FFSP0865B

Silicon Carbide Schottky Diode

650 V, 8 A

Silicon Carbide (SiC) Schottky Diodes use a completely new technology that provides superior switching performance and higher reliability compared to Silicon. No reverse recovery current, temperature independent switching characteristics, and excellent thermal performance sets Silicon Carbide as the next generation of power semiconductor. System benefits include highest efficiency, faster operating frequency, increased power density, reduced EMI, and reduced system size and cost.

Features

- Max Junction Temperature 175°C
- Avalanche Rated 33 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Applications

- General Purpose
- SMPS, Solar Inverter, UPS
- Power Switching Circuits

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Peak Repetitive Reverse Voltage		V_{RRM}	650	V
Single Pulse Avalanche Energy (T_J = 25°C, $I_{L(pk)}$ = 11.5 A, L = 0.5 mH, V = 50 V)		E_{AS}	33	mJ
Continuous Rectified Forward Current	@ T_C < 147	I_F	8.0	A
	@ T_C < 135		10.1	
Non−Repetitive Peak Forward Surge Current	T_C = 25°C t_P = 10 μs	I_{FM}	551	A
	T_C = 150°C t_P = 10 μs		498	
Non−Repetitive Forward Surge Current (Half−Sine Pulse)	T_C = 25°C t_P = 8.3 ms	I_{FSM}	56	A
Power Dissipation	T_C = 25°C	P_{tot}	73	W
	T_C = 150°C		12	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	−55 to +175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction−to−Case, Max.	$R_{\theta JC}$	2.05	°C/W

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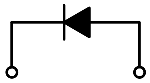
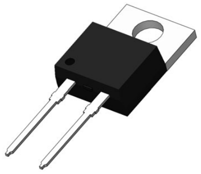
V_{RRM}	I_F
650 V	8.0 A



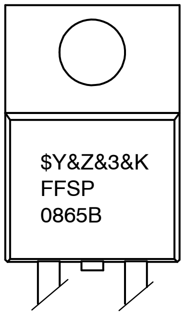
1., 3. Cathode 2. Anode

Schottky Diode



TO−220−2LD
CASE 340BB

MARKING DIAGRAM



$Y = ON Semiconductor Logo
&Z = Assembly Plant Code
&3 = Numeric Date Code
&K = Lot Code
FFSP0865B = Specific Device Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

September, 2019 − Rev. 1

Publication Order Number:
FFSP0865B/D

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON CHARACTERISTICS						
Forward Voltage	V_F	I_F = 8.0 A, T_J = 25°C		1.39	1.7	V
		I_F = 8.0 A, T_J = 125°C		1.55	2.0	
		I_F = 8.0 A, T_J = 175°C		1.71	2.4	
Reverse Current	I_R	V_R = 650 V, T_J = 25°C		0.073	40	μA
		V_R = 650 V, T_J = 125°C		0.24	80	
		V_R = 650 V, T_J = 175°C		0.48	160	
CHARGES, CAPACITANCES & GATE RESISTANCE						
Total Capacitive Charge	Q_C	V_C = 400 V		22		nC
	C_{tot}	V_R = 1 V, f = 100 kHz		336		pF
		V_R = 200 V, f = 100 kHz		39		
		V_R = 400 V, f = 100 kHz		30		

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

PACKAGE MARKING AND ORDERING INFORMATION

Part Number	Top Marking	Package	Packing Method	Reel Size	Tape Width	Quantity
FFSP0865B	FFSP0865B	TO220	Tube	N/A	N/A	50 Units

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

TYPICAL CHARACTERISTICS

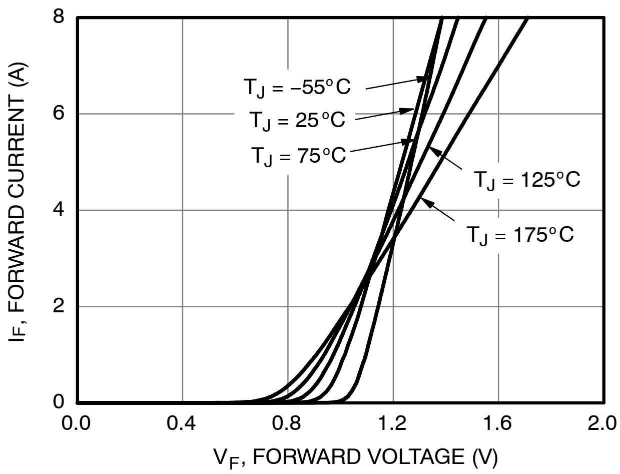


Figure 1. Forward Characteristics

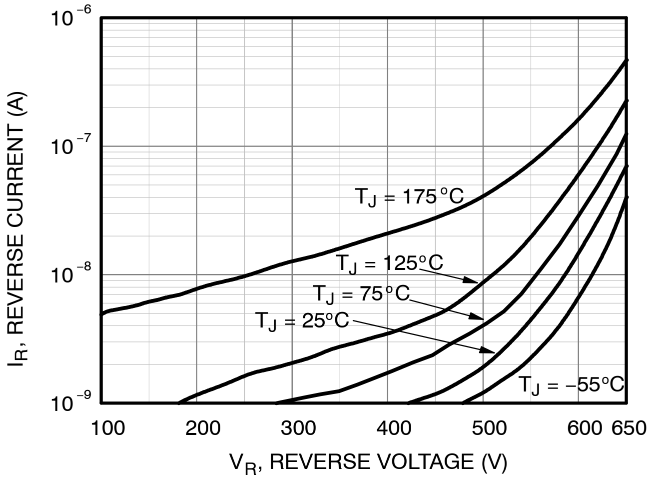


Figure 2. Reverse Characteristics

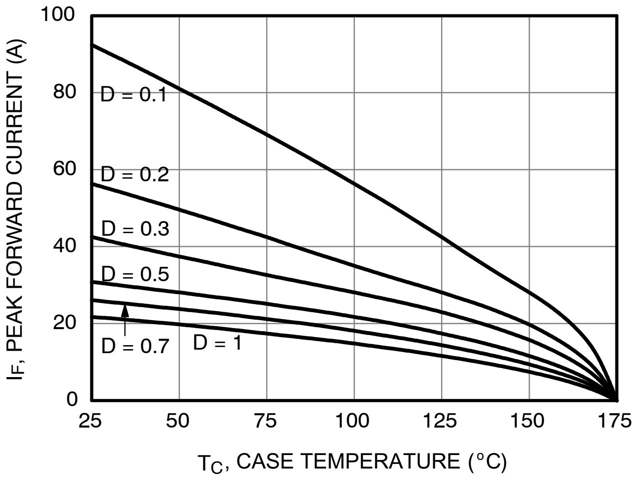


Figure 3. Current Derating

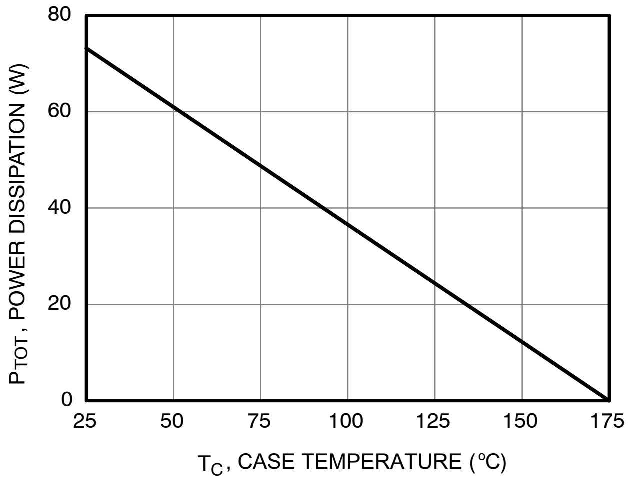


Figure 4. Power Derating

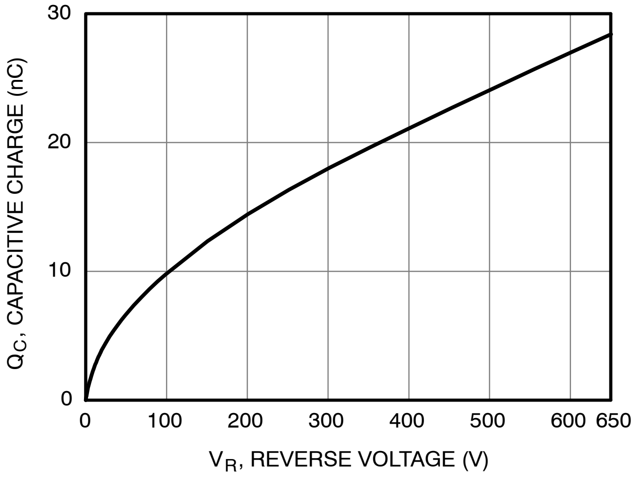


Figure 5. Capacitive Charge vs. Reverse Voltage

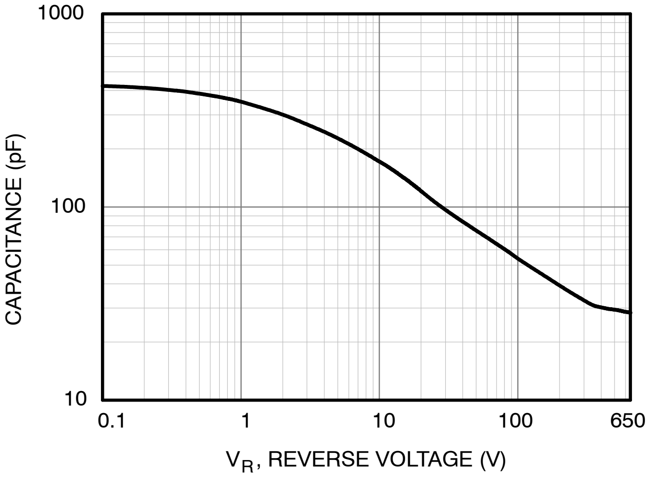


Figure 6. Capacitance vs. Reverse Voltage

TYPICAL CHARACTERISTICS

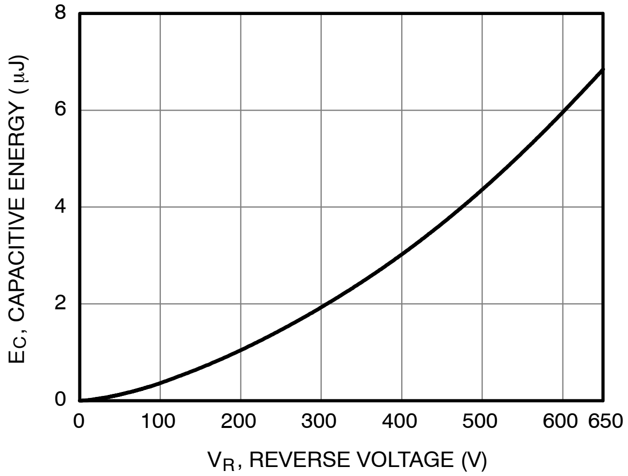


Figure 7. Capacitance Stored Energy

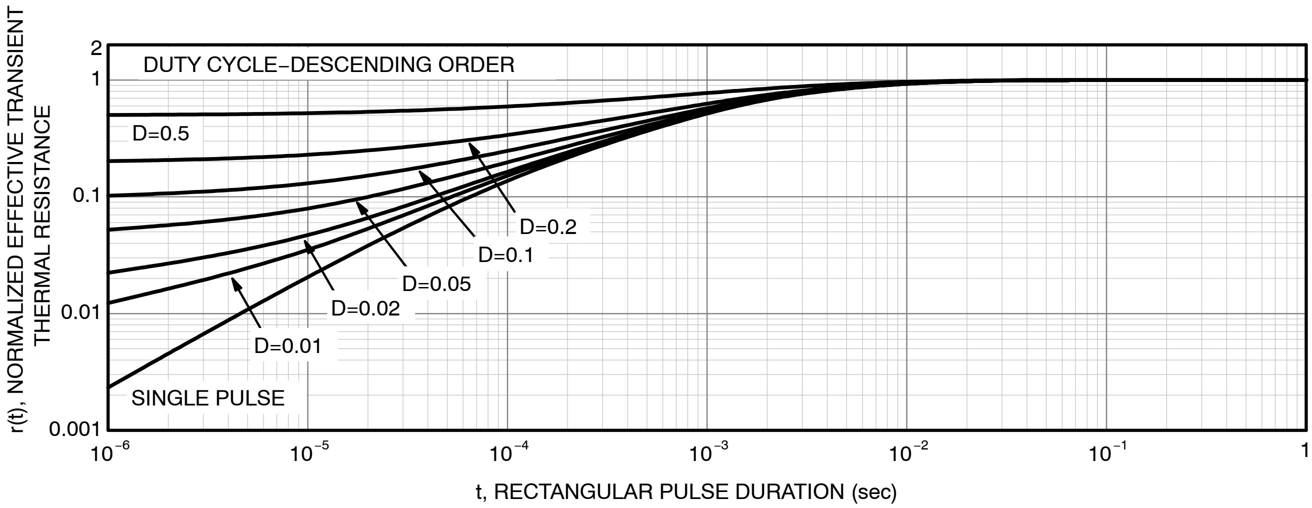
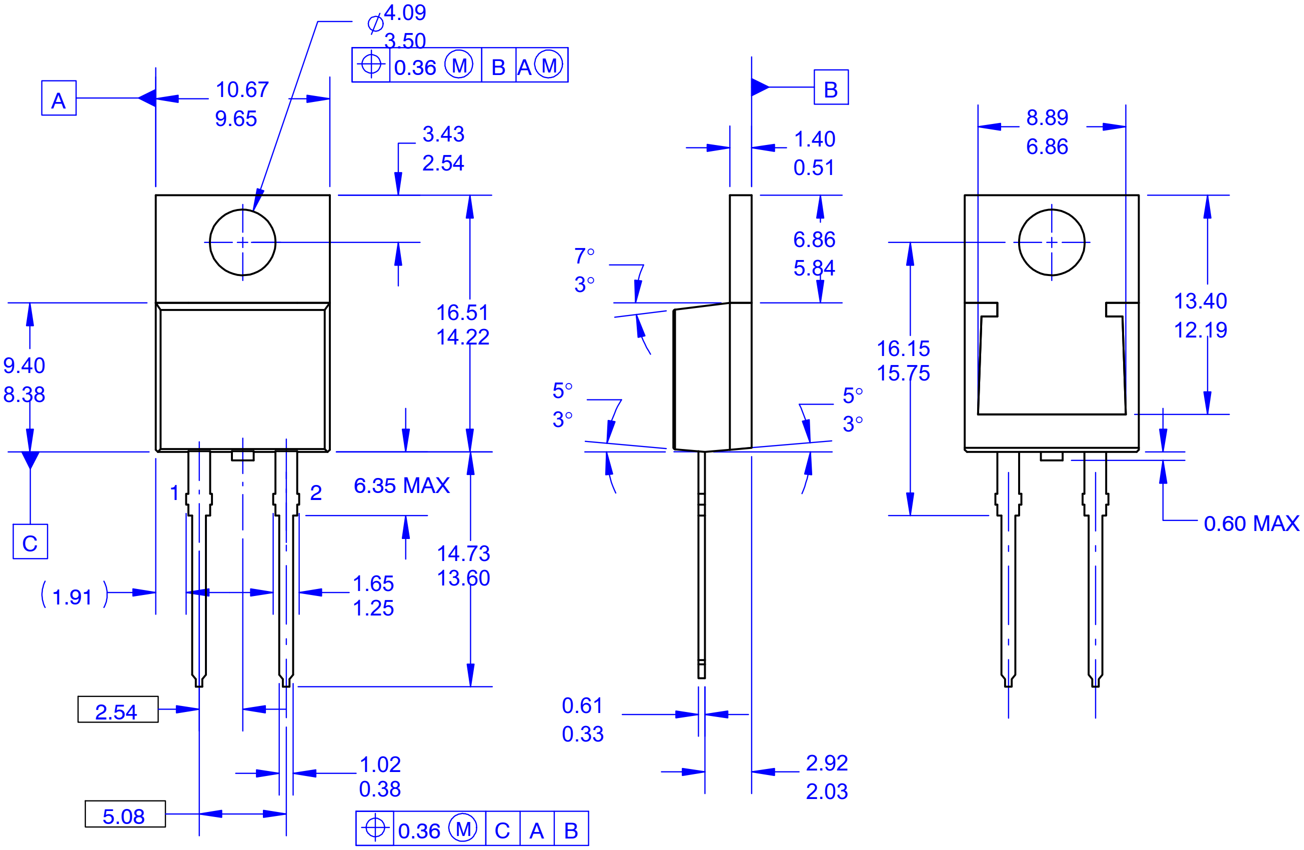
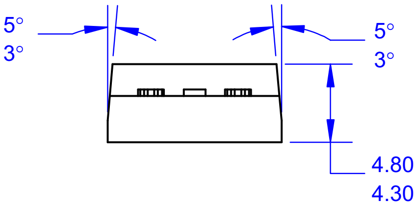


Figure 8. Junction−to−Case Transient Thermal Response

PACKAGE DIMENSIONS

TO−220−2LD
CASE 340BB
ISSUE O





NOTES:

A. PACKAGE REFERENCE: JEDEC TO220,ISSUE K, VARIATION AC,DATED APRIL 2002.
B. ALL DIMENSIONS ARE IN MILLIMETERS.
C. DIMENSION AND TOLERANCE AS PER ASME Y14.5−2009.
D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.

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