

Description

The ESD5ZXXV is an uni-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The ESD5ZXXV complies with the IEC 61000-4-2 (ESD) standard with $\pm 15\text{kV}$ air and $\pm 8\text{kV}$ contact discharge. It is assembled into an ultra-small SOD-523 lead-free package. The small size and high ESD surge protection make ESD5ZXXV an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

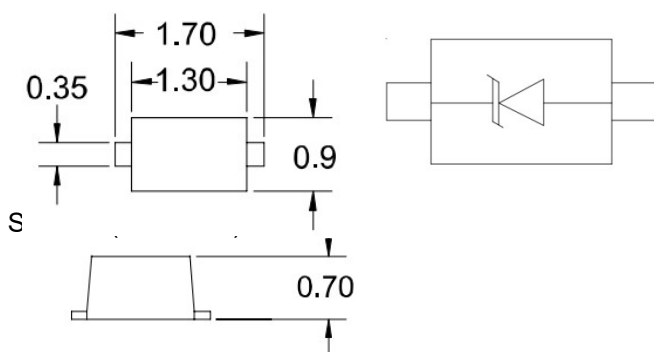
- Protects one data line
- Ultra low leakage: nA level
- Stand-off Voltage: 3.3 V ~36V
- Ultra low clamping voltage
- Response Time is Typically < 1ns
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test

Air discharge: $\pm 30\text{kV}$

Contact discharge: $\pm 30\text{kV}$

- RoHS Compliant

Dimensions & Symbol (Unit: mm Max)



Package Dimensions Circuit and Pin Schematic

Mechanical Characteristics

- Package: SOD-523
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

Marking Information



Bar denotes cathode

Details marking code reference customer approval list

Ordering Information

Part Number	Packaging	Reel Size
ESD5Z3V3	3000/Tape&Reel	7inch
ESD5Z5V	3000/Tape&Reel	7inch
ESD5Z7V	3000/Tape&Reel	7inch
ESD5Z12V	3000/Tape&Reel	7inch
ESD5Z24V	3000/Tape&Reel	7inch
ESD5Z36V	3000/Tape&Reel	7inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

ESD5Z3V3			
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	150	W
Peak Pulse Current(8/20μs)	Ipp	11	A
ESD per IEC 61000-4-2(Air)	VESD	±30	kV
ESD per IEC 61000-4-2(Contact)		±30	
Operating TemperatureRange	TJ	-55 to+125	°C
Storage TemperatureRange	Tstg	-55 to+150	°C
ESD5Z5V			
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	170	W
Peak Pulse Current(8/20μs)	Ipp	9.4	A
ESD per IEC 61000-4-2(Air)	VESD	±30	kV
ESD per IEC 61000-4-2(Contact)		±30	
Operating TemperatureRange	TJ	-55 to+125	°C
Storage TemperatureRange	Tstg	-55 to+150	°C
ESD5Z7V			
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	200	W
Peak Pulse Current(8/20μs)	Ipp	8.8	A
ESD per IEC 61000-4-2(Air)	VESD	±30	kV
ESD per IEC 61000-4-2(Contact)		±30	
Operating TemperatureRange	TJ	-55 to+125	°C
Storage TemperatureRange	Tstg	-55 to+150	°C

ESD5Z12V			
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	170	W
Peak Pulse Current(8/20μs)	Ipp	6	A
ESD per IEC 61000-4-2(Air)	VESD	±30	kV
ESD per IEC 61000-4-2(Contact)		±30	
Operating TemperatureRange	TJ	-55 to+125	°C
Storage TemperatureRange	Tstg	-55 to+150	°C
ESD5Z24V			
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	120	W
Peak Pulse Current(8/20μs)	Ipp	3	A
ESD per IEC 61000-4-2(Air)	VESD	±25	kV
ESD per IEC 61000-4-2(Contact)		±20	
Operating TemperatureRange	TJ	-55 to+125	°C
Storage TemperatureRange	Tstg	-55 to+150	°C
ESD5Z36V			
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	120	W
Peak Pulse Current(8/20μs)	Ipp	2	A
ESD per IEC 61000-4-2(Air)	VESD	±25	kV
ESD per IEC 61000-4-2(Contact)		±20	
Operating TemperatureRange	TJ	-55 to+125	°C
Storage TemperatureRange	Tstg	-55 to+150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

ESD5Z3V3						
Parameter	Symbol	Min	Typ	Max	Unit	TestCondition
Reverse Working Voltage	VRWM			3.3	V	
Breakdown Voltage	VBR	5			V	IT = 1mA
Reverse Leakage Current	IR			0.9	uA	VRWM = 3.3V
Clamping Voltage	VC		7.5		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			14	V	IPP = 11.2A (8 x 20uS pulse)
Junction Capacitance	CJ		105		pF	VR = 0V, f = 1MHz

ESD5Z5V						
Parameter	Symbol	Min	Typ	Max	Unit	TestCondition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6.2			V	IT = 1mA
Reverse Leakage Current	IR			0.08	uA	VRWM = 5V
Clamping Voltage	VC		9.8		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			18.6	V	IPP = 9.4A (8 x 20uS pulse)
Junction Capacitance	CJ			80	pF	VR = 0V, f = 1MHz

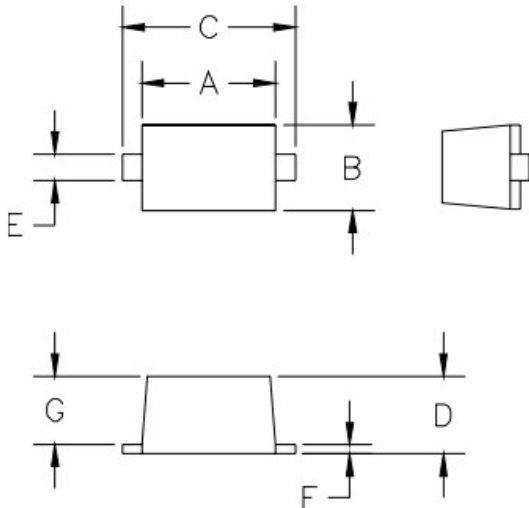
ESD5Z7V						
Parameter	Symbol	Min	Typ	Max	Unit	TestCondition
Reverse Working Voltage	VRWM			7	V	
Breakdown Voltage	VBR	7.5			V	IT = 1mA
Reverse Leakage Current	IR			0.03	uA	VRWM = 7V
Clamping Voltage	VC		13.5		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			22.7	V	IPP = 8.8A (8 x 20uS pulse)
Junction Capacitance	CJ		65		pF	VR = 0V, f = 1MHz

ESD5Z12V						
Parameter	Symbol	Min	Typ	Max	Unit	TestCondition
Reverse WorkingVoltage	VRWM			12	V	
BreakdownVoltage	VBR	14.1			V	IT = 1mA
Reverse LeakageCurrent	IR			0.03	uA	VRWM = 12V
ClampingVoltage	VC		19		V	IPP = 1A (8 x 20uS pulse)
ClampingVoltage	VC			29	V	IPP = 6A (8 x 20uS pulse)
JunctionCapacitance	CJ		35		pF	VR = 0V, f = 1MHz

ESD5Z24V						
Parameter	Symbol	Min	Typ	Max	Unit	TestCondition
Reverse WorkingVoltage	VRWM			24	V	
BreakdownVoltage	VBR	26.7			V	IT = 1mA
Reverse LeakageCurrent	IR			5	uA	VRWM = 24V
ClampingVoltage	VC		35		V	IPP = 1A (8 x 20uS pulse)
ClampingVoltage	VC			40	V	IPP = 3A (8 x 20uS pulse)
JunctionCapacitance	CJ		50		pF	VR = 0V, f = 1MHz

ESD5Z36V						
Parameter	Symbol	Min	Typ	Max	Unit	TestCondition
Reverse WorkingVoltage	VRWM			36	V	
BreakdownVoltage	VBR	40			V	IT = 1mA
Reverse LeakageCurrent	IR			5	uA	VRWM = 36V
ClampingVoltage	VC		55		V	IPP = 1A (8 x 20uS pulse)
JunctionCapacitance	CJ		28		pF	VR = 0V, f = 1MHz

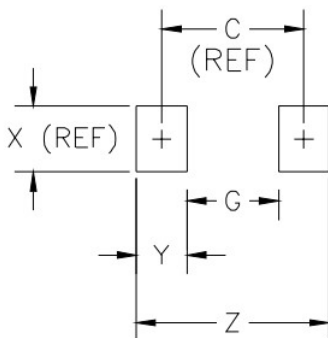
Package mechanical data



DIM ^N	INCHES		MM [1]		NOTE
	MIN	MAX	MIN	MAX	
A	.043	.051	1.10	1.30	-
B	.028	.035	0.70	0.90	-
C	.059	.067	1.50	1.70	-
D	.020	.028	0.50	0.70	-
E	.010	.014	0.25	0.35	-
F	.004	.008	0.10	0.20	-
G	.020	.028	0.50	0.70	-

[1] CONTROLLING DIMENSION: MILLIMETERS

Suggested Land Pattern



DIM ^N	INCHES		MM [1]		NOTE
	MIN	MAX	MIN	MAX	
C	-	.067	-	1.70	REF
G	-	.043	-	1.10	-
X	-	.031	-	0.80	REF
Y	-	.024	-	0.60	-
Z	-	.091	-	2.30	-

[1] CONTROLLING DIMENSION: MILLIMETERS

Contact information

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