

Bourns® Model BSD Series Silicon Carbide (SiC) Schottky Barrier Diodes Product Guide

INTRODUCTION

Bourns introduced its first Silicon Carbide (SiC) Schottky Barrier Diodes (SBDs) line designed to provide excellent current carrying capacity. These advanced wide band gap diodes are ideal solutions for high frequency applications such as AC-DC, DC-DC, Switched-Mode Power Supplies (SMPS), photovoltaic inverters and PC computing applications. These applications have a common requirement for high peak forward surge capability, low forward voltage drop, reduced thermal resistance and low power loss, enabling them to meet higher efficiency targets.

The BSD Series models are available in commercial grade in an assortment of package options to match a variety of design needs, including TO220-2, TO247-2, TO247-3, TO252, TO263 and DFN8x8.

FEATURES

- Flexible DFN, TO220-2, TO247-2/3, TO252, and TO263 package options
- 650 V and 1200 V repetitive peak reverse voltage
- Offers multiple 6, 8, 10, and 20 A forward current choices
- Maximum operating junction temperature (T_J) up to 175 °C
- Epoxy compound is flame retardant to the UL 94V-0 standard
- High power integration with dual diodes that help reduce PCB form factor
- RoHS compliant*, Pb free and halogen free**

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

**Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.






BENEFITS

- Low power loss
- High efficiency
- Low forward voltage drop
- Low reverse leakage current
- High peak forward surge current (I_{FSM})
- Reduced EMI


APPLICATIONS

- Switched-Mode Power Supplies (SMPS)
- Power Factor Correction (PFC)
- Photovoltaic inverters
- DC-DC, AC-DC converters
- Telecommunications
- Motor drives


TO252 SMD

Model Number	Photo	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_r Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDD06G65E2		TO252	6	—	175	650	9	1.45
BSDD08G65E2		TO252	8	—	175	650	12	1.45
BSDD10G65E2		TO252	10	—	175	650	14.5	1.45
BSDD10S65E6		TO252	10	—	175	650	24	1.29
BSDD05G120E2		TO252	5	—	175	1200	11	1.42

TO263 SMD

Model Number	Photo	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_r Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDB10S65E6		TO263	10	—	175	650	24	1.29

DFN8x8 SMD

Model Number	Photo	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_r Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDL10S65E6		DFN8x8	10	—	175	650	24	1.29



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PRODUCT



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SAMPLES



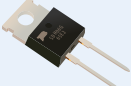

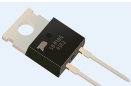
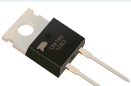
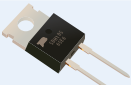
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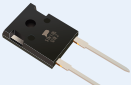
CONTACT

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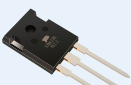


TO220-2 DIP

Model Number	Photo	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_r Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDH06G65E2		TO220-2	6	—	175	650	9	1.45
BSDH08G65E2		TO220-2	8	—	175	650	12	1.45
BSDH10G65E2		TO220-2	10	—	175	650	14.5	1.45
BSDH10G120E2		TO220-2	10	—	175	1200	22	1.42
BSDH10S65E6		TO220-2	10	—	175	650	24	1.29

TO247-2 DIP

Model Number	Photo	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_r Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDV10G120E2		TO247-2	10	—	175	1200	22	1.42

TO247-3 DIP

Model Number	Photo	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_r Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDW20G65C2		TO247-3	—	20	175	650	14.5	1.45
BSDW20S65C6		TO247-3	—	20	175	650	24	1.29
BSDW20G120C2		TO247-3	—	20	175	1200	22	1.42

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Product Overview

Model Number	Package	$I_{F(AV)}$ Max. (A)	$I_{O(AV)}$ Max. (A)	T_J Max. (°C)	V_{RRM} Max. (V)	Q_f Typ. (nC)	V_F Typ. @ $T_J = 25^\circ\text{C}$, $I_{F(av)}$ (V)
BSDD06G65E2	TO252	6	—	175	650	9	1.45
BSDD05G120E2	TO252	5	—	175	1200	11	1.42
BSDD08G65E2	TO252	8	—	175	650	12	1.45
BSDD10G65E2	TO252	10	—	175	650	14.5	1.45
BSDD10S65E6	TO252	10	—	175	650	24	1.29
BSDB10S65E6	TO263	10	—	175	650	24	1.29
BSDL10S65E6	DFN8x8	10	—	175	650	24	1.29
BSDH06G65E2	TO220-2	6	—	175	650	9	1.45
BSDH08G65E2	TO220-2	8	—	175	650	12	1.45
BSDH10G65E2	TO220-2	10	—	175	650	14.5	1.45
BSDH10G120E2	TO220-2	10	—	175	1200	22	1.42
BSDH10S65E6	TO220-2	10	—	175	650	24	1.29
BSDV10G120E2	TO247-2	10	—	175	1200	22	1.42
BSDW20G65C2	TO247-3	—	20	175	650	14.5	1.45
BSDW20S65C6	TO247-3	—	20	175	650	24	1.29
BSDW20G120C2	TO247-3	—	20	175	1200	22	1.42

SiC Schottky Barrier Diode Product Portfolio

V_{RRM} $I_{(AV)}$ Type	TO220-2	TO247-2	TO247-3	TO252 (DPAK)	TO263 (DPAK)	DFN8x8
650 V, 6 A, General V_F	BSDH06G65E2	—	—	BSDD06G65E2	—	—
650 V, 8 A, General V_F	BSDH08G65E2	—	—	BSDD08G65E2	—	—
650 V, 10 A, General V_F	BSDH10G65E2	—	—	BSDD10G65E2	—	—
650 V, 10 A, Low V_F	BSDH10S65E6	—	—	BSDD10S65E6	BSDB10S65E6	BSDL10S65E6
650 V, 20 A, General V_F (Dual)	—	—	BSDW20G65C2	—	—	—
650 V, 20 A, Low V_F (Dual)	—	—	BSDW20S65C6	—	—	—
1200 V, 5 A, General V_F	—	—	—	BSDD05G120E2	—	—
1200 V, 10 A, General V_F	BSDH10G120E2	BSDV10G120E2	—	—	—	—
1200 V, 20 A, General V_F (Dual)	—	—	BSDW20G120C2	—	—	—



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650 V Application Matrix

Package	T0263	T0252	T0252	T0252	T0252	T0220-2	T0220-2	T0220-2	T0220-2	DFN8x8	T0247-3	T0247-3
Computer Power Supplies	X		X	X	X		X	X	X	X		
Industrial Power Supplies	X	X	X	X	X	X	X	X	X	X	X	X
Server Power Supplies	X	X	X	X	X	X	X	X	X	X	X	X
Telecom Power Supplies	X	X	X	X	X	X	X	X	X	X	X	X
Uninterruptible Power Supplies	X	X	X	X	X	X	X	X	X		X	X
Solar Inverters	X	X	X	X	X	X	X	X	X		X	X
Motor Drives	X	X	X	X	X	X	X	X	X	X	X	X
Industrial Welding	X		X	X	X	X	X	X	X		X	X
EV Charging	X		X	X	X	X	X	X	X		X	X

1200 V Application Matrix

Package	T0252	T0220-2	T0247-2	T0247-3
Computer Power Supplies				
Industrial Power Supplies	X	X	X	X
Server Power Supplies	X	X	X	X
Telecom Power Supplies	X			
Uninterruptible Power Supplies		X	X	X
Solar Inverters	X	X	X	X
Motor Drives	X	X	X	X
Industrial Welding		X	X	X
EV Charging		X	X	X

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