



New Product Announcement

SBR Q Portfolio for Automotive Applications

SBR® 'Q' Portfolio meets the needs of Automotive Applications

Diodes Incorporated has introduced a range of 21 of its Super Barrier Rectifiers qualified to the AEC-Q101 high-reliability automotive standard and backed by PPAP level 3 documentation. The parts are 100% avalanche tested and proven to deliver a reverse avalanche capability of upto 10 times greater than competing Schottky alternatives.

Due to the SBR's unique patented structure, its high reverse avalanche performance ensures greater guardbanding against negative spikes and inductive load surges, thereby raising the ruggedness and reliability of automotive products. In a typical single-pulse avalanche test, avalanche energy measurements for Schottky and SBR devices were respectively 7mJ and 70mJ for the same circuit conditions.

Offering current ratings up to 60A and reverse voltage ratings up to 100V, the SBR 'Q' portfolio is also characterized by significantly lower reverse leakage current at higher temperatures, helping to minimize circuit losses and increasing protection against thermal runaway.

The SBR forward voltage drop is also lower than that of the Schottky, meaning conduction losses are less and overall efficiency is improved in common reverse polarity protection and freewheeling diode circuits for example.

SBR® is a registered trademark of Diodes Incorporated



The Diodes' Advantage

- **AEC-Q101**
Hi-reliability qualification in accordance with AECQ101.
- **PPAP Supported**
Production Part Approval Procedure documentation provided.
- **Avalanche Rated**
100% Avalanche tested, ensures more rugged applications. Reverse avalanche capability that is up to ten times greater than a Schottky diode, ensuring more reliable end applications.
- **Low Reverse Leakage Current (I_R)**
Reduced high temperature reverse leakage provides increased reliability against thermal runaway at high temperatures.
- **Low Forward Voltage (V_F)**
The lower forward voltage drop of the SBR ensures power dissipation is minimized.

Circuit Functions

- Reverse Polarity Protection
- Freewheel Diode
- Boost Diode

Target Markets

- Automotive
- Industrial



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SBR Automotive Q Portfolio

Part Name	Package	V _R (V)	I _O (A)	V _F max (V)	I _R max (mA)	I _R Typ (mA)	EAS (mJ)	AEC-Q101	Release Date
				I _R @ I _O max @25°C	V _R = V _R @25°C	V _R = V _R @125°C			
SBR660CTLQ	TO-252	60	6	0.57	0.3	5	190	Yes	Now
SBR6100CTLQ	TO-252	100	6	0.74	0.1	6	120	Yes	Now
SBR1045D1Q*	TO-252	45	10	0.5	0.3	50	200	Yes	Now
SBR10U45D1Q*	TO-252	45	10	0.57	0.3	13	620	Yes	Now
SBR1045CTLQ	TO-252	45	10	0.55	0.3	13	200	Yes	Q3 2013
SBR15U100CTLQ	TO-252	100	15	0.8	0.1	1.5	192	Yes	Now
SBR20A60CTBQ	TO-263	60	20	0.47	0.5	20	500	Yes	Q3 2013
SBR30A60CTBQ	TO-263	60	30	0.63	0.33	40	600	Yes	Now
SBR30A45CTBQ	TO-263	45	30	0.55	0.5	65	135	Yes	Now
SBR3045CTBQ	TO-263	45	30	0.63	0.5	80	180	Yes	Q3 2013
SBR40U60CTBQ	TO-263	60	40	0.6	0.4	15	1600	Yes	Q3 2013
SBR60A60CTBQ	TO-263	60	60	0.62	0.2	15	1600	Yes	Q3 2013
SBR8U20SP5Q*	PowerDi5	20	8	0.52	0.3	16	146	Yes	Now
SBR8U60P5Q*	PowerDi5	60	8	0.53	0.33	20	800	Yes	Now
SBR10U45SP5Q*	PowerDi5	45	10	0.47	0.3	30	530	Yes	Now
SBR15U30SP5Q*	PowerDi5	30	15	0.49	0.3	10	1074	Yes	Now
SBR12U100P5Q*	PowerDi5	100	12	0.55	0.25	11	592	Yes	Now
SBR12U120P5Q*	PowerDi5	120	12	0.55	0.3	12	592	Yes	Q3 2013

* All devices are dual common cathode except where * denotes single die.

Cross Reference

Part Name	ST	Vishay
SBR660CTLQ	-	V6W60C
SBR6100CTLQ	STPS5H100-Y	V6WM100C
SBR1045D1Q	STPS1045B-Y	V10WL45C
SBR10U45D1Q	-	V10WL45C
SBR1045CTLQ	-	-
SBR15U100CTLQ	STPS15H100C-Y	V12WM100C
SBR20A60CTBQ	STPS20L60C-Y	VBT2060C
SBR30A60CTBQ	STPS30H60-Y	VBT3060C
SBR30A45CTBQ	STPS3045-Y	VBT3045C
SBR3045CTBQ	STPS3045-Y	-
SBR40U60CTBQ	-	-
SBR60A60CTBQ	-	-
SBR8U20SP5Q	-	SS8P2CL
SBR8U60P5Q	-	SS8P6C
SBR10U45SP5Q	-	V10P45
SBR12U100P5Q	-	V10P10
SBR12U120SP5	-	V10P12
SBR15U30SP5Q	-	SS15P3

Application Information

The reverse avalanche capability of a 45V 10A SBR was compared against two competitor 45V 10A Schottky Diodes. The devices were tested until the device breakdown was reached using inductors of increasing value.

As can be seen from Fig1, the SBR has an avalanche energy capability that is three times greater than Schottky of competitor A and is greater than ten times that of competitor 2's Schottky.

