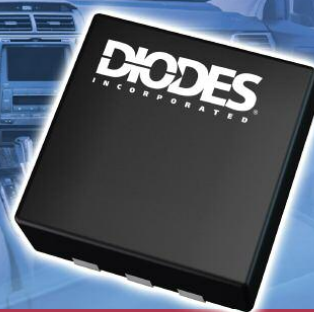




AUTOMOTIVE





COMPANY OVERVIEW

DIODES INCORPORATED'S PRODUCTS ARE DESIGNED FOR HIGH PERFORMANCE, ACROSS A WIDE RANGE OF EXISTING AND EMERGING APPLICATIONS

Diodes Incorporated is a leading global provider of Discrete, Analog, and Logic semiconductors.

Its global footprint includes sales offices in 5 countries and manufacturing locations in China, Europe and the USA.

A focus on product innovation, cost reduction, acquisitions and customer service has made Diodes Incorporated an industry leader.

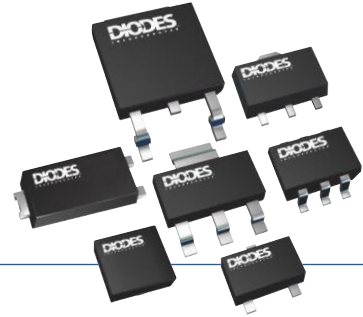
Combining leading silicon and packaging technologies, Diodes provides a broad portfolio of discrete semiconductors comprising Bipolar Transistors, MOSFETs, Schottky diodes, SBR®, switching diodes and functional specific arrays to enable our customers' next generation designs.

The Diodes' Analog IC portfolio consists of 6 main areas: Power Management ICs, Standard Linear, Lighting, Sensors, Direct Broadcast by Satellite and Applications Specific Standard Products. Diodes IC portfolio also includes Standard Logic products.

SBR and IntellifET are registered trademarks of Diodes Incorporated.



DIODES AUTOMOTIVE: The Leading Edge...



DIODES INCORPORATED OFFERS A BROAD PORTFOLIO OF ANALOG AND DISCRETE DEVICES, QUALIFIED TO AEC-Q100 AND AEC-Q101 RESPECTIVELY, THAT MEET THE REQUIREMENTS OF THE AUTOMOTIVE SEGMENT.

However, many Automotive OEM's require products to be traceable and supported by a Production Part Approval Process warrant (PPAP).

To meet this requirement Diodes Incorporated has introduced an Automotive product line.

Identified by the letter 'Q' at the end of the part numbering nomenclature, these 'Q' parts are qualified to AEC-Q101 or AEC-Q100, supported by a PPAP and manufactured in TS16949-compliant facilities.

Many of the products have additional performance features. For example, the Super Barrier Rectifier Portfolio is 100% Avalanche tested.

DIODES PRODUCT QUALIFICATION STANDARDS

AUTOMOTIVE 'Q' PRODUCT	Product with a Q suffix that has passed the rigorous AECQ reliability standard AND can be supplied on request with a PPAP. Automotive 'Q' parts are fully supported for Automotive customers via PPAP and TS16949-approved manufacturing sites.
AEC-Q100/101 QUALIFIED PRODUCT	Product has passed the rigorous AECQ reliability standards, and is capable of meeting automotive reliability requirements.
STANDARD GRADE PRODUCT	Products built, tested and supplied within Diodes' standard quality control parameters, and suitable for all applications which do not specifically require AECQ qualification and/or PPAP documentation.

Automotive Networking

- TVS Protection
- Zener Diodes

Exterior Lighting

- LED Drivers
- Schottky Diodes
- MOSFETs
- Bipolar Transistors

Powertrain

- MOSFETs
- Hall Sensors
- SBRs
- Bipolar Transistors
- Zener Diodes



AUTOMOTIVE



Infotainment

- MOSFETs
- TVS Protection
- LED Drivers
- Voltage References
- Voltage Regulators
- Zener Diodes

Interior Light

- LED Drivers
- Schottky Diodes
- MOSFETs
- Bipolar Transistors

Body Control Electronics

- Bipolar Transistors
- Shunt Regulator
- Voltage Reference
- IntelliFET®
- MOSFETs
- Current Monitors

Seat Control Module

- SBRs
- IntelliFETs
- Voltage References
- Bipolar Transistors
- Current Monitors
- Zener Diodes
- Voltage Regulators

Braking Control Units

- Voltage References
- IntelliFETs
- MOSFETs
- Hall Sensors
- Current Monitors
- Voltage Regulators



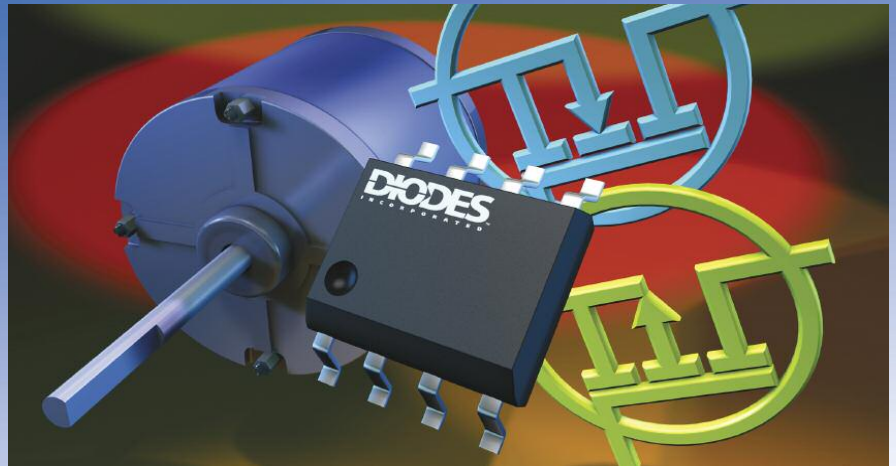
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MOSFET AUTOMOTIVE 'Q' PORTFOLIO

THE DIODES ADVANTAGE

- **AEC-Q101**
High reliability qualification in association with AEC-Q101.
- **100% Avalanche Tested**
- **PPAP Supported**
Production Part Approval Process documents provided.
- **Qualified to +175°C**



Part	Polarity	V _{DS} (V)	V _{GSS} (V)	I _D (A)	R _{DS(ON)} max (mΩ)		Q _G Typ @10V (nc)	Typ C _{ISS} (pf) @0.5V _{DSS}	E _{AS} (mJ)	Package
					@10V	@4.5V				
DMP4015SK3Q	P	-40	20	-14	11	13	47*	4234	242	TO252 (DPAK)
DMP4015SPSQ	P	-40	20	-17	11	13	47*	4234	242	POWERDI5060-8
DMP4015SSSQ	P	-40	20	-10.1	11	13	47*	4234	242	SO-8
DMP3010LPSQ	P	-30	20	-36	7.5	10	59	6324	153	POWERDI5060-8
ZXMP6A13FQ	P	-60	20	-2.3	400	600	5.9	219	N/A	SOT23
ZXMP6A17E6Q	P	-60	20	-4.1	125	190	17.7	637	N/A	SOT26
ZXMP6A17GQ	P	-60	20	-3	125	190	17.7	637	N/A	SOT223
ZXMP6A16DN8Q	P	-60	20	-3	125	190	17.7	637	N/A	SO-8
ZXMP7A17GQ	P	-70	20	-3.7	160	250	18	635	N/A	SOT223
ZXMP10A17E6Q	P	-100	20	-1.6	350	450	10.7	424	N/A	SOT223
ZXMN6A08E6Q	N	60	20	3.5	80	150	5.8	459	N/A	SOT223
ZXMN6A08GQ	N	60	20	5.3	80	150	5.8	459	N/A	SOT223

AUTOMOTIVE 'Q' MOSFETS FOR REVERSE BATTERY PROTECTION

Application Requirements

Protect against reverse polarity connection of the battery during vehicle maintenance. During the reconnection of a vehicle's battery it is possible to reverse the battery polarities causing damage to the vehicle's electronics.

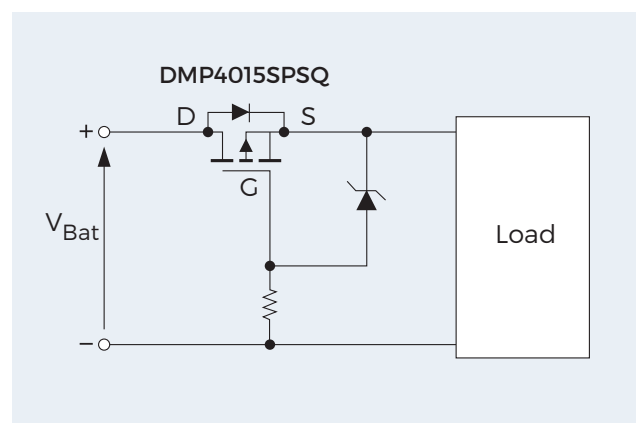
- **Simple, Low Cost, and Minimal Component Count**
- **Minimal Power Losses**
- **Pulse Ruggedness to ISO7637**
- **AEC-Q101 and PPAP Required**
- **EMI Emissions**

Key Products: 40V P-channel MOSFETs

- DMP4015SPSQ in PowerDI5060
- DMP4015SK3Q in TO252 (DPAK)
- DMP4015SSSQ in SO-8

PowerDI is a registered trademark of Diodes Incorporated.

REVERSE BATTERY PROTECTION CIRCUIT



HIGH TEMPERATURE MOSFET AUTOMOTIVE 'Q' PORTFOLIO

Part	Polarity	V _{DS} (V)	V _{GSS} (V)	I _D (A)	V _{GSTH} (V)	R _{DS(ON)} max (mΩ)		Q _{GT} Typ @ V _{GS} = 10 V (nC)	Typ C _{ISS} (pF) @ 25V _{DSS}	E _{AR} (mJ)	I _{AR} (A)	T _J max	Package	Availability
						@10V	@4.5V							
DMTH4004SCTBQ	N	40	20	100	2 – 4	3.4	-	69	3750	200	45	175	TO252 (DPAK)	Q4 2015*
DMTH4004LK3Q	N	40	20	100	2 – 4	2.5	3.6	83	4450	120	30	175	TO252 (DPAK)	Q4 2015*
DMTH4004SPSQ	N	40	20	100	2 – 4	2.7	-	60.1	3714	200	45	175	POWERDI5060-8	Q4 2015*
DMNH4006LK3Q	N	40	20	80	2 – 4	5	-	54	2492	260	70	175	TO252 (DPAK)	Q4 2015*
DMNH4006LPSQ	N	40	20	80	2 – 4	5	-	54	2492	260	70	175	POWERDI5060-8	Q4 2015*
DMTH4007LPSQ	N	40	20	100	1 – 3	6.5	9.8	41	2090	64	20	175	POWERDI5060-8	Q4 2015*
DMTH4007LK3Q	N	40	20	50	1 – 3	7.5	11.5	41	2090	64	20	175	TO252 (DPAK)	Q4 2015*
DMTH4007SPD	N+N	40	20		2 – 4	8.6	-	41	2026	89	24	175	POWERDI5060-8	Q4 2015*
DMNH4011LK3Q	N	40	20	50	2 – 4	10	-	25.5	1374	170	18	175	TO252 (DPAK)	Q4 2015*
DMNH4011LPSQ	N	40	20	20	2 – 4	10	-	25.5	1374	170	18	175	POWERDI5060-8	Q4 2015*
DMTH6003SCTBQ	N	60	20	100	2 – 3	2.4	-	TBC	TBC	TBC	TBC	175	TO252 (DPAK)	Q4 2015*
DMTH6004SPSQ	N	60	20	95	2 – 4	3.1	-	68.7	4221	200	45	175	POWERDI5060-8	Q4 2015*
DMTH6004SCTBQ	N	60	20	100	2 – 4	3.4	-	70.3	4221	200	45	175	TO252 (DPAK)	Q4 2015*
DMTH6004SK3Q	N	60	20	95	2 – 4	3.8	-	70.3	4221	200	45	175	TO252 (DPAK)	Q4 2015*
DMTH6005LK3Q	N	60	20	80	1 – 3	4.8	8.2	37	6300	68	90	175	TO252 (DPAK)	Q4 2015*
DMTH6005LPSQ	N	60	20	80	1 – 3	4.8	8.2	37	6300	68	90	175	POWERDI5060-8	Q4 2015*
DMNH6008SPSQ	N	60	20	50	2 – 4	8	-	75.4	3290	300	26	175	POWERDI5060-8	Q4 2015*
DMTH6010LK3Q	N	60	20	50	1 – 3	8	12	41.3	2090	64	20	175	TO252 (DPAK)	Q4 2015*
DMTH6010SPSQ	N	60	20	20	1 – 3	8	12	41.3	2090	64	20	175	POWERDI5060-8	Q4 2015*
DMNH6012SPSQ	N	60	20	20	2 – 4	11	-	48.5	2221	168	58	175	POWERDI5060-8	Q4 2015*
DMNH6012LK3Q	N	60	20	50	1 – 3	12	18	48.5	2221	168	58	175	TO252 (DPAK)	Q4 2015*
DMNH6021SPDQ	N	60	20	40	1 – 3	23	28	19.7	1030	68	37	175	POWERDI5060-8	Q4 2015*
DMNH6021SK3Q	N	60	20	40	1 – 3	23	28	19.7	1030	68	37	175	TO252 (DPAK)	Q4 2015*
DMNH6022SSDQ	N	60	20	16	1 – 3	23	28	19.7	1030	68	37	175	SO-8	Q4 2015*
DMNH6042SPDQ	N	60	20	7	1 – 3	50	65	15.6	700	106	5	175	POWERDI5060-8	Q4 2015*
DMNH6042SSDQ	N	60	20	18	1 – 3	50	65	15.6	700	106	5	175	SO-8	Q4 2015*
DMNH6042SK3Q	N	60	20	18	1 – 3	50	65	15.6	700	106	5	175	TO252 (DPAK)	Q4 2015*
DMNH10H014LPSQ	N	100	20	TBC	2 – 4	14	24	50	3000	TBC	TBC	175	POWERDI5060-8	Q4 2015*
DMNH10H014LK3Q	N	100	20	TBC	2 – 4	14	24	50	3000	TBC	TBC	175	TO252 (DPAK)	Q4 2015*
DMNH10H028SPSQ	N	100	20	50	1.2 – 2.2	26	32	20	1500	102	44	175	POWERDI5060-8	Q4 2015*
DMNH10H028SK3Q	N	100	20	50	1.2 – 2.2	26	32	20	1500	102	44	175	TO252 (DPAK)	Q4 2015*
DMPH3010LK3Q	P	-30	20	-17.5	-1 – 2.2	7.5	10	126	6234	292	-24	175	TO252 (DPAK)	Q4 2015*
DMPH4015LSSQ	P	-40	20	-20	-1 – 2.3	11	15	91	4234	58	-34	175	SO-8	Q4 2015*
DMPH4013LSSQ	P	-40	20	-10	-1 – 2.4	13	18	-	3428	58	-34	175	SO-8	Q4 2015*
DMPH4023LSSQ	P	-40	20	-50	-1 – 2.5	22	30	TBC	TBC	TBC	TBC	175	SO-8	Q4 2015*
DMPH6050SFGQ	P	-60	20	-17	-1 – 3	24	50	70	1293	31	-24	175	PowerDI3333-8	Q4 2015*
DMPH6050SK3Q	P	-60	20	-17	-1 – 3	24	50	70	1293	31	-24	175	TO252 (DPAK)	Q4 2015*

*Advance Information: For more details contact Diodes Sales

SELF-PROTECTED MOSFET AUTOMOTIVE 'Q' PORTFOLIO

Part	Configuration	TAB	B _{VPSS}	I _D (A)	P _D	R _{DS(on)} max (mΩ) @ V _{IN}			V _{DS} (S/C)	E _{AS} (mJ)	Package Outlines	Availability
			(V)	V _{IN} =	(W)	3V	5V	10V	V _{IN} = 5V			
BSP75GQ	Single	Drain	60	1.4	2.5	-	0.675	0.55	36	550	SOT223	Q4 2015*
BSP75NQ	Single	Source	60	1.2	1.5	-	0.675	0.55	36	550	SOT223	Q4 2015*
ZXMS6004SGQ	Single	Source	60	1.3	1.6	0.6	0.5	-	36	480	SOT223	Now
ZXMS6004DGQ	Single	Drain	60	1.3	3	0.6	0.5	-	36	490	SOT223	Now
ZXMS6004FFQ	Single	Drain	60	1.3	1.5	0.6	0.5	-	36	90	SOT23F	Now
ZXMS6004DT8Q	Single	Drain	60	1.2	2.3	0.6	0.5	-	36	210	SM-8	Now
ZXMS6005DGQ	Single	N/A	60	2	1.6	0.25	0.2	-	36	490	SOT223	Now
ZXMS6005SGQ	Single	Source	60	2	1.6	0.25	0.2	-	36	490	SOT223	Now
ZXMS6005DT8Q	Dual	N/A	60	1.8	1.6	0.25	0.2	-	36	210	SM-8	Now
ZXMS6006DGQ	Single	Drain	60	2.8	3	0.1	0.125	-	36	490	SOT223	Now
ZXMS6006SGQ	Single	Source	60	2.8	3	0.1	0.125	-	36	490	SOT223	Now
ZXMS6006DT8Q	Dual	N/A	60	-	2.1	0.1	0.125	-	36	210	SM-8	Now

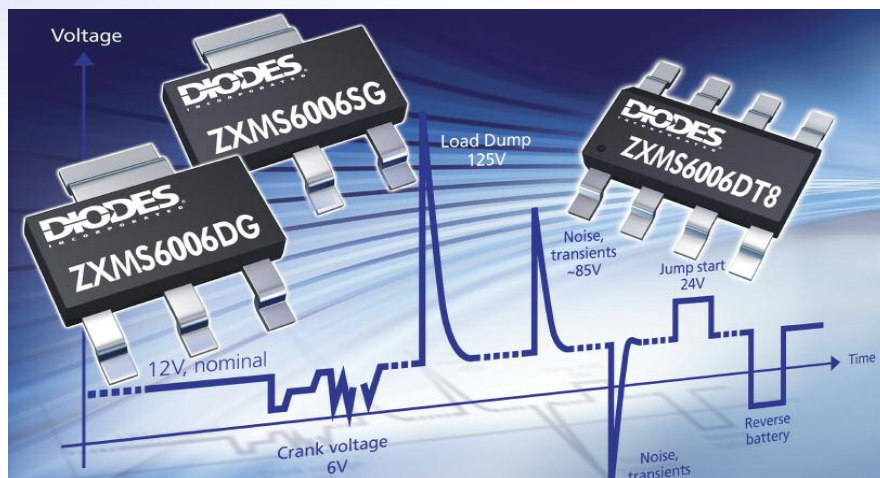
*Advance Information: For more details contact Diodes Sales

SELF- PROTECTED MOSFET (IntelliFET)

Diodes Incorporated designs, develops and manufactures a range of low-side self-protected MOSFETs that are ideal for switching inductive loads, such as motors, relays and lamps at low frequencies.

These devices feature over-temperature, over voltage, and over current protection as well input ESD protection facilities enabling circuit designers to dramatically increase reliability.

The Diodes IntelliFET portfolio is packaged in the SO-8, SM-8, SOT223 and the SOT23F package, enabling the industry's smallest self-protected MOSFET.



THE DIODES ADVANTAGE

- **Over-Voltage, Over-Temperature and Over-Current Protection**
Improved robustness and reliability for harsh environment
- **Typical R_{DS(ON)} as Low as 80mΩ**
Low R_{DS(ON)} minimizes the conduction losses through the device.
- **3V and 5.5V Inputs**
IntelliFET portfolio can be driven directly from a microcontroller.
- **Low Thermal Resistance of SM-8 Package**
The SM-8 package has a thermal resistance 30% lower than competing SO-8 solutions, enabling cooler running more reliable end applications.
- **Two Independent and Isolated Self-Protected MOSFETs**
Co-packaging two self-protected MOSFETs enables one dual SM-8 to replace two SOT223 whilst delivering the same thermal performance.
- **Qualified to AECQ101**
Fully meets the requirements of AEC-Q101 standard of the Automotive Electronics Council.

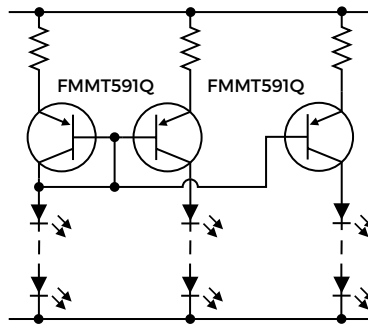
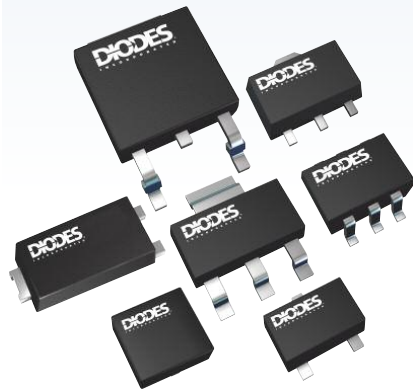
BIPOLAR TRANSISTORS AUTOMOTIVE 'Q' PORTFOLIO

Part	Product Type	V _{CEO} (V)	I _C (A)	I _{CM} (A)	P _D (W)	h _{FE}				V _{CE(sat)}				Package
						Min	@I _C (A)	Min	@I _{C2} (A)	Max (mV)	@ I _C /I _B (A/mA)	Max 2 (mV)	@ I _C /I _{B2} (A/mA)	
FZT651Q	NPN	60	3	6	2	100	0.5	40	2	300	1/100	600	3/300	SOT223
FZT751Q	PNP	60	3	6	2	100	0.5	40	2	300	1/100	600	3/300	SOT223
BCP5616Q	NPN	80	1	2	2	100	0.15	25	0.5	500	0.5/50	-	-	SOT223
BCP5316Q	PNP	80	1	2	2	100	0.15	25	0.5	500	0.5/50	-	-	SOT223
FMMT491Q	NPN	60	1	2	0.5	100	0.5	80	1	150	0.5/50	250	1/100	SOT23
FMMT591Q	PNP	60	1	2	0.5	100	0.5	80	1	180	0.5/50	350	1/100	SOT23
FMMT459Q	NPN	450	0.15	0.5	0.625	50	0.03	-	-	75	0.02/2	90	0.05/6	SOT23
FMMT560Q	PNP	500	0.15	0.5	0.625	100	0.001	80	0.05	200	0.02/2	500	0.05/10	SOT23
BCX5616Q	NPN	80	1	1.5	1	100	0.15	25	0.5	500	0.5/50	-	-	SOT89
BCX5316Q	PNP	80	1	1.5	1	100	0.15	25	0.5	500	0.5/50	-	-	SOT89
MJD31CQ	NPN	100	3	5	15	25	1	10	3	1200	3/375	-	-	TO252-3L
MJD32CQ	PNP	100	3	5	15	25	1	10	3	1200	3/375	-	-	TO252-3L
FMMT634Q	NPN	100	0.9	5	0.625	15,000	1	-	-	960	1/5	-	-	SOT23

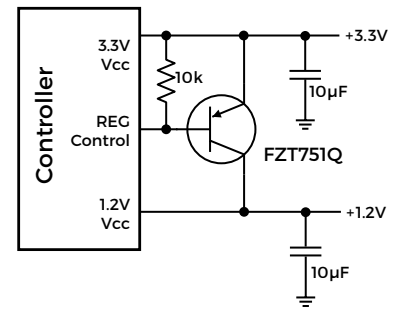
Diodes Incorporated is the market leader when it comes to Bipolar transistors.

The Bipolar transistor portfolio is built on successive generations of our innovative matrix emitter process. Years of knowledge, leading-edge designs and process innovation have extended our leadership in building ultra-low saturation, high-gain and increased power density transistors

By utilizing its wide line up of in-house packaging and superior silicon technology, Diodes is ideally positioned to meet your application needs for Bipolar transistors.



PNP current mirror to equalize current across multiple parallel LED strings



External PNP pass transistor acting as a linear regulator to step down from 3.3V to 1.2V.

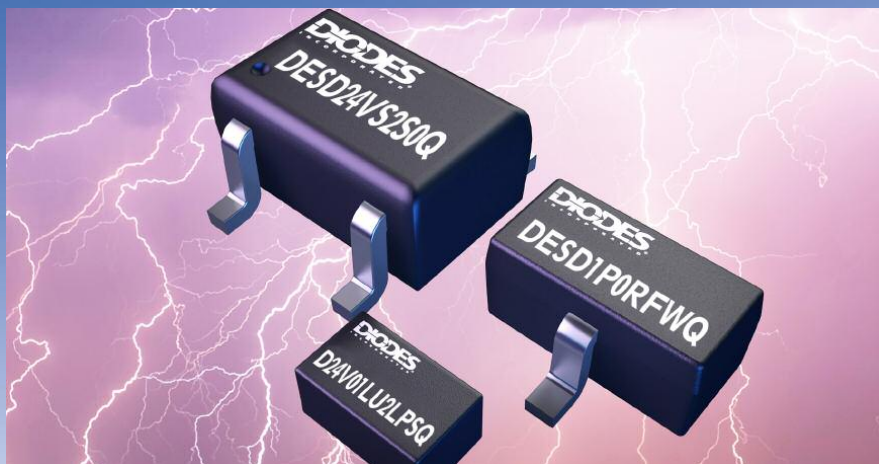
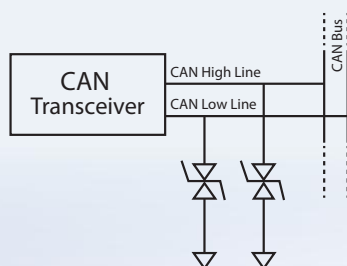
THE DIODES ADVANTAGE

- Broad Portfolio**
 NPN, PNP, Darlington, Matched Pairs, Pre-Biased Transistors, Gate Drivers to meet the majority of customer needs.
- Low V_{CE(sat)}**
 Leading-edge silicon technology gives best-in-class saturation voltage performance with respect to footprint.
- High Peak Current**
 For gate driving, the high peak current handling allows the capacitive load of MOSFET and IGBT gates to be switched quickly.
- High Gain**
 High minimum gains help to reduce the base current requirements and assist in switching faster.
- AEC-Q101**
 High-reliability qualification to meet the demands of the automotive industry.
- PPAP Supported**
 Production Part Approval Process documents provided.

TVS AUTOMOTIVE 'Q' PORTFOLIO

Diodes' range of Automotive TVS and ESD clamping diodes series protects sensitive automotive circuits such as electronic control units and infotainment systems against surges and ESD discharges.

They are used in applications for smart junction boxes, relay protection and power-line protection.



THE DIODES ADVANTAGE

- **AEC-Q101**
High-reliability qualification in association with AEC-Q101.
- **PPAP Supported**
Production Part Approval Process documents provided.
- **IEC Compliant**
IEC61000-4-2 and 6100-4-5 compliant against electrostatic discharge.
- **Small Form Factor Package**

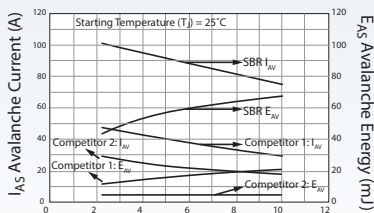
Part	Package	Configuration	Channel Input Capacitance C_T Typ (pF)	Reverse Standoff Voltage V_{RWM} (V)	Breakdown Voltage V_{BR} Min (V)	Typ Reverse Leakage Current I_R @ V_{RWM} Max (nA)	Max Peak Pulse Current I_{PP} @ $8 \times 20 \mu s$ Max (A)	Max Clamping Voltage @ Max Peak Pulse Current V_{CL} (V)	VESD IEC61000-4-2 Contact Discharge ($\pm kV$)	Availability
DESD5V0S1BAQ	SOD323	1 ch bi-directional	35	5	5.5	5	12	14	30	Now
DESD5V0S1BBQ	SOT523	1 ch bi-directional	35	5	5.5	5	12	14	30	Now
DESD1P0R1FWQ	SOT323	2 ch uni-directional	1	70	TBC	100	10	8	30	Now
D24V0L1B2LPSQ	DFN1006-2	1 ch bi-directional	6	24	26	100	2	46	20	Now
D20V0L1B2WSQ	SOD323	2 ch bi-directional	15	20	21	100	3	30	30	Now
DUP1105SQ	SOT23	1 ch bi-directional	25	24	26.2	100	8	44	30	Q4 2015*
DUP2105SQ	SOT23	2 ch bi-directional	25	24	26.2	100	8	44	30	Q4 2015*
DESD1CAN2SQ	SOT23	2 ch bi-directional	11	24	26.2	50	3	70	30	Now
DESD2CAN2SQ	SOT23	2 ch bi-directional	25	24	25.4	10	5	41	30	Now
DESD1LIN2WSQ	SOD323	1 ch bi-directional	13	17.1	17.1	50	5	35	30	Now

*Advance Information: For more details contact Diodes Sales

SUPER BARRIER RECTIFIER AUTOMOTIVE 'Q' PORTFOLIO

Super Barrier Rectifier (SBR) is a Diodes Incorporated proprietary rectifier technology that combines the low reverse leakage (I_R) and fast switching characteristics (T_{RR}) of ultrafast rectifiers, with the low forward voltage drop (V_F) of Schottky diodes.

Furthermore, SBR has a proven, best-in-class repetitive avalanche rating, high temperature stability and wide safe operating area (SOA) that improves the reliability of the end application. These characteristics make it ideal for use as a reverse battery blocking or freewheel diode in Automotive applications.



Comparison of SBR I_{AS} and E_{AS} performance versus equivalent schottky diodes.



THE DIODES ADVANTAGE

- Avalanche Rated**
 Reverse Avalanche capability that is up to 10 times greater than competing solutions. 100% Avalanche tested, ensuring more rugged and reliable end applications.
- Low Forward Voltage (V_F)**
 The lower SBR forward voltage drop ensures power dissipation is minimized.
- Qualified to AEC-Q101**
 Proven reliability for harsh automotive environment.
- PPAP Supported**
 Production Part Approval Process documents provided.
- Low Reverse Leakage Current (I_R)**
 Low reverse leakage (I_R) at high temperatures provides increased reliability against thermal runaway.

Part	Package	V_R (V)	I_o (A)	V_F Max (V)	I_R Max (mA)	I_R Max (mA)	E_{AS} (mJ)	AEC-Q101
				Irated @25C	$V_{B, rated @25C}$	$V_{B, rated @125C}$		
SBR2A40PIQ	PowerD123	40	2	0.5	1	10	N/S	Yes
SBR3U40PIQ	PowerDI123	40	3	0.47	0.4	40	N/S	Yes
SBR3A40SAQ	SMA	40	3	0.5	0.4	40	N/S	Yes
SBR660CTLQ	TO-252	60	6	0.57	0.3	5	190	Yes
SBR6100CTLQ	TO-252	60	6	0.74	0.1	6	120	Yes
SBR1045DIQ	TO-252	45	10	0.5	0.3	50	200	Yes
SBR10U45DIQ	TO-252	45	10	0.57	0.3	13	620	Yes
SBR1045CTLQ	TO-252	45	10	0.55	0.3	13	200	Yes
SBR15U100CTLQ	TO-252	100	15	0.8	0.1	1.5	192	Yes
SBR20A60CTBQ	TO-263	60	20	0.47	0.5	20	500	Yes
SBR30A60CTBQ	TO-263	60	30	0.6	0.33	30	800	Yes
SBR30A45CTBQ	TO-263	45	30	0.55	0.5	20	240	Yes
SBR3045CTBQ	TO-263	45	30	0.63	0.5	80	180	Yes
SBR40U60CTBQ	TO-263	60	40	0.6	0.4	15	2050	Yes
SBR60A60CTBQ	TO-263	60	60	0.62	0.2	15	2050	Yes
SBR8U60P5Q	PowerDI5	60	8	0.53	0.33	60	790	Yes
SBR10U45SP5Q	PowerDI5	45	10	0.47	0.3	TBC	TBC	Yes
SBR8U20SP5Q	PowerDI5	20	8	0.52	0.3	16	146	Yes
SBR12U100SP5Q	PowerDI5	100	12	0.55	0.25	11	592	Yes
SBR12U120SP5Q	PowerDI5	100	12	0.55	0.25	11	592	Yes
SBR15U30SP5Q	PowerDI5	30	15	0.49	0.3	10	1074	Yes

SBR® is a registered trademark of Diodes Incorporated

SCHOTTKY AND ZENER DIODES AUTOMOTIVE 'Q' PORTFOLIO

The PowerDI123 and PowerDI5 packages feature a proprietary clip die attach that improves IFSM and reliability.

Furthermore, both the PowerDI5 and PowerDI123 feature off-board profiles of just 1.1mm and 1mm respectively, providing designers with a high-density, low-profile Schottky portfolio.



Package Cross Sections

Diodes Incorporated's patent-pending flat lead frame heat-sink solder pad results in higher power dissipation and surge capabilities in a compact, low-profile package.



THE DIODES ADVANTAGE

- AEC-Q101**
 High-reliability qualification in association with AEC-Q101.
- Small Form Factor Package**
 PowerDI5 occupies just 26mm², 55% smaller than DPAK.
 PowerDI123 PCB footprint is just 7.5mm², 60% smaller than SMA package.
- Low Profile Package**
 PowerDI123 off board profile is 1mm, 62% thinner than SMA enabling thinner applications. PowerDI5 has package profile of just 1.1mm, 62% thinner than the industry-standard DPAK.
- PPAP Supported**
 Production Part Approval Process documents provided.

POWERDI ZENER DIODE AUTOMOTIVE 'Q' PORTFOLIO

Part	Package	Configuration	P _D (W)	V _Z (nom) (V)@25C	@ I _{ZT} @25C	V _T Tolerance (%) Typ	I _{R, Max} (μA)
DFLZ10Q	PowerDI123	Single	1	10	50	5	5
DFLZ11Q	PowerDI123	Single	1	11	50	5	4
DFLZ12Q	PowerDI123	Single	1	12	50	5	3
DFLZ13Q	PowerDI123	Single	1	13	50	5	2
DFLZ15Q	PowerDI123	Single	1	15	50	5	1
DFLZ16Q	PowerDI123	Single	1	16	25	5	1
DFLZ18Q	PowerDI123	Single	1	18	25	5	1
DFLZ20Q	PowerDI123	Single	1	20	25	5	1
DFLZ22Q	PowerDI123	Single	1	22	25	5	1
DFLZ24Q	PowerDI123	Single	1	24	25	5	1
DFLZ27Q	PowerDI123	Single	1	27	25	5	1
DFLZ30Q	PowerDI123	Single	1	30	25	5	1
DFLZ33Q	PowerDI123	Single	1	33	25	5	1
DFLZ36Q	PowerDI123	Single	1	36	10	5	1
DFLZ39Q	PowerDI123	Single	1	39	10	5	1
DFLZ5V1Q	PowerDI123	Single	1	5.1	100	5	2.5
DFLZ5V6Q	PowerDI123	Single	1	5.6	100	5	10
DFLZ6V2Q	PowerDI123	Single	1	6.2	100	5	5
DFLZ6.8Q	PowerDI123	Single	1	6.8	100	5	5
DFLZ7V5Q	PowerDI123	Single	1	7.5	100	5	5
DFLZ8V2Q	PowerDI123	Single	1	8.2	100	5	5

PowerDI is a registered trademark of Diodes Incorporated

POWERDI5 SCHOTTKY AUTOMOTIVE 'Q' PORTFOLIO

Part	Package	V _R (V)	I _o (A)	V _F Max (V)	I _R Max (mA)	I _R Max (mA)
				I rated @25C	V _B , rated @25C	V _B , rated @125C
PDS340Q	PowerDI5	40	3	0.49	0.5	25
PDS360Q	PowerDI5	60	3	0.62	0.15	15
PDS3100Q	PowerDI5	100	3	0.72	0.1	20
PDS3200Q	PowerDI5	200	3	0.78	0.1	25
PDS4150Q	PowerDI5	150	4	0.76	0.01	4.5
PDS540Q	PowerDI5	40	5	0.52	0.25	40
PDS560Q	PowerDI5	60	5	0.67	0.15	30
PDS5100Q	PowerDI5	100	5	0.78	0.2	20
PDS760Q	PowerDI5	60	7	0.62	0.1	20

POWERDI123 SCHOTTKY AUTOMOTIVE 'Q' PORTFOLIO

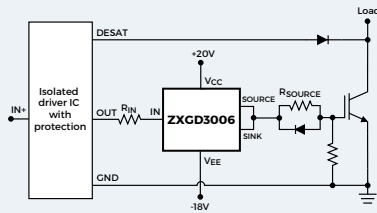
Part	Package	V _R (V)	I _o (A)	V _F Max (V)	I _R Max (mA)	I _R Max (mA)
				I rated @25C	V _B , rated @25C	V _B , rated @125C
DFLS1200Q	PowerDI123	200	1	0.85	2	Yes
DFLS120LQ	PowerDI123	20	1	0.36	1	Yes
DFLS130LQ	PowerDI123	30	1	0.36	1	Yes
DFLS140Q	PowerDI123	40	1	0.55	0.01	Yes
DFLS140LQ	PowerDI123	40	1	0.51	0.1	Yes
DFLS160Q	PowerDI123	60	1	0.5	0.1	Yes
DFLS1100Q	PowerDI123	100	1	0.77	2	Yes
DFLS230Q	PowerDI123	30	2	0.49	1	Yes
DFLS230LQ	PowerDI123	30	2	0.42	1	Yes
DFLS240LQ	PowerDI123	40	2	0.5	1	Yes
DFLS260Q	PowerDI123	60	2	0.62	1	Yes
DFLS2100Q	PowerDI123	100	2	0.86	1	Yes

POWERDI323 SCHOTTKY AUTOMOTIVE 'Q' PORTFOLIO

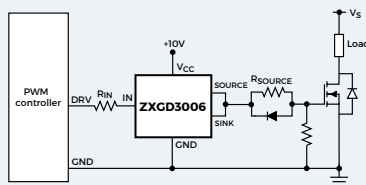
Part	Package	V _R (V)	I _o (A)	V _F Max (V)	I _R Max (mA)	I _R Max (mA)
				I rated @25C	V _B , rated @25C	V _B , rated @125C
PD3S120LQ	PowerDI323	20	1	0.42	0.16	30
PD3S130HQ	PowerDI323	30	1	0.55	0.1	-
PD3S130LQ	PowerDI323	30	1	0.42	0.25	-
PDS3140Q	PowerDI323	40	1	0.55	1.5	100
PDS3160Q	PowerDI323	60	1	0.64	0.1	2
PD3S220LQ	PowerDI323	20	2	0.49	0.16	30
PD3S230HQ	PowerDI323	30	2	0.6	1.5	-
PD3S230LQ	PowerDI323	30	2	0.45	1.4	-

GATE DRIVERS AUTOMOTIVE 'Q' PORTFOLIO

IGBT Driving



MOSFET Driving



THE DIODES ADVANTAGE

- **4A Output from 1mA Input**
High-gain buffer stage for driving the capacitive load of MOSFET and IGBT gates.
- **40V Wide Operating Voltage**
Full enhancement to minimize on-state losses.
- **Resistant to Latch-up and Shoot-Through**
Bipolar emitter-follower configuration is inherently resistant to latch-up and shoot-through issues.
- **Short Propagation Delay**
Less than 10ns propagation delay can rapidly track input.

Part	V _{IN} & V _{CC}	I _{source} @ I _{IN} = 1mA A	I _{sink} @ I _{IN} = 1mA A	I _{pk} A	I _{IN} A	Gate Driver Switching Times (typ)				Package
	Max V					td(rise) ns	tr ns	td(fall) ns	tf ns	
ZXGD3006E6Q	40	4	3.8	10	0.1	1.3	7.3	3	11	SOT26

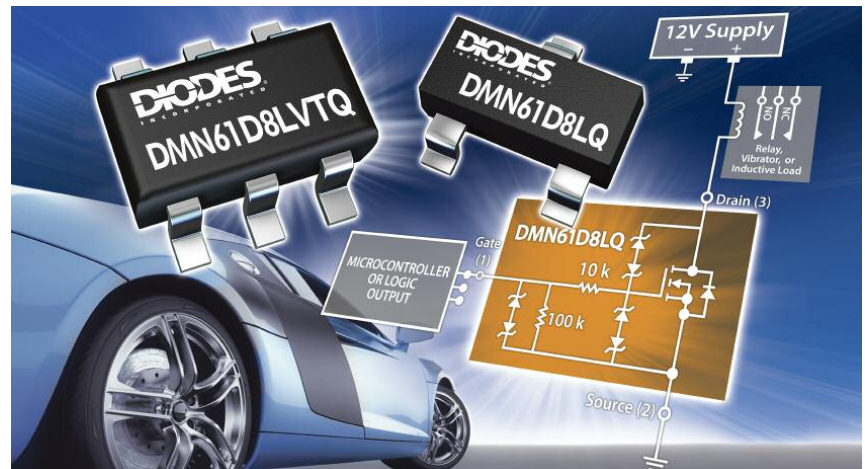
RELAY DRIVERS AUTOMOTIVE 'Q' PORTFOLIO

DMN61D8LQ and DMN61D8LVTQ inductive load-drivers are designed for inductive load-switching applications, such as door relays, solenoids and small DC motors.

On-chip integrated Zener diodes and bias resistors eliminate the need for several external components, saving cost and reducing the PCB footprint.

THE DIODES ADVANTAGE

- **Integrated Solution**
Replaces 3 to 4 discrete components
- **Integrated Active Clamp**
Eliminates the need for external freewheeling diodes



Part	Polarity	ESD Diodes Y/N	V _{DS} (V)	V _{GS} (±V)	I _{DS} @ T _A = +25°C (A)	P _D @ T _A = +25°C (W)	R _{DS(ON)} Max (mΩ) @ V _{GS} 5V	R _{DS(ON)} Max (mΩ) @ V _{GS} (3V)	C _{ISS} Typ (pF)	Q _C Typ @ V _{GS} = 5V (nc)	Package	Availability
DMN61D8LVTQ	N+N	Y	60	12	0.47	0.61	1800	2400	12.9	0.74	SOT23-6	Now
DMN61D8LQ	N	Y	60	12	0.47	0.61	1800	2400	12.9	0.74	SOT23	Now

LED DRIVERS AUTOMOTIVE 'Q' PORTFOLIO

The best Analog ICs provide circuit designers with the most advantageous combination of efficiency, functionality and package size.

Diodes Incorporated's automotive LED lighting solutions are not only recognized for their high efficiency and simplicity, but also for their flexibility and versatility, making them well suited for Automotive applications.



THE DIODES ADVANTAGE

- **Reduced Switching Noise and Ringing**
Solves EMI issues.
- **Open LED, Short LED and Overtemperature Protection**
Open LED - automatically stops switching.
Short LED - duty cycle reduction.
- **5% Initial LED Average Current Accuracy**
Meets the accuracy requirements of Automotive lighting.
- **AEC-Q100**
High-reliability qualification in association with AEC-Q100.
- **PPAP Supported**
Production Part Approval Process documents provided.

Part	Buck	Buck-boost	Boost	Linear	Driver/Controller	Input Voltage		Drop-Out Voltage	Maximum Output Voltage	Maximum LED Current	LED Current Accuracy	Max Switching Frequency	Dimming		Efficiency	Operating Temp Range	Sense Voltage	Package
						Min	Max						PWM	Analog				
						V	V	V	mV	A	%	kHz	Y	N	%	°C	mV	
AL5801Q	N	N	N	Y	D	5	20	2	100	350	-	N/A	Y	N	N/A	-40 to +125	560	SOT26
AL5809Q	N	N	N	Y	D	N/A	N/A	2.5	60	15, 20, 25, 30, 40, 50, 60, 90, 120, 150	5	N/A	Ext	N	N/A	-40 to +125	N/A	POWERDI123
AL8400Q	N	N	N	Y	C	2	18	0.5	18	Ext Tx	3	N/A	Ext	N	N/A	-40 to +125	200	SOT353
AL8806Q	Y	N	N	N	D	6	30	-	30	1.5	5	1000	Y	Y	97	-40 to +125	100	MSOP-8EP
AL8807BQ	Y	N	N	N	D	6	36	-	36	1.3	5	1000	Y	N	95	-40 to +125	100	MSOP-8EP
AL8807Q	Y	N	N	N	D	6	30	-	30	1.3	5	1000	Y	Y	95	-40 to +125	100	MSOP-8EP
BCR420UW6Q	N	N	N	Y	D	1.4	40	1.4	40	350	10	N/A	N	N	N/A	-55 to +150	N/A	SOT26
BCR421UW6Q	N	N	N	Y	D	1.4	40	1.4	40	350	10	N/A	Y	N	N/A	-55 to +150	N/A	SOT26
ZXLD1350Q	Y	N	N	N	D	7	30	-	30	0.38	5	1000	Y	Y	95	-40 to +105	100	TSOT25
ZXLD1356Q	Y	N	N	N	D	6	60	-	60	0.55	3	1000	Y	Y	97	-40 to +125	200	TSOT25 V-DFN3030-6
ZXLD1360Q	Y	N	N	N	D	7	30	-	30	1	5	1000	Y	Y	95	-40 to +125	100	TSOT25
ZXLD1362Q	Y	N	N	N	D	6	60	-	60	1	5	1000	Y	Y	95	-40 to +125	100	TSOT25
ZXLD1366Q	Y	N	N	N	D	6	60	-	60	1	2.5	625	Y	Y	95	-40 to +125	200	TSOT25, SO-8EP V-DFN3030-6
ZXLD1370Q	Y	Y	Y	N	C	6.5	60	-	Ext. MOSFET		2	1000	Y	Y	95	-40 to +125	218	TSSOP-16EP
ZXLD1371Q	Y	Y	Y	N	C	5	60	-	Ext. MOSFET		2	1000	Y	Y	95	-40 to +125	218	TSSOP-16EP
ZXLD1374Q	Y	Y	Y	N	D	6.5	60	-	60	1.5	2	1000	Y	Y	95	-40 to +125	218	TSSOP-20EP

LED LIGHTING AUTOMOTIVE APPLICATIONS

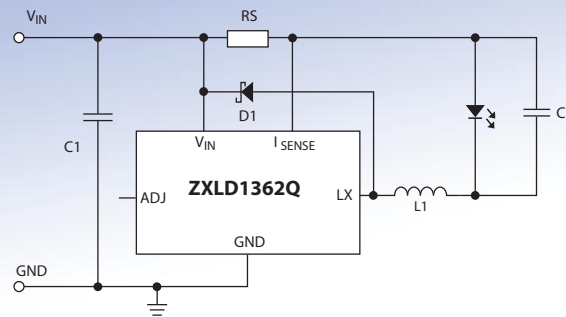
LED DOOR LIGHTING

Application Requirements

- 9-16V typical input voltage range
- High efficiency drive of 1 LED in series
- Wide temperature range $>+85^{\circ}\text{C}$
- Withstand load dump
- Meet AEC-Q100 automotive quality requirements

THE DIODES ADVANTAGE

- 7-60V input range $\rightarrow$ supports normal battery range and load dumps
- 1A switch $\rightarrow$ Drives 0.5, 1 and 3W LEDs
- Qualified to AEC-Q100 grade 1
- Ambient temperature range up to $+125^{\circ}\text{C}$
- High accuracy:
ZXLD1356/66Q: 2.5%
ZXLD1362Q: 5%



KEY PRODUCTS

- ZXLD1362Q
- ZXLD1356Q
- ZXLD1366Q
- PDS3S140Q D1

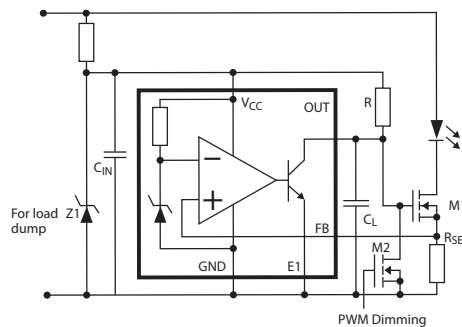
INTERIOR LAMP

Application Requirements

- Operate over whole battery (9-16V) voltage range
- Wide temperature range $>+85^{\circ}\text{C}$
- Simple cost-effective solution for driving 50-150mA LEDs
- Meet AEC-Q100 automotive quality requirements

THE DIODES ADVANTAGE

- Qualified to AEC-Q100 grade
- Ambient temperature range up to $+125^{\circ}\text{C}$
- Drives external transistor $\rightarrow$ determines LED current and Power Dissipation capability
- Simple cost-effective solution



KEY PRODUCTS

- AL8400Q
- ZXMN4A06GQ M1
- DMN6068SEQ M1
- BZT52C12Q Z1
- 2N7002M2Q M2

LED LIGHTING AUTOMOTIVE APPLICATIONS

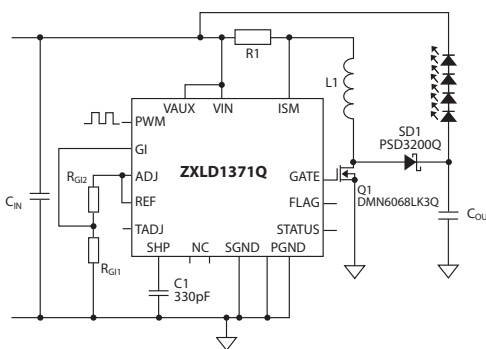
DAYTIME RUNNING LIGHTS

Application Requirements

- Operate over whole battery (9~16V) voltage range
- High efficiency drive of LEDs
- Wide temperature range $>+85^{\circ}\text{C}$
- Withstand load dump
- Meet AEC-Q100 automotive quality requirements

THE DIODES ADVANTAGE

- Multitopology LED drivers $\rightarrow$ Buck-boost mode works over V_{BATT} range driving LED chain used in DRL.
- ZXLD operates from 60V down to 5V
- 2% accuracy $\rightarrow$ better matching between DRL pair.
- Qualified to AEC-Q100 grade 1.
- Ambient temperature range up to $+125^{\circ}\text{C}$.
- LED Thermal protection loop.



KEY PRODUCTS

- ZXLD1371Q
- ZXLD1374Q
- DMN6068LK3Q Q1
- PDS3200Q SD1

QUALITY AND ENVIRONMENTAL STANDARDS

- ISO/TS 16949:2009
Quality Management System
Process-based / customer-focused
- ISO14001 Environmental
Management System
- VDA6.3 Compliant Wafer and
Assembly Facilities
- RoHS-Compliant
All reliability and environmental
information available at
diodes.com

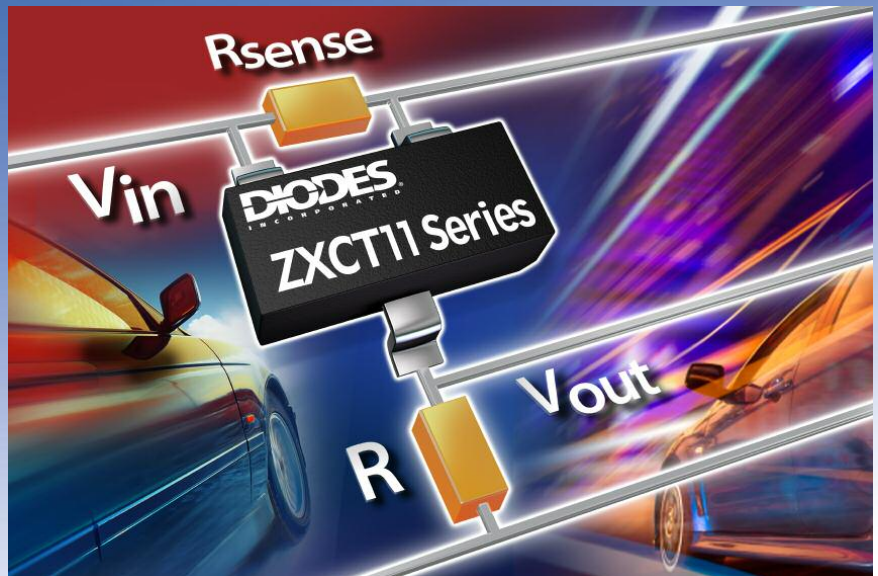
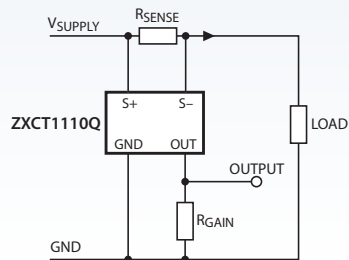
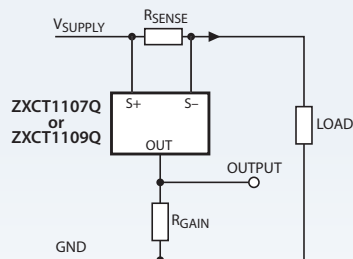


HIGH-SIDE CURRENT MONITORS AUTOMOTIVE 'Q' PORTFOLIO

Diodes' current monitors offer simple, cost-effective solutions to high-sided current measurement.

The current-output versions provide a variable gain, while the voltage-output versions provide fixed gain and require only one external resistor.

All versions have AEC-Q100 qualification.



THE DIODES ADVANTAGE

- **High-Side Current Sensing**
Doesn't disturb the ground plane
- **Up to 2.5V Sense Voltage**
Measures larger transient currents while keeping accuracy at lower currents
- **Up to 60V Common-Mode Sensing**
Withstands Load dump conditions
- **1% Typical Accuracy**
Meets accuracy requirements of applications
- **AEC-Q100 Qualification**
Meets requirements of automotive needs

Part	Description	V _{IN} (V)	V _{CC} (V)	Accuracy @ 100mV	Quiescent Current	Gain ($\frac{V_{OUT}}{V_{SENSE}}$)	Bandwidth (MHz)	Package
CURRENT OUTPUT								
ZXCT1008/9Q	Cost-effective current monitor	2.5 to 20	N/A	±2.5%	4µA	10mA/V	2	SOT23
ZXCT1082Q	60V improved accuracy	2.7 to 60	2.5 ~ 60	2%	25µA	Prog	0.5	SOT25
ZXCT1083Q	40V improved accuracy	2.7 to 40	2.5 ~ 40	2%	25µA	Prog	0.5	SOT25
ZXCT1107/9Q	High-accuracy and cost-effective	2.5 to 36	N/A	±3.4%	3µA	4mA/V	0.3	SOT23
ZXCT1110Q	Improved offset over ZXCT1107/9	2.5 to 36	N/A	±1.8%	3µA	4mA/V	0.3	SOT25
VOLTAGE OUTPUT								
ZXCT1080Q	60V common-mode range	3 to 60	4.5 ~ 12	±3%	30µA	10	0.5	SOT25
ZXCT1081Q	40V common-mode range	3 to 40	4.5 ~ 12	±3%	30µA	10	0.5	SOT25
ZXCT1084/5Q	60V/40V common-mode enhanced performance	2.7 to 60/40	2.5 ~ 60/40	2%	25µA	25	0.5	SOT25
ZXCT1086/7Q						50	0.2	SOT25

CURRENT MONITORS AUTOMOTIVE APPLICATIONS

WINDOW LIFT

Application Requirements

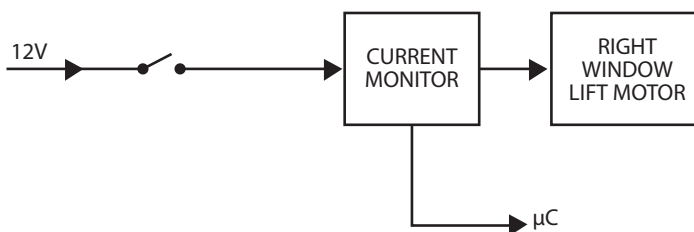
- High-side current measurement so that ground reference point isn't disturbed.
- Wide operating temperature range
- AEC-Q100 qualification

THE DIODES ADVANTAGE

- ZXCT1109Q qualified to AEC-Q100 grade 1 (up to 125°C ambient)
- Up to 36V common-mode voltage
- Up to 800mV sense voltage (can be extended by couple of resistors)
- Only 2 resistors required to measure current and set gain

KEY PRODUCTS

- ZXCT1008Q
- ZXCT11Q Series
- ZXCT108xQ



OP AMPS AND COMPARATORS AUTOMOTIVE 'Q' PORTFOLIO

Part	Number of channels	Supply Voltage		Supply Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Input Common Mode Voltage		Output Current (mA)	Ambient Temperature Range (°C)	Package
		Min (V)	Max (V)				Min (V)	Max (V)			
OP AMPS											
LM2902Q/AQ	4	3	36	0.7	2/1	-20	0	V _{CC} -1.5	±16	-40 to +125	SO-14 ¹ , TSSOP-14 ¹
LM2904Q/AQ	2	3	36	0.5	2/1	-20	0	V _{CC} -1.5	±16	-40 to +125	SO-8 ¹ , MSOP-8 ² , TSSOP-8 ²
COMPARATORS											
LM2901Q/AQ	4	3	36	0.9	2/1	-25	0	V _{CC} -1.5	±16	-40 to +125	SO-14 ¹ , TSSOP-14 ¹
LM2903Q/AQ	2	3	36	0.6	2/1	-25	0	V _{CC} -1.5	±16	-40 to +125	SO-8 ¹ , MSOP-8 ² , TSSOP-8 ²

CONSTANT VOLTAGE AND CONSTANT CURRENT CONTROLLER

Part	Constant Voltage		Constant Current		MAX V_{CC} (V)	Supply Current (mA)	Package
	Reference Voltage (V)	Reference Tolerance (%)	V_{SENSE} (mV)	V_{SENSE} Tolerance (%)			
AP4312Q	1.21	±0.5	70	±3	18	0.18	SOT26

REFERENCES AND REGULATORS AUTOMOTIVE 'Q' PORTFOLIO

THE DIODES ADVANTAGE

- Extended -40 to +125°C Ambient Temperature Range
Meets requirements for automotive applications except under the hood
- Industry-Standard Pin-Out and Packages
- AEC-Q100 Qualification
Meets requirements of automotive needs



SHUNT REGULATORS AND REFERENCES

Part	Reference Voltage (V)	Accuracy (%)	Max V_{KA} (V)	Sink Current (mA)	Minimum I_K for Regulation Typ (μA)	Ambient Temperature Range ($^{\circ}C$)	AEC-Q100 Grade	Package
SHUNT REGULATORS								
ZTL431Q*	2.5	0.5, 1	20	100	400	-40 to +125	1	SOT23, SOT25
ZTL432Q*	2.5	0.5, 1	20	100	400	-40 to +125	1	SOT23
TLV431Q	1.24	0.2, 0.5, 1	18	15	55	-40 to +125	1	SOT23, SOT25
SHUNT REFERENCE								
LM4040-xxQ*	2.5, 3.0, 5.0	0.2, 0.5, 1	-	15	60	-40 to +85	1	SOT23
LM4041Q	1.225	0.5, 1	-	12	30	-40 to +125	1	SOT23
LM4041_ADJQ*	1.233	0.5, 1	10	12	30	-40 to +125	1	SOT23

* Reverse pinout to ZTL431 in SOT23

LINEAR REGULATORS AND LDOs

THE DIODES ADVANTAGE

- ZLDO1117Q with Extended -40 to +125°C Ambient Temperature Range
Meets requirements for automotive applications except under the hood
- Industry-Standard Pin-Out and Packages
- AEC-Q100 Qualification
Meets automotive requirements



Part	Output Voltage (V)	Accuracy (%)	Max Input Voltage (V)	Output Current (mA)	Ambient Temperature Range ($^{\circ}C$)	AEC-Q100 Grade	Package
QUASI-LDO REGULATORS							
ZLDO1117Q	Adj. 1.2, 1.5, 1.8, 2.5, 3.3, 5.0	1	20	1000	-40 to +125	1	SOT223, TO252
LINEAR VOLTAGE REGULATORS							
ZMR250Q	2.5	2.5	22.5	50	-40 to +85	3	SOT23
ZMR330Q	3.3		24				
ZMR500Q	5.0		25				

HALL SWITCHES AUTOMOTIVE 'Q' PORTFOLIO

Diodes' Automotive Hall Effect Switches provide simple and reliable solutions to contactless switching in automotive applications

Typical application areas include open and close detection, rotation and position monitoring.

Diodes' Automotive Hall Effect switch portfolio includes three single-channel families:

Latch	Latches with one polarity and changes state only when opposite field is applied
Unipolar	Responds to either a N or S field; dependent on package (see below)
Omnipolar	Responds to any magnetic field polarity. Magnet's polarity not critical.

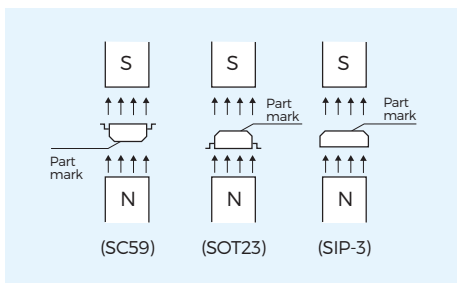


THE DIODES ADVANTAGE

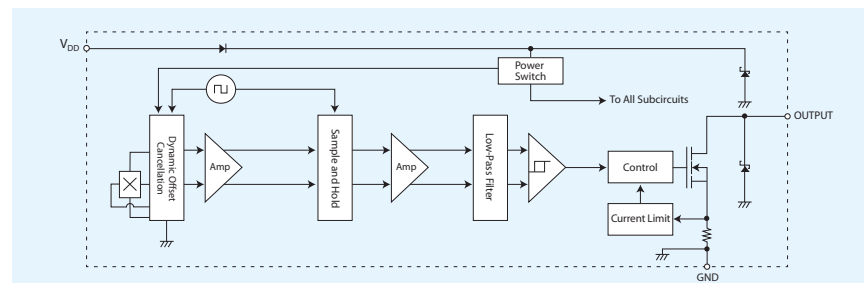
- **Qualified to AEC-Q100 Grade 0 with PPAP Supported**
- **Wide Operating Range**
3V to 28V over -40 to +150°C
- **8kV ESD Rating**
- **Comprehensive Portfolio:**
8 Latches - Now
10 Unipolar Switches - 4Q samples*
5 Omnipolar Switches - 4Q samples*
- **Simple Cost-Effective Solution**
- **Wide Protection Features:**
 - Low-leakage reverse-blocking diodes
 - Zener clamps on supply and output pins
 - Output (tight tolerance) Over-current limit
 - 32V load dump capability
- **Industry-Standard Pin-Out and Packages**
SOT23, SC59 and SIP3
SC59 offers reverse polarity to SOT23
- **Open-Drain Output**
Easily interfaces to 3.3V and 5V μ C

Part	Type	Output	Operating Voltage (V)	Supply Current (mA)	Output Current (mA)	Operating Point Bop (Gauss)			Release Point Brp (Gauss)			Temp Range (°C)	Package
						Min	Typ	Max	Min	Typ	Max		
AH3762Q	Latch	Single Open-Drain	3 to 28	3.0	30	10	25	40	-40	-25	-10	-40 to +150	SOT23, SC59, SIP-3
AH3763Q						15	30	45	-45	-30	-15	-40 to +150	
AH3764Q						20	40	60	-60	-40	-20	-40 to +150	
AH3765Q						50	70	90	-90	-70	-50	-40 to +150	
AH3766Q						80	110	140	-140	-110	-80	-40 to +150	
AH3767Q						110	140	170	-170	-140	-110	-40 to +150	
AH3768Q						140	175	200	-200	-175	-140	-40 to +150	
AH3769Q						170	220	250	-250	-220	-170	-40 to +150	
AH3362Q	Unipolar					15	30	45	5	20	35	-40 to +150	SOT23, SIP-3
AH3366Q						60	100	135	50	85	120	-40 to +150	
AH3562Q	Omnipolar					±10	±20	±30	±5	±10	±20	-40 to +150	SOT23, SIP-3

PACKAGE ORIENTATION - MAGNETIC POLE



AUTOMOTIVE HALL SENSOR APPLICATION



*Advance Information: For more details contact Diodes Sales



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