Product Selection Guide

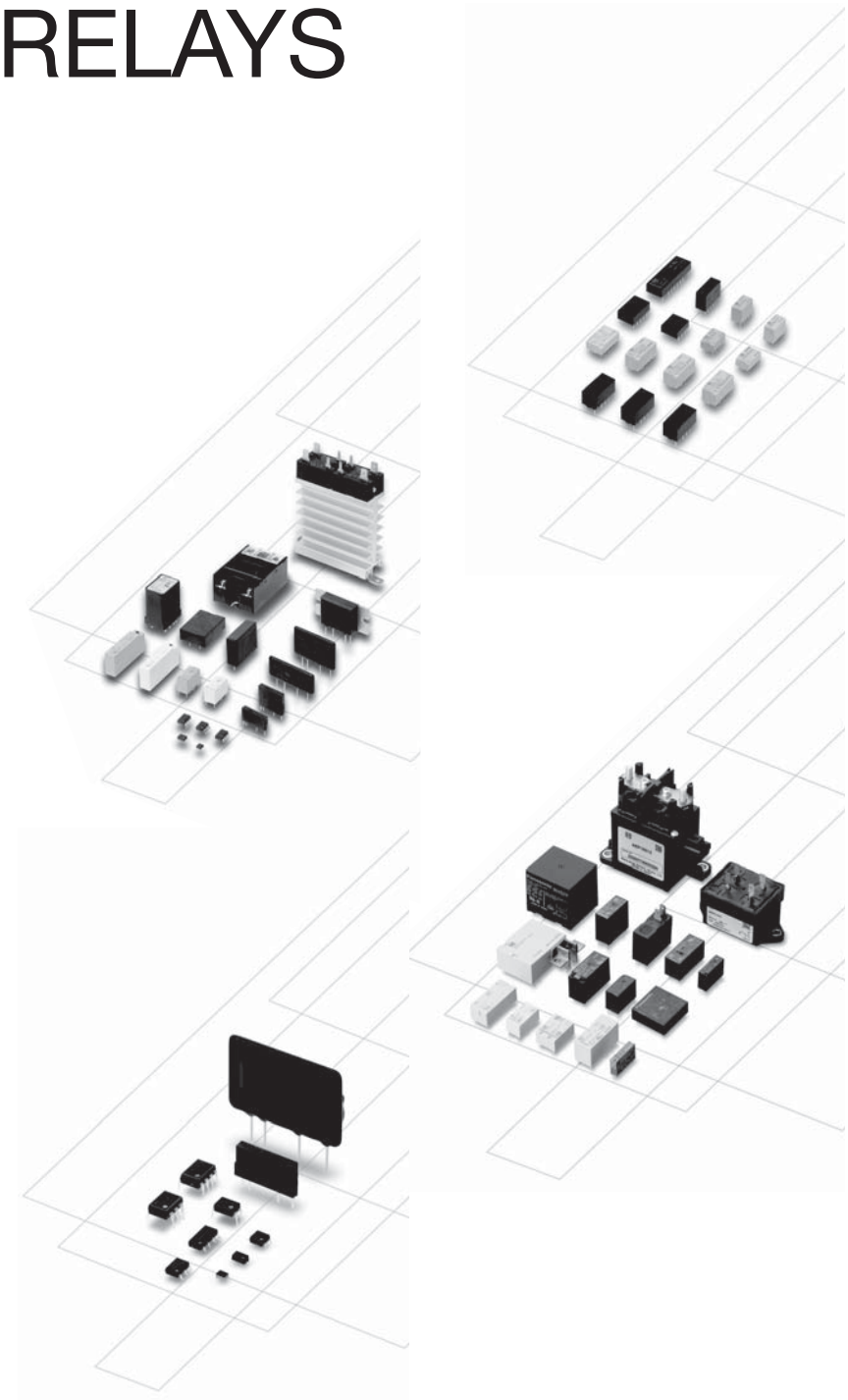
RELAYS
SENSORS
CONNECTORS

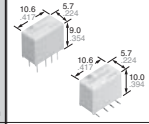
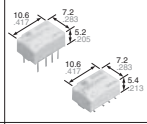
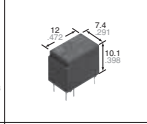
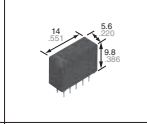
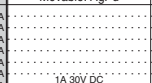
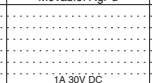
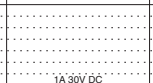
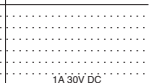
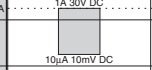
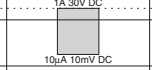
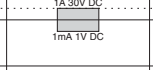
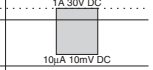
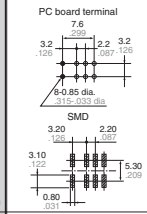
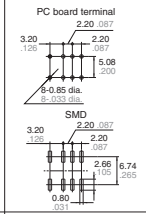
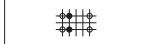


Panasonic Electric Works Corporation of America
http://pewa.panasonic.com 1-800-276-6289

Panasonic ideas for life

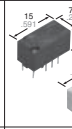
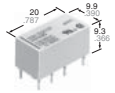
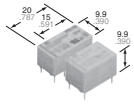
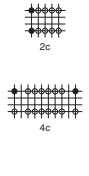
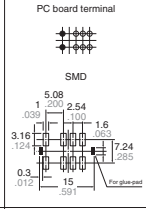
RELAYS



• Products		Signal Relays			
		GN RELAY (AGN)	GQ RELAY (AGQ)	HY RELAY	TN RELAY
• Type of relay mm inch					
• Features		• Compact slim body saves space • Outstanding surge resistance • High sensitivity of 100 mW type	• Compact flat body saves space • Outstanding surge resistance • High sensitivity of 100 mW type	• High sensitivity: 150mW/200mW	• Slim size • 1,500V FCC
• Sealed types availability		●	●	●	●
• Latching types availability		●	●	—	●
• Contact material (Optional material)		Stationary: AgPd+Au clad Movable: AgPd	Stationary: AgPd+Au clad Movable: AgPd	Ag + Au clad	Ag + Au clad
• Contact rating chart Maximum (cos φ = 1)					
Minimum (For Reference)					
• Max. switching voltage		110V DC, 125V AC	110V DC, 125V AC	60V DC	110V DC, 125V AC
• Contact arrangement		2c	2c	1c	2c
• Life (Min. operation)	Electrical	10^5	10^5	10^5 (at 1A 30V DC)	2×10^5 (at 1A 30V DC) 10^5 (at 0.5A 125V AC)
	Mechanical	5×10^7	5×10^7	10^7	10^8
• Breakdown voltage	Between open contacts	750Vrms	750Vrms	500Vrms	750Vrms
	Between contacts sets	1,000Vrms	1,000Vrms	—	1,000Vrms
	Between contacts and coil	1,500Vrms	1,500Vrms	1,000Vrms	1,000Vrms
	Between live parts and ground	—	—	—	—
• Surge breakdown voltage		1,500V FCC 2,500V Telcordia	1,500V FCC 2,500V Telcordia	—	1,500V FCC
• Coil voltage		(DC) 1.5, 3, 4.5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 5, 6, 9,12, 24V	(DC) 3, 4.5, 5, 6, 9, 12, 24, 48V
• Nominal operating power		(Single) 1.5 to 12V DC: 140mW 24V DC: 230mW	(Single) 1.5 to 12V DC: 140mW 24V DC: 230mW	Standard: 200mW High sensitivity: 150mW	(Single) 3 to 12V DC: 140mW 24V DC: 200mW 48V DC: 300mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch					
• Standards		UL, CSA, BSI	UL, CSA, BSI	UL, CSA	UL, CSA
• Mounting method					

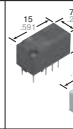
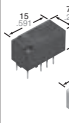
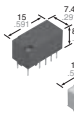
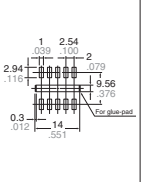
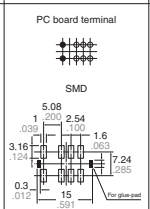
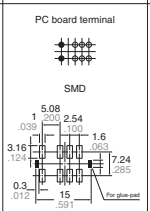
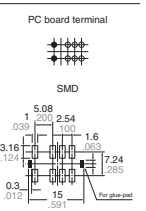
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Signal Relays				
	TQ RELAY	TX-S RELAY	DS2Y-RELAY	DS RELAY	TK RELAY
• Type of relay mm inch					
• Features	• 1,500V FCC • 4 pole model available	• High sensitivity • Nominal operating power, 50 mW • 1,500 V FCC • Added New pin layout (LT type) in 2 coil latching type	• High sensitivity • 2 Form C contact • 1,500V FCC • Sealed construction	• 1,500V FCC • High switching power	• Low profile 4 mm .157 inch • High contact capacity: 2 A • Surge breakdown voltage between contact and coil: 2,500 V
• Sealed types availability	●	●	●	●	●
• Latching types availability	●	●	—	●	●
• Contact material (Optional material)	Ag + Au clad	Ag + Au clad	Ag + Au clad	Ag + Au clad	Ag + Au clad
• Contact rating chart Maximum (cos φ = 1)	15 A 10 A 8 A 5 A 3 A 2 A 1 A 1A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 1A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 1A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 2A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 2A 30V DC
Minimum (For Reference)	10μA 10mV DC	10μA 10mV DC	10μA 10mV DC	10μA 10mV DC	10μA 10mV DC
• Max. switching voltage	110V DC, 125V AC	110V DC	220V DC, 250V AC	220V DC, 250V AC	220V DC
• Contact arrangement	2c, 4c	2c	2c	1c, 2c	1c
• Life (Min. operation) Electrical	2×10^5 (at 1A 30V DC) 10^5 (at 0.5A 125V AC)	2×10^5 (at 1A 30V DC)	5×10^5	5×10^5	10^5 (at 2A 30V DC)
• Life (Min. operation) Mechanical	10^8	5×10^7	10^8	10^8	10^8 (Single side stable) 5×10^7 (Latching)
• Breakdown voltage Between open contacts	750Vrms	750Vrms	750Vrms	1,000Vrms (500Vrms for DS1E-S)	750Vrms
• Breakdown voltage Between contacts sets	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts and coil	1,000Vrms	1,800Vrms	1,000Vrms	1,500Vrms (1,000Vrms for DS1E-S)	1,500Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—	—
• Surge breakdown voltage	1,500V FCC	1,500V FCC 2,500V Telcordia	1,500V FCC	1,500V FCC	1,500V FCC 2,500V Telcordia
• Coil voltage	(DC) 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 6, 9, 12, 24V	(DC) 1.5, 3, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V
• Nominal operating power	(Single) 3 to 12V DC: 140mW 24V DC: 200mW 48V DC: 300mW	(Single) 1.5 to 12V DC: 50mW 24V DC: 70mW	(Single) 200mW (300mW: 48V) (–L2) 180mW (360mW: 48V)	M type (Single) 400mW (–L2) 360mW S type (Single) 200mW (–SL2) 180mW	(Single) 1.5 to 12V DC: 140mW 24V DC: 270mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch					
• Standards	UL, CSA	UL, CSA, BSI	UL, CSA	UL, CSA	UL, CSA
• Mounting method					

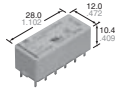
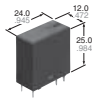
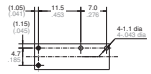
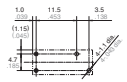
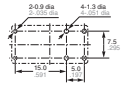
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Signal Relays			
	TQ-SMD RELAY	TX RELAY	TX-D RELAY	TX RELAY TH type
• Type of relay mm inch				
• Features	• Ultra low profile: 5.8mm .228inch • Surge voltage: 2,500 V • 3 types of surface-mount terminal available	• Surge voltage: 2,500V • Breakdown voltage between contacts and coil: 2,000 V • Added New pin layout (LT type) in 2 coil latching type	• High-insulation relay that conforms to the insulation level provided for in the EN60950 • 3 types of surface-mount terminal available	• Small size, controlled 7.5A inrush current possible
• Sealed types availability	●	●	●	●
• Latching types availability	●	●	●	●
• Contact material (Optional material)	AgNi type + Au clad	Ag + Au clad	Ag + Au clad	Ag + Au plating
• Contact rating chart Maximum (cos φ = 1)	15 A 10 A 8 A 5 A 3 A 2 A 1 A 2A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 2A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 2A 30V DC	15 A 10 A 8 A 5 A 3 A 2 A 1 A 2A 30V DC
Minimum (For Reference)	10μA 10mV DC	10μA 10mV DC	10μA 10mV DC	10μA 10mV DC
• Max. switching voltage	220V DC, 125V AC	220V DC	220V DC	220V DC, 250V AC
• Contact arrangement	2c	2c	2c	2c
• Life (Min. operation) Electrical	10^5 (at 2A 30V DC) 2×10^5 (at 1A 30V DC) 10^7 (at 0.5A 125V AC)	10^5 (at 2 A 30 V DC) 2×10^5 (at 1 A 30 V DC)	10^5 (at 2 A 30 V DC) 5×10^5 (at 1 A 30 V DC)	2×10^5
• Life (Min. operation) Mechanical	10^8	10^8	10^8	10^8
• Breakdown voltage Between open contacts	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts sets	1,500Vrms	1,000Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts and coil	1,500Vrms	2,000Vrms	2,000Vrms	2,000Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—
• Surge breakdown voltage	1,500V FCC 2,500V Telcordia	1,500V FCC 2,500V Telcordia	1,500V FCC 2,500V Telcordia	1,500V FCC 2,500V Telcordia
• Coil voltage	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V
• Nominal operating power	(Single) 1.5 to 12V DC: 140mW 24V DC: 200mW 48V DC: 300mW	(Single) 1.5 to 24V DC: 140mW 48V DC: 270mW	(Single) 1.5 to 12V DC: 200mW 24V DC: 230mW	(Single) 1.5 to 24V DC: 140mW 48V DC: 270mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				
• Standards	UL, CSA	UL, CSA, BSI	UL, CSA, BSI	—
• Mounting method				

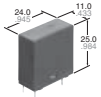
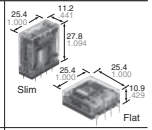
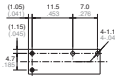
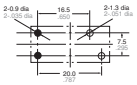
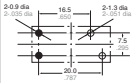
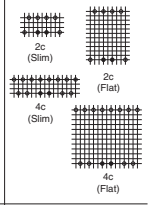
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		Power Relays (2A or more)			
		LD RELAY (ALD)	LJ RELAY (ALJ)	S RELAY	LA RELAY (ALA)
• Type of relay (mm inch)					
• Features		• 1a 3A slim power relays	• 1a 3A slim power relay class minimum	• 2a2b/3a1b/4a 4A polarized power relays	• TV-4 rated. • 2a 3A/5A power relays
• Sealed types availability		●	—	●	—
• Latching types availability		—	—	●	—
• Contact material (Optional material)		AgNi type	AgNi type	Au clad silver alloy (cadmium free)	AgNi type + Au clad / $AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)		30 A 20 A 15 A 10 A 8 A 5 A 3 A 3A 277V AC 3A 30V DC	3A 250V AC	4A 250V AC 3A 30V DC	3A 125V AC 5A 277V AC
Minimum (For Reference)		100mA 5V DC	100mA 5V DC	100µA 100mV DC	100mA 5V DC
• Max. switching voltage		30V DC, 277V AC	250V AC	48V DC, 250V AC	125V AC / 277V AC
• Contact arrangement		1a	1a	2a2b, 3a1b, 4a	2a
• Life (Min. operation)	Electrical	2×10^5 (3A 125V AC, 3A 30V DC) 10^5 (3A 250V AC)	5×10^4 (5A 250V AC) 10^5 (3A 250V AC)	10^5(AC) 2×10^5(DC)	5×10^4
	Mechanical	5×10^6	2×10^6	10^8	10^6
• Breakdown voltage	Between open contacts	750Vrms	750Vrms	750Vrms	1,000Vrms
	Between contacts sets	—	—	1,000Vrms	1,000Vrms
	Between contacts and coil	4,000Vrms	3,000Vrms	1,500Vrms	4,000Vrms
	Between live parts and ground	—	—	—	—
• Surge withstand voltage		Min. 10,000V	Min. 6,000V	—	Min. 10,000V
• Coil voltage		(DC) 4.5, 5, 6, 9, 12, 18, 24V	(DC) 5, 9, 12, 18, 24V	(DC) 3, 5, 6, 12, 24, 48V	(DC) 12, 24V
• Nominal operating power		200mW	200mW	200mW	530mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) (mm inch)					
• Standards		UL, CSA, TÜV, VDE	UL, C-UL, VDE	UL, CSA	UL, CSA, TÜV, SEMKO, VDE
• Mounting method					

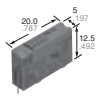
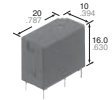
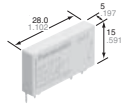
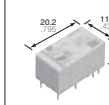
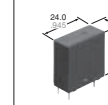
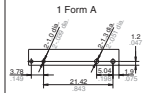
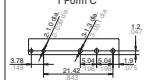
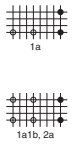
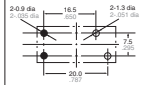
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		Power Relays (2A or more)			
		LD-P RELAY (ALDP)	LK-S RELAY	LK-T RELAY	NC RELAY
• Type of relay (mm inch)					
• Features		• 1a 5A slim power relay	• TV-5 rated. • High sensitivity: 250mW • 1a 5A power relays	• TV-8 rated. • 1a 5A power relays	• Transistor drive • 2c/4c 5A slim power relays
• Sealed types availability		●	—	—	●
• Latching types availability		—	—	—	—
• Contact material (Optional material)		AgNi type	$AgSnO_2$ type	$AgSnO_2$ type	Au clad AgNi type
• Contact rating chart Maximum (cos φ = 1)		30 A 20 A 15 A 10 A 8 A 5 A 3 A 5A 277V AC	5A 277V AC	5A 277V AC	2c: 5A 250V AC 4c: 4A 250V AC 5A 30V DC
Minimum (For Reference)		100mA 5V DC	100mA 5V DC	100mA 5V DC	100µA 1V DC
• Max. switching voltage		277V AC	277V AC	277V AC	250V AC
• Contact arrangement		1a	1a	1a	2c, 4c
• Life (Min. operation)	Electrical	2×10^5 (5A 125V AC) 10^5 (5A 250V AC)	10^5	10^5	10^5 (5A 250V AC) 5×10^5 (5A 30V DC)
	Mechanical	5×10^6	10^6	10^6	(AC) 10^7 (DC) 5×10^7
• Breakdown voltage	Between open contacts	750Vrms	1,000Vrms	1,000Vrms	1,000Vrms
	Between contacts sets	—	—	—	1,000Vrms
	Between contacts and coil	4,000Vrms	4,000Vrms	4,000Vrms	2,000Vrms
	Between live parts and ground	—	—	—	—
• Surge withstand voltage		Min. 10,000V	Min. 10,000V	Min. 10,000V	—
• Coil voltage		(DC) 5, 6, 9, 12, 18, 24V	(DC) 5, 9, 12, 24V	(DC) 5, 9, 12, 24V	(DC) 3, 5, 6, 12, 24, 48, 100V (AC) 12, 24, 48, 100V
• Nominal operating power		200mW	250mW	250mW	(2c) 1.05VA (4c) 1.30VA (2c) 360mW (4c) 720mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) (mm inch)					
• Standards		UL, CSA, VDE	UL, CSA, TÜV, SEMKO, VDE	UL, C-UL, TÜV, SEMKO, VDE	UL, CSA
• Mounting method					

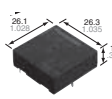
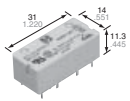
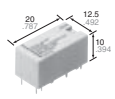
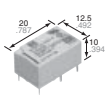
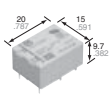
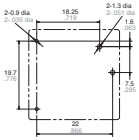
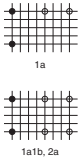
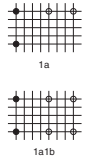
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Power Relays (2A or more)				
	PA RELAY	PQ RELAY	PF RELAY (APF)	DS-P RELAY	LK-Q RELAY
• Type of relay mm inch					
• Features	• 1a 5A slim power relay for interface	• 1a 5A small size power relay for interface	• Compliant with European standards • 1a/1c 6A Slim power relays	• 1a 8A, 1a1b/2a 5A small polarized power relays	• TV-5/TV-8 rated. • 1a 5A/8A silent type power relays
• Sealed types availability	●	●	●	●	—
• Latching types availability	—	—	—	●	—
• Contact material (Optional material)	Au clad AgNi type	Au clad AgNi type	AgNi type, Au plated AgNi type	Au flashed $AgSnO_2$ type	$AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)	30 A 20 A 15 A 10 A 8 A 5 A 3 A 5A 250V AC 5A 30V DC	5A 250V AC 5A 30V DC	6A 250V AC	8A 250V AC 5A 30V DC 5A 250V AC 5A 30V DC 1a 1a1b, 2a	5A 277V AC 8A 277V AC
Minimum (For Reference)	100μA 100mV DC	100μA 100mV DC	1mA 1V DC (Au plating)	10mA 5V DC 10mA 5V DC	100mA 5V DC
• Max. switching voltage	110V DC, 250V AC	110V DC, 250V AC	250V AC	125V DC, 380V AC	277V AC
• Contact arrangement	1a	1a	1a, 1c	1a, 1a1b, 2a	1a
• Life (Min. operation) Electrical	10^5 (3A 250V AC, 30V DC) 5×10^4 (5A 250V AC, 30V DC)	2×10^5 (5A 125V AC) 10^5 (5A 250V AC)	5×10^4 (N.O.) 3×10^4 (N.C.)	10^5	10^5
• Life (Min. operation) Mechanical	2×10^7	2×10^7	5×10^6	5×10^7	10^8
• Breakdown voltage Between open contacts	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts sets	—	—	—	2,000Vrms (1a1b, 2a)	—
• Breakdown voltage Between contacts and coil	2,000Vrms	4,000Vrms	4,000Vrms	3,000Vrms	4,000Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	—	—	Min. 6,000V	Min. 5,000V	Min. 10,000V
• Coil voltage	(DC) 5, 6, 9, 12, 18, 24V	(DC) 3, 5, 6, 9, 12, 18, 24V	(DC) 4.5, 5, 6, 9, 12, 18, 24, 48, 60V	(DC) 3, 5, 6, 9, 12, 24V	(DC) 5, 9, 12, 24V
• Nominal operating power	120mW, 180mW	200mW	170mW, 217mW, 175mW	300mW	250mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch			1 Form A  1 Form C 	 1a 1a1b, 2a	
• Standards	UL, CSA, TÜV	UL, CSA, VDE, TÜV, SEMKO	UL, C-UL, VDE	UL, CSA, TÜV	UL, C-UL, TÜV, SEMKO
• Mounting method					

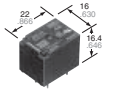
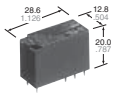
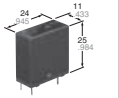
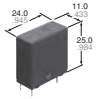
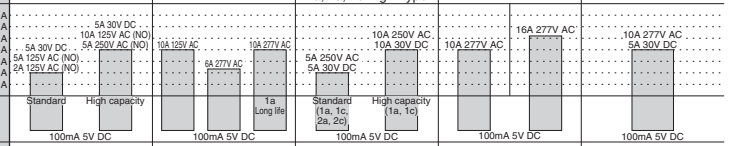
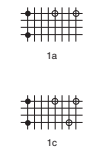
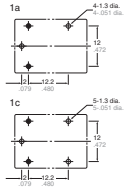
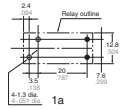
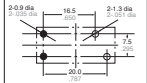
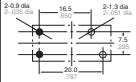
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Power Relays (2A or more)				
	LK-F RELAY	ST RELAY	DE RELAY (ADE)	DK RELAY	DY RELAY (ADY)
• Type of relay mm inch					
• Features	• TV-5, TV-8 rated 10mm flat power relays • Silent type is available	• 1a1b/2a 8A polarized power relays	• Compliant with European standards • 1a1b 10A/8A polarized power relays	• 1a 10A, 1a1b/2a 8A small polarized power relays	• Electrical life: Min. 2×10^5 • 1a 10A, 1a1b 8A small polarized power relays
• Sealed types availability	—	●	●	●	●
• Latching types availability	—	●	●	●	●
• Contact material (Optional material)	$AgSnO_2$ type	Au flashed $AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type / Au flashed AgNi type	Au flashed $AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)	30 A 20 A 15 A 10 A 8 A 5 A 3 A 5A 277V AC 8A 277V AC	8A 250V AC	10A 250V AC 10A 30V DC 8A 250V AC 8A 30V DC 1a 1a1b, 2a	10A 250V AC 10A 30V DC 8A 250V AC 8A 30V DC 1a 1a1b, 2a	10A 250V AC 10A 30V DC 8A 250V AC 8A 30V DC 1a 1a1b
Minimum (For Reference)	100mA 5V DC	100mA 5V DC		10mA 5V DC 10mA 5V DC	10mA 5V DC 10mA 5V DC
• Max. switching voltage	277V AC	250V DC, 380V AC	230V DC, 440V AC	125V DC, 250V AC	125V DC, 380V AC
• Contact arrangement	1a	1a1b, 2a	1a, 1a1b, 2a	1a, 1a1b, 2a	1a, 1a1b
• Life (Min. operation) Electrical	10^5 (TV-5) 5×10^4 (TV-8)	10^5	10^5	10^5	10^6 (resistive load = 1a, 1a1b) 2×10^5 (inductive load = 1a) 10^5 (inductive load = 1a1b)
• Life (Min. operation) Mechanical	10^8	10^7	10^7	5×10^7	5×10^7
• Breakdown voltage Between open contacts	1,000Vrms	1,200Vrms	1,000Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts sets	—	2,000Vrms	4,000 Vrms (2a, 1a1b)	—	—
• Breakdown voltage Between contacts and coil	4,000Vrms	3,750Vrms	5,000Vrms	4,000Vrms	4,000Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	Min. 10,000V	Min. 6,000V	Min. 12,000V	Min. 10,000V	Min. 10,000V
• Coil voltage	(DC) 5, 9, 12, 24V	(DC) 3, 5, 6, 9, 12, 24, 48V	(DC) 5, 12, 24V	(DC) 3, 5, 6, 9,12, 24V	(DC) 3, 5, 6, 12, 24V
• Nominal operating power	250mW	240mW	200mW	200mW	200mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				 1a 1a1b, 2a	 1a 1a1b
• Standards	UL, C-UL, SEMKO, TÜV	UL, CSA, VDE, SEV, TV rating	UL, CSA, VDE	UL, CSA, TÜV	UL, CSA, TÜV
• Mounting method					

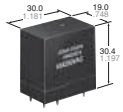
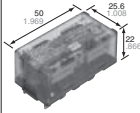
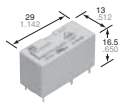
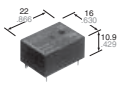
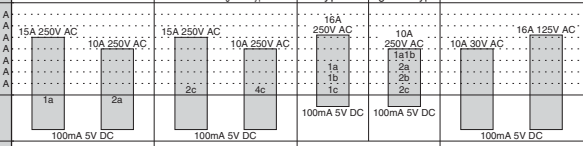
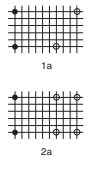
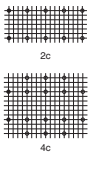
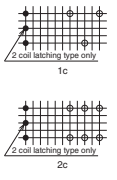
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Power Relays (2A or more)				
	JQ RELAY	JS RELAY	JW RELAY	LK-G RELAY	LK-P RELAY
• Type of relay (mm inch)					
• Features	• 1a/1c 5A/10A small power relays	• 1a/1c 10A cubic type power relays	• Ideal for power supply • 1a/1c/2a/2c/5A/10A power relays	• 1mm contact gap. 1a 10A/16A power relays • TV-5 rated	• 1a 10A TV-5 rated power relays
• Sealed types availability	●	● (1a, 1c)	●	—	—
• Latching types availability	—	—	—	—	—
• Contact material (Optional material)	$AgSnO_2$ type	$AgSnO_2$ type	1a: $AgSnO_2$ type 1a, 2a, 2c: AgNi type	$AgSnO_2$ type	$AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)					
Minimum (For Reference)					
• Max. switching voltage	110V DC(0.3A), 250V AC	100V DC(0.5A), 250V AC	30V DC, 250V AC	277V AC	30V DC, 277V AC
• Contact arrangement	1a, 1c	1a, 1c, 1a (Long life type)	Standard: 1a, 1c, 2a, 2c High capacity: 1a, 1c	1a	1a
• Life (Min. operation) Electrical	5×10^4 (1a standard, 5A 125V AC)	10^5 2×10^5 (Long life type)	10^5	10^5 (10A type) 5×10^4 (16A type)	10^5
• Life (Min. operation) Mechanical	10^7	10^7	5×10^6	2×10^6	2×10^6
• Breakdown voltage Between open contacts	1a: 1,000Vrms 1c: 750Vrms	750Vrms	1,000Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts sets	—	—	3,000Vrms (2a, 2c)	—	—
• Breakdown voltage Between contacts and coil	4,000Vrms	1,500Vrms	5,000Vrms	4,000Vrms	4,000Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	Min. 8,000V	—	Min. 10,000V	Min. 10,000V	Min. 10,000V
• Coil voltage	(DC) 5, 6, 9, 12, 18, 24, 48V	(DC) 5, 6, 9, 12, 18, 24, 48V	(DC) 6, 9,12, 24, 48V	(DC) 5, 9, 12, 24V	(DC) 5, 9, 12, 24V
• Nominal operating power	1a: 200mW 1c: 400mW	360mW	530mW	530mW	530mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) (mm inch)					
• Standards	UL, CSA, TÜV, VDE, SEMKO	UL, CSA, TÜV, VDE	UL, CSA, VDE, SEMKO, FIMKO, TÜV, SEV	UL, C-UL, TÜV	UL, CSA, TÜV, SEMKO, VDE
• Mounting method					

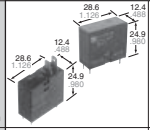
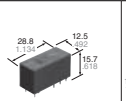
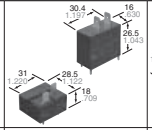
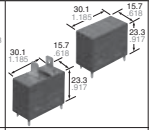
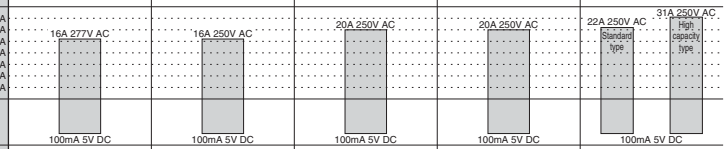
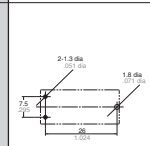
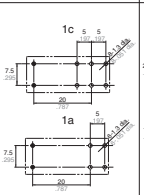
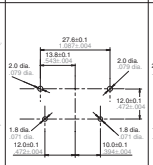
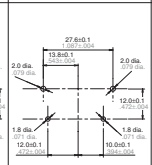
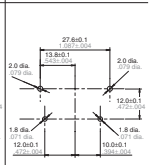
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Power Relays (2A or more)			
	JC RELAY	SP RELAY	DJ RELAY (ADJ)	JV-N RELAY
• Type of relay (mm inch)				
• Features	• Wide variation • 1a 15A, 2a 10A power relays	• 2c 15A, 4c 10A polarized power relays	• 1-pole/2-pole 16A polarized power relays	• Ideal for heater control • 1a 16A, 10.9 mm height flat power relays
• Sealed types availability	—	—	●	●
• Latching types availability	—	●	●	—
• Contact material (Optional material)	$AgSnO_2$ type	Stationary: Au flashed $AgSnO_2$ type Movable: $AgSnO_2$ type	$AgSnO_2$ type / Au flashed $AgSnO_2$ type	$AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)				
Minimum (For Reference)				
• Max. switching voltage	250V AC	30V DC, 250V AC	250V AC	30 V DC, 277 V AC
• Contact arrangement	1a, 2a	2c, 4c	1a, 1b, 1c, 1a1b, 2a, 2b, 2c	1a
• Life (Min. operation) Electrical	10^5	10^5	10^5	10^5
• Life (Min. operation) Mechanical	5×10^6	5×10^7	5×10^6	2×10^7
• Breakdown voltage Between open contacts	2,000Vrms	1,500Vrms	1,000Vrms	1,000Vrms
• Breakdown voltage Between contacts sets	2,000Vrms (2a)	3,000Vrms	—	—
• Breakdown voltage Between contacts and coil	4,000Vrms	3,000Vrms	4,000Vrms	2,500Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—
• Surge withstand voltage	Min. 10,000V	—	Min. 10,000V	Min. 4,500V
• Coil voltage	(DC) 6, 12, 24V	(DC) 3, 5, 6, 12, 24, 48V	(DC) 5, 6, 12, 24, 48V	(DC) 4.5, 6, 9, 12, 18, 24, 48, 100V
• Nominal operating power	(1a) 900mW (2a) 1,000mW	300mW	250mW	(DC) 4.5V to 48V: 200mW (DC) 100V: 600mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) (mm inch)				
• Standards	UL, CSA, VDE, SEMKO, TÜV	UL, CSA, TÜV	UL, C-UL, VDE	UL, CSA, TÜV
• Mounting method				

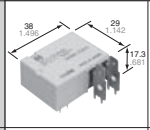
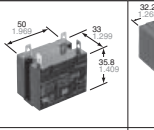
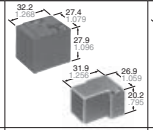
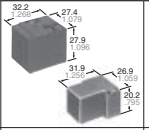
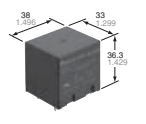
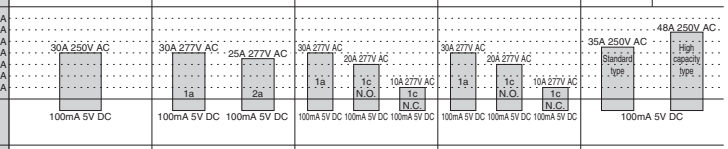
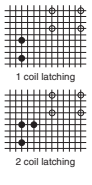
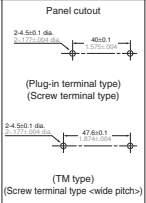
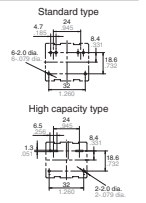
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Power Relays (2A or more)				
	LE RELAY (ALE)	LZ RELAY (ALZ)	JM RELAY	LF RELAY (ALF)	LF-G RELAY (ALFG)
• Type of relay					
mm inch					
• Features	• 1a 16A power relay for micro wave oven	• Low profile: 15.7mm height • 1a/1c 16A power relay	• Ideal for compressor and motor control • Inrush 80A, 1a 20A power relay	• Load for air conditioner • 1a 20A power relays	• Ideal for solar inverter compact size, 1a 22A/ 31A power relays
• Sealed types availability	—	●	—	—	—
• Latching types availability	—	—	—	—	—
• Contact material (Optional material)	$AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)					
Minimum (For Reference)	100mA 5V DC	100mA 5V DC	100mA 5V DC	100mA 5V DC	100mA 5V DC
• Max. switching voltage	277V AC	440V AC	250V AC	250V AC	250V AC
• Contact arrangement	1a	1a, 1c	1a	1a	1a
• Life (Min. operation) Electrical	10^5	10^5 (NO) 5×10^4 (NC)	10^5	10^5	3×10^4
• Life (Min. operation) Mechanical	2×10^6	10^7	10^6	2×10^6	10^6
• Breakdown voltage Between open contacts	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms	2,500Vrms
• Breakdown voltage Between contacts sets	—	—	—	—	—
• Breakdown voltage Between contacts and coil	4,000Vrms	5,000Vrms	5,000Vrms	5,000Vrms	4,000Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	Min. 10,000V	Min. 10,000V	Min. 10,000V	Min. 10,000V	Min. 6,000V
• Coil voltage	(DC) 5, 6, 9, 12, 18, 24, 48V	(DC) 5, 9, 12, 18, 24, 48V	(DC) 5, 6, 9, 12, 24, 48V	(DC) 5, 6, 9,12, 18, 24V	(DC) 9, 12, 18, 24V
• Nominal operating power	200mW 400mW	400mW	0.9 W	900mW	1,400mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid)	 (PC board type, TMP type are also available)		 Slim TMP type		
mm inch					
• Standards	UL, CSA, TÜV, VDE, SEMKO	UL, C-UL, VDE	UL, CSA, VDE	UL, C-UL, TÜV, VDE	UL, C-UL, VDE
• Mounting method					

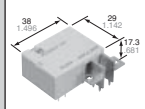
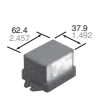
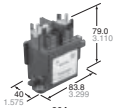
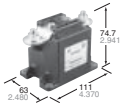
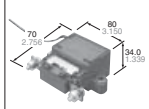
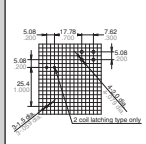
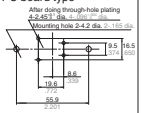
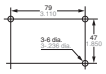
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products	Power Relays (2A or more)				
	DQ RELAY (ADQ)	HE RELAY	JT-V RELAY	JT-N RELAY	HE RELAY PV TYPE
• Type of relay					
mm inch					
• Features	• 1a 30A polarized power relays	• TV-10/TV-15 rated • 1a 30A, 2a 20A power relays	• Surge withstand voltage: 6kV • 1a/1c 30A power relays	• High switching capacity • 1a/1c 30A power relays	• Ideal for solar inverter compact size, 1a 35A/48A power relays
• Sealed types availability	●	—	●	●	—
• Latching types availability	● (Latching type only)	—	—	—	—
• Contact material (Optional material)	$AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type	$AgSnO_2$ type / AgNi type
• Contact rating chart Maximum (cos φ = 1)					
Minimum (For Reference)	100mA 5V DC	100mA 5V DC / 100mA 5V DC	100mA 5V DC / 100mA 5V DC / 100mA 5V DC	100mA 5V DC / 100mA 5V DC / 100mA 5V DC	100mA 5V DC
• Max. switching voltage	250V AC	30VDC, 277V AC	277V AC	277V AC	250V AC
• Contact arrangement	1a	1a, 2a	1a, 1c	1a, 1c	1a
• Life (Min. operation) Electrical	10^4	2×10^5	10⁵ (20A 277V AC) 10⁷ (N.O.)(20A 277V A) 10⁵ (N.C.)(10A 277V A)	10⁵ (20A 277V AC) 10⁷ (N.O.)(20A 277V A) 10⁵ (N.C.)(10A 277V A)	3×10^4
• Life (Min. operation) Mechanical	10^6	DC: 10^7 AC: 5×10^6	10^7	10^7	10^7
• Breakdown voltage Between open contacts	1,500Vrms	2,000Vrms	1,200Vrms	1,200Vrms	2,000Vrms
• Breakdown voltage Between contacts sets	—	4,000Vrms (2a)	—	—	—
• Breakdown voltage Between contacts and coil	4,000Vrms	5,000Vrms	3,500Vrms	2,500Vrms	5,000Vrms
• Breakdown voltage Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	Min. 10,000V	Min. 10,000V	6,000V	—	Min. 10,000V
• Coil voltage	(DC) 4.5, 6, 9, 12, 24V	(AC) 12, 24, 48, 100/120, 200/240V (DC) 6, 12, 24, 48, 100, 110V	(DC) 12, 18, 24, 48V	(DC) 5, 6, 9, 12, 15, 18, 24V	(DC) 6, 9, 12, 24V (Standard type DC9V only)
• Nominal operating power	500mW (1 coil latching) 1,000mW (2 coil latching)	(AC) 1.7 to 2.7VA (DC) 1.92W	1,000mW	800mW	1,920mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid)	 1 coil latching / 2 coil latching	 Panel cutout / (Plug-in terminal type) (Screw terminal type) / (TM type) (Screw terminal type <wide pitch>)			 Standard type / High capacity type
mm inch					
• Standards	UL, C-UL	UL, CSA, VDE, TÜV	UL/C-UL	UL, CSA	UL, CSA, VDE / C-UL, VDE
• Mounting method					

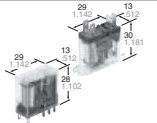
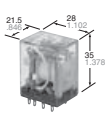
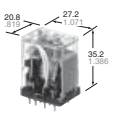
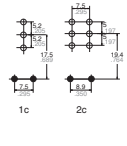
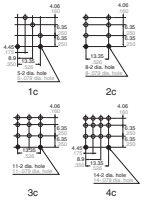
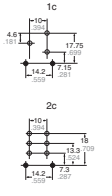
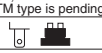
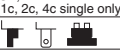
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		Power Relays (2A or more)	High-capacity DC cutoff Relays			
		DQ-M RELAY (ADQM)	EP RELAY (AEP)			EJ RELAY (AEJ)
• Type of relay mm inch			 10A  80A  300A			
• Features		• 60A power latching relays	• High capacity DC cutoff 10 A to 300 A at 400V DC			• High capacity DC cutoff 100A at 100V DC
• Sealed types availability		—	●			—
• Latching types availability		—	—			—
• Contact material (Optional material)		AgNi type	Molybdenum type	Tungsten type/ Copper type alloy	Copper type alloy	AgCuO type
• Contact rating chart Maximum (cos φ = 1)		60A 250V AC	10A 400V DC	80A 400V DC	300A 400V DC	100A 100V DC
Minimum (For Reference)		100mA 5V DC	1A 6V DC			1A 12V DC
• Max. switching voltage		250V AC	10A 400V DC	80A 400V DC	300A 400V DC	100A 100V DC
• Contact arrangement		1a	1a	1a	1a	1a
• Life (Min. operation)	Electrical	10^3 (60A 250V AC) 10^4 (50A 250V AC)	7.5×10^4 10A 400V DC (L/R ≦ 1ms)	10^3 80A 400V DC (L/R ≦ 1ms)	10^3 300A 400V DC (L/R ≦ 1ms)	10^4 (100A 100V DC)
	Mechanical	10^6	10^5	2×10^5	2×10^5	10^6
• Breakdown voltage	Between open contacts	1,500Vrms	2,500Vrms			1,500Vrms
	Between contacts sets	—	—			—
	Between contacts and coil	4,000Vrms	2,500Vrms			2,500Vrms
	Between live parts and ground	—	—	—	—	—
• Surge withstand voltage		Min. 10,000V	—	—	—	—
• Coil voltage		(DC) 4.5, 6, 9, 12, 24V	(DC) 12, 24, 48, 100V	(DC) 12, 24V	(DC) 12, 24V	(DC) 12, 24V
• Nominal operating power		500mW (1 coil latching) 1,000mW (2 coil latching)	Max. 1.4W	Max. 4.5W	Max. 4 to 40W	5W
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch			PC board type  TM type 			
• Standards		—	UL, C-UL	UL, C-UL	—	—
• Mounting method				Screw terminal blocks	Screw terminal blocks	Screw terminal blocks

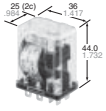
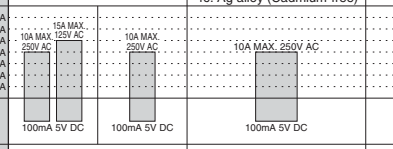
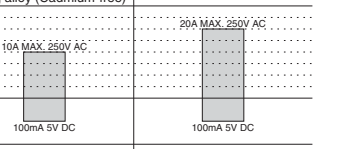
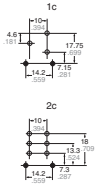
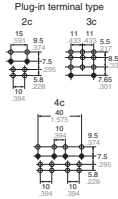
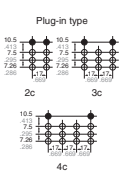
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		Control Panel Relays			
		HN RELAY (AHN)	HJ RELAY	HC RELAY	HK RELAY (AHK)
• Type of relay mm inch					
• Features		• Relay for control panel of 1c 10A, 2c 5A and 1a 16A	• Relay for control panel of 2c 7A and 4c 5A	• Relay for control panel of 1A to 10A (1c/2c/3c/4c)	• Relay for control panel of 1c 15A, and 2c 10A
• Sealed types availability		—	—	●	—
• Latching types availability		—	—	(Keep)	—
• Contact material (Optional material)		$AgSnO_2$ type / Au flashed AgNi type / $AgSnO_2$ type	Ag	1c, 2c, 3c: Au flashed Ag alloy (Cadmium free) 4c: Au clad AgNi type	$AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)		16A 250V AC / 5A 250V AC / 16A 250V AC	7A 250V AC / 5A 250V AC	10A 250V AC / 7A 250V AC / 7A 250V AC / 5A 250V AC / 3A 250V AC	15A 125V AC / 10A 125V AC
Minimum (For Reference)		100mA 5V DC / 1mA 1V DC / 100mA 5V DC	1mA 1V DC (Au plating) / 1mA 1V DC (Au plating)	1mA 1V DC / 100μA 1V DC	100mA 5V DC / 100mA 5V DC
• Max. switching voltage		250V AC, 30V DC	250V AC	250V AC	125V DC, 250V AC
• Contact arrangement		1c, 2c, 1a (TM type)	2c, 4c	1c, 2c, 3c, 4c, 4c twin	1c, 2c
• Life (Min. operation)	Electrical	10^5	10^5	2×10^5 (1c, 2c, 4c) 10^5 (3c)	2×10^5 (1c) 5×10^5 (2c)
	Mechanical	(DC) 2×10^7 (AC) 10^7	2×10^7	(DC) 10^8 (AC) 5×10^7	(DC) 10^8 (AC) 5×10^7
• Breakdown voltage	Between open contacts	1,000Vrms	1,000Vrms	700Vrms	1,000Vrms
	Between contacts sets	3,000Vrms (2c)	2,000Vrms	700Vrms	2,000Vrms
	Between contacts and coil	5,000Vrms	2,000Vrms	2,000Vrms	2,000Vrms
	Between live parts and ground	—	—	—	—
• Surge withstand voltage		—	—	—	—
• Coil voltage		(AC) 12, 24, 100/110, 200/220V (DC) 5, 6, 12, 24, 48, 100, 110V	(AC) 12, 24, 48, 100/110, 200/220V (DC) 12, 24, 48, 100/110V	(AC) 6, 12, 24, 48, 100/110, 110/120, 200/220, 220/240V (DC) 6, 12, 24, 48 100/110V	(AC) 12, 24, 48, 100/110, 110/120, 200/220, 220/240V (DC) 6, 12, 24, 48 100/110V
• Nominal operating power		(AC) 1.2 to 1.4VA (DC) 0.53W	(AC) 1.2 to 1.3VA (DC) 0.9W	(AC) 1.2 to 1.3VA (DC) 0.9 to 1.1W	(AC) 1.2 to 1.3VA (DC) 0.9W
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch		Plug-in type 	Plug-in type 2c  4c 		
• Standards		UL/C-UL, VDE (TM type is pending)	UL, C-UL, TÜV	UL, CSA, VDE (1c, 2c, 4c single only)	UL, C-UL, TÜV
• Mounting method					

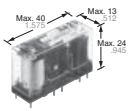
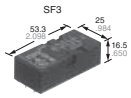
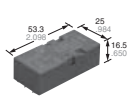
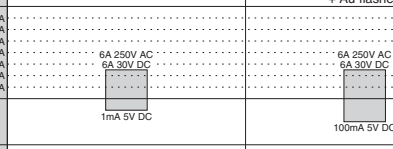
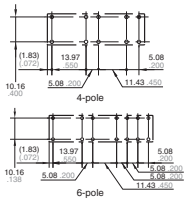
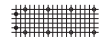
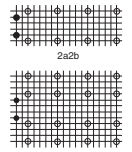
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		Control Panel Relays		
		HL RELAY	HP RELAY	HG RELAY
• Type of relay mm inch				
• Features		• Relay for control panel of 1c 15A, and 2c 10A	• Relay for control panel of 10A (2c/3c/4c)	• Relay for control panel of 20A (2c/3c/4c)
• Sealed types availability		—	—	—
• Latching types availability		—	—	—
• Contact material (Optional material)		$AgSnO_2$ type	2c, 3c: Ag 4c: Ag alloy (Cadmium-free)	$AgSnO_2$ type
• Contact rating chart Maximum (cos φ = 1)				
Minimum (For Reference)				
• Max. switching voltage		30V DC, 250V AC	—	—
• Contact arrangement		1c, 2c	2c, 3c, 4c	2c, 3c, 4c
• Life (Min. operation)	Electrical	5×10^5	2×10^5	2×10^5
	Mechanical	(DC) 10^8 (AC) 5×10^7	10^7	(DC) 10^8 (AC) 10^7
• Breakdown voltage	Between open contacts	1,000Vrms	(2c, 4c) 1,000Vrms (3c) 2,000Vrms	2,000Vrms
	Between contacts sets	1,500Vrms	(2c, 4c) 1,500Vrms (3c) 2,000Vrms	2,000Vrms
	Between contacts and coil	2,000Vrms	(2c,4c) 1,500Vrms (3c) 2,000Vrms	2,000Vrms
	Between live parts and ground	—	—	—
• Surge withstand voltage		—	—	—
• Coil voltage		(AC) 6, 12, 24, 48, 100/110, 110/120, 200/220, 240V (DC) 6, 12, 24, 48 100/110V	(AC) 24, 48, 100, 115, 200, 220, 240V (DC) 12, 24, 48, 100, 110V	(AC) 24, 48, 100, 115, 200, 220, 240V (DC) 12, 24, 48, 100, 110, 200V
• Nominal operating power		(AC) 1.2 to 1.3VA (DC) 0.9W	(2c) Approx. 2.0VA (AC) Approx. 1.5W (DC) (3c) Approx. 3.1VA (AC) Approx. 1.5W (DC) (4c) Approx. 4.8VA (AC) Approx. 1.5W (DC)	(2c) Approx. 3.6VA (AC) Approx. 1.4W (DC) (3c) Approx. 5.2VA (AC) Approx. 1.8W (DC) (4c) Approx. 7.6VA (AC) Approx. 2.0W (DC)
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				
• Standards		UL, CSA	UL, CSA (With operation indication type is excluded)	UL, CSA
• Mounting method				

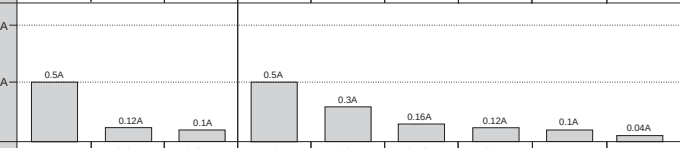
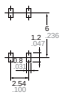
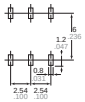
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

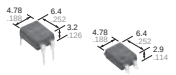
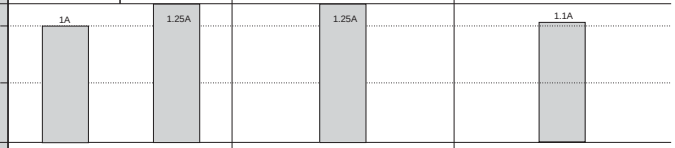
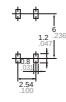
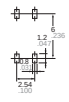
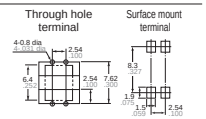
• Products		Safety Relays		
		SF RELAY Slim type	SF RELAY	SF RELAY Double Contact Type
• Type of relay mm inch				
• Features		• Slim type safety relays	• Flat type safety relays	• Flat type safety relays (double contact)
• Sealed types availability		—	●	●
• Latching types availability		—	—	—
• Contact material (Optional material)		Au flashed $AgSnO_2$ type	$AgSnO_2$ type + Au flashed	$AgSnO_2$ type + Au flashed
• Contact rating chart Maximum (cos φ = 1)				
Minimum (For Reference)				
• Max. switching voltage		30V DC, 250V AC	30V DC, 250V AC	440V AC, 30V DC
• Contact arrangement		2a2b, 3a1b (4-pole) 4a2b, 5a1b, 3a3b (6-pole)	3a1b	2a2b, 4a4b
• Life (Min. operation)	Electrical	10^5	3×10^4	10^5
	Mechanical	10^7	10^7	10^7
• Breakdown voltage	Between open contacts	1,500Vrms	2,500Vrms	1,300Vrms
	Between contacts sets	2,500Vrms, 4,000Vrms	2,500Vrms	2,500Vrms
	Between contacts and coil	4,000Vrms	2,500Vrms	2,500Vrms
	Between live parts and ground	—	—	—
• Surge withstand voltage		—	—	—
• Coil voltage		(DC) 12, 24, 48V	(DC) 5, 12, 24, 48, 60V	(DC) 5, 12, 24, 48, 60V
• Nominal operating power		360mW (4-pole) 500mW (6-pole)	500mW	500mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				
• Standards		UL/C-UL, TÜV	UL, CSA, TÜV, SEV	UL, CSA, TÜV, SEV
• Mounting method				

Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

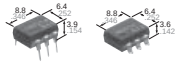
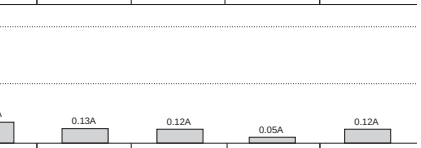
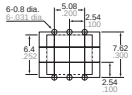
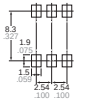
Notes:

Product name			GU SOP								
			1 Form A (4-pin)			1 Form A (6-pin)					
			AC/DC			AC/DC					
Appearance configuration *Standoff height included mm inch											
Part No.			AQY212S	AQY210S	AQY214S	AQV212S	AQV215S	AQV217S	AQV210S	AQV214S	AQV216S
Output	Load voltage	Peak AC	60V	350V	400V	60V	100V	200V	350V	400V	600V
		DC	60V	350V	400V	60V	100V	200V	350V	400V	600V
	Continuous load current *6-pin type: in case of A connection										
	Peak load current		1.5A	0.3A	0.24A	1.0A	0.9A	0.48A	0.3A	0.3A	0.12A
	Power dissipation		300mW			450mW					
	On resistance *6-pin type: in case of A connection	Typ.	0.83Ω	17Ω	25Ω	0.83Ω	2.3Ω	11Ω	23Ω	30Ω	70Ω
		Max.	2.5Ω	25Ω	35Ω	2.5Ω	4.0Ω	15Ω	35Ω	50Ω	120Ω
	Output capacitance (Typ.)		80pF	45pF		80pF	110pF	70pF	45pF		
	Off state leakage current (Max.)		1μA			1μA					
Input	LED forward current		50mA			50mA					
	LED reverse voltage		5V			5V					
	Peak forward current		1A			1A					
	Power dissipation		75mW			75mW					
	LED operate current	Typ.	0.9mA			0.7mA					
		Max.	3mA			3mA					
	LED turn off current	Min.	0.4mA			0.4mA					
		Typ.	0.85mA			0.65mA					
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)			1.25V (1.14V at IF = 5mA)					
		Max.	1.5V			1.5V					
Turn on time		Typ.	0.65ms	0.23ms	0.21ms	0.65ms	0.60ms	0.25ms	0.25ms		
		Max.	2ms	0.5ms	0.5ms	2ms	2ms	1ms	0.5ms		
Turn off time		Typ.	0.08ms	0.04ms		0.08ms	0.06ms	0.05ms			
		Max.	0.2ms	0.2ms		0.2ms	0.2ms	0.2ms			
Total power dissipation			350mW			500mW					
I/O isolation voltage			1,500V AC			1,500V AC					
Operating temperature			–40°C to +85°C –40°F to +185°F			–40°C to +85°C –40°F to +185°F					
Storage temperature			–40°C to +100°C –40°F to +212°F			–40°C to +100°C –40°F to +212°F					
I/O capacitance		Typ.	—			0.8pF					
		Max.	1.5pF			1.5pF					
Initial I/O isolation resistance (Min.)			1,000MΩ			1,000MΩ					
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW			 TOP VIEW					
Standards			UL, C-UL, BSI			UL, C-UL					
Mass (weight) (approx.)			0.084g .003oz			0.125g .004oz					
Packing style			Tube packing, Tape and reel packing								

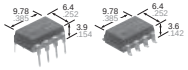
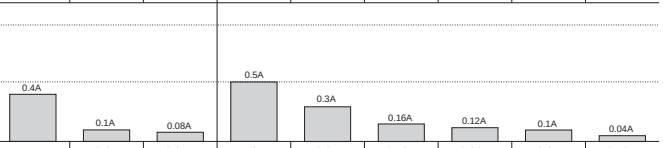
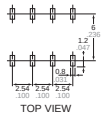
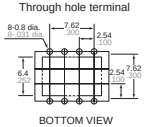
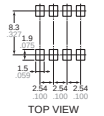
Notes:

Product name			GU SOP High Capacity	GU SOP High Capacity Voltage-sensitive	GU High Capacity
			1 Form A (4-pin)	1 Form A (4-pin)	1 Form A (4-pin)
			AC/DC	AC/DC	AC/DC
Appearance configuration *Standoff height included mm inch					
Part No.			AQY212GS	AQY212G2S	AQY212FG2S	AQY212GH
Output	Load voltage	Peak AC	60V	60V	60V	60V
		DC	60V	60V	60V	60V
	Continuous load current					
	Peak load current		3.0A		3.0A	3.0A
	Power dissipation		300mW		300mW	500mW
	On resistance	Typ.	0.34Ω	0.2Ω	0.2Ω	0.34Ω
		Max.	0.7Ω	0.5Ω	0.5Ω	0.7Ω
	Output capacitance (Typ.)		220pF	150pF	—	220pF
	Off state leakage current (Max.)		1μA		1μA	1μA
Input	LED forward current		50mA		Input voltage: 6V	50mA
	LED reverse voltage		5V		Input reverse voltage: 5V	5V
	Peak forward current		1A		—	1A
	Power dissipation		75mW		65mW	75mW
	LED operate current	Typ.	1.1mA		Operate voltage: 1.4V	1.1mA
		Max.	3mA		4V	3mA
	LED turn off current	Min.	0.3mA		Turn off voltage: 0.8V	0.3mA
		Typ.	1mA		1.4V	1mA
	LED dropout voltage	Typ.	1.32V (1.14V at IF = 5mA)		Input current: 8.5mA (VIN = 5V)	1.25V (1.14V at IF = 5mA)
		Max.	1.5V		—	1.5V
Turn on time		Typ.	1.3ms		0.7ms	1.3ms
		Max.	5ms		5ms	5ms
Turn off time		Typ.	0.1ms		0.1ms	0.1ms
		Max.	0.5ms		0.5ms	0.5ms
Total power dissipation			350mW		350mW	550mW
I/O isolation voltage			1,500V AC		500V AC	5,000V AC
Operating temperature			–40°C to +85°C –40°F to +185°F		–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F
Storage temperature			–40°C to +100°C –40°F to +212°F		–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F
I/O capacitance		Typ.	0.8pF		0.8pF	0.8pF
		Max.	1.5pF		1.5pF	1.5pF
Initial I/O isolation resistance (Min.)			1,000MΩ		1,000MΩ	1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW	 TOP VIEW	 BOTTOM VIEW TOP VIEW
Standards			UL, C-UL, VDE		—	UL, C-UL, VDE
Mass (weight) (approx.)			0.084g .003oz		0.084g .003oz	0.19g .007oz
Packing style			Tube packing, Tape and reel packing			

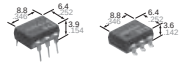
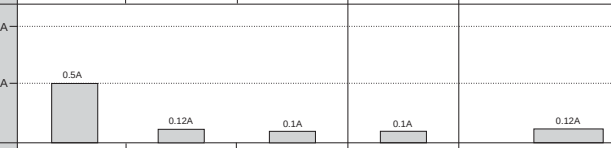
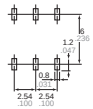
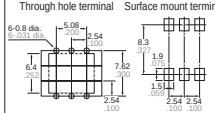
Notes:

Product name			GU						
			1 Form A (6-pin)						
			AC/DC						
Appearance configuration *Standoff height included									
mm inch									
Part No.			AQV212	AQV215	AQV217	AQV210	AQV214	AQV216	AQV214H
Output	Load voltage	Peak AC	60V	100V	200V	350V	400V	600V	400V
		DC	60V	100V	200V	350V	400V	600V	400V
	Continuous load current *6-pin type: in case of A connection	1A / 0.5A							
	Peak load current		1.2A	0.96A	0.54A	0.4A	0.3A	0.15A	0.3A
	Power dissipation		500mW						
	On resistance *6-pin type: in case of A connection	Typ.	0.83Ω	2.3Ω	11Ω	23Ω	30Ω	70Ω	30Ω
		Max.	2.5Ω	4Ω	15Ω	35Ω	50Ω	120Ω	50Ω
	Output capacitance (Typ.)		80pF	110pF	70pF	45pF			
	Off state leakage current (Max.)		1μA						
Input	LED forward current		50mA						
	LED reverse voltage		5V						
	Peak forward current		1A						
	Power dissipation		75mW						
	LED operate current	Typ.	1mA						1.3mA
		Max.	3mA						3mA
	LED turn off current	Min.	0.4mA						0.4mA
		Typ.	0.79mA						1.2mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)						
		Max.	1.5V						
Turn on time		Typ.	0.65ms	0.60ms	0.25ms	0.25ms	0.21ms	0.28ms	0.6ms
		Max.	2ms	2ms	1ms	0.5ms	0.5ms	0.5ms	0.8ms
Turn off time		Typ.	0.08ms	0.06ms	0.05ms	0.05ms	0.05ms	0.04ms	0.05ms
		Max.	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms
Total power dissipation			550mW						
I/O isolation voltage			1,500V AC						5,000V AC
Operating temperature			–40°C to +85°C –40°F to +185°F						
Storage temperature			–40°C to +100°C –40°F to +212°F						
I/O capacitance		Typ.	0.8pF						
		Max.	1.5pF						
Initial I/O isolation resistance (Min.)			1,000MΩ						
Terminal layout			Through hole terminal  BOTTOM VIEW			Surface mount terminal  TOP VIEW			
• Tolerance: ±0.1 ±.004 mm inch									
Standards			UL, C-UL						UL, C-UL, BSI
Mass (weight) (approx.)			0.453g .016oz						
Packing style			Tube packing, Tape and reel packing						

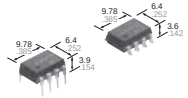
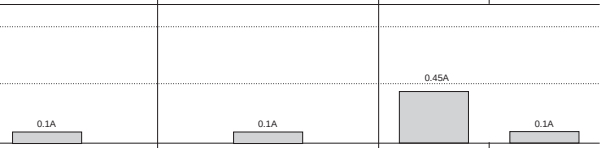
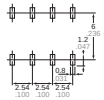
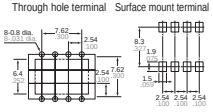
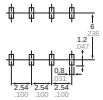
Notes:

Product name			GU SOP			GU					
			2 Form A			2 Form A					
			AC/DC			AC/DC					
Appearance configuration *Standoff height included											
mm inch											
Part No.			AQW212S	AQW210S	AQW214S	AQW212	AQW215	AQW217	AQW210	AQW214	AQW216
Output	Load voltage	Peak AC	60V	350V	400V	60V	100V	200V	350V	400V	600V
		DC	60V	350V	400V	60V	100V	200V	350V	400V	600V
	Continuous load current	1A / 0.5A									
	Peak load current		1.5A	0.3A	0.24A	1.0A	0.9A	0.48A	0.36A	0.3A	0.12A
	Power dissipation		600mW			800mW					
	On resistance	Typ.	0.83Ω	16Ω	30Ω	0.83Ω	2.3Ω	11Ω	23Ω	30Ω	70Ω
		Max.	2.5Ω	35Ω	50Ω	2.5Ω	4Ω	15Ω	35Ω	50Ω	120Ω
	Output capacitance (Typ.)		80pF	45pF		80pF	110pF	70pF	45pF		
	Off state leakage current (Max.)		1μA			1μA					
Input	LED forward current		50mA			50mA					
	LED reverse voltage		5V			5V					
	Peak forward current		1A			1A					
	Power dissipation		75mW			75mW					
	LED operate current	Typ.	0.9mA			0.9mA				1mA	0.9mA
		Max.	3mA			3mA				3mA	3mA
	LED turn off current	Min.	0.4mA			0.4mA				0.4mA	0.4mA
		Typ.	0.8mA			0.8mA				0.79mA	0.8mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)			1.25V (1.14V at IF = 5mA)					
		Max.	1.5V			1.5V					
Turn on time		Typ.	0.65ms	0.23ms	0.21ms	0.65ms	0.60ms	0.25ms	0.25ms	0.31ms	0.28ms
		Max.	2ms	0.5ms	0.5ms	2ms	2ms	1.0ms	0.5ms	0.5ms	0.5ms
Turn off time		Typ.	0.08ms	0.04ms		0.08ms	0.06ms	0.05ms			0.04ms
		Max.	0.2ms	0.2ms		0.2ms	0.2ms	0.2ms			0.2ms
Total power dissipation			650mW			850mW					
I/O isolation voltage			1,500V AC			1,500V AC					
Operating temperature			–40°C to +85°C –40°F to +185°F			–40°C to +85°C –40°F to +185°F					
Storage temperature			–40°C to +100°C –40°F to +212°F			–40°C to +100°C –40°F to +212°F					
I/O capacitance		Typ.	0.8pF			0.8pF					
		Max.	1.5pF			1.5pF					
Initial I/O isolation resistance (Min.)			1,000MΩ			1,000MΩ					
Terminal layout			 TOP VIEW			Through hole terminal  BOTTOM VIEW			Surface mount terminal  TOP VIEW		
• Tolerance: ±0.1 ±.004 mm inch											
Standards			UL, C-UL, BSI			UL, C-UL					
Mass (weight) (approx.)			0.195g .007oz			0.5g .017oz					
Packing style			Tube packing, Tape and reel packing								

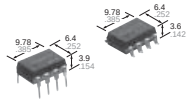
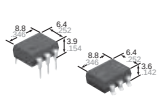
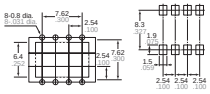
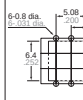
Notes:

Product name			GU SOP			GU SOP	GU
			1 Form B (4-pin)			1 Form B (6-pin)	1 Form B (6-pin)
			AC/DC			AC/DC	AC/DC
Appearance configuration *Standoff height included mm inch							
Part No.			AQY412S	AQY410S	AQY414S	AQV414S	AQV414
Output	Load voltage	Peak AC	60V	350V	400V	400V	400V
		DC	60V	350V	400V	400V	400V
	Continuous load current *6-pin type: in case of A connection						
	Peak load current		1.5A	0.3A	0.24A	0.3A	0.3A
	Power dissipation		300mW			450mW	500mW
	On resistance *6-pin type: in case of A connection	Typ.	1Ω	18Ω	26Ω	26Ω	26Ω
		Max.	2.5Ω	25Ω	35Ω	50Ω	50Ω
	Output capacitance (Typ.)		500pF	110pF	100pF	100pF	100pF
	Off state leakage current (Max.)		1µA			1µA	1µA
Input	LED forward current		50mA			50mA	50mA
	LED reverse voltage		5V			5V	5V
	Peak forward current		1A			1A	1A
	Power dissipation		75mW			75mW	75mW
	LED operate (OFF) current	Typ.	0.9mA			0.6mA	1mA
		Max.	3mA			3mA	3mA
	LED reverse (ON) current	Min.	0.4mA			0.4mA	0.4mA
		Typ.	0.85mA			0.55mA	0.95mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)			1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)
		Max.	1.5V			1.5V	1.5V
Operate (OFF) time		Typ.	0.9ms	0.52ms	0.47ms	0.47ms	0.47ms
		Max.	3ms	1ms	1ms	1ms	1ms
Reverse (ON) time		Typ.	0.21ms	0.23ms	0.28ms	0.28ms	0.28ms
		Max.	1ms	1ms	1ms	1ms	1ms
Total power dissipation			350mW			500mW	550mW
I/O isolation voltage			1,500V AC			1,500V AC	1,500V AC
Operating temperature			–40°C to +85°C –40°F to +185°F			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F
Storage temperature			–40°C to +100°C –40°F to +212°F			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F
I/O capacitance		Typ.	0.8pF			0.8pF	0.8pF
		Max.	1.5pF			1.5pF	1.5pF
Initial I/O isolation resistance (Min.)			1,000MΩ			1,000MΩ	1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW			 TOP VIEW	Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW
Standards			UL, C-UL, VDE	UL, C-UL, BSI		UL, C-UL	UL, C-UL
Mass (weight) (approx.)			0.084g .003oz			0.125g .004oz	0.453g .016oz
Packing style			Tube packing, Tape and reel packing				

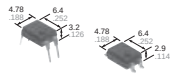
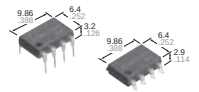
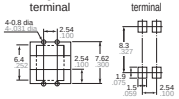
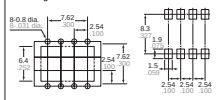
Notes:

Product name			GU SOP	GU	GU SOP	
			2 Form B	2 Form B	Form A & B combination	
			AC/DC	AC/DC	AC/DC	
Appearance configuration *Standoff height included mm inch						
Part No.			AQW414S	AQW414	AQW612S	AQW610S
Output	Load voltage	Peak AC	400V	400V	60V	350V
		DC	400V	400V	60V	350V
	Continuous load current					
	Peak load current		0.24A	0.3A	1.5A	0.3A
	Power dissipation		600mW	800mW	600mW	
	On resistance	Typ.	26Ω	26Ω	1Ω	18Ω
		Max.	50Ω	50Ω	2.5Ω	25Ω
	Output capacitance (Typ.)		100pF	100pF	80pF (N.O.) 500pF(N.C.)	45pF (N.O.) 100pF (N.C.)
	Off state leakage current (Max.)		1µA	1µA	1µA	
Input	LED forward current		50mA	50mA	50mA	
	LED reverse voltage		5V	5V	5V	
	Peak forward current		1A	1A	1A	
	Power dissipation		75mW	75mW	75mW	
	LED operate current	Typ.	0.9mA	0.7mA	0.9mA	
		Max.	3mA	3mA	3mA	
	LED reverse current	Min.	0.4mA	0.4mA	0.4mA	
		Typ.	0.8mA	0.64mA	0.8mA	
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)	
		Max.	1.5V	1.5V	1.5V	
Operate time		Typ.	0.43ms	0.46ms	0.65ms (N.O.) 0.9ms (N.C.)	0.28ms (N.O.) 0.52ms (N.C.)
		Max.	1ms	1ms	3ms	1ms
Reverse time		Typ.	0.3ms	0.40ms	0.08ms (N.O.) 0.2ms (N.C.)	0.04ms (N.O.) 0.23ms (N.C.)
		Max.	1ms	1ms	1ms	1ms
Total power dissipation			650mW	850mW	650mW	
I/O isolation voltage			1,500V AC	1,500V AC	1,500V AC	
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF	0.8pF	0.8pF	
		Max.	1.5pF	1.5pF	1.5pF	
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ	1,000MΩ	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW	Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW	 TOP VIEW	
Standards			UL, C-UL, BSI	UL, C-UL	UL, C-UL, VDE	UL, C-UL, BSI
Mass (weight) (approx.)			0.195g .007oz	0.5g .017oz	0.195g .007oz	
Packing style			Tube packing, Tape and reel packing			

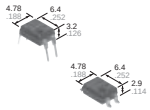
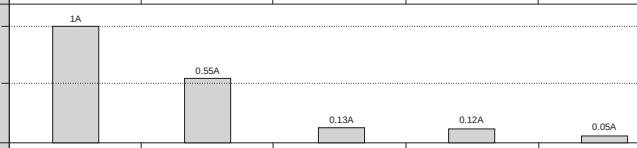
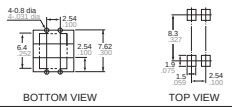
Notes:

Product name			GU	GU SOP Short Circuit Protection (Latch type)	GU Short Circuit Protection (Non-latch type)
			Form A & B combination	1 Form A (4-pin)	1 Form A (6-pin)
			AC/DC	AC/DC	DC
Appearance configuration *Standoff height included mm inch					
Part No.			AQW614	AQY210KS	AQV112KL
Output	Load voltage	Peak AC	400V	350V	—
		DC	400V	350V	60V
	Continuous load current *6-pin type: in case of A connection	1A			
		0.5A	0.1A	0.12A	0.5A
	Peak load current		0.3A	0.2A (Cut off current [typ.])	—
	Power dissipation		800mW	300mW	550mW
	On resistance *6-pin type: in case of A connection	Typ.	27Ω	23.5Ω	0.55Ω
		Max.	50Ω	35Ω	2Ω
	Output capacitance (Typ.)		45pF (N.O.) 100pF (N.C.)	42pF	300pF
	Off state leakage current (Max.)		1μA	1μA	1μA
Input	LED forward current		50mA	50mA	50mA
	LED reverse voltage		5V	5V	5V
	Peak forward current		1A	1A	1A
	Power dissipation		75mW	75mW	75mW
	LED operate current	Typ.	0.9mA	1.1mA	0.8mA
		Max.	3mA	3mA	10mA
	LED turn off current	Min.	0.4mA	0.3mA	0.3mA
		Typ.	0.8mA	1mA	0.7mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.13V (1.32V at IF = 50mA)	1.17V (1.35V at IF = 5mA)
		Max.	1.5V	1.5V	1.5V
Turn on time		Typ.	0.28ms (N.O.) 0.43ms (N.C.)	0.7ms	2.0ms
		Max.	1ms	2.0ms	5.0ms
Turn off time		Typ.	0.04ms (N.O.) 0.3ms (N.C.)	0.07ms	0.1ms
		Max.	1ms	1ms	1ms
Total power dissipation			850mW	350mW	550mW
I/O isolation voltage			1,500V AC	1,500V AC	1,500VAC
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F
I/O capacitance		Typ.	0.8pF	0.8pF	0.8pF
		Max.	1.5pF	1.5pF	1.5pF
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ	1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW	 TOP VIEW	Through hole terminal Surface mount terminal BOTTOM VIEW TOP VIEW
Standards			UL, C-UL	UL, C-UL, BSI	UL, C-UL, VDE
Mass (weight) (approx.)			0.5g .017oz	0.087g .003oz	0.453g .016oz
Packing style			Tube packing, Tape and reel packing		

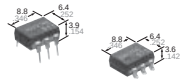
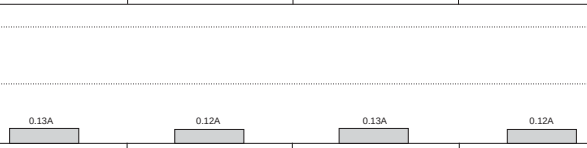
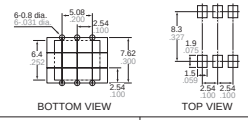
Notes:

Product name			GU SOP Current Limiting	GU Current Limiting	
			1 Form A (4-pin)	1 Form A (4-pin)	2 Form A
			AC/DC	AC/DC	AC/DC
Appearance configuration *Standoff height included mm inch					
Part No.			AQY210LS	AQY210HL	AQW210HL
Output	Load voltage	Peak AC	350V	350V	350V
		DC	350V	350V	350V
	Continuous load current	1A			
		0.5A	0.12A	0.12A	0.1A
	Peak load current		0.18A (Output Limit Current [typ.])	0.18A (Output Limit Current [typ.])	0.18A (Output Limit Current [typ.])
	Power dissipation		300mW	500mW	800mW
	On resistance	Typ.	20Ω	20Ω	20Ω
		Max.	25Ω	25Ω	25Ω
	Output capacitance (Typ.)		45pF	45pF	45pF
	Off state leakage current (Max.)		1μA	1μA	1μA
Input	LED forward current		50mA	50mA	50mA
	LED reverse voltage		5V	5V	5V
	Peak forward current		1A	1A	1A
	Power dissipation		75mW	75mW	75mW
	LED operate current	Typ.	1.2mA	1.2mA	1.2mA
		Max.	3mA	3mA	3mA
	LED turn off current	Min.	0.4mA	0.4mA	0.4mA
		Typ.	1.1mA	1.1mA	1.1mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)
		Max.	1.5V	1.5V	1.5V
Turn on time		Typ.	0.5ms	0.5ms	0.5ms
		Max.	2ms	2ms	2ms
Turn off time		Typ.	0.08ms	0.08ms	0.08ms
		Max.	1ms	1ms	1ms
Total power dissipation			350mW	550mW	850mW
I/O isolation voltage			1,500V AC	5,000V AC	5,000V AC
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F
I/O capacitance		Typ.	0.8pF	0.8pF	0.8pF
		Max.	1.5pF	1.5pF	1.5pF
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ	1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW	Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW	Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW
Standards			UL, C-UL, BSI	UL, C-UL, BSI	UL, C-UL, BSI
Mass (weight) (approx.)			0.084g .003oz	0.19g .007oz	0.4g .014oz
Packing style			Tube packing, Tape and reel packing		

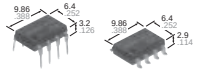
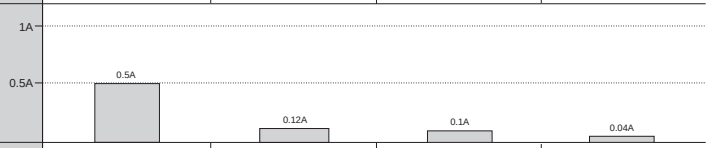
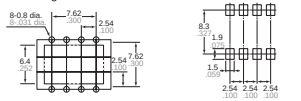
Notes:

Product name		GU-E
		1 Form A (4-pin)
		AC/DC
Appearance configuration *Standoff height included mm inch		
Part No.		AQY211EH / AQY212EH / AQY210EH / AQY214EH / AQY216EH
Output — Load voltage	Peak AC	30V / 60V / 350V / 400V / 600V
Output — Load voltage	DC	30V / 60V / 350V / 400V / 600V
Output — Continuous load current		
Output — Peak load current		3A / 1.5A / 0.4A / 0.3A / 0.15A
Output — Power dissipation		500mW
Output — On resistance	Typ.	0.25Ω / 0.85Ω / 18Ω / 26Ω / 52Ω
Output — On resistance	Max.	0.5Ω / 2.5Ω / 25Ω / 35Ω / 120Ω
Output — Output capacitance (Typ.)		240pF / 80pF / 45pF / 35pF
Output — Off state leakage current (Max.)		1μA
Input — LED forward current		50mA
Input — LED reverse voltage		5V
Input — Peak forward current		1A
Input — Power dissipation		75mW
Input — LED operate current	Typ.	1.2mA
Input — LED operate current	Max.	3mA
Input — LED turn off current	Min.	0.4mA
Input — LED turn off current	Typ.	1.1mA
Input — LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)
Input — LED dropout voltage	Max.	1.5V
Turn on time	Typ.	1.5ms / 1ms / 0.5ms
Turn on time	Max.	5ms / 4ms / 2ms
Turn off time	Typ.	0.1ms / 0.05ms / 0.08ms / 0.04ms
Turn off time	Max.	1ms / 1ms / 1ms / 1ms
Total power dissipation		550mW
I/O isolation voltage		5,000V AC
Operating temperature		–40°C to +85°C –40°F to +185°F
Storage temperature		–40°C to +100°C –40°F to +212°F
I/O capacitance	Typ.	0.8pF
I/O capacitance	Max.	1.5pF
Initial I/O isolation resistance (Min.)		1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch		Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW
Standards		UL, C-UL / UL, C-UL, BSI
Mass (weight) (approx.)		0.19g .007oz
Packing style		Tube packing, Tape and reel packing

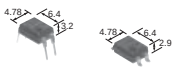
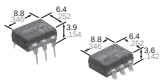
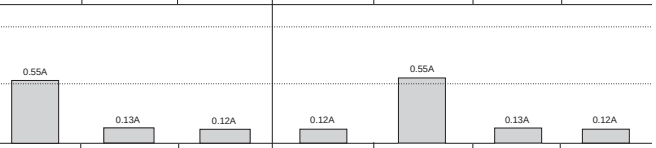
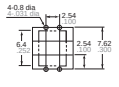
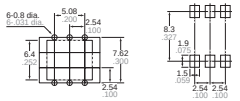
Notes:

Product name		GU-E
		1 Form A (6-pin)
		AC/DC
Appearance configuration *Standoff height included mm inch		
Part No.		AQV210E / AQV214E / AQV210EH / AQV214EH
Output — Load voltage	Peak AC	350V / 400V / 350V / 400V
Output — Load voltage	DC	350V / 400V / 350V / 400V
Output — Continuous load current *6-pin type: in case of A connection		
Output — Peak load current		0.4A / 0.3A / 0.4A / 0.3A
Output — Power dissipation		500mW
Output — On resistance *6-pin type: in case of A connection	Typ.	23Ω / 30Ω / 23Ω / 30Ω
Output — On resistance *6-pin type: in case of A connection	Max.	35Ω / 50Ω / 35Ω / 50Ω
Output — Output capacitance (Typ.)		45pF
Output — Off state leakage current (Max.)		1μA
Input — LED forward current		50mA
Input — LED reverse voltage		5V
Input — Peak forward current		1A
Input — Power dissipation		75mW
Input — LED operate current	Typ.	1.1mA / 1.6mA
Input — LED operate current	Max.	3mA / 3mA
Input — LED turn off current	Min.	0.3mA / 0.4mA
Input — LED turn off current	Typ.	1mA / 1.5mA
Input — LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)
Input — LED dropout voltage	Max.	1.5V
Turn on time	Typ.	0.5ms / 0.7ms
Turn on time	Max.	2ms / 2ms
Turn off time	Typ.	0.05ms
Turn off time	Max.	1ms
Total power dissipation		550mW
I/O isolation voltage		1,500V AC / 5,000V AC
Operating temperature		–40°C to +85°C –40°F to +185°F
Storage temperature		–40°C to +100°C –40°F to +212°F
I/O capacitance	Typ.	0.8pF
I/O capacitance	Max.	1.5pF
Initial I/O isolation resistance (Min.)		1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch		Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW
Standards		UL, C-UL / UL, C-UL, BSI
Mass (weight) (approx.)		0.453g .016oz
Packing style		Tube packing, Tape and reel packing

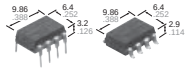
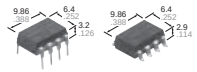
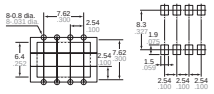
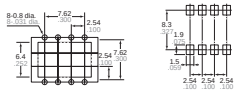
Notes:

Product name			GU-E			
			2 Form A			
			AC/DC			
Appearance configuration *Standoff height included mm inch						
Part No.			AQW212EH	AQW210EH	AQW214EH	AQW216EH
Output	Load voltage	Peak AC	60V	350V	400V	600V
		DC	60V	350V	400V	600V
	Continuous load current					
	Peak load current		1.5A	0.36A	0.3A	0.12A
	Power dissipation		800mW			
	On resistance	Typ.	0.83Ω	18Ω	26Ω	52Ω
		Max.	2.5Ω	25Ω	35Ω	120Ω
	Output capacitance (Typ.)		80pF	45pF		35pF
	Off state leakage current (Max.)		1μA			
Input	LED forward current		50mA			
	LED reverse voltage		5V			
	Peak forward current		1A			
	Power dissipation		75mW			
	LED operate current	Typ.	1.2mA			
		Max.	3mA			
	LED turn off current	Min.	0.4mA			
		Typ.	1.1mA			
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)			
		Max.	1.5V			
Turn on time		Typ.	1.0ms	0.5ms		
		Max.	4.0ms	2ms		
Turn off time		Typ.	0.08ms			0.04ms
		Max.	1ms			1ms
Total power dissipation			850mW			
I/O isolation voltage			5,000V AC			
Operating temperature			–40°C to +85°C –40°F to +185°F			
Storage temperature			–40°C to +100°C –40°F to +212°F			
I/O capacitance		Typ.	0.8pF			
		Max.	1.5pF			
Initial I/O isolation resistance (Min.)			1,000MΩ			
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW			
Standards			UL, C-UL, BSI			
Mass (weight) (approx.)			0.4g .014oz			
Packing style			Tube packing, Tape and reel packing			

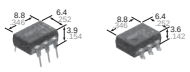
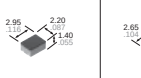
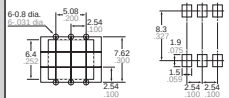
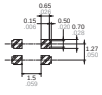
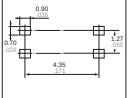
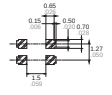
Notes:

Product name			GU-E						
			1 Form B (4-pin)			1 Form B (6-pin)			
			AC/DC			AC/DC			
Appearance configuration *Standoff height included mm inch									
Part No.			AQY412EH	AQY410EH	AQY414EH	AQV414E	AQV412EH	AQV410EH	AQV414EH
Output	Load voltage	Peak AC	60V	350V	400V	400V	60V	350V	400V
		DC	60V	350V	400V	400V	60V	350V	400V
	Continuous load current *6-pin type: in case of A connection								
	Peak load current		1.5A	0.4A	0.3A	0.3A	1.5A	0.4A	0.3A
	Power dissipation		500mW			500mW			
	On resistance *6-pin type: in case of A connection	Typ.	1Ω	18Ω	26Ω	26Ω	1Ω	18Ω	25.2Ω
		Max.	2.5Ω	25Ω	35Ω	50Ω	2.5Ω	35Ω	50Ω
	Output capacitance (Typ.)		500pF	110pF	100pF	100pF	500pF	110pF	100pF
	Off state leakage current (Max.)		10μA			1μA	10μA		
Input	LED forward current		50mA			50mA			
	LED reverse voltage		5V			5V			
	Peak forward current		1A			1A			
	Power dissipation		75mW			75mW			
	LED operate (OFF) current	Typ.	1.4mA			1.45mA	1.9mA		
		Max.	3mA			3mA	3mA		
	LED reverse (ON) current	Min.	0.4mA			0.3mA	0.4mA		
		Typ.	1.3mA			1.4mA	1.8mA		
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)			1.25V (1.14V at IF = 5mA)			
		Max.	1.5V			1.5V			
Operate (OFF) time		Typ.	3ms	1ms	0.8ms	0.7ms	3ms	1.5ms	1.3ms
		Max.	10ms	3ms	3ms	2ms	8ms	3ms	3ms
Reverse (ON) time		Typ.	0.2ms	0.3ms	0.2ms	0.1ms	0.3ms		
		Max.	1ms	1ms	1ms	1ms	1.5ms		
Total power dissipation			550mW			550mW			
I/O isolation voltage			5,000V AC			1,500V AC	5,000V AC		
Operating temperature			–40°C to +85°C –40°F to +185°F			–40°C to +85°C –40°F to +185°F			
Storage temperature			–40°C to +100°C –40°F to +212°F			–40°C to +100°C –40°F to +212°F			
I/O capacitance		Typ.	0.8pF			0.8pF			
		Max.	1.5pF			1.5pF			
Initial I/O isolation resistance (Min.)			1,000MΩ			1,000MΩ			
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW			Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW			
Standards			UL, C-UL, VDE	UL, C-UL, BSI		UL, C-UL	UL, C-UL, VDE	UL, C-UL, BSI	
Mass (weight) (approx.)			0.19g .007oz			0.453g .016oz			
Packing style			Tube packing, Tape and reel packing						

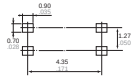
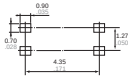
Notes:

Product name			GU-E			
			2 Form B	Form A & B combination		
			AC/DC	AC/DC		
Appearance configuration *Standoff height included mm inch						
Part No.			AQW414EH	AQW612EH	AQW610EH	AQW614EH
Output	Load voltage	Peak AC	400V	60V	350V	400V
		DC	400V	60V	350V	400V
	Continuous load current		0.1A	0.5A	0.12A	0.1A
	Peak load current		0.3A	1.5A	0.36A	0.3A
	Power dissipation		800mW	800mW		
	On resistance	Typ.	26Ω	1Ω	18Ω	26Ω
		Max.	35Ω	2.5Ω	25Ω	35Ω
	Output capacitance (Typ.)		100pF	80pF (N.O.), 500pF (N.C.)	45pF (N.O.), 100pF (N.C.)	
	Off state leakage current (Max.)		10μA	1μA (N.O.), 10μA (N.C.)		
Input	LED forward current		50mA	50mA		
	LED reverse voltage		5V	5V		
	Peak forward current		1A	1A		
	Power dissipation		75mW	75mW		
	LED operate current	Typ.	1.3mA	1.4mA		
		Max.	3mA	3mA		
	LED reverse current	Min.	0.4mA	0.4mA		
		Typ.	1.2mA	1.3mA		
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)		
		Max.	1.5V	1.5V		
Operate time		Typ.	0.8ms	1ms (N.O.), 3ms (N.C.)	0.5ms (N.O.), 1ms (N.C.)	0.5ms (N.O.), 0.8ms (N.C.)
		Max.	3ms	4ms (N.O.), 10ms (N.C.)	3ms	3ms
Reverse time		Typ.	0.2ms	0.05ms (N.O.), 0.2ms (N.C.)	0.08ms (N.O.), 0.3ms (N.C.)	0.08ms (N.O.), 0.2ms (N.C.)
		Max.	1ms	1ms	1ms	1ms
Total power dissipation			850mW	850mW		
I/O isolation voltage			5,000V AC	5,000V AC		
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F		
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F		
I/O capacitance		Typ.	0.8pF	0.8pF		
		Max.	1.5pF	1.5pF		
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ		
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW	Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW		
Standards			UL, C-UL, BSI	UL, C-UL, VDE	UL, C-UL, BSI	
Mass (weight) (approx.)			0.5g .018oz	0.5g .018oz		
Packing style			Tube packing, Tape and reel packing			

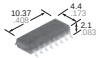
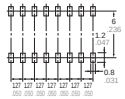
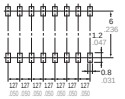
Notes:

Product name			RF		RF SON C×R5	RF SSOP C×R5	RF SON C×R10	
			1 Form A (6-pin)		1 Form A	1 Form A	1 Form A	
			AC/DC		AC/DC	AC/DC	AC/DC	
Appearance configuration *Standoff height included mm inch								
Part No.			AQV221	AQV225	AQY221N3M	AQY221N3V	AQY221R2M	AQY221N2M
Output	Load voltage	Peak AC	40V	80V	25V	25V	40V	40V
		DC	40V	80V	25V	25V	40V	40V
	Continuous load current *6-pin type: in case of A connection		0.08A	0.05A	0.15A	0.15A	0.25A	0.12A
	Peak load current		0.18A	0.15A	—	0.4A	0.75A	—
	Power dissipation		230mW		250mW	250mW	250mW	
	On resistance *6-pin type: in case of A connection	Typ.	22Ω	36Ω	5.5Ω	5.5Ω	0.8Ω	9.5Ω
		Max.	35Ω	50Ω	7.5Ω	7.5Ω	1.25Ω	12.5Ω
	Output capacitance (Typ.)		5.6pF	4.8pF	1.1pF	1pF	14pF	1.1pF
	Off state leakage current (Max.)		10nA		10nA	10nA	10nA	10nA
Input	LED forward current		50mA		50mA	50mA	50mA	
	LED reverse voltage		5V		5V	5V	5V	
	Peak forward current		1A		1A	1A	1A	
	Power dissipation		75mW		75mW	75mW	75mW	
	LED operate current	Typ.	0.9mA		1mA	1mA	0.8mA	1mA
		Max.	3mA		3mA	3mA	3mA	3mA
	LED turn off current	Min.	0.4mA		0.2mA	0.2mA	0.2mA	0.2mA
		Typ.	0.85mA		0.9mA	0.9mA	0.7mA	0.9mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)		1.35V (1.14V at IF = 5mA)	1.35V (1.14V at IF = 5mA)	1.35V (1.14V at IF = 5mA)	
		Max.	1.5V		1.5V	1.5V	1.5V	
Turn on time		Typ.	0.1ms		0.02ms	0.02ms	0.2ms	0.02ms
		Max.	0.3ms		0.2ms	0.2ms	0.5ms	0.2ms
Turn off time		Typ.	0.03ms		0.02ms	0.02ms	0.04ms	0.02ms
		Max.	0.1ms		0.2ms	0.2ms	0.2ms	0.2ms
Total power dissipation			280mW		300mW	300mW	300mW	
I/O isolation voltage			1,500V AC		200V AC	1,500VAC	200V AC	
Operating temperature			–40°C to +85°C –40°F to +185°F		–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F		–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF		0.8pF	0.8pF	0.8pF	
		Max.	1.5pF		1.5pF	1.5pF	1.5pF	
Initial I/O isolation resistance (Min.)			1,000MΩ		—	1,000MΩ	—	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW					
Standards			UL, C-UL		—	—	—	
Mass (weight) (approx.)			0.453g .016oz		0.024g .001oz	0.064g .002oz	0.024g .001oz	
Packing style			Tube packing, Tape and reel packing		Tape and reel packing			

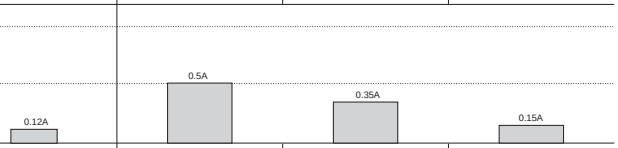
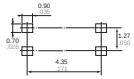
Notes:

Product name			RF SSOP C×R10			RF SSOP C×R10 Voltage-sensitive	
			1 Form A			1 Form A	
			AC/DC			AC/DC	
Appearance configuration *Standoff height included mm inch							
Part No.			AQY221R2V	AQY221R4V	AQY221N2V	AQY221FR2V	AQY221FN2V
Output	Load voltage	Peak AC	40V	40V	40V	40V	40V
		DC	40V	40V	40V	40V	40V
	Continuous load current	1A / 0.5A	0.25A	0.5A	0.12A	0.25A	0.12A
	Peak load current		0.75A	1A	0.3A	0.75A	0.2A
	Power dissipation		250mW			250mW	
	On resistance	Typ.	0.75Ω	0.55Ω	9.5 Ω	0.75Ω	9.5Ω
		Max.	1.25Ω	1Ω	12.5Ω	1.25Ω	12.5Ω
	Output capacitance (Typ.)		12.5pF	24pF	1pF	12.5pF	1pF
	Off state leakage current (Max.)		10nA			10nA	
Input	LED forward current		50mA			Input voltage: 6V	
	LED reverse voltage		5V			Input reverse voltage: 5V	
	Peak forward current		1A			—	
	Power dissipation		75mW			65mW	
	LED operate current	Typ.	0.9mA		1mA	Operate voltage:	1.3V
		Max.	3mA		3mA		4V
	LED turn off current	Min.	0.1mA		0.2mA	Turn off voltage:	0.8V
		Typ.	0.8mA		0.9mA		1.3V
	LED dropout voltage	Typ.	1.35V (1.14V at IF = 5mA)			Input current (typ.): 8.5mA (VIN = 5V)	
		Max.	1.5V				
Turn on time		Typ.	0.1ms	0.25ms	0.02ms	0.05ms	0.01ms
		Max.	0.5ms	0.75ms	0.5ms	0.5ms	0.5ms
Turn off time		Typ.	0.08ms		0.02ms	0.06ms	0.03ms
		Max.	0.2ms		0.2ms	0.2ms	0.2ms
Total power dissipation			300mW			300mW	
I/O isolation voltage			1,500VAC			500VAC	
Operating temperature			–40°C to +85°C –40°F to +185°F			–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F			–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF			0.8pF	
		Max.	1.5pF			1.5pF	
Initial I/O isolation resistance (Min.)			1,000MΩ			1,000MΩ	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch							
Standards			—			—	
Mass (weight) (approx.)			0.064g .002oz			0.064g .002oz	
Packing style			Tape and reel packing				

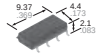
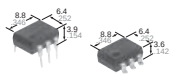
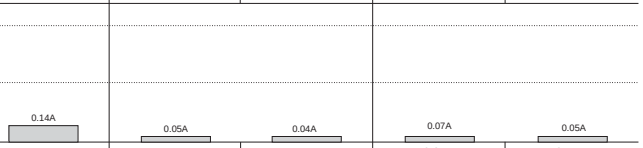
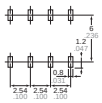
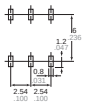
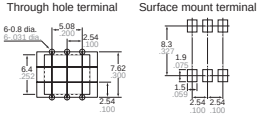
Notes:

Product name			RF SOP C×R10		RF SOP C×R10		RF SOP C×R10 Voltage-sensitive	
			1 Form A (4-pin)		4 Form A		4 Form A	
			AC/DC		AC/DC		AC/DC	
Appearance configuration *Standoff height included mm inch								
Part No.			AQY221R2S	AQY221N2S	AQS221N2S	AQS221R2S	AQS221FR2S	AQS221FN2S
Output	Load voltage	Peak AC	40V	40V	40V	40V	40V	40V
		DC	40V	40V	40V	40V	40V	40V
	Continuous load current	1A / 0.5A	0.25A	0.12A	0.06A	0.16A	0.16A	0.06A
	Peak load current		0.75A	0.3A	0.12A	0.2A	0.2A	0.12A
	Power dissipation		300mW		600mW		600mW	
	On resistance	Typ.	0.8Ω	9.5Ω	9.5Ω	0.8Ω	0.75Ω	9.5Ω
		Max.	1.25Ω	12.5Ω	12.5Ω	1.25Ω	12.5Ω	12.5Ω
	Output capacitance (Typ.)		13pF	1pF	1pF	13pF	12.5pF	1pF
	Off state leakage current (Max.)		10nA		10nA		10nA	
Input	LED forward current		50mA		50mA		Input voltage: 6V	
	LED reverse voltage		5V		5V		Input reverse voltage: 5V	
	Peak forward current		1A		1A		—	
	Power dissipation		75mW		75mW		260mW (65mW per channel)	
	LED operate current	Typ.	0.5mA	0.9mA	0.9mA	0.5mA	Operate voltage:	1.3V
		Max.	3mA	3mA	3mA	3mA		4V
	LED turn off current	Min.	0.1mA	0.2mA	0.1mA	0.1mA	Turn off voltage:	0.8V
		Typ.	0.4mA	0.85mA	0.85mA	0.4mA		1.3V
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)		1.25V (1.14V at IF = 5mA)		Input current (typ.): 8.5mA (VIN = 5V)	
		Max.	1.5V		1.5V			
Turn on time		Typ.	0.1ms	0.03ms	0.03ms	0.15ms	0.07ms	0.02ms
		Max.	0.5ms	0.5ms	0.2ms	0.5ms	0.5ms	0.5ms
Turn off time		Typ.	0.06ms	0.03ms	0.03ms	0.06ms	0.07ms	0.02ms
		Max.	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms
Total power dissipation			350mW		650mW		650mW	
I/O isolation voltage			500V AC	1,500V AC	500V AC		500V AC	
Operating temperature			–40°C to +85°C –40°F to +185°F		–40°C to +85°C –40°F to +185°F		–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F		–40°C to +100°C –40°F to +212°F		–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF		0.8pF		0.8pF	
		Max.	1.5pF		1.5pF		1.5pF	
Initial I/O isolation resistance (Min.)			1,000MΩ		1,000MΩ		1,000MΩ	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW		 TOP VIEW		 TOP VIEW	
Standards			—		—		—	
Mass (weight) (approx.)			0.084g .003oz		0.195g .007oz		0.195g .007oz	
Packing style			Tube packing, Tape and reel packing					

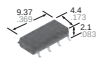
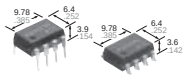
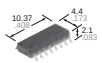
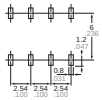
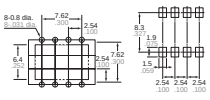
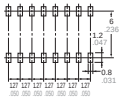
Notes:

Product name			RF SSOP C×R	RF SOP C×R		
			1 Form A	1 Form A (4-pin)		
			AC/DC	AC/DC		
Appearance configuration *Standoff height included mm inch						
Part No.			AQY225R2V	AQY222R1S	AQY225R1S	AQY225R2S
Output	Load voltage	Peak AC	80V	60V	80V	80V
		DC	80V	60V	80V	80V
	Continuous load current					
	Peak load current		0.3A	1A	0.7A	0.45A
	Power dissipation		250mW	300mW		
	On resistance	Typ.	10.5Ω	0.8Ω	0.8Ω	10.5Ω
		Max.	15Ω	1.2Ω	1.2Ω	15Ω
	Output capacitance (Typ.)		4.5pF	24.5pF	37.5pF	4.5pF
	Off state leakage current (Max.)		10nA	10nA		
Input	LED forward current		50mA	50mA		
	LED reverse voltage		5V	5V		
	Peak forward current		1A	1A		
	Power dissipation		75mW	75mW		
	LED operate current	Typ.	0.5mA	0.5mA		
		Max.	3mA	3mA		
	LED turn off current	Min.	0.1mA	0.1mA		
		Typ.	0.45mA	0.45mA		
	LED dropout voltage	Typ.	1.32V (1.14V at IF = 5mA)	1.32V (1.14V at IF = 5mA)		
		Max.	1.5V	1.5V		
Turn on time		Typ.	0.05ms	0.15ms	0.25ms	0.05ms
		Max.	0.5ms	0.5ms	0.75ms	0.5ms
Turn off time		Typ.	0.05ms	0.06ms	0.08ms	0.05ms
		Max.	0.2ms	0.2ms	0.2ms	0.2ms
Total power dissipation			300mW	350mW		
I/O isolation voltage			1,500V AC	1,500V AC		
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F		
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F		
I/O capacitance		Typ.	0.8pF	0.8pF		
		Max.	1.5pF	1.5pF		
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ		
Terminal layout • Tolerance: ±0.1 ±.004 mm inch				 TOP VIEW		
Standards			—	—		
Mass (weight) (approx.)			0.064g .002oz	0.084g .003oz		
Packing style			Tape and reel packing	Tube packing, Tape and reel packing		

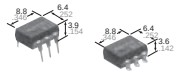
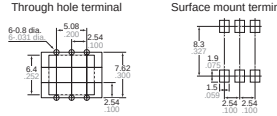
Notes:

Product name			RF SOP C×R	RF SOP Low on-resistance		RF Low on-resistance	
			2 Form A	1 Form A (6-pin)		1 Form A (6-pin)	
			AC/DC	AC/DC		AC/DC	
Appearance configuration *Standoff height included mm inch							
Part No.			AQW223R2S	AQV227NS	AQV224NS	AQV227N	AQV224N
Output	Load voltage	Peak AC	250V	200V	400V	200V	400V
		DC	250V	200V	400V	200V	400V
	Continuous load current *6-pin type: in case of A connection						
	Peak load current		0.42A	0.15A	0.12A	0.21A	0.15A
	Power dissipation		600mW	450mW		360mW	
	On resistance *6-pin type: in case of A connection	Typ.	11Ω	30Ω	70Ω	30Ω	70Ω
		Max.	15Ω	50Ω	100Ω	50Ω	100Ω
	Output capacitance (Typ.)		33pF	10pF		10pF	
	Off state leakage current (Max.)		10nA	10nA		10nA	
Input	LED forward current		50mA	50mA		50mA	
	LED reverse voltage		5V	5V		5V	
	Peak forward current		1A	1A		1A	
	Power dissipation		75mW	75mW		75mW	
	LED operate current	Typ.	0.5mA	0.7mA		0.9mA	
		Max.	3mA	3mA		3mA	
	LED turn off current	Min.	0.1mA	0.4mA		0.4mA	
		Typ.	0.45mA	0.65mA		0.85mA	
	LED dropout voltage	Typ.	1.32V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)		1.25V (1.14V at IF = 5mA)	
		Max.	1.5V	1.5V		1.5V	
Turn on time		Typ.	0.15ms	0.12ms	0.1ms	0.2ms	
		Max.	0.5ms	0.5ms	0.5ms	0.5ms	
Turn off time		Typ.	0.05ms	0.05ms		0.08ms	
		Max.	0.2ms	0.2ms		0.2ms	
Total power dissipation			650mW	500mW		410mW	
I/O isolation voltage			1,500V AC	1,500V AC		1,500V AC	
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F		–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F		–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF	0.8pF		0.8pF	
		Max.	1.5pF	1.5pF		1.5pF	
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ		1,000MΩ	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW	 TOP VIEW		Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW	
Standards			—	UL, C-UL		UL, C-UL	
Mass (weight) (approx.)			0.195g .007oz	0.125g .004oz		0.453g .016oz	
Packing style			Tube packing, Tape and reel packing				

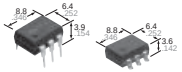
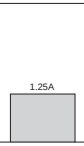
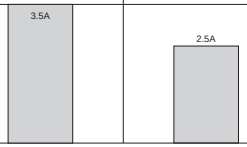
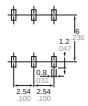
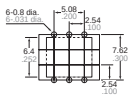
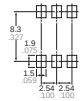
Notes:

Product name			RF SOP Low on-resistance	RF Low on-resistance		RF SOP C×R
			2 Form A	2 Form A		4 Form A
			AC/DC	AC/DC		AC/DC
Appearance configuration *Standoff height included						
mm inch						
Part No.			AQW227NS	AQW227N	AQW224N	AQS225R2S
Output	Load voltage	Peak AC	200V	200V	400V	80V
		DC	200V	200V	400V	80V
	Continuous load current		0.05A	0.05A	0.04A	0.07A
	Peak load current		0.15A	0.15A	0.12A	0.2A
	Power dissipation		600mW	800mW		600mW
	On resistance	Typ.	30Ω	30Ω	70Ω	10.5Ω
		Max.	50Ω	50Ω	100Ω	15Ω
	Output capacitance (Typ.)		10pF	10pF		4.5pF
	Off state leakage current (Max.)		10nA	10nA		10nA
Input	LED forward current		50mA	50mA		50mA
	LED reverse voltage		5V	5V		5V
	Peak forward current		1A	1A		1A
	Power dissipation		75mW	75mW		75mW
	LED operate current	Typ.	0.7mA	0.9mA		0.9mA
		Max.	3mA	3mA		3mA
	LED turn off current	Min.	0.4mA	0.4mA		0.3mA
		Typ.	0.65mA	0.8mA		0.85mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)		1.25V (1.14V at IF = 5mA)
		Max.	1.5V	1.5V		1.5V
Turn on time		Typ.	0.25ms	0.2ms		0.04ms
		Max.	0.5ms	0.5ms		0.3ms
Turn off time		Typ.	0.08ms	0.08ms		0.07ms
		Max.	0.2ms	0.2ms		0.2ms
Total power dissipation			650mW	850mW		650mW
I/O isolation voltage			1,500V AC	1,500V AC		1,500V AC
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F		–40°C to +85°C –40°F to +185°F
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F		–40°C to +100°C –40°F to +212°F
I/O capacitance		Typ.	0.8pF	0.8pF		0.8pF
		Max.	1.5pF	1.5pF		1.5pF
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ		1,000MΩ
Terminal layout				Through hole terminal Surface mount terminal 		
• Tolerance: ±0.1 ±.004 mm inch			TOP VIEW	BOTTOM VIEW	TOP VIEW	TOP VIEW
Standards			UL, C-UL	UL, C-UL		—
Mass (weight) (approx.)			0.195g .007oz	0.5g .018oz		0.195g .007oz
Packing style			Tube packing, Tape and reel packing			

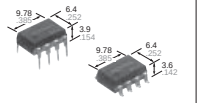
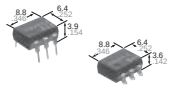
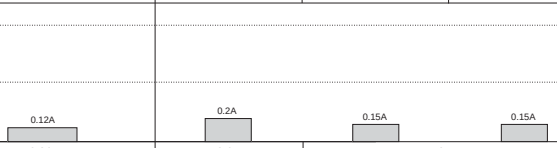
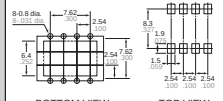
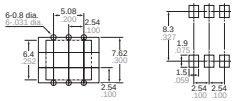
Notes:

Product name			HE									
			1 Form A (6-pin)									
			AC/DC									
Appearance configuration *Standoff height included												
mm inch												
Part No.			AQV251	AQV252	AQV255	AQV257	AQV253	AQV254	AQV259	AQV258	AQV253H	AQV254H	AQV256H
Output	Load voltage	Peak AC	40V	60V	100V	200V	250V	400V	1,000V	1,500V	250V	400V	600V
		DC	40V	60V	100V	200V	250V	400V	1,000V	1,500V	250V	400V	600V
	Continuous load current *6-pin type: in case of A connection		0.5A	0.4A	0.35A	0.25A	0.2A	0.15A	0.03A	0.02A	0.2A	0.15A	0.13A
	Peak load current		1.8A	1.5A	1.0A	0.75A	0.6A	0.5A	0.09A	0.06A	0.6A	0.5A	0.4A
	Power dissipation		360mW										
	On resistance *6-pin type: in case of A connection	Typ.	0.6Ω	0.74Ω	1.8Ω	2.6Ω	5.5Ω	12.4Ω	85Ω	345Ω	5.5Ω	12.4Ω	20Ω
		Max.	1Ω	1.4Ω	2.5Ω	4Ω	8Ω	16Ω	200Ω	500Ω	8Ω	16Ω	30Ω
	Output capacitance (Typ.)		350pF			170pF			80pF		170pF		70pF
	Off state leakage current (Max.)		1μA						10μA		1μA		
Input	LED forward current		50mA										
	LED reverse voltage		5V										
	Peak forward current		1A										
	Power dissipation		75mW										
	LED operate current	Typ.	0.9mA								1.4mA		
		Max.	3mA								3mA		
	LED turn off current	Min.	0.4mA								0.4mA		
		Typ.	0.8mA								1.3mA		
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)										
		Max.	1.5V										
Turn on time		Typ.	1.7ms	1.4ms	0.9ms	1.5ms	0.8ms		0.6ms	0.35ms	2.4ms	1.8ms	1.2ms
		Max.	3ms	3ms	2ms	3ms	2ms		1ms	1ms	4ms	3ms	3ms
Turn off time		Typ.	0.07ms		0.09ms	0.1ms	0.06ms	0.05ms	0.04ms	0.04ms	0.06ms	0.05ms	0.06ms
		Max.	0.2ms		0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms	0.2ms
Total power dissipation			410mW										
I/O isolation voltage			1,500V AC								5,000V AC		
Operating temperature			–40°C to +85°C –40°F to +185°F										
Storage temperature			–40°C to +100°C –40°F to +212°F										
I/O capacitance		Typ.	1.3pF										
		Max.	3pF										
Initial I/O isolation resistance (Min.)			1,000MΩ										
Terminal layout			Through hole terminal Surface mount terminal 										
• Tolerance: ±0.1 ±.004 mm inch			BOTTOM VIEW TOP VIEW										
Standards			UL, C-UL								UL, C-UL, BSI		—
Mass (weight) (approx.)			0.453g .016oz										
Packing style			Tube packing, Tape and reel packing										

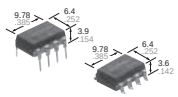
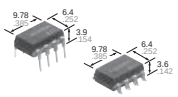
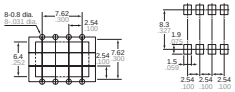
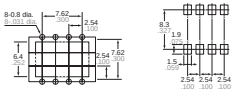
Notes:

Product name			HE SOP High Capacity	HE High Capacity	
			1 Form A (6-pin)	1 Form A (6-pin)	
			AC/DC	AC/DC	
Appearance configuration *Standoff height included mm inch					
Part No.			AQV255GS	AQV251G	AQV252G
Output	Load voltage	Peak AC	80V	30V	60V
		DC	80V	30V	60V
	Continuous load current *6-pin type: in case of A connection				
	Peak load current		2.5A	6.0A	
	Power dissipation		450mW	500mW	
	On resistance *6-pin type: in case of A connection	Typ.	0.09Ω	0.035Ω	0.08Ω
		Max.	0.15Ω	0.08Ω	0.12Ω
	Output capacitance (Typ.)		300pF	330pF	240pF
	Off state leakage current (Max.)		1μA	1μA	
Input	LED forward current		50mA	50mA	
	LED reverse voltage		5V	5V	
	Peak forward current		1A	1A	
	Power dissipation		75mW	75mW	
	LED operate current	Typ.	0.5mA	0.55mA	0.5mA
		Max.	3mA	3mA	3mA
	LED turn off current	Min.	0.2mA	0.2mA	
		Typ.	0.4mA	0.45mA	
	LED dropout voltage	Typ.	1.32V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)	
		Max.	1.5V	1.5V	
Turn on time		Typ.	1.3ms	1.1ms	
		Max.	5.0ms	5.0ms	
Turn off time		Typ.	0.1ms	0.1ms	0.25ms
		Max.	0.5ms	0.5ms	0.5ms
Total power dissipation			500mW	550mW	
I/O isolation voltage			1,500V AC	1,500V AC	
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF	0.8pF	
		Max.	1.5pF	1.5pF	
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			 TOP VIEW	Through hole terminal  BOTTOM VIEW	Surface mount terminal  TOP VIEW
Standards			UL, C-UL, VDE	—	UL, C-UL, VDE
Mass (weight) (approx.)			0.125g .004oz	0.453g .016oz	
Packing style			Tube packing, Tape and reel packing		

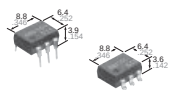
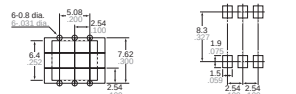
Notes:

Product name			HE			
			2 Form A	1 Form B (6-pin)		
			AC/DC	AC/DC		
Appearance configuration *Standoff height included mm inch						
Part No.			AQW254	AQV453	AQV454	AQV454H
Output	Load voltage	Peak AC	400V	250V	400V	400V
		DC	400V	250V	400V	400V
	Continuous load current *6-pin type: in case of A connection					
	Peak load current		0.36A	0.6A	0.5A	
	Power dissipation		800mW	360mW		
	On resistance *6-pin type: in case of A connection	Typ.	10.2Ω	5.5Ω	11Ω	
		Max.	16Ω	8Ω	16Ω	
	Output capacitance (Typ.)		170pF	350pF	170pF	
	Off state leakage current (Max.)		1μA	1μA		10μA
Input	LED forward current		50mA	50mA		
	LED reverse voltage		5V	5V		
	Peak forward current		1A	1A		
	Power dissipation		75mW	75mW		
	LED operate current [LED operate (OFF) current]	Typ.	0.9mA	1mA	0.9mA	1.4mA
		Max.	3mA	3mA	3mA	3mA
	LED turn off current [LED reverse (ON) current]	Min.	0.4mA	0.4mA	0.4mA	0.4mA
		Typ.	0.8mA	0.9mA	0.8mA	1.3mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)		
		Max.	1.5V	1.5V		
Turn on time [Operate (OFF) time]		Typ.	0.8ms	1.52ms	1.2ms	1.8ms
		Max.	2ms	3ms	2ms	3ms
Turn off time [Reverse (ON) time]		Typ.	0.04ms	0.4ms	0.36ms	0.4ms
		Max.	0.2ms	1ms	1ms	1ms
Total power dissipation			850mW	410mW		
I/O isolation voltage			1,500V AC	1,500V AC		5,000V AC
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F		
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F		
I/O capacitance		Typ.	0.8pF	1.3pF		
		Max.	1.5pF	3pF		
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ		
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW	Through hole terminal Surface mount terminal  BOTTOM VIEW TOP VIEW		
Standards			UL, C-UL	UL, C-UL		UL, C-UL, BSI
Mass (weight) (approx.)			0.5g .018oz	0.453g .016oz		
Packing style			Tube packing, Tape and reel packing			

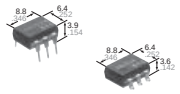
Notes:

Product name			HE	
			2 Form B	Form A & B combination
			AC/DC	AC/DC
Appearance configuration *Standoff height included mm inch				
Part No.			AQW454	AQW654
Output	Load voltage	Peak AC	400V	400V
		DC	400V	400V
	Continuous load current		1A 0.5A 0.12A	1A 0.5A 0.12A
	Peak load current		0.36A	0.36A
	Power dissipation		800mW	800mW
	On resistance	Typ.	11Ω	11Ω
		Max.	16Ω	16Ω
	Output capacitance (Typ.)		170pF	170pF
	Off state leakage current (Max.)		1μA	1 μA
Input	LED forward current		50mA	50mA
	LED reverse voltage		5V	5V
	Peak forward current		1A	1A
	Power dissipation		75mW	75mW
	LED operate current	Typ.	0.9mA	0.9mA
		Max.	3mA	3mA
	LED reverse current	Min.	0.4mA	0.4mA
		Typ.	0.8mA	0.8mA
	LED dropout voltage	Typ.	1.25V (1.14V at IF = 5mA)	1.25V (1.14V at IF = 5mA)
		Max.	1.5V	1.5V
Operate time		Typ.	1.2ms	0.8ms (N.O.), 1.2ms (N.C.)
		Max.	2ms	2ms
Reverse time		Typ.	0.36ms	0.04ms (N.O.), 0.36ms (N.C.)
		Max.	1ms	1ms
Total power dissipation			850mW	850mW
I/O isolation voltage			1,500V AC	1,500V AC
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F
I/O capacitance		Typ.	0.8pF	0.8pF
		Max.	1.5pF	1.5pF
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW	Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW
Standards			UL, C-UL	UL, C-UL
Mass (weight) (approx.)			0.5g .018oz	0.5g .018oz
Packing style			Tube packing, Tape and reel packing	

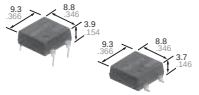
Notes:

Product name			HF							
			1 Form A (6-pin)							
			DC				AC/DC			
Appearance configuration *Standoff height included mm inch										
Part No.			AQV101	AQV102	AQV103	AQV104	AQV201	AQV202	AQV203	AQV204
Output	Load voltage	Peak AC	—				40V	60V	250V	400V
		DC	40V	60V	250V	400V	40V	60V	250V	400V
	Continuous load current *6-pin type: in case of A connection		1A 0.5A 0.7A	0.6A	0.3A	0.18A	0.5A	0.4A	0.2A	0.15A
	Peak load current		1.8A	1.5A	0.6A	0.5A	1.8A	1.5A	0.6A	0.5A
	Power dissipation		360mW				360mW			
	On resistance *6-pin type: in case of A connection	Typ.	0.3Ω	0.37Ω	2.7Ω	6.3Ω	0.6Ω	0.74Ω	5.5Ω	12.4Ω
		Max.	0.5Ω	0.7 Ω	4 Ω	8 Ω	1 Ω	1.4Ω	8Ω	16Ω
	Output capacitance (Typ.)		600pF		300pF		350pF		170pF	
	Off state leakage current (Max.)		1μA							
Input	LED forward current		50mA							
	LED reverse voltage		10V							
	Peak forward current		1A							
	Power dissipation		150mW							
	LED operate current	Typ.	2.3mA				2.4mA			
		Max.	5mA				5mA			
	LED turn off current	Min.	0.8mA							
		Typ.	2.2mA							
	LED dropout voltage	Typ.	2.3V							
		Max.	3V							
Turn on time		Typ.	0.23ms	0.22ms	0.13ms	0.09ms	0.38ms	0.41ms	0.21ms	0.18ms
		Max.	1ms	1ms	1ms	1ms	1ms	1ms	1ms	1ms
Turn off time		Typ.	0.07ms	0.07ms	0.07ms	0.08ms	0.08ms	0.08ms	0.07ms	0.07ms
		Max.	1ms	1ms	1ms	1ms	1ms	1ms	1ms	1ms
Total power dissipation			410mW							
I/O isolation voltage			1,500V AC							
Operating temperature			–40°C to +85°C –40°F to +185°F							
Storage temperature			–40°C to +100°C –40°F to +212°F							
I/O capacitance		Typ.	1.3pF							
		Max.	3pF							
Initial I/O isolation resistance (Min.)			1,000MΩ							
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal / Surface mount terminal  BOTTOM VIEW / TOP VIEW							
Standards			UL, C-UL							
Mass (weight) (approx.)			0.453g .016oz							
Packing style			Tube packing, Tape and reel packing							

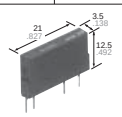
Notes:

Product name			HS	HS SOP		
			1 Form A (6-pin)	1 Form A (4-pin)		
			AC/DC	AC/DC		
Appearance configuration *Standoff height included mm inch						
Part No.			AQY234	AQY232S	AQY230S	AQY234S
Output	Load voltage	Peak AC	400V	60V	350V	400V
		DC	400V	60V	350V	400V
	Continuous load current *6-pin type: in case of A connection		2A, 1A, 0.5A; 0.12A	0.5A	0.12A	0.1A
	Peak load current		0.3A	1.5A	0.3A	0.24A
	Power dissipation		500mW	300mW		
	On resistance *6-pin type: in case of A connection	Typ.	30Ω	0.85Ω	19Ω	27Ω
		Max.	50Ω	2.5Ω	25Ω	35Ω
	Output capacitance (Typ.)		45pF	80pF	32pF	35pF
	Off state leakage current (Max.)		1μA	1μA		
Input	LED forward current		50mA	50mA		
	LED reverse voltage		5V	5V		
	Peak forward current		1A	1A		
	Power dissipation		75mW	75mW		
	LED operate current	Typ.	0.31mA	0.35mA		
		Max.	0.5mA	0.5mA		
	LED turn off current	Min.	0.1mA	0.1mA		
		Typ.	0.29mA	0.3mA		
	LED dropout voltage	Typ.	1.25V (1.1V at I_F = 2mA)	1.25V (1.1V at I_F = 2mA)		
		Max.	1.5V	1.5V		
Turn on time		Typ.	0.89ms	1.5ms	1.2ms	0.8ms
		Max.	2ms	5ms	5ms	5ms
Turn off time		Typ.	0.22ms	0.15ms	0.1ms	0.1ms
		Max.	1ms	2ms	2ms	2ms
Total power dissipation			550mW	350mW		
I/O isolation voltage			1,500V AC	1,500V AC		
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C –40°F to +185°F		
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F		
I/O capacitance		Typ.	0.8pF	0.8pF		
		Max.	1.5pF	1.5pF		
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ		
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal / Surface mount terminal; BOTTOM VIEW / TOP VIEW	TOP VIEW		
Standards			UL, C-UL	—		
Mass (weight) (approx.)			0.453g .016oz	0.084g .003oz		
Packing style			Tube packing, Tape and reel packing			

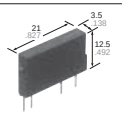
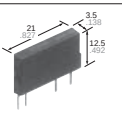
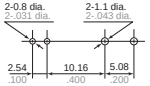
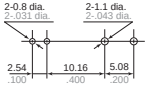
Notes:

Product name			PD			
			1 Form A			
			AC/DC			
Appearance configuration *Standoff height included mm inch						
Part No.			AQY272	AQY275	AQY277	AQY274
Output	Load voltage	Peak AC	60V	100V	200V	400V
		DC	60V	100V	200V	400V
	Continuous load current *6-pin type: in case of A connection		2A, 1A, 0.5A; 2A / 1.3A / 0.65A / 0.35A			
	Peak load current		6A	4A	2A	1A
	Power dissipation		700mW			
	On resistance *6-pin type: in case of A connection	Typ.	0.11Ω	0.23Ω	0.7Ω	2.1Ω
		Max.	0.18Ω	0.34Ω	1.1Ω	3.2Ω
	Output capacitance (Typ.)		1,400pF		600pF	
	Off state leakage current (Max.)		10μA			
Input	LED forward current		50mA			
	LED reverse voltage		5V			
	Peak forward current		1A			
	Power dissipation		75mW			
	LED operate current	Typ.	1mA			
		Max.	3mA			
	LED turn off current	Min.	0.4mA			
		Typ.	0.9mA			
	LED dropout voltage	Typ.	1.16V (1.25V at I_F = 50mA)			
		Max.	1.5V			
Turn on time		Typ.	2.46ms	2.4ms	1.12ms	1.65ms
		Max.	5ms	5ms	5ms	5ms
Turn off time		Typ.	0.22ms	0.21ms	0.1ms	0.08ms
		Max.	3ms	3ms	3ms	3ms
Total power dissipation			750mW			
I/O isolation voltage			2,500V AC			
Operating temperature			–40°C to +85°C –40°F to +185°F			
Storage temperature			–40°C to +100°C –40°F to +212°F			
I/O capacitance		Typ.	0.8pF			
		Max.	1.5pF			
Initial I/O isolation resistance (Min.)			1,000MΩ			
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal / Surface mount terminal; BOTTOM VIEW / TOP VIEW			
Standards			UL, C-UL			
Mass (weight) (approx.)			0.62g .022oz			
Packing style			Tube packing, Tape and reel packing			

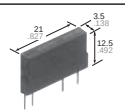
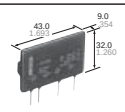
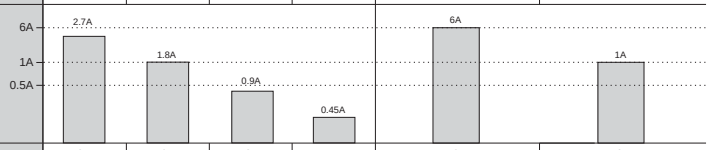
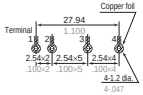
Notes:

Product name			Power							
			1 Form A							
			DC				AC/DC			
Appearance configuration *Standoff height included mm inch										
Part No.			AQZ102	AQZ105	AQZ107	AQZ104	AQZ202	AQZ205	AQZ207	AQZ204
Output	Load voltage	Peak AC	—				60V	100V	200V	400V
		DC	60V	100V	200V	400V	60V	100V	200V	400V
	Continuous load current		3A, 1A; 4A, 2.6A, 1.3A, 0.7A, 3A, 2A, 1A, 0.5A							
	Peak load current		9.0A	6.0A	3.0A	1.5A	9.0A	6.0A	3.0A	1.5A
	Power dissipation		1.35W				1.6W			
	On resistance	Typ.	0.05Ω	0.081Ω	0.34Ω	1.06Ω	0.11Ω	0.23Ω	0.7Ω	2.1Ω
		Max.	0.09Ω	0.17Ω	0.55Ω	1.6Ω	0.18Ω	0.34Ω	1.1Ω	3.2Ω
	Output capacitance (Typ.)		1,700pF		900pF		1,400pF		600pF	
	Off state leakage current (Max.)		10μA							
Input	LED forward current		50mA							
	LED reverse voltage		5V							
	Peak forward current		1A							
	Power dissipation		75mW							
	LED operate current	Typ.	1mA							
		Max.	3mA							
	LED turn off current	Min.	0.4mA							
		Typ.	0.9mA							
	LED dropout voltage	Typ.	1.25V (1.16V at IF = 10mA)							
		Max.	1.5V							
Turn on time		Typ.	1.66ms	1.89ms	0.83ms	1.01ms	2.46ms	2.4ms	1.12ms	1.65ms
		Max.	5ms	5ms	5ms	5ms	5ms	5ms	5ms	5ms
Turn off time		Typ.	0.15ms	0.19ms	0.10ms	0.08ms	0.22ms	0.21ms	0.10ms	0.08ms
		Max.	3ms	3ms	3ms	3ms	3ms	3ms	3ms	3ms
Total power dissipation			1.35W				1.6W			
I/O isolation voltage			2,500V AC							
Operating temperature			–40°C to +85°C –40°F to +185°F							
Storage temperature			–40°C to +100°C –40°F to +212°F							
I/O capacitance		Typ.	0.8pF							
		Max.	1.5pF							
Initial I/O isolation resistance (Min.)			1,000MΩ							
Terminal layout • Tolerance: ±0.1 ±.004 mm inch										
Standards			UL, C-UL							
Mass (weight) (approx.)			1.65g .058oz							
Packing style			PA relay socket							

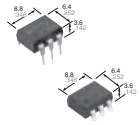
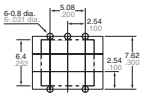
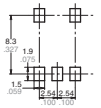
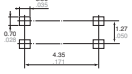
Notes:

Product name			Power	Power Voltage-sensitive			
			1 Form B	1 Form A			
			AC/DC	DC			
Appearance configuration *Standoff height included mm inch							
Part No.			AQZ404	AQZ102D	AQZ105D	AQZ107D	AQZ104D
Output	Load voltage	Peak AC	400V	—			
		DC	400V	60V	100V	200V	400V
	Continuous load current		3A, 1A; 0.5A	3.6A, 2.3A, 1.1A, 0.6A			
	Peak load current		1.5A	9A	6A	3A	1.5A
	Power dissipation		1.6W	1.35W			
	On resistance	Typ.	2.8Ω	0.033Ω	0.090Ω	0.33Ω	1.23Ω
		Max.	4.0Ω	0.09Ω	0.17Ω	0.55Ω	1.6Ω
	Output capacitance (Typ.)		2,000pF	1,700pF		900pF	
	Off state leakage current (Max.)		10μA	10μA			
Input	LED forward current		50mA	Input voltage: 30V			
	LED reverse voltage		5V	Input reverse voltage: 5V			
	Peak forward current		1A	—			
	Power dissipation		75mW	300mW			
	LED operate current [LED operate (OFF) current]	Typ.	1mA	Operate voltage: 1.4V			
		Max.	3mA	4V			
	LED turn off current [LED reverse (ON) current]	Min.	0.4mA	Turn off voltage: 0.8V			
		Typ.	0.9mA	1.3V			
	LED dropout voltage	Typ.	1.25V (1.16V at IF = 10mA)	Input current (typ.): 6.5mA			
		Max.	1.5V				
Turn on time [Operate (OFF) time]		Typ.	3.9ms	3.3ms	2.2ms	1.5ms	1.2ms
		Max.	7.5ms	10ms	10ms	10ms	10ms
Turn off time [Reverse (ON) time]		Typ.	0.8ms	0.2ms		0.1ms	
		Max.	3ms	3ms		3ms	
Total power dissipation			1.6W	1.35W			
I/O isolation voltage			2,500V AC	2,500V AC			
Operating temperature			–40°C to +85°C –40°F to +185°F	–40°C to +85°C (4V≤Vin≦6V), –40°C to +75°C (6V≤Vin≦15V), –40°C to +60°C (15V≤Vin≦30V) –40°F to +185°F (4V≤Vin≦6V), –40°F to +167°F (6V≤Vin≦15V), –40°F to +140°F (15V≤Vin≦30V)			
Storage temperature			–40°C to +100°C –40°F to +212°F	–40°C to +100°C –40°F to +212°F			
I/O capacitance		Typ.	0.8pF	0.8pF			
		Max.	1.5pF	1.5pF			
Initial I/O isolation resistance (Min.)			1,000MΩ	1,000MΩ			
Terminal layout • Tolerance: ±0.1 ±.004 mm inch							
Standards			UL, C-UL	UL, C-UL			
Mass (weight) (approx.)			1.65g .058oz	1.65g .058oz			
Packing style			PA relay socket	PA relay socket			

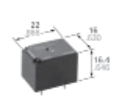
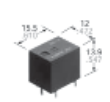
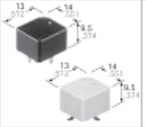
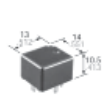
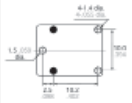
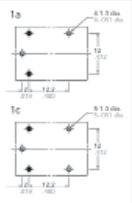
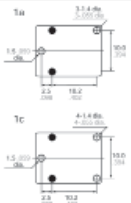
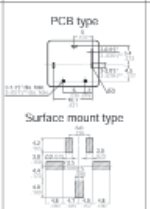
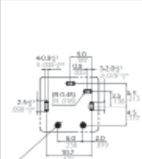
Notes:

Product name			Power Voltage-sensitive				Power High Capacity	
			1 Form A				1 Form A	
			AC/DC				AC/DC	
Appearance configuration *Standoff height included mm inch								
Part No.			AQZ202D	AQZ205D	AQZ207D	AQZ204D	AQZ262	AQZ264
Output	Load voltage	Peak AC	60V	100V	200V	400V	60V	400V
		DC	60V	100V	200V	400V	60V	400V
	Continuous load current							
	Peak load current		9A	6A	3A	1.5A	10A	3A
	Power dissipation		1.6W				3W	
	On resistance	Typ.	0.066Ω	0.180Ω	0.64Ω	2.4Ω	0.036Ω	1Ω
		Max.	0.18Ω	0.34Ω	1.1Ω	3.2Ω	0.05Ω	1.4Ω
	Output capacitance (Typ.)		1,400pF		600pF		1,400pF	600pF
	Off state leakage current (Max.)		10μA				10μA	
Input	LED forward current		Input voltage: 30V				50mA	
	LED reverse voltage		Input reverse voltage: 5V				5V	
	Peak forward current		—				1A	
	Power dissipation		300mW				75mW	
	LED operate current	Typ.	Operate voltage: 1.4V				1mA	
		Max.	Operate voltage: 4V				3mA	
	LED turn off current	Min.	Turn off voltage: 0.8V				0.4mA	
		Typ.	Turn off voltage: 1.3V				0.9mA	
	LED dropout voltage	Typ.	Input current (typ.): 6.5mA				1.25V	
		Max.	Input current (typ.): 6.5mA				1.5V	
Turn on time		Typ.	5.8ms	4.2ms	2.7ms	2.3ms	5ms	4ms
		Max.	10ms	10ms	10ms	10ms	10ms	10ms
Turn off time		Typ.	0.2ms		0.1ms		0.32ms	0.14ms
		Max.	3ms		3ms		3ms	3ms
Total power dissipation			1.6W				3W	
I/O isolation voltage			2,500V AC				1,500V AC	
Operating temperature			–40°C to +85°C (4V≤Vin≤6V), –40°C to +75°C (6V≤Vin≤15V), –40°C to +60°C (15V≤Vin≤30V) –40°F to +185°F (4V≤Vin≤6V), –40°F to +167°F (6V≤Vin≤15V), –40°F to +140°F (15V≤Vin≤30V)				–40°C to +85°C –40°F to +185°F	
Storage temperature			–40°C to +100°C –40°F to +212°F				–40°C to +100°C –40°F to +212°F	
I/O capacitance		Typ.	0.8pF				2pF	
		Max.	1.5pF				4pF	
Initial I/O isolation resistance (Min.)			1,000MΩ				1,000MΩ	
Terminal layout • Tolerance: ±0.1 ±.004 mm inch								
Standards			UL, C-UL				—	
Mass (weight) (approx.)			1.65g .058oz				10.6g .374oz	
Packing style			PA relay socket				—	

Notes:

Product name			Photovoltaic MOSFET driver			
Appearance configuration *Standoff height included mm inch						
Part No.			APV1122	APV1121S	APV2121S	APV2111V
Output	Open voltage	Min.	6V		5V	
		Typ.	8.7V		8.2V	
	Short current	Min.	5μA		3μA	
		Typ.	14μA		8μA	
Input	LED forward current		50mA			
	LED reverse voltage		5V			
	Peak forward current		1A			
	Power dissipation		75mA			
	LED operate current	Typ.	0.6mA		0.85mA	
		Max.	3mA			
	LED turn offf current	Min.	0.2mA			
		Typ.	0.5mA		0.75mA	
	LED dropout voltage	Typ.	1.15V			
		Max.	1.5V			
Turn on time		Typ.	0.4mA		0.8mA	
Turn off time		Typ.	0.1ms			
I/O capacitance		Typ.	0.8pF			
		Max.	1.5pF			
Initial I/O isolation resistance (Min.)			1,000MΩ			
I/O isolation voltage			5,000V AC	2,500V AC	2,500V AC	1,500V AC
Operating temperature			–40°C to +85°C –40°F to +185°F			
Storage temperature			–40°C to +100°C –40°F to +212°F			
Terminal layout • Tolerance: ±0.1 ±.004 mm inch			Through hole terminal  BOTTOM VIEW Surface mount terminal  TOP VIEW	 TOP VIEW	 TOP VIEW	
Standards			UL, C-UL			
Mass (weight) (approx.)			0.45g	0.08g .003oz		0.06g

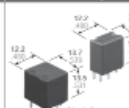
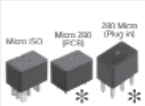
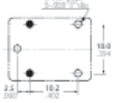
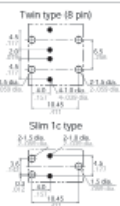
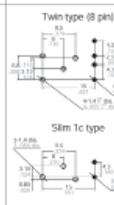
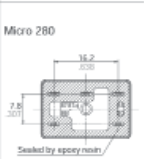
Notes:

• Products	Double make contact Automotive Relay JJ-M RELAY (AJJM) Double make type	Global Standard Terminal Pitch Automotive Power Relay JS-M RELAY	Compact size Automotive Relay JJ-M RELAY	Miniature, Low Profile Automotive Relay CP RELAY	Power type, Miniature, Low profile Automotive Relay CP RELAY<Power type>
• Type of relay mm inch					
• Features	• Small size • Standard terminal pitch employed • Plastic sealed type • For security	• Designed for automotive applications • Low pick-up voltage for high ambient use	• Compact • Perfect for automobile electrical systems	• Low profire • High capacity • Simple footprint pattern enables ease of PC board layout	• Compact flat type • 35A maximum carrying current • Supports capacitor loads required for power supply applications
• Sealed types availability	●	●	●	●	●
• Latching types availability	—	—	—	—	—
• Contact material (Optional material)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)
• Contact rating chart Maximum (cos φ = 1)	(Lamp load) 12A 14V DC (6A 1 contact) 1A 12V DC	10A 16V DC 15A 16V DC Standard High capacity 1A 12V DC	20A 14V DC 10A 14V DC N.O. N.C. 1A 12V DC	20A 14V DC 10A 14V AC 1c N.O. N.C. 1A 12V DC	35A 1h (at 20°C, 450mW) Max. carrying current N.O. 1A 12V DC
Minimum (For Reference)					
• Max. switching voltage	—	16V DC	14V DC	—	—
• Contact arrangement	Double make contact	1a, 1c	1a, 1c	1a, 1c	1a, 1c
• Life (Min. operation) Electrical	10^5 (lamp load)	Standard: 10^7 High capacity: 10^5 (N.O.) 5×10^4 (N.C.)	2×10^5 (at 14V DC, inrush 25A, steady 5A)	2×10^5 (at 14V DC, inrush 25A, steady 5A)	10^5 (Capacitor load)
• Life (Min. operation) Mechanical	10^7	10^7	10^7	10^7	10^7
• Breakdown voltage: Between open contacts	500Vrms	750Vrms	500Vrms	500Vrms	500Vrms
• Breakdown voltage: Between contacts sets	—	—	—	—	—
• Breakdown voltage: Between contacts and coil	500Vrms	1,500Vrms	500Vrms	500Vrms	500Vrms
• Breakdown voltage: Between live parts and ground	—	—	—	—	—
• Surge withstand voltage	—	—	—	—	—
• Coil voltage	12V DC	12V DC	12V DC	12V DC	12V DC
• Nominal operating power	1,000mW	640mW	640mW	640mW	450mW 640mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch					
• Standards	—	—	—	—	—
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

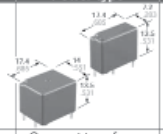
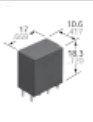
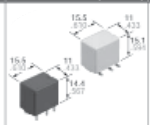
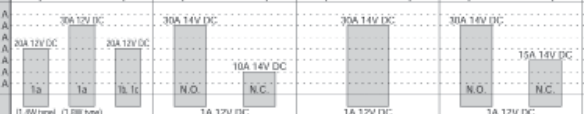
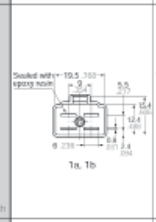
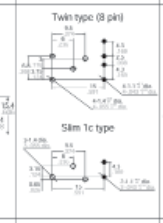
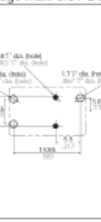
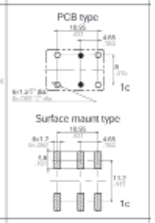
✻: Products to be discontinued

• Products	1 Form C Automotive Silent Relay CQ RELAY (ACQ)	Super Miniature Twin Type Automotive Relay CJ RELAY (ACJ)	Small & Slim Automotive Relay CT RELAY (ACT)	Automotive Low Profile Relay CV RELAY (ACV)
• Type of relay mm inch				
• Features	• Silent type • Less space required • Sealed construction • Next-generation standard terminal pitch employed	• Super miniature size • High capacity (25A) in a compact body • Twin (1 Form C × 2)	• Small & Slim size • Twin (1 Form C × 2) • Simple footprint enables ease of PC board layout (8 or 10 terminals)	• Low profile • Low temperature rise • Low sound pressure level
• Sealed types availability	●	●	●	●
• Latching types availability	—	—	—	—
• Contact material (Optional material)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)
• Contact rating chart Maximum (cos φ = 1)	20A 14V DC 10A 14V DC N.O. N.C. 1A 12V DC	20A 14V DC 10A 14V DC N.O. N.C. 1A 12V DC	20A 14V DC 10A 14V DC N.O. N.C. 1A 12V DC	20A 14V DC 10A 14V DC N.O. N.C. 1A 12V DC
Minimum (For Reference)				
• Max. switching voltage	—	14V DC (N.O.) 14V DC (N.C.)	—	14V DC (N.O.) 14V DC (N.C.)
• Contact arrangement	1c	1c, 1c × 2	1c, 1c × 2	1a, 1c
• Life (Min. operation) Electrical	3×10^5 (at 14V DC, inrush 30A, steady 5A)	2×10^5 (at 14V DC, inrush 25A, steady 5A) 10^5 (Motor lock)	2×10^5 (at 14V DC, inrush 25A, steady 5A) 10^5 (Motor lock)	10^5 (Resistive load)
• Life (Min. operation) Mechanical	10^7	10^7 (Operating frequency: 120 cpm)	10^7	10^6 (Operating frequency: 120 cpm)
• Breakdown voltage: Between open contacts	500Vrms	500Vrms	500Vrms	500Vrms
• Breakdown voltage: Between contacts sets	—	—	—	—
• Breakdown voltage: Between contacts and coil	500Vrms	500Vrms	500Vrms	500Vrms
• Breakdown voltage: Between live parts and ground	—	—	—	—
• Surge withstand voltage	—	—	—	—
• Coil voltage	12V DC	12V DC	12V DC	12V DC
• Nominal operating power	640mW	640mW, 800mW	800mW	800mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				
• Standards	—	—	—	—
• Mounting method				

Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

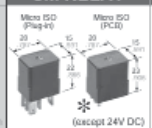
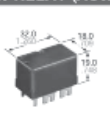
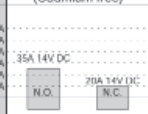
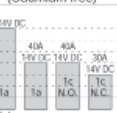
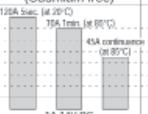
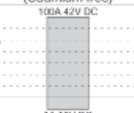
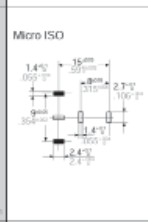
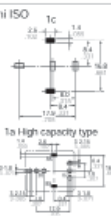
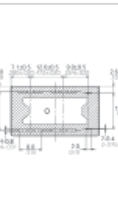
✻: Products to be discontinued

• Products	Automotive Power Relay CA RELAY	Power type, Small and Slim Automotive Relay CT RELAY (ACTP) <Power type>	High load Relay for Smart J/B CN-H RELAY (ACNH)	Middle load Relay for Smart J/B CN-M RELAY (ACNM)
• Type of relay mm inch				
• Features	• Small size • Light weight • Automotive direct plug-in	• Compact type for automotives • 35A maximum switching capacity • Still top-of-its-class for silent operation	• Large capacity switching despite small size • Can replace micro ISO terminal type relays	• Compact and high-capacity 30A load switching
• Sealed types availability	●	●	●	●
• Latching types availability	—	—	—	—
• Contact material (Optional material)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)
• Contact rating chart Maximum (cos φ = 1)				
Minimum (For Reference)	(1.4W type) (1.8W type) 1A 12V DC	1A 12V DC	1A 12V DC	1A 12V DC
• Max. switching voltage	16V DC (1a, 1b 12Vtype), 15V DC (1c 12V type) 30V DC (1c 24V type)	—	16V DC	16V DC
• Contact arrangement	1a, 1b, 1c	1c, 1c × 2	1a	1a, 1c
• Life (Min. operation) Electrical	10^5 1a 1.8W type: 2×10^4 (30A)	10^5 (at 14V DC, inrush 30A, steady 7A), 5×10^4 (Motor lock)	10^5 (Resistive load) 3×10^5 (Motor load)	10^5 (Resistive load) 2×10^5 (Motor load)
• Life (Min. operation) Mechanical	10^6 (1a, 1b) 5×10^5 (1c)	10^7	10^7 (at 120cpm)	10^7 (at 120cpm)
• Break-down voltage: Between open contacts	500Vrms	500Vrms	500Vrms	500Vrms
• Break-down voltage: Between contacts sets	—	—	—	—
• Break-down voltage: Between contacts and coil	500Vrms	500Vrms	500Vrms	500Vrms
• Break-down voltage: Between live parts and ground	—	—	—	—
• Surge withstand voltage	—	—	—	—
• Coil voltage	12, 24V DC	12V DC	12V DC	12V DC
• Nominal operating power	1.4W (1a) 1.8W (1a, 1b, 1c)	1,000mW	450mW (for pick-up voltage max. 6.5V DC) 640 mW (for pick-up voltage max. 5.5V DC)	640mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				
• Standards	—	—	—	—
• Mounting method				

Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

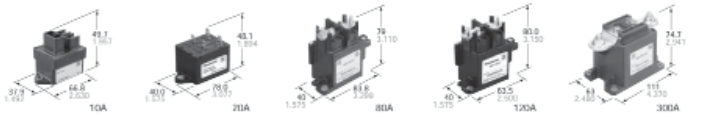
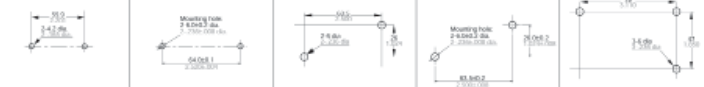
Notes:

✻: Products to be discontinued

• Products	Compact, Space-Saving Automotive Relay CM RELAY	High Power Automotive CB RELAY	Automotive Relay for High Output 3-phase Motor CW RELAY (ACW)	A Relay for 42V EB RELAY (AEB)
• Type of relay mm inch				
• Features	• Compact and high-capacity 35 A load switching • Micro ISO terminals	• 40 A rating at 85°C 185°F • ISO type terminals • High shock resistance for drop test requirements • Low temperature rise	• High current cutoff • High carrying current performance • High heat resistance properties	• Automotive high-capacity DC cutoff relay • Supports even 42 V vehicles
• Sealed types availability	●	●	●	—
• Latching types availability	—	—	—	—
• Contact material (Optional material)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)	Ag alloy (Cadmium free)
• Contact rating chart Maximum (cos φ = 1)				
Minimum (For Reference)	1A 12V DC (Coil rating 12V type)	High capacity 1A 12V DC	1A 14V DC	1A 12V DC
• Max. switching voltage	16V DC	16V DC (12 V type) 32V DC (24 V type)	16V DC	100A 42V DC
• Contact arrangement	1a, 1c	1a, 1c	2a	1a
• Life (Min. operation) Electrical	10^6 (Resistive load) (Sealed type: 5×10^4)	10^5 (Sealed type: 5×10^4)	Min. 3 times (at cutoff only, without diode)	10^4 (100A, 42V DC, resistive load)
• Life (Min. operation) Mechanical	10^6 (Operating frequency: 120 cpm)	10^6	2×10^5 (at 60 cpm)	10^5 (Operating frequency: 120 cpm)
• Break-down voltage: Between open contacts	500Vrms	500Vrms	500Vrms	1,500Vrms
• Break-down voltage: Between contacts sets	—	—	—	—
• Break-down voltage: Between contacts and coil	500Vrms	500Vrms	500Vrms	2,500Vrms
• Break-down voltage: Between live parts and ground	—	—	—	—
• Surge withstand voltage	—	—	—	—
• Coil voltage	12, 24V DC	12, 24V DC	12V DC	12, 24, 36V DC
• Nominal operating power	1.5W (12V type) 1.8W (24V type)	1.4W (12V type) 1.8W (24V type) 1.8W (1a High capacity type)	1.4W	5.0W
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch				
• Standards	—	—	—	—
• Mounting method			Welding terminal	Screw terminal blocks

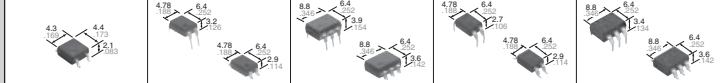
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		Power Capsule Contact Relay EV RELAY (AEV)				
• Type of relay mm inch						
		10A	20A	80A	120A	300A
• Features		• High-capacity DC cutoff achieved in a compact relay • Relay for electric cars with the "EVPC" power capsule mechanism				
• Sealed types availability		●	●	●	●	●
• Latching types availability		—	—	—	—	—
• Contact material (Optional material)		Molybdenum type	Copper type alloy	Tungsten type/ Copper type alloy	Copper type alloy	Copper type alloy
• Contact rating chart Maximum (cos φ = 1)		35 A 30 A 25 A 20 A 10 A 5 A 10A 400V DC	20A 400V DC	80A 400V DC	120A 400V DC	300A 400V DC
Minimum (For Reference)		1A 12V DC	1A 12V DC		1A 12V DC	
• Max. switching voltage		10A 400V DC	20A 400V DC	80A 400V DC	120A 400V DC	300A 400V DC
• Contact arrangement		1a	1a	1a	1a	1a
• Life (Min. operation)	Electrical	7.5[4] 10A 400V DC L/R ≦ 1ms	3×10^3 20A 400V DC L/R ≦ 1ms	10^3 80A 400V DC L/R ≦ 1ms	3×10^3 30A 400V DC L/R ≦ 1ms	10^3 300A 400V DC L/R ≦ 1ms
	Mechanical	10^5	2×10^5	2×10^5	2×10^5	2×10^5
• Break-down voltage	Between open contacts	2,500Vrms				
	Between contacts sets	—				
	Between contacts and coil	2,500Vrms				
	Between live parts and ground	—				
• Surge withstand voltage		—				
• Coil voltage		(DC) 12, 24V				
• Nominal operating power		Max. 1.24W	Max. 3.9W	Max. 4.2W	Max. 4.2W	12V: Max. 37.9W (Inrush, approx 0.1s) Max. 3.6W (Stable) 24V: Max. 44.4W (Inrush, approx 0.1s) Max. 3.8W (Stable)
• Mounting dimensions (Top View) mm inch						
• Standards		—	—	—	—	—
• Mounting method		Screw terminal blocks				

Note: Meaning of symbol marks '┣': PC board terminal; '⊓': Plug-in; '▟': Top-mounting; '▟': Top-mounting with PC board terminals; '□': Surface-mounting

Notes:

		APT Phototriac Coupler				
		Phototriac				
		Zero-cross / Random	Zero-cross / Random	Zero-cross / Random	Zero-cross / Random	Zero-cross / Random
		0.05 A	0.1 A	0.1 A	0.1 A	0.1 A
• Type of relay mm inch						
		SOP 4 pin	DIP 4 pin	DIP 6 pin	DIP 4 pin wide	DIP 6 pin wide
• Part No.		APT1211S / APT1221S	APT1211 / APT1221	APT1212 / APT1222	APT1211W / APT1221W	APT1212W / APT1222W
• Output	Repetitive peak OFF-state voltage	600 V	600 V	600 V	600 V	600 V
	ON-state RMS current	0.4 A 0.3 A 0.2 A 0.1 A 0.05 A	0.1 A	0.1 A	0.1 A	0.1 A
	Non-repetitive surge current	0.6 A	1.2 A	1.2 A	1.2 A	1.2 A
	Peak ON-state voltage	Max. 2.5 V	Max. 2.5 V	Max. 2.5 V	Max. 2.5 V	Max. 2.5 V
	Peak OFF-state current	Max. 1 μA	Max. 1 μA	Max. 1 μA	Max. 1 μA	Max. 1 μA
• Input	LED forward current	50 mA	50 mA	50 mA	50 mA	50 mA
	LED reverse voltage	6 V	6 V	6 V	6 V	6 V
	Peak forward current	1 A	1 A	1 A	1 A	1 A
	LED dropout voltage (IF=20 mA)	Max. 1.3 V	Max. 1.3 V	Max. 1.3 V	Max. 1.3 V	Max. 1.3 V
• Trigger LED current		Max. 10 mA	Max. 10 mA	Max. 10 mA	Max. 10 mA	Max. 10 mA
• Zero-cross voltage		Max. 50 V / —	Max. 50 V / —	Max. 50 V / —	Max. 50 V / —	Max. 50 V / —
• Turn on time		Max. 0.1 ms	Max. 0.1 ms	Max. 0.1 ms	Max. 0.1 ms	Max. 0.1 ms
• I/O isolation voltage		3,750 V AC	5,000 V AC	5,000 V AC	5,000 V AC	5,000 V AC
• Temperature limits operating		−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F
• Temperature limits storage		−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F
• I/O capacitance	Typical	0.8 pF	0.8 pF	0.8 pF	0.8 pF	0.8 pF
	Maximum	1.5 pF	1.5 pF	1.5 pF	1.5 pF	1.5 pF
• I/O isolation resistance		Min. 50 GΩ	Min. 50 GΩ	Min. 50 GΩ	Min. 50 GΩ	Min. 50 GΩ
• Terminal layout (Bottom View) mm inch		Recommended mounting pad (Top view)	Through hole terminal (Bottom view) Surface mount terminal recommended mounting pad (Top view)	Through hole terminal (Bottom view) Surface mount terminal recommended mounting pad (Top view) Tolerance: ±0.1 ±.004	PC board pattern (Bottom view) Recommended mounting pad (Top view) Tolerance: ±0.1 ±.004	PC board pattern (Bottom view) Recommended mounting pad (Top view) Tolerance: ±0.1 ±.004
• Standards		UL, C-UL, *VDE	UL, C-UL, *VDE	UL, C-UL, *VDE	UL, C-UL, *VDE	UL, C-UL, *VDE
• Mounting method		□	┣ □	┣ □	┣ □	┣ □

Note: Meaning of symbol marks '┣': PC board terminal; '⊓': Plug-in; '▟': Top-mounting; '▟': Top-mounting with PC board terminals; '□': Surface-mounting
* Normal part number is taken UL, C-ULstandards. About VDE standard, please inquire.

Notes:

		APT Phototriac Coupler				
		Phototriac				
		Zero-cross (Low zero-cross type)				
• Type of relay		0.05 A	0.1 A	0.1 A	0.1 A	0.1 A
mm inch		SOP 4 pin	DIP 4 pin	DIP 6 pin	DIP 4 pin wide	DIP 6 pin wide
• Part No.		APT1231S	APT1231	APT1232	APT1231W	APT1232W
• Output	Repetitive peak OFF-state voltage	600 V	600 V	600 V	600 V	600 V
	ON-state RMS current	0.05 A	0.1 A	0.1 A	0.1 A	0.1 A
	Non-repetitive surge current	0.6 A	1.2 A	1.2 A	1.2 A	1.2 A
	Peak ON-state voltage	Max. 2.0 V	Max. 2.0 V	Max. 2.0 V	Max. 2.0 V	Max. 2.0 V
	Peak OFF-state current	Max. 1 μA	Max. 1 μA	Max. 1 μA	Max. 1 μA	Max. 1 μA
• Input	LED forward current	50 mA	50 mA	50 mA	50 mA	50 mA
	LED reverse voltage	6 V	6 V	6 V	6 V	6 V
	Peak forward current	1 A	1 A	1 A	1 A	1 A
	LED dropout voltage (IF=20 mA)	Max. 1.3 V	Max. 1.3 V	Max. 1.3 V	Max. 1.3 V	Max. 1.3 V
• Trigger LED current		Max. 10 mA	Max. 10 mA	Max. 10 mA	Max. 10 mA	Max. 10 mA
• Zero-cross voltage		Max. 15 V	Max. 15 V	Max. 15 V	Max. 15 V	Max. 15 V
• Turn on time		Max. 0.1 ms	Max. 0.1 ms	Max. 0.1 ms	Max. 0.1 ms	Max. 0.1 ms
• I/O isolation voltage		3,750 V AC	5,000 V AC	5,000 V AC	5,000 V AC	5,000 V AC
• Temperature limits operating		−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F	−40°C to +100°C −40°F to +212°F
• Temperature limits storage		−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F	−40°C to +125°C −40°F to +257°F
• I/O capacitance	Typical	0.8 pF	0.8 pF	0.8 pF	0.8 pF	0.8 pF
	Maximum	1.5 pF	1.5 pF	1.5 pF	1.5 pF	1.5 pF
• I/O isolation resistance		Min. 50 GΩ	Min. 50 GΩ	Min. 50 GΩ	Min. 50 GΩ	Min. 50 GΩ
• Terminal layout (Bottom View)		Recommended mounting pad (Top view)	Through hole terminal (Bottom view) / Surface mount terminal recommended mounting pad (Top view)	Through hole terminal (Bottom view) / Surface mount terminal recommended mounting pad (Top view)	PC board pattern (Bottom view) / Recommended mounting pad (Top view)	PC board pattern (Bottom view) / Recommended mounting pad (Top view)
mm inch				Tolerance: ±0.1 ±.004	Tolerance: ±0.1 ±.004	Tolerance: ±0.1 ±.004
• Standards		UL, C-UL, *VDE	UL, C-UL, *VDE	UL, C-UL, *VDE	UL, C-UL, *VDE	UL, C-UL, *VDE
• Mounting method						

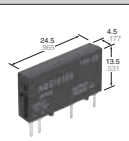
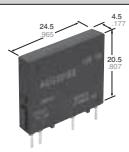
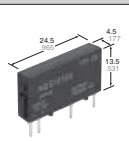
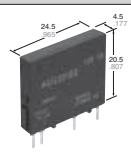
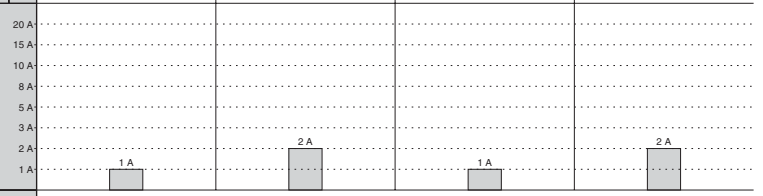
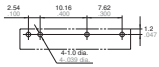
Note: Meaning of symbol marks ⊐: Surface-mounting

Notes:

		AQ-H Relays							
		Phototriac							
		Zero-cross	Random	Zero-cross	Random	Zero-cross	Random	Zero-cross	Random
• Type of relay		0.3 A		0.6 A		0.9 A		1.2 A	
mm inch									
• Part No.		AQH0213	AQH0223	AQH1213	AQH1223	AQH2213	AQH2223	AQH3213	AQH3223
• Output	Repetitive peak OFF-state voltage	600 V							
	ON-state RNS current	0.3 A		0.6 A		0.9 A		1.2 A	
	Non-repetitive surge current	3 A		6 A		9 A		12 A	
	Peak ON-state voltage	Max. 2.5 V							
	Peak OFF-state current	Max. 100 μA							
• Input	LED forward current	50 mA							
	LED reverse voltage	6 V							
	Peak forward current	1 A							
	LED dropout voltage (IF=20 mA)	Max. 1.3 V							
• Trigger LED current		Max. 10 mA							
• Zero-cross voltage		Max. 50 V	—	Max. 50 V	—	Max. 50 V	—	Max. 50 V	—
• Turn on time		Max. 0.1 ms							
• I/O isolation voltage		5,000 V AC							
• Temperature limits operating		−30°C to +85°C −22°F to +155°F							
• Temperature limits storage		−40°C to +125°C −40°F to +212°F							
• I/O capacitance, typ.		2.1 pF							
• I/O isolation resistance		Min. 50 GΩ							
• Terminal layout (Bottom View)		Through hole terminal (Bottom view) / Surface mount terminal (Top view)							
mm inch								Tolerance: ±0.1 ±.004	
• Standards		UL, C-UL, VDE							
• Mounting method									

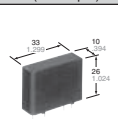
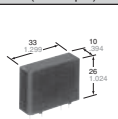
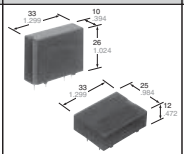
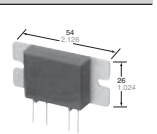
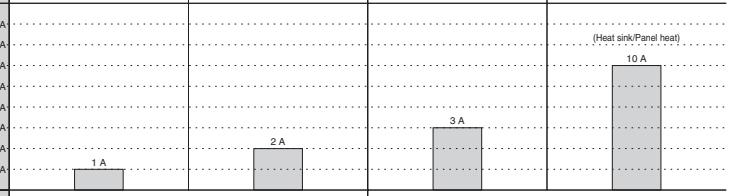
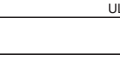
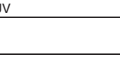
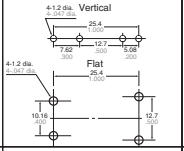
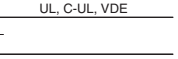
Note: Meaning of symbol marks ┗┳: PC board terminal; ┗┯: Plug-in; ▟: Top-mounting; ▟: Top-mounting with PC board terminals; ⊐: Surface-mounting

Notes:

			AQ-G Relays					
			Phototriac			Phototriac		
			Zero-cross			Random		
			1A	2A		1A	2A	
• Types of relay								
mm inch								
• Load side	Load voltage	AC	75 to 264 V	75 to 264 V		75 to 264 V	75 to 264 V	
		DC	—	—		—	—	
	Max. load current							
	Off state leakage current, max.		1.5 mA (applied 200 V)					
	Non-repetitive surge current		8 A	30 A		8 A	30 A	
• Input side	Input voltage		4 to 6 V	9.6 to 14.4 V	19.2 to 28.8 V	4 to 6 V	9.6 to 14.4 V	19.2 to 28.8 V
	Input impedance, approx.		0.3 kΩ	0.8 kΩ	1.6 kΩ	0.3 kΩ	0.8 kΩ	1.6 kΩ
	Pick-up voltage, max.		4 V	9.6 V	19.2 V	4 V	9.6 V	19.2 V
	Drop-out voltage, min.		1 V			1 V		
• Operate time, max.			1/2 cycle of voltage sine wave+1 ms			1 ms		
• Release time, max.			1/2 cycle of voltage sine wave+1 ms			1/2 cycle of voltage sine wave+1 ms		
• Breakdown voltage			3,000 V AC			3,000 V AC		
• Ambient temperature			–30°C to +80°C –22°F to +176°F			–30°C to +80°C –22°F to +176°F		
• Snubber circuit integrated			●			●		
• LED operation indicator			—			—		
• Terminal layout (Bottom view)								
mm inch								
• Standards			UL, C-UL, VDE			UL, C-UL, VDE		
• Mounting method								

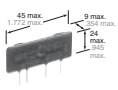
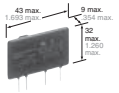
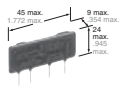
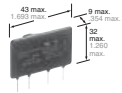
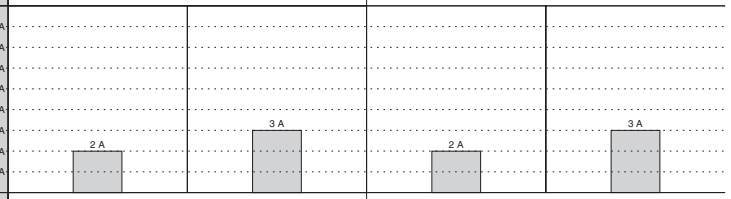
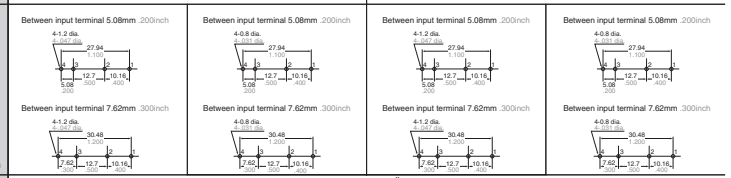
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

			AQ1 Relays			
			Phototransistor, Phototriac			
			—	—	Zero-cross*1	
			1 A (DC output)	2 A (DC output)	3 A	10 A
• Types of relay						
mm inch						
• Load side	Load voltage	AC	—	—	75 to 250 V	
		DC	10 to 200 V	3 to 60 V	—	—
	Max. load current					
	Off state leakage current, max.		1 mA		5 mA	
	Non-repetitive surge current		5 A (1 sec.)		80 A	100 A
• Input side	Input voltage		3 to 28 V DC		4 to 32 V DC	4 to 32 V DC
	Input impedance, approx.		1.6 kΩ		—	—
	Pick-up voltage, max.		3 V		4 V	4 V
	Drop-out voltage, min.		0.8 V		1.0 V	1.0 V
• Operate time, max.			0.5 ms		1/2 cycle of voltage sine wave+1 ms	
• Release time, max.			2 ms		1/2 cycle of voltage sine wave+1 ms	
• Breakdown voltage			3,000 V AC		4,000 V AC (between input and output) 2,500 V AC (between input, output and case)	4,000 V AC (between input and output) 2,500 V AC (between input, output and case)
• Ambient temperature			–30°C to +80°C –22°F to +176°F		–30°C to +80°C –22°F to +176°F	
• Snubber circuit integrated			—	—	●	●
• LED operation indicator			—	—	—	—
• Terminal layout (Bottom view)						
mm inch						
• Standards			UL, CSA, *TÜV		UL, C-UL, VDE	UL, C-UL, VDE
• Mounting method						

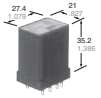
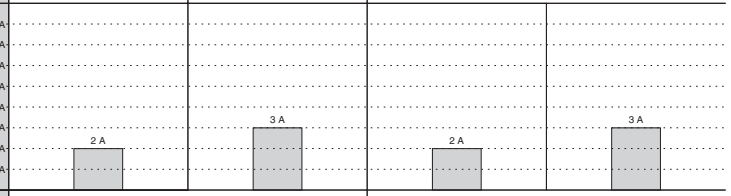
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting
* Normal part number is taken UL, CSA standards. About TÜV standard, please inquire. *1 Random type is also available by custom order.

Notes:

			AQ8 Relays									
			Phototriac									
			Zero-cross				Random					
			2 A			3 A			2 A			3 A	
• Types of relay													
mm inch													
• Load side	Load voltage	AC	75 to 125 V 75 to 250 V										
		DC	—						—				
	Max. load current												
	Off state leakage current, max.		5 mA						5 mA				
	Non-repetitive surge current		30 A			80 A			30 A			80 A	
• Input side	Input voltage		4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V	4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V	4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V	4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V
	Input impedance, approx.		0.18 kΩ	0.55 kΩ	1.4 kΩ	0.18 kΩ	0.55 kΩ	1.4 kΩ	0.3 kΩ	0.8 kΩ	1.8 kΩ	0.3 kΩ	0.8 kΩ	1.8 kΩ
	Pick-up voltage, max.		4 V	9.6 V	21.6 V	4 V	9.6 V	21.6 V	4 V	9.6 V	21.6 V	4 V	9.6 V	21.6 V
	Drop-out voltage, min.		0.5 V	1.2 V	2.4 V	0.5 V	1.2 V	2.4 V	0.5 V	1.2 V	2.4 V	0.5 V	1.2 V	2.4 V
• Operate time, max.			1/2 cycle of voltage sine wave +1 ms						1 ms					
• Release time, max.			1/2 cycle of voltage sine wave +1 ms						1/2 cycle of voltage sine wave +1 ms					
• Breakdown voltage			3,000 V AC											
• Ambient temperature			–30°C to +80°C –22°F to +176°F											
• Snubber circuit integrated			●						●					
• LED operation indicator			—						—					
• Terminal layout (Bottom view)														
mm inch														
• Standards			UL, CSA, *TÜV											
• Mounting method														

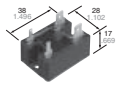
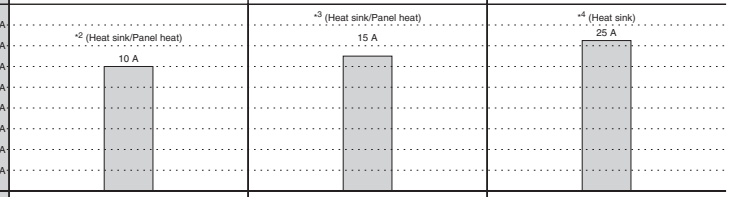
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting
* Normal part number is taken UL, CSA standards. About TÜV standard, please inquire.

Notes:

			AQ-F Relays			
			Phototransistor			
			Zero-cross		—	
			2 A (AC output)	3 A (AC output)	2 A (DC output)	3 A (DC output)
• Types of relay						
mm inch						
• Load side	Load voltage	AC	75 to 250 V		—	—
		DC	—	—	3 to 60 V	
	Max. load current					
	Off state leakage current, max.		5 mA		1 mA	
	Non-repetitive surge current		80 A		5 A	6 A
• Input side	Input voltage		3 to 28 V			
	Input impedance, approx.		1.6 kΩ			
	Pick-up voltage, max.		3 V			
	Drop-out voltage, min.		0.8 V			
• Operate time, max.			1/2 cycle of voltage sine wave+1 ms		0.5 ms	
• Release time, max.			1/2 cycle of voltage sine wave+1 ms		2 ms	
• Breakdown voltage			2,000 V AC			
• Ambient temperature			–30°C to +80°C –22°F to +176°F			
• Snubber circuit integrated			●	●	—	—
• LED operation indicator			—	—	—	—
• Terminal layout (Bottom view)						
mm inch						
• Standards			UL, CSA			
• Mounting method						

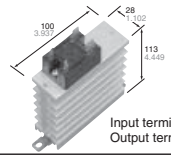
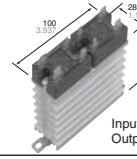
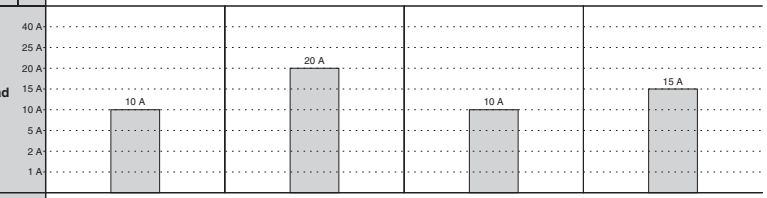
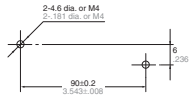
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

			AQ-J Relays								
			Phototriac								
			Zero-cross*1								
			10 A			15 A			25 A		
• Types of relay			 Input terminal: #110 type Output terminal: #250 type								
mm inch											
• Load side	Load voltage	AC	75 to 264 V			75 to 264 V			75 to 264 V		
		DC	—			—			—		
	Max. load current		 *2 (Heat sink/Panel heat) 10 A; *3 (Heat sink/Panel heat) 15 A; *4 (Heat sink) 25 A; 40 A, 20 A, 10 A, 8 A, 5 A, 3 A, 2 A, 1 A								
	Off state leakage current, max.		5 mA			5 mA			5 mA		
	Non-repetitive surge current		100 A			150 A			250 A		
• Input side	Input voltage		4 to 6 V	10 to 18 V	18 to 28 V	4 to 6 V	10 to 18 V	18 to 28 V	4 to 6 V	10 to 18 V	18 to 28 V
	Input impedance, approx.		0.26 kΩ	0.8 kΩ	1.6 kΩ	0.26 kΩ	0.8 kΩ	1.6 kΩ	0.26 kΩ	0.8 kΩ	1.6 kΩ
	Pick-up voltage, max.		4 V	10 V	18 V	4 V	10 V	18 V	4 V	10 V	18 V
	Drop-out voltage, min.		1 V								
• Operate time, max.			1/2 cycle of voltage sine wave + 1ms								
• Release time, max.			1/2 cycle of voltage sine wave + 1ms								
• Breakdown voltage			3,000 Vrms between input and output 2,500 Vrms between input, output and case								
• Ambient temperature			–30 to +80°C –22 to +176°F								
• Snubber circuit integrated			●								
• LED operation indicator			—								
• Terminal layout (Bottom view)			 2-4.3 dia. or M4 2-.169 dia. or M4								
mm inch											
• Standards			UL, C-UL, TÜV								
• Mounting method			—								

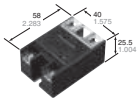
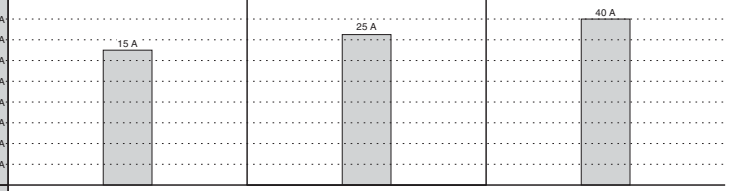
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting
*1 Random type is available by custom order. *2 When mounting a standard heat sink (AQP-HS-J10A) When mounting on 100 × 100 × t1.6 (mm) iron plate
*3 When mounting a standard heat sink (AQP-HS-J10A) When mounting on 200 × 200 × t2 (mm) iron plate *4 When mounting a standard heat sink (AQP-HS-J25A)

Notes:

			AQ-J Relays								
			Phototriac								
			Zero-cross*								
			10 A (Output arrangement: 1a)			20 A (Output arrangement: 1a)			10 A (Output arrangement: 1a×2)		
• Types of relay			 Input terminal: #110 type Output terminal: #250 type						 Input terminal: #110 type Output terminal: #250 type		
mm inch											
• Load side	Load voltage	AC	75 to 264 V								
		DC	—								
	Max. load current		 40 A, 25 A, 20 A, 15 A, 10 A, 5 A, 2 A, 1 A; 10 A, 20 A, 10 A, 15 A								
	Off state leakage current, max.		5 mA								
	Non-repetitive surge current		100 A			250 A			100 A		
• Input side	Input voltage		4 to 6 V	10 to 18 V	18 to 28 V	4 to 6 V	10 to 18 V	18 to 28 V	4 to 6 V	10 to 18 V	18 to 28 V
	Input impedance, approx.		0.26 kΩ	0.8 kΩ	1.6 kΩ	0.26 kΩ	0.8 kΩ	1.6 kΩ	0.26 kΩ	0.8 kΩ	1.6 kΩ
	Pick-up voltage, max.		4 V	10 V	18 V	4 V	10 V	18 V	4 V	10 V	18 V
	Drop-out voltage, min.		1 V								
• Operate time, max.			1/2 cycle of voltage sine wave + 1ms								
• Release time, max.			1/2 cycle of voltage sine wave + 1ms								
• Breakdown voltage			3,000 Vrms between input and output 2,500 Vrms between input, output and case								
• Ambient temperature			–30 to +80°C –22 to +176°F								
• Snubber circuit integrated			●								
• LED operation indicator			—								
• Terminal layout (Bottom view)			 2-4.6 dia. or M4 2-.181 dia. or M4								
mm inch											
• Standards			—								
• Mounting method			—								

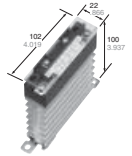
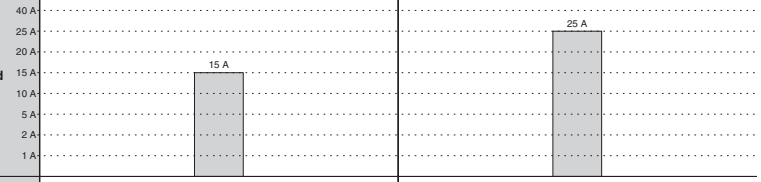
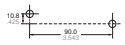
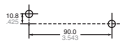
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting
* Random type is available by custom order.

Notes:

			AQ-A Relays		
			Phototriac		
			Zero-cross/Random		
			15 A	25 A	40 A
• Types of relay					
mm inch					
• Load side	Load voltage	AC	75 to 250 V		
		DC	—		
	Max. load current				
	Off state leakage current, max.		10 mA		
	Non-repetitive surge current		150 A	250 A	400 A
• Input side	Input voltage		4 to 32 V		
	Input impedance, approx.		—		
	Pick-up voltage, max.		4 V		
	Drop-out voltage, min.		1 V		
• Operate time, max.			1/2 cycle of voltage sine wave+1 ms		
• Release time, max.			1/2 cycle of voltage sine wave+1 ms		
• Breakdown voltage			4,000 V AC between input and output/ 2,500 V AC between input, output and case		
• Ambient temperature			–20°C to +85°C –4°F to +185°F		
• Snubber circuit integrated			●		
• LED operation indicator			● (LED indication type)		
• Terminal layout (Bottom view)					
mm inch					
• Standards			—		
• Mounting method			—		

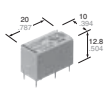
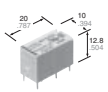
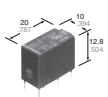
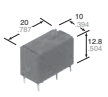
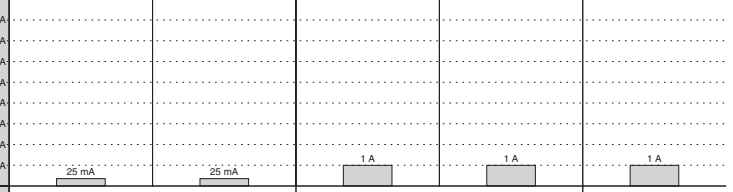
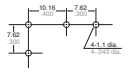
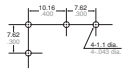
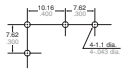
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

			AQ-K Relays	
			Phototriac	
			Zero-cross	
			15 A	25 A
• Types of relay				
mm inch				
• Load side	Load voltage	AC	75 to 250 V	75 to 250 V
		DC	—	—
	Max. load current			
	Off state leakage current, max.		9 mA (applied 200 V)	9 mA (applied 200 V)
	Non-repetitive surge current		150 A	250 A
• Input side	Input voltage		4.5 to 30 V	4.5 to 30 V
	Input impedance, approx.		—	—
	Pick-up voltage, max.		4.5 V	4.5 V
	Drop-out voltage, min.		1 V	1 V
• Operate time, max.			1/2 cycle of voltage sine wave+1 ms	1/2 cycle of voltage sine wave+1 ms
• Release time, max.			1/2 cycle of voltage sine wave+1 ms	1/2 cycle of voltage sine wave+1 ms
• Breakdown voltage			2,500 V AC/4,000 VAC	2,500 V AC/4,000 VAC
• Ambient temperature			–30°C to +80°C –22°F to +176°F	–30°C to +80°C –22°F to +176°F
• Snubber circuit integrated			●	●
• LED operation indicator			●	●
• Terminal layout (Bottom view)			35mm 1.378inch DIN rail mounting hole or 2-4.6 dia. 2-.181 dia. hole or M4 hole. 	35mm 1.378inch DIN rail mounting hole or 2-4.6 dia. 2-.181 dia. hole or M4 hole. 
mm inch				
• Standards			UL, C-UL, *TÜV	
• Mounting method			—	—

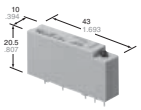
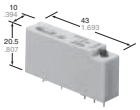
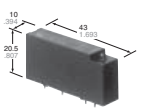
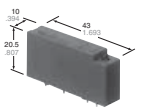
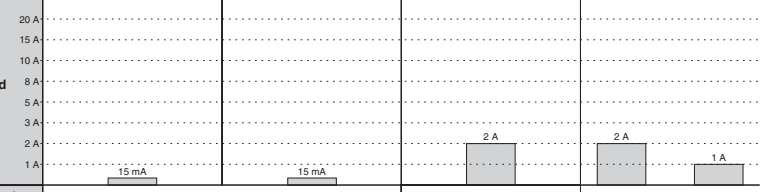
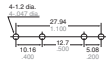
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting
* TÜV standard is taken in case breakdown voltage 2,500 V AC.

Notes:

			AQ-C Relays									
			Phototransistor		Phototriac				Phototransistor			
			—	—	Zero-cross		Random		—			
			AC input	DC input	1 A (AC output)				1 A (DC output)			
• Types of relay												
mm inch												
• Load side	Load voltage	AC	—	—	75 to 125 V 75 to 250 V				—			
		DC	4 to 32 V	4 to 32 V	—		—		3 to 60 V			
	Max. load current											
	Off state leakage current, max.		5 μA		1.1 mA				0.1 mA			
	Non-repetitive surge current		—	—	20 A				1.5 A			
• Input side	Input voltage		80 to 250 V AC	3 to 32 V DC	4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V	4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V	4 to 6 V	9.6 to 14.4 V	21.6 to 26.4 V
	Input impedance, approx.		—	—	0.3 kΩ	0.8 kΩ	1.8 kΩ	0.3 kΩ	0.8 kΩ	1.8 kΩ	0.43 kΩ	1.2 kΩ	2.8 kΩ
	Pick-up voltage, max.		80 V AC	3 V DC	4 V	9.6 V	21.6 V	4 V	9.6 V	21.6 V	4 V	9.6 V	21.6 V
	Drop-out voltage, min.		10 V AC	1 V DC	0.5 V	1.2 V	2.4 V	0.5 V	1.2 V	2.4 V	0.8 V		
• Operate time, max.			20 ms	0.5 ms	1/2 cycle at voltage sine wave+1 ms			1 ms			0.5 ms		
• Release time, max.			20 ms	0.5 ms	1/2 cycle of voltage sine wave+1 ms						1 ms		
• Breakdown voltage			2,500 V AC		2,500 V AC								
• Ambient temperature			–30°C to +80°C –22°F to +176°F		–30°C to +80°C –22°F to +176°F								
• Snubber circuit integrated			—		●				—				
• LED operation indicator			—		—				—				
• Terminal layout (Bottom view)													
mm inch													
• Standards			UL, CSA, *TÜV		UL, CSA, *TÜV								
• Mounting method													

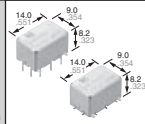
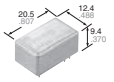
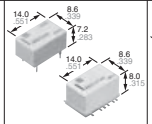
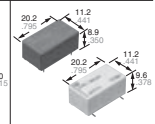
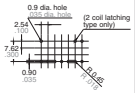
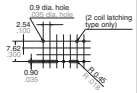
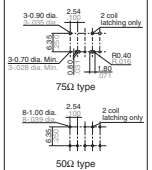
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting
* Normal part number is taken UL, CSA standards. About TÜV standard, please inquire.

Notes:

			I/O Relays			
			Phototransistor			
			—	—	Zero-cross	—
			AC Input modules	DC Input modules	AC Output modules	DC Output modules
• Types of relay						
mm inch						
• Load side	Load voltage	AC	—	—	75 to 125 V 75 to 250 V	—
		DC	4 to 15 V 10 to 32 V		—	3 to 60 V 10 to 200 V
	Max. load current					
	Off state leakage current, max.		100 μA		5 mA	1 mA
	Non-repetitive surge current		—	—	30 A	5 A (1 s)
• Input side	Input voltage		80 to 140 V AC	160 to 280 V AC	3 to 32 V DC	3 to 15, 4 to 15, 10 to 32 V DC
	Input impedance, approx.		—	—	—	1.6, 1.7, 5.6 kΩ
	Pick-up voltage, max.		80 V AC	160 V AC	3 V	3 V (4 V)
	Drop-out voltage, min.		10 V AC	20 V AC	0.8 V	0.8 V
• Operate time, max.			20 ms		5 ms	1/2 cycle of voltage sine wave+1 ms	0.5 ms
• Release time, max.			20 ms		5 ms	1/2 cycle of voltage sine wave+1 ms	2 ms
• Breakdown voltage			4,000 V AC			4,000 V AC	
• Ambient temperature			–30°C to +80°C –22°F to +176°F			–30°C to +80°C –22°F to +176°F	
• Snubber circuit integrated			—			●	—
• LED operation indicator			● (optional)			● (optional)	
• Terminal layout (Bottom view)							
mm inch							
• Standards			UL, CSA			UL, CSA	
• Mounting method							

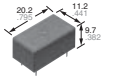
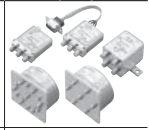
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

• Products		8GHz microwave RJ RELAY (ARJ)	3GHz microwave RX-P RELAY (ARXP)	3GHz microwave RX RELAY (ARX)	3GHz microwave RS RELAY (ARS)	2.6GHz microwave RE RELAY (ARE)
• Type of relay mm inch						
• Features		• Excellent high frequency characteristics (50Ω, at 5GHz) • Surface mount terminal • Small size	• 3GHz Microwave relay with 60W carrying power	• Insertion loss; Max.0.2dB (2.5GHz) • Isolation Min. 60dB (2.5GHz) • V.S.W.R.; Max. 1.2 (2.5GHz)	• 3GHz Microwave relays miniature size line up includes 50/75Ω type	• Small microwave relay (2.6GHz) • 50Ω, 75Ω
• Sealed types availability		—	●	●	●	●
• Latching types availability		●	●	●	●	
• Contact material (Optional material)		Gold plating	Stationary: Gold plating Movable: Gold clad (twin)	Stationary: Gold plating Movable: Gold clad (twin)	Gold plating (twin)	Gold plating (twin)
• Contact rating chart Maximum (cos φ = 1) 70 A 60 A 50 A 40 A 30 A 20 A 10 A Minimum (For Reference)		Contact input power: 1W (at 5GHz)	Contact input power: 60W (at 2.5GHz)	Contact input power: 20W (at 2.5GHz)	Contact input power: 10W (at 3GHz)	Contact input power: 10W (at 2.6GHz)
• Max. switching voltage		30V DC	30V DC	30V DC	30V DC	30V DC
• Contact arrangement		2 Form C (DPDT)	1 Form C	1 Form C	1 Form C	1 Form C
• Life (Min. operation)	Electrical	10^6	10^4	10^5	3×10^5 (75Ω) 10^5 (50Ω)	3×10^5
	Mechanical	10^7	10^4	5×10^6	5×10^6	10^6
• Breakdown voltage	Between open contacts	500Vrms	500Vrms	500Vrms	500Vrms	500Vrms
	Between contacts sets	500Vrms	—	—	—	—
	Between contacts and coil	500Vrms	1,000Vrms	1,000Vrms	1,000Vrms	1,000Vrms
	Between live parts and ground	500Vrms	500Vrms	500Vrms	500Vrms	500Vrms
• Surge withstand voltage		—	—	—	—	—
• Coil voltage		(DC) 3, 4.5, 12, 24V	(DC) 3, 4.5, 6, 9, 12, 24V	(DC) 3, 4.5, 6, 9, 12, 24V	(DC) 3, 4.5, 9, 12, 24V	(DC) 3, 4.5, 6, 9, 12, 24V
• Nominal operating power		200mW	(Single) 200mW (–L) 200mW (–L2) 400mW	(Single) 200mW (–L) 200mW (–L2) 400mW	(Single) 200mW (–L) 200mW (–L2) 400mW	200mW
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch		—			 75Ω type 50Ω type	
• Standards		—	—	—	—	—
• Mounting method						

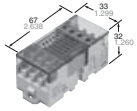
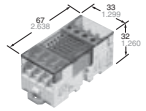
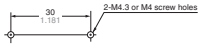
Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

Notes:

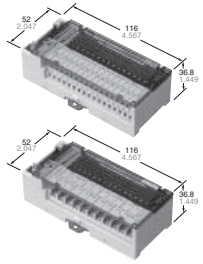
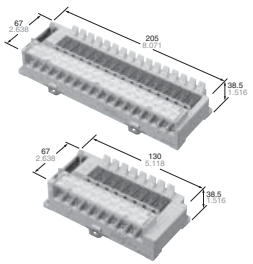
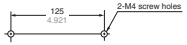
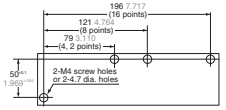
• Products		1.5GHz microwave RK RELAY (ARK)	1GHz microwave RA RELAY (ARA)	1.8GHz microwave RP RELAY	Coaxial switch RD Coaxial Switch (ARD)
• Type of relay mm inch					
• Features		• Isolation Min. 60dB (1.5GHz) • Insertion loss Max. 0.2dB (900MHz)(75Ω) • V.S.W.R. Max. 1.2 (900MHz)(75Ω)	• Insertion loss; Max. 0.3dB (1GHz) • Isolation; Min. 20dB (1GHz) (Between open contacts) Min. 30dB (1GHz) (Between contact sets) • V.S.W.R.; Max. 1.2 (1GHz)	• High frequency with the low profile of 4mm .157inch • High sensitivity • Isolation; Min. 10dB (1.8GHz)	• High power control • Small size • 18GHz, 26.5GHz
• Sealed types availability		●	●	●	
• Latching types availability		●	●		●
• Contact material (Optional material)		Stationary: Gold plating Movable: Gold clad (twin)	Stationary: AgPd + Au clad Movable: AgPd (twin)	Stationary: Ag + Au clad Movable: AgPd (twin)	Gold plating
• Contact rating chart Maximum (cos φ = 1) 15 A 10 A 8 A 5 A 3 A 2 A 1 A Minimum (For Reference)		Contact input power: 10W (at 1.2GHz)	Contact input power: 3W (at 1GHz)	Contact input power: 3W (at 1.2GHz)	Contact input power: 120W (at 3GHz)
• Max. switching voltage		30V DC	30V DC	30V DC	30V 100mA (indicator)
• Contact arrangement		1 Form C	2 Form C	1 Form C	SPDT, Transfer, SP6T
• Life (Min. operation)	Electrical	3×10^5	10^7	10^5	5×10^6 (SPDT, Transfer, SP6T)
	Mechanical	5×10^6	10^8	5×10^6	5×10^6 (SPDT, Transfer, SP6T)
• Breakdown voltage	Between open contacts	500Vrms	750Vrms	750Vrms	500Vrms
	Between contacts sets	—	1,000Vrms	—	—
	Between contacts and coil	1,000Vrms	1,000Vrms	1,500Vrms	500Vrms
	Between live parts and ground	500Vrms	1,000Vrms	—	500Vrms
• Surge withstand voltage		—	—	—	—
• Coil voltage		(DC) 3, 4.5, 5, 6, 9, 12, 24V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48V	(DC) 1.5, 3, 4.5, 5, 6, 9, 12, 24V	(DC) 4.5 (Single side stable only), 5 (TTL-drive type only), 12, 24V
• Nominal operating power		(Single) 200mW (–L) 200mW (–L2) 400mW	140mW (1.5 to 12V) 200mW (24V) 300mW (48V)	140mW (1.5 to 12 V) 270mW (24 V)	(SPDT, SP6T) 840mW (Transfer) 1,540mW * Failsafe type 4.5, 12V DC
• Terminal layout (Bottom View) •: coil terminal (.100 inch grid) mm inch		 Single side stable 1 coil latching	—		—
• Standards		—	—	—	—
• Mounting method					

Note: Meaning of symbol marks : PC board terminal; :Plug-in; : Top-mounting; : Top-mounting with PC board terminals; : Surface-mounting

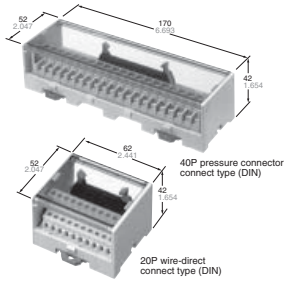
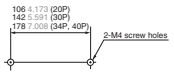
Notes:

• Products			Interface Terminal					
			RT-3 UNIT RELAY (Power PhotoMOS type)		RT-3 UNIT RELAY (PA Relay type)		4 point terminal	
• Types (mm inch)								
• Features			• Slim, Space-saving, 4-point Unit Relay		• Slim, Space-saving, 4-point Unit Relay		• Possible to select relay for use in interface in accordance with load [Possible relays: PA relay and Power PhotoMOS (voltage sensitive type)]	
• I/O points			4 points		4 points		4 points	
• Contact rating		Recommended voltage	AQZ102 type: 0 to 30V DC AQZ204 type: 0 to 200V DC, 0 to 125V AC	Rated control capacity (resistive load)	3A 250V AC 3A 30V DC	PA relay	Rated control capacity (resistive load)	3A 250V AC, 3A 30V DC
		Continuous load current	AQZ102 type: 2A (DC) AQZ204 type: 0.3A (DC, AC peak value)			PhotoMOS	Continuous load current	AQZ102D type: 1.8A, AQZ202D type: 1.35A AQZ105D type: 1.15A, AQZ205D type: 0.9A AQZ107D type: 0.55A, AQZ207D type: 0.45A AQZ104D type: 0.3A, AQZ204D type: 0.225A
		Peak load current (100ms 1shot)	AQZ102 type: 9A AQZ204 type: 1.5A	Min. switching capacity (ref. value)	100mV 100μA		Peak load current (100ms 1shot)	AQZ102D type: 9A, AQZ202D type: 9A AQZ105D type: 6A, AQZ205D type: 6A AQZ107D type: 3A, AQZ207D type: 3A AQZ104D type: 1.5A, AQZ204D type: 1.5A
• Life (Min. operation)	Mechanical		—		2×10^7	PA relay		2×10^7
						PhotoMOS		—
	Electrical (resistive load)		—		3A 250V AC : 3×10^4 3A 30V DC : 3×10^4 2A 250V AC : 10^5 2A 30V DC : 10^5	PA relay		3A 250V AC, 3A 30V DC: 3×10^4 2A 250V AC, 2A 30V DC: 10^5
						PhotoMOS		—
• Rated input voltage			12, 24V DC		12, 24V DC		12, 24V DC	
• Breakdown voltage	Between input and output		2,000Vrms for 1 min.		2,000Vrms for 1 min.		2,000Vrms for 1 min.	
	Between different terminals (between relays, both ways)		1,500Vrms for 1 min.		1,500Vrms for 1 min.		1,500Vrms for 1 min.	
	Between contacts	Max. load voltage	AQZ102 type: 60V (DC) AQZ204 type: 400V (DC, AC peak value)		1,000Vrms for 1 min.	PA relay		1,000Vrms for 1 min.
						PhotoMOS		AQZ102D type: 60V (DC) AQZ202D type: 60V (AC/DC) AQZ105D type: 100V (DC) AQZ205D type: 100V (AC/DC) AQZ107D type: 200V (DC) AQZ207D type: 200V (AC/DC) AQZ104D type: 400V (DC) AQZ204D type: 400V (AC/DC)
• Ambient temperature			–20°C to +55°C –4°F to +131°F		–20°C to +55°C –4°F to +131°F		–20°C to +55°C –4°F to +131°F	
• Terminal layout (Bottom View) (mm inch)								
• Option			Power PhotoMOS Relays internal varister type, Power PhotoMOS Relays 1b type, short circuit plate		Power PhotoMOS Relays voltage sensitive type, short circuit plate		PA Relay, Power PhotoMOS Relays voltage sensitive type, short circuit plate	

Notes:

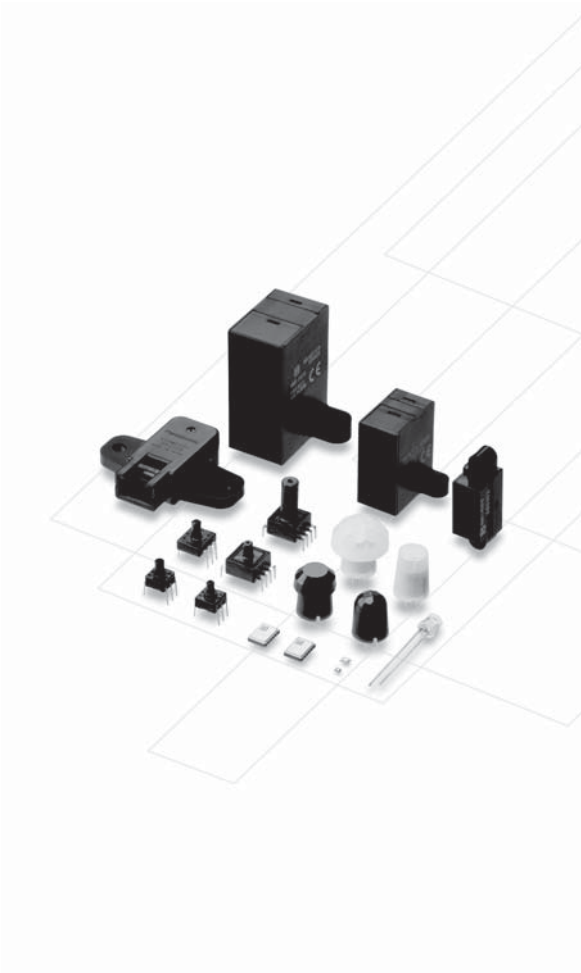
• Products		Interface Terminal			
		RT-2 RELAY TERMINAL		RT-1 PC RELAY TERMINAL RT-1 PC TERMINAL	
• Types (mm inch)					
• Features		• Palm-sized, 16-channel Relay Terminals		• Wide variation relay terminal	
• I/O type		Input device	Output device	Input device	Output device
• I/O points		16 points	16 points	16, 8, 4 points	16, 8, 4, 2 points
• Rating	Nominal switching capacity (resistive)	2A 250V AC, 2A 30V DC		5A 250V AC, 5A 30V DC	
	Min. switching capacity (ref. value)	100mV 100μA		100mV 100μA	
• Expected life (Min. operation)	Mechanical	2×10^7		10^6	
	Electrical (resistive load)	1A 250V AC: 3×10^5 2A 250V AC: 10^5	1A 30V DC: 3×10^5 2A 30V DC: 10^5	5A 250V AC: 10^5	5A 30V DC: 10^5
• Rated input voltage		12, 24V DC		12, 24V DC	
• Breakdown voltage	Between connector terminals	2,000Vrms for 1 min. (excluding battery)		2,000Vrms for 1 min. (excluding battery)	
	Between unlike poles on the terminals	1,500Vrms for 1 min.		1,500Vrms for 1 min.	
	Between connector unlike poles (for input)	—	—	250Vrms for 1 min.	
	Between like poles on the terminals (for output)	—	1,000Vrms for 1 min.	1,000Vrms for 1 min.	
• Ambient temperature		0°C to +55°C +32°F to +131°F		0°C to +55°C +32°F to +131°F	
• Terminal layout (Bottom View) (mm inch)		 DIN rail mounting type and direct mounting type		 2 way type of DIN rail mounting and direct mounting are available	
• Option		Power PhotoMOS Relays voltage sensitive type, various cables		AQ-C Solid State Relays, jumper relay, short circuit plate, various cables	

Notes:

• Products	Interface Terminal CT-2 CONNECTOR TERMINAL
• Types mm inch	
• Features	• Connector terminal for PLCs, PCs and various controllers
• No. of poles	20P, 30P, 34P, 40P
• Rated voltage	125V AC
• Rated current	1A
• Breakdown voltage	250Vrms for 1 min.
• Insulation resistance	100MΩ (at 500V DC megger)
• Fasten torque	Pressure connector connect type: 0.3 to 0.5 N·m {3 to 5 kgf·cm} Wire-direct connect type: 0.2 to 0.4 N·m {2 to 4 kgf·cm}
• Ambient temperature	0°C to +55°C +32°F to +131°F
• Terminal layout (Bottom View) mm inch	 Direct mounting type DIN rail mounting, and direct mounting type available
• Option	Various cables

Notes:

SENSORS



Current / Range	Digital				Analog
	1μA *Sleep Mode*	2μA	6μA	170μA	170μA
2M				 11.9mm ø 15.2mm (H) Slight motion	 11.9mm ø 15.2mm (H) Slight motion
3m	**A**  3mm ø 6mm (H)	**A**  3mm ø 6mm (H)	**A**  3mm ø 6mm (H)		
5m				 9.5 mm ø 14.5mm (H) Standard	 9.5 mm ø 14.5mm (H) Standard
	A  9.7mm ø 10.1mm (H)	**A**  9.7mm ø 10.1mm (H)	**A**  9.7mm ø 10.1mm (H)	 8.9 mm ø 15.1 (H) Spot	 8.9 mm ø 15.1(H) Spot
	B  9.5mm ø 14.4 mm(H)	**B**  9.5mm ø 14.4 mm(H)	**B**  9.5mm ø 14.4 mm(H)	**C**  9.5mm ø 14.4 mm(H) Standard	**B**  9.5mm ø 14.4 mm(H) Standard
10m				 18.5mm ø 17.4mm (H)	 18.5mm ø 17.4mm (H)
12m	**B**  20.7mm ø 15.9mm (H)	**B**  20.7mm ø 15.9 mm (H)	**B**  20.7mm ø 15.9mm (H)	**C**  20.7mm ø 15.9mm (H)	**B**  20.7mm ø 15.9mm (H)

PaPIRs			NaPiOn
EKM **A**: **A** • Lowest Profile • Silicon Lens w/ 3mm Aperture • Polyethylene Lens w/ Smooth Surface • Low Current: (1, 2, 6μA)	EKM **B**: **B** • Standard Profile • Polyethylene Lens Only w/ Smooth Surface • Low Current: (1, 2, 6μA)	EKM **C**: **C** • Standard Profile • Polyethylene Lens Only w/ Smooth Surface • Current: (170μA)	AMN: • Standard Profile • Polyethylene Lens • Current: (170μA) • Spot detection w/ small angle opening (option)

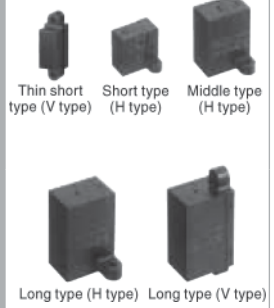
Acceleration Sensor

Product	Detection Range	Characteristics
GS2: 2-Axis 	+2g ±1.5g	High precision and high sensitivity High reliability: Detection errors due to temperature fluctuation reduced to a minimum Product lineup covers range of operating voltage and acceleration detection
GS1: 1-Axis 		

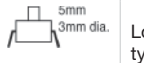
Light Sensor

Product	Peak Sensitivity Wave Length	Characteristics
NaPiCa  Chip SMD Through-hole	580nm 560nm (Chip)	Cadmium-free Built-in optical filter for spectral response similar to the human eye Photocurrent is proportional to illumination (linear output) Chip style is miniaturized

Motion Sensor

Product	Detection Method	Type		Features
MA Motion Sensor  Thin short type (V type) Short type (H type) Middle type (H type) Long type (H type) Long type (V type)	Detecting the presence of a human body (or other object) by the reflected beam of LED light from the sensor.	Built-In Oscillation Circuit	Detection Distance: 5 ~ 200 cm 1.969 ~ 78.74 inch	Sensors are ready for immediate use by connecting to a DC power supply The built-in oscillation circuit removes the need for a start signal Can be used w/ different supply voltages • 5V DC type • Free-range: 6.5 ~ 27VDC
		External Trigger	Detection Distance: 5 ~ 200 cm 1.969 ~ 78.74 inch	Sensors can be used in adjacent positions & can save energy. Can be used w/ different supply voltages • 5V DC type • Free-range: 6.5 ~ 27VDC

Pressure Sensors

Product	Pressure Medium	Type		Terminal Direction	Press Inlet Hole Length	Characteristics
PS-A 	Air	Rated Pressure: ±100, –100, 25, 50, 100, 200, 500, 1,000 *40kPa		Opposite the pressure inlet direction 	3mm  5mm 	Compact pressure sensor with built-in amplification and temperature compensation circuit
		Low pressure: 6kPa			5mm 3mm dia.  13.5mm 5.45mm dia. 	Low pressure type ideal for water level detection applications
PS-A  Direct Water Pressure Detection	Air Water	–19.6 to 49kPa		8mm 6mm dia. 		Not only air, now water pressure can be detected directly
PS 	Air	Rated Pressure: 4.9, 14.7, 34.3, *49.0, 98.1, 196.1, 343.2, 490.3, 833.6, 980.7 kPa	Bridge Resistance: 5kΩ	Opposite the pressure inlet direction 	—	Ultra-miniature Base area 7.2 (W) x 7.2 (D) mm .283 (W) x .283 (D) inch A wide range of rated pressure, including a minute pressure
PF 		*40kPa 98.1, 980.7kPa (PS only)	3.3kΩ			

Parameter		Value
Part Number		EKL-3104
Operating Range		1.2m ~ 9.0m 3.94ft ~ 29.53ft
Field of View	Horizontal	60°
	Vertical	44°
Pixel Array Size	Horizontal	160 Pixels
	Vertical	120 Pixels
Frame Rate		30 FPS (frames/sec)
Range Resolution		1. σ = 3cm (1.18in.) (max.) (Ambient Illumination: 0lx) 2. σ = 14cm (5.51in.) (max.) (Ambient Illumination: 20,000lx)
Absolute Accuracy		±4cm (±1.57in.) (Ambient Illumination: 0lx)
Modulation Frequency		3 Modes
Operating Ambient Illumination		20,000lx or less (sunlight)
Output Type	Range Data	11 bit
	Image Data	8 bit
Connector		Mini USB 2.0 *
Dimensions		D-IMager 

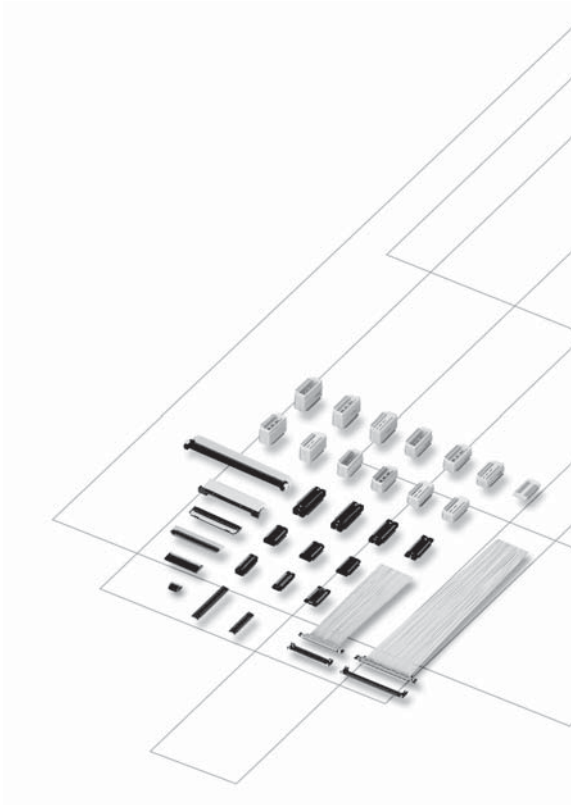
The D-IMager does not include application specific software.
AC Adapter and Mini-USB 2.0 Cable are NOT included.

Minimum System Requirements:
- Microsoft Windows XP
- CPU: Pentium 4 or M 1GHz
- USB 2.0 Standard Connector
- Device Driver: Dimagerusb.SYS

Available Documentation:
- Display Software User Manual
- User Manual
- Instructions for Dimagerdll.dll

Notes:

CONNECTORS

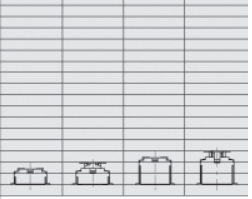


Series	0.35 mm pitch series		
Types	Connector for board-to-FPC		Connector for board-to-FPC/board-to-board
Product name	A35S	F35S	P35S
Part No.	**Socket: AXE7*** **Header: AXE8***	**Socket: AXT7*** **Header: AXT8***	**Socket: AXT1*** **Header: AXT2***
Shape			
Features	●Ultra-small type (width: 2.5 mm, Terminal pitch: 0.35 mm and Mated height: 0.8 mm) ●The world's first* low-profile connector with up to 120 contacts ●Strong resistance to various environments TOUGH CONTACT ADVANCED construction	●Space-saving design (width: 3.4 mm, Terminal pitch: 0.35 mm and Mated height: 1.0 mm) ●Strong resistance to various environments TOUGH CONTACT construction	●1.5 mm low-profile mated height Narrower pitch version of P4S Narrow-Pitch Connectors ●Strong resistance to various environments TOUGH CONTACT construction ●Pattern wiring possible on PC board below connectors ●Connectors for inspection are also available
Terminal pitch	0.35mm	0.35mm	0.4mm
Mated height	0.8mm	1.0mm	1.5mm
Dimensions (short width) (Include terminal)	Socket: 2.5mm Header: 2.0mm	Socket: 3.4mm Header: 2.6mm	Socket: 3.6mm Header: 2.35mm
No. of contacts 100	100 120		100
90			90
80		80	80
70		70	70
60	60	60	60
50	50	50	50 52
40		40	40
30	34		30 32 34 36 38
20			20 22 24 26 28
10			
Rated current	0.25A/contact (Max.4 A at total contacts)	0.25A/contact (Max.4 A at total contacts)	0.25A/contact (Max.4 A at total contacts)
Rated voltage	AC,DC 60V	AC,DC 60V	AC,DC 60V
Ambient temperature	–55°C to +85°C	–55°C to +85°C	–55°C to +85°C
Insertion and removal life	30 times	50 times	50 times
Terminal shape	SMD	SMD	SMD
RoHS directive	Compliance	Compliance	Compliance

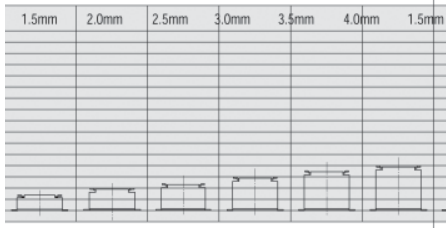
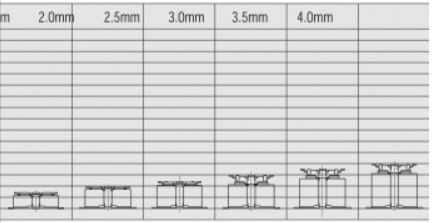
Notes:

0.4 mm pitch series			
Connector for board-to-FPC			
A4US	**A4S**		**A4F**
Socket: AXE1✻✻✻ **Header: AXE2✻✻✻**	**Socket: AXE5✻✻✻** **Header: AXE6✻✻✻**		**Socket: AXE3✻✻✻** **Header: AXE4✻✻✻**
			
●The ultra-slim size (2.2 mm in width) contributes to space saving design. (The footprint is down 12% from A4S, an existing model) ●Strong resistance to various environments ***TOUGH CONTACT ADVANCED*** construction ●The ultra-slim body has a sufficient suction face. (Sockets: 0.6 mm, Headers: 0.7mm)	●Ultra-slim connectors (width: 2.5 mm) ●Mated heights of 0.8 and 1.0 mm are available for the same foot pattern ●Strong resistance to various environments ***TOUGH CONTACT ADVANCED*** construction ●Connectors for inspection are also available		●Ultra-low profile connectors (Mated height: 0.6 mm) ●Strong resistance to various environments ***TOUGH CONTACT ADVANCED*** construction ●Connectors for inspection are also available
0.4mm	0.4mm		0.4mm
0.8mm	0.8mm	1.0mm	0.6mm
			
Socket: 2.2mm Header: 1.8mm	Socket: 2.5mm Header: 2.0mm		Socket: 3.0mm Header: 2.4mm
80	80	80	80
	70	70	70
60	60 64	60	60 64
50	50 54	50 54	50 54
40	40 44	40	40 42 44
30 36	30 32 34 36 38	30	30 32 34 36 38
20 24	20 22 24 26 28	20 24 26	20 22 24 26 28
10 14	10 12 14 16 18	10 12 14	10 12 14 16
0.3A/contact (Max.5 A at total contacts)	0.3A/contact (Max.5 A at total contacts)		0.3A/contact (Max.5 A at total contacts)
AC,DC 60V	AC,DC 60V		AC,DC 60V
–55°C to +85°C	–55°C to +85°C		–55°C to +85°C
30 times	30 times		30 times
SMD	SMD		SMD
Compliance	Compliance		Compliance

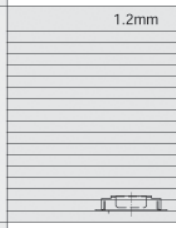
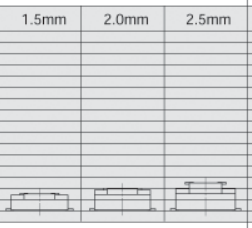
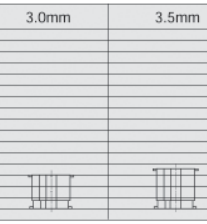
Notes:

Series	0.4 mm pitch series							
Types	Connector for board-to-FPC				Connector for board-to-FPC/board-to-board			
Product name	**F4S**		**F4**		**P4S**			
Part No.	**Socket: AXT5✻✻✻** **Header: AXT6✻✻✻**		**Socket: AXK7L✻✻✻** **Header: AXK8L✻✻✻**		**Socket: AXT3✻✻✻** **Header: AXT4✻✻✻**			
Shape								
Features	●Low-profile connectors that form a board-to FPC connection with 1.0 mm and 1.2 mm mated height ●Strong resistance to various environments ***TOUGH CONTACT*** construction ●Connectors for inspection are also available		●Low-profile connectors that form a board-to FPC connection with 0.9 mm mated height ●Strong resistance to various environments ***TOUGH CONTACT*** construction ●Pattern wiring possible on PC board below connectors ●Connectors for inspection are also available		●1.5 mm, 2.0 mm, 2.5 mm and 3.0 mm low-profile mated height P4 Narrow-Pitch Connectors now even slimmer ●Strong resistance to various environments ***TOUGH CONTACT*** construction ●Pattern wiring possible on PC board below connectors ●Connectors for inspection are also available			
Terminal pitch	0.4mm		0.4mm		0.4mm			
Mated height	1.0mm	1.2mm	0.9mm		1.5mm	2.0mm	2.5mm	3.0mm
								
Dimensions (short width) (Include terminal)	Socket: 3.6mm Header: 2.6mm		Socket: 5.0mm Header: 4.1mm		Socket: 3.6mm Header: 2.35mm			
No. of contacts 100					100	100	100	100 120
90					90	90		
80	80	80	80		80		80	80
70	70	70	70		70			
60	60 64		60 66		60 64		60	60
50	50 54	50	50 54		50 54 56		56	56
40	40 42 44 46 48	40	40 44 48		40 44 46	40	40	42
30	30 32 34 36 38	30	30 32 34 36 38		30 32 34 36 38		30	30
20	20 22 24 26 28		20 22 24 26 28		20 22 24 26 28		20	20
10	10 12 14 16 18	10	10 12 16 18		10 16			
Rated current	0.3A/contact (Max.5 A at total contacts)		0.3A/contact (Max.5 A at total contacts)		0.3A/contact (Max.5 A at total contacts)			
Rated voltage	AC,DC 60V		AC,DC 60V		AC,DC 60V			
Ambient temperature	–55°C to +85°C		–55°C to +85°C		–55°C to +85°C			
Insertion and removal life	50 times		50 times		50 times			
Terminal shape	SMD		SMD		SMD			
RoHS directive	Compliance		Compliance		Compliance			

Notes:

0.4 mm pitch series	
Connector for board-to-FPC/board-to-board	
P4 (Without soldering terminal)	**P4 (With soldering terminal)**
Socket: AXK7✻✻✻ **Header: AXK8✻✻✻**	**Socket: AXK7✻✻✻** **Header: AXK8✻✻✻**
	
●1.5 mm, 2.0mm, 2.5 mm, 3.0 mm, 3.5 mm and 4.0 mm low-profile mated height ●Strong resistance to various environments TOUGH CONTACT construction ●Pattern wiring possible on PC board below connectors ●Connectors for inspection are also available	●1.5 mm, 2.0mm, 2.5 mm, 3.0 mm, 3.5 mm and 4.0 mm low-profile mated height ●Strong resistance to various environments TOUGH CONTACT construction ●Pattern wiring possible on PC board below connectors ●Connectors for inspection are also available ●With soldering terminals for improved mountability.
0.4mm	0.4mm
1.5mm 2.0mm 2.5mm 3.0mm 3.5mm 4.0mm	1.5mm 2.0mm 2.5mm 3.0mm 3.5mm 4.0mm
	
Socket: 5.1mm Header: 3.96mm	Socket: 5.1mm Header: 3.96mm
100 100 100 100 90 90 80 80 80 80 80 80 70 70 70 70 70 60, 64 60 60 60 60 60 60 60 60 60 50, 54 50, 54 50 50 50 50 50 50 50 50 40, 42, 44 40 40, 44 40 40 40 40 40 40 42 30, 34, 36 30, 34, 38 30, 34 30 30 30 36 30 34 20, 22, 24, 26, 28 20, 24, 26 20, 24 20, 24 20 24 20, 22, 24, 28 20, 24 20, 28 20 20 14 16 14 14 10 12 12	
0.3A/contact (Max.5 A at total contacts)	
AC,DC 60V	
–55°C to +85°C	
50 times	
SMD	
Compliance	

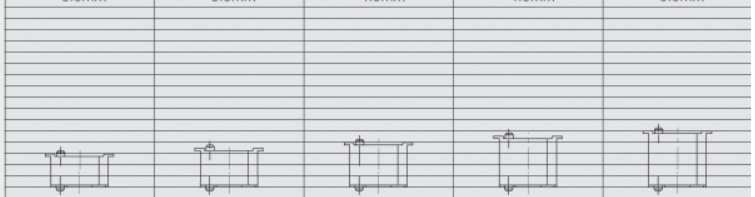
Notes:

Series	0.5 mm pitch series		
Types	Connector for board-to-FPC/board-to-board		Connector for board-to-board
Product name	**P5KL**	**P5KF**	**P5K**
Part No.	**Socket: AXK5L✻✻✻** **Header: AXK6L✻✻✻**	**Socket: AXK5F✻✻✻** **Header: AXK6F✻✻✻**	**Socket: AXK5✻✻✻** **Header: AXK6✻✻✻**
Shape			
Features	●Low-profile connectors that connection with 1.2 mm mated height ●Strong resistance to various TOUGH CONTACT construction ●Pattern wiring possible on PC board below connectors	●The mated height is the low-profile 1.5 mm and includes 2.0 mm and 2.5 mm ●Strong resistance to various TOUGH CONTACT construction ●Pattern wiring possible on PC board below connectors ●Connectors for inspection are	●The mated heights are 3.0 mm, 3.5 mm ●Strong resistance to various environments TOUGH CONTACT construction
Terminal pitch	0.5mm	0.5mm	0.5mm
Mated height	1.2mm	1.5mm 2.0mm 2.5mm	3.0mm 3.5mm
			
Dimensions (short width) (Include terminal)	Socket: 5.8mm Header: 3.3mm	Socket: 5.8mm Header: 3.3mm	Socket: 5.8mm Header: 4.6mm
No. of contacts 100		100	100 100, 120 100, 120
90			
80		80	80 80 80
70		70	70 70 70
60	60	60	60 60 60
50	50	50	50 50 50
40	40 46	40	40 44 40 40
30	30 34	30, 32, 34	30, 34 30 34 36 30 30 34
20	20 24	20, 22, 24, 26	20, 22, 24, 26 20, 22, 24 20, 22 20, 22
10	10 12	10 12 14 16 18	10 12 14 16
Rated current	0.5A/contact (Max.10 A at total contacts)	0.5A/contact (Max.10 A at total contacts)	0.5A/contact (Max.10 A at total contacts)
Rated voltage	AC,DC 60V	AC,DC 60V	AC,DC 60V
Ambient temperature	–55°C to +85°C	–55°C to +85°C	–55°C to +85°C
Insertion and removal life	50 times	50 times	50 times
Terminal shape	SMD	SMD	SMD
RoHS directive	Compliance	Compliance	Compliance

Notes:

Connector for board-to-board	
P5KS	**Floating type P5**
Socket: AXK5S✻✻✻ **Header: AXK6S✻✻✻**	**Socket: AXN5✻✻✻** **Header: AXN6✻✻✻**
	
●The mated heights are 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 7.0 mm, 8.0 mm, and 9.0 mm ●Strong resistance to various environments TOUGH CONTACT construction	●The mated height is 5.0 mm ●Can absorb a maximum deviation of 0.3 mm in mounting when two sets of connectors are used
0.5mm	0.5mm
4.0mm / 4.5mm / 5.0mm / 5.5mm / 6.0mm / 6.5mm / 7.0mm / 8.0mm / 9.0mm	5.0mm
	
Socket: 5.4mm Header: 5.0mm	Socket: 4.4mm Header: 6.8mm
100 120 160 / 100 120 160 / 100 / 100 / 100 / 100 130 / 100 / 100 / 100	100
80 / 80 / 80 / 80 / 80 / 80 / 80 / 80 / 80	80
70 / 70 / 70 / 70 / 70 / 70 / 70 / 70 / 70	
60 / 60 / 60 / 60 / 60 / 60 / 60 / 60 / 60	60
50 / 50 / 50 / 50 / 50 / 50 / 50 / 50 / 50	50
40 / 40 / 40 / 40 / 40 / 40 / 40 / 40 / 40	40
30 34 / 30 34 36 / 30 34 / 30 34 / 30 / 30 / 30 / 30 / 30	30
20 24 / 20 24 / 20 24 / 20 24 / 20 / 20 / 20 / 20 / 20	20
0.5A/contact (Max.16 A at total contacts)	0.2A
AC,DC 60V	AC,DC 60V
–55°C to +85°C	–55°C to +85°C
50 times	20 times
SMD	SMD
Compliance	Compliance

Notes:

Series	0.8 mm pitch series				
Types	Connector for board-to-board				
Product name	**P8**				
Part No.	**Socket: AXN3✻✻✻** **Header: AXN4✻✻✻**				
Shape					
Features	●The mated heights are 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 7.0 mm, 8.0 mm, 11.5 mm, 13 mm, and 14 mm ●Bellows type contact structure resist vibration and impact				
Terminal pitch	0.8mm				
Mated height	3.0mm	3.5mm	4.0mm	4.5mm	5.0mm
					
Dimensions (short width) (Include terminal)	Socket: 5.88mm, Header: 6.83mm				
No. of contacts 100	100		100		100
90					
80	80		80		80
70					
60	60	60	60	60	60
50	50		50		50
40	40		40		40
30	30	30	30	30	30
20	20 24 26	24 26	20 26	26	20 24 26
10	16	16	16	16	12 14
Rated current	0.5A/contact				
Rated voltage	AC,DC 60V				
Ambient temperature	–55°C to +85°C				
Insertion and removal life	50 times				
Terminal shape	SMD				
RoHS directive	Compliance				

Notes:

0.8 mm pitch series
Connector for board-to-board
P8
Socket: AXN3∗∗∗ **Header: AXN4∗∗∗** **Socket, Header: AXN1∗∗∗ (Mated height 11.5mm)**

●The mated heights are 3.0 mm, 3.5 mm, 4.0 mm, 4.5 mm, 5.0 mm, 5.5 mm, 6.0 mm, 7.0 mm, 8.0 mm, 11.5 mm, 13 mm, and 14 mm ●Bellows type contact structure resist vibration and impact ●For the 11.5 mm type, the socket and header have the same shape

0.8mm

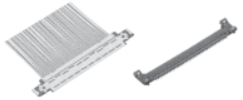
5.5mm	6.0mm	7.0mm	8.0mm	11.5mm	13mm	14mm
						

Socket: 5.88mm, Header: 6.83mm
(9.0 mm socket and header is mated height 11.5 mm type only)

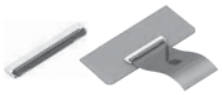
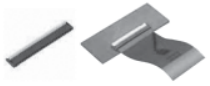
	100	100	100	100		
	80	80	80	80	80	
60	60, 64	60	60		60	
	50	50	50	50	50	
	40	40	40	40	40	
30	30	30	30, 34	30	30	
24, 26	20, 24, 26	20, 22, 26	20, 22, 24, 26		20	20
12						

0.5A/contact
AC,DC 60V
–55°C to +85°C
50 times (100 times is mated height 11.5mm type only)
SMD
Compliance

Notes:

Series	Micro coaxial C series	
Types	Connector for board-to-micro coaxial wire	
Product name	**Micro coaxial connector CS**	**Micro coaxial connector CF**
Part No.	**Receptacle: AXC51S∗** **Plug: AXC61S∗** **Cover shell: AXC81S∗**	**Receptacle: AXC51F∗** **Plug: AXC61F∗** **Cover shell: AXC81F∗**
Shape		
Features	●The 0.25-mm cable pitch reduces the required space. ●TOUGH CONTACT ADVANCED provides high contact reliability and tactile feedback.	●Ultra low profile (mated height: 0.8mm) ●TOUGH CONTACT ADVANCED provides high contact reliability and tactile feedback.
Cable pitch	0.25mm	0.4mm
Terminal pitch	0.5mm	0.4mm
Mated height	1.27mm	0.8mm
Dimensions (short width) (Include terminal)	2.81mm	3.7mm
No. of contacts 100		
90		
80		
70		
60		
50	51	50
40	41	40
30		
20		
10		
Rated current	0.25A/contact	0.30A/contact
Rated voltage	AC,DC 50V	AC,DC 50V
Ambient temperature	–55°C to +85°C	–55°C to +85°C
Insertion and removal life	30 times	30 times
Terminal shape	SMD	SMD
RoHS directive	Compliance	Compliance

Notes:

Types	0.5mm pitch type		
Product name	Y3FT	Y3F	Y3B
Part No.	AYF31**15	AYF32**15	AYF33**35
Shape			
Features	●Low-profile, space-saving design (Pitch: 0.3 mm) ●Compatible with FPC with tabs, reliability is increased through secure connectibility ●Wiring patterns can be located underneath the connector	●Low-profile, space-saving design (3.0mm pitch) ●Compatible with FPC without tabs, allowing smooth FPC insertion ●Wiring patterns can be located underneath the connector	●Ultra slim and low profile design (Pitch: 0.3 mm) ●Mechanical design freedom achieved by top and bottom double contacts ●Wiring patterns can be located underneath the connector
Lock structure	Front lock 	Front lock 	Back lock 
Compatibility with FPC/FFC	FPC	FPC	FPC
Contact pitch	0.3mm	0.3mm	0.3mm
Terminal pitch	0.6mm	0.6mm	0.6mm
Contact structure	Bottom contact	Bottom contact	Top and bottom double contacts
Mounting height	0.9mm	0.9mm	0.9mm
Dimensions (short width)	3.2mm (Including lever) 3.0mm	3.2mm (Including lever) 3.0mm	3.15mm (Including lever) 2.95mm
No. of contacts 50	51	51	51
No. of contacts 40	41 45	41 45	45
No. of contacts 30	31 33 35 39	31 33 35 39	31 33 35 37 39
No. of contacts 20	23 25 27 29	23 25 27 29	21 23 25 27
No. of contacts 10	15 17	15 17	11 13 15 17
No. of contacts			7 8 9
Rated current	0.2A/contact	0.2A/contact	0.2A/contact
Rated voltage	50V AC/DC	50V AC/DC	50V AC/DC
Ambient temperature	–55°C to +85°C	–55°C to +85°C	–55°C to +85°C
Insertion and removal life	30 times	30 times	20 times
Terminal shape	SMD	SMD	SMD
RoHS directive	Compliance	Compliance	Compliance

Notes:

0.3mm pitch type				
Y5B	Y5BW	Y5S	Y5F	
AYF53**35	AYF53**65	AYF51**15	AYF52**15	
				
●Low profile, space saving back lock type with improved lever operability ●The lineup includes a type with a small number of contacts. ●Top and bottom double contacts structure ●Y5BW features advanced functionality		●A wide variety of digital equipments ●Slide lock structure ●Soldering terminals (Metal clips) resistant to twisting ●FPC/FFC (Au contact) are also available	●A wide variety of digital equipments ●Front lock structure ●Soldering terminals (Metal clips) resistant to twisting ●FPC/FFC (Au contact) are also available	
Back lock 		Slide lock 	Front lock 	
FPC/FFC	FPC	FPC/FFC	FPC/FFC	
0.5mm		0.5mm	0.5mm	
0.5mm		0.5mm	0.5mm	
Top and bottom double contacts		Bottom contact	Bottom contact	
1.0mm		1.9mm	2.0mm	
3.7mm (Including lever) 3.2mm		5.2mm (Including lever) 4.0mm	6.3mm (Including lever) 5.4mm	
50			50 54	
	48		40 45	
			34	
24 28	22 26	24	26 28	
10 12 14 16	10 12 14	15		
4 5 6 8	2 3 4 6 8			
0.5A/contact		0.5A/contact	0.5A/contact	
50V AC/DC		50V AC/DC	50V AC/DC	
–55°C to +85°C		–55°C to +85°C	–55°C to +85°C	
20 times		30 times	30 times	
SMD		SMD	SMD	
Compliance		Compliance	Compliance	

Notes:

Notes:

Notes:

Panasonic Electric Works Corporation of America

629 Central Avenue New Providence, NJ 07974
http://pewa.panasonic.com
1-800-276-6289

http://www.twitter.com/panasonicelec

http://www.youtube.com/panasonicelec

Panasonic ideas for life

XCP-RSCSELECTOR-0311