FFSD0865A

Silicon Carbide Schottky Diode

650 V, 8 A

ON Semiconductor®

www.onsemi.com

Description

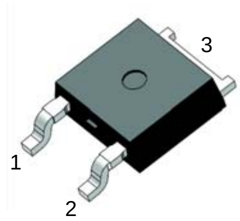
Silicon Carbide (SiC) Schottky Diodes use a completely new technology that provides superior switching performance and higher reliability compared to Silicon. No reverse recovery current, temperature independent switching characteristics, and excellent thermal performance sets Silicon Carbide as the 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

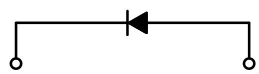
- Max Junction Temperature 175°C
- Avalanche Rated 49 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery

Applications

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



DPAK3
TO−252
CASE 369AS



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Table 1. ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Symbol	Parameter		FFSD0865A	Unit
V_{RRM}	Peak Repetitive Reverse Voltage		650	V
E_{AS}	Single Pulse Avalanche Energy (Note 1)		49	mJ
I_F	Continuous Rectified Forward Current @ T_C < 159°C		8	A
	Continuous Rectified Forward Current @ T_C < 135°C		15	
$I_{F,Max}$	Non−Repetitive Peak Forward Surge Current	T_C = 25°C, 10 μs	750	A
		T_C = 150°C, 10 μs	730	A
$I_{F,SM}$	Non−Repetitive Forward Surge Current	Half−Sine Pulse, t_p = 8.3 ms	49	A
$I_{F,RM}$	Repetitive Forward Surge Current	Half−Sine Pulse, t_p = 8.3 ms	28	A
Ptot	Power Dissipation	T_C = 25°C	125	W
		T_C = 150°C	21	W
T_J, T_{STG}	Operating and Storage Temperature Range		−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.

1. E_{AS} of 36 mJ is based on starting T_J = 25°C, L = 0.5 mH, I_{AS} = 14 A, V = 50 V.

Table 2. THERMAL CHARACTERISTICS

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance, Junction−to−Case, Max.	1.2	°C/W

Table 3. OPERATING CHARACTERISTICS (T_C = 25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	I_F = 8 A, T_C = 25°C	−	1.50	1.75	V
		I_F = 8 A, T_C = 125°C	−	1.6	2.0	
		I_F = 8 A, T_C = 175°C	−	1.72	2.4	
I_R	Reverse Current	V_R = 650 V, T_C = 25°C	−	−	200	μA
		V_R = 650 V, T_C = 125°C	−	−	400	
		V_R = 650 V, T_C = 175°C	−	−	600	
Q_C	Total Capacitive Charge	V = 400 V	−	27	−	nC
C	Total Capacitance	V_R = 1 V, f = 100 kHz	−	463	−	pF
		V_R = 200 V, f = 100 kHz	−	48	−	
		V_R = 400 V, f = 100 kHz	−	38	−	

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.

PART MARKING AND ORDERING INFORMATION

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFSD0865A	FFSD0865A	D−PAK	N/A	13″	N/A	2500 units

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

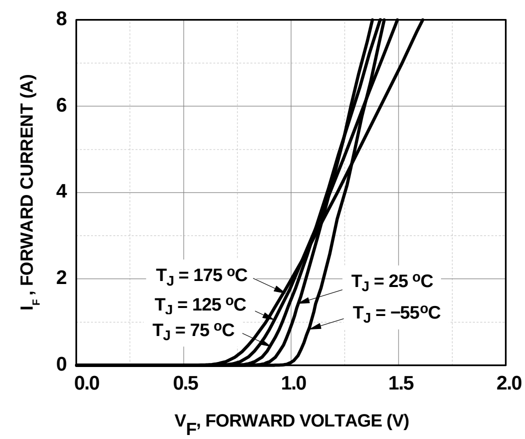


Figure 1. Forward Characteristics

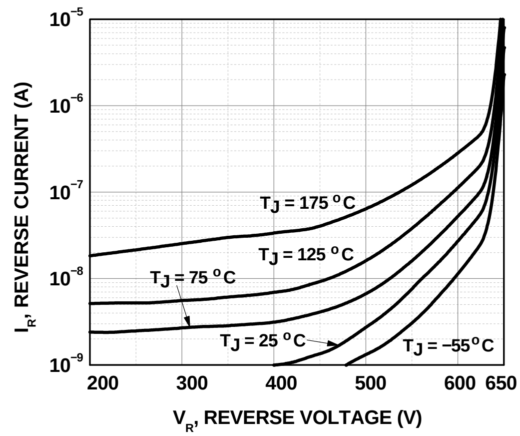


Figure 2. Reverse Characteristics

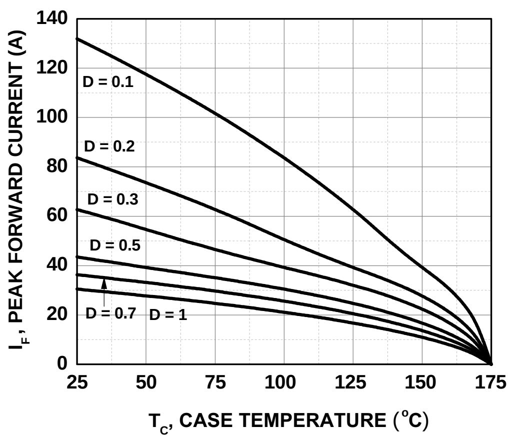


Figure 3. Current Derating

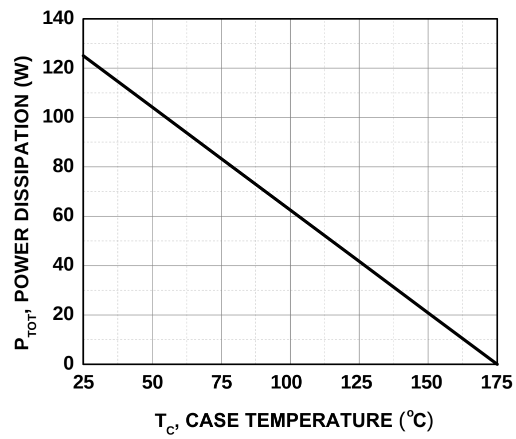


Figure 4. Power Derating

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

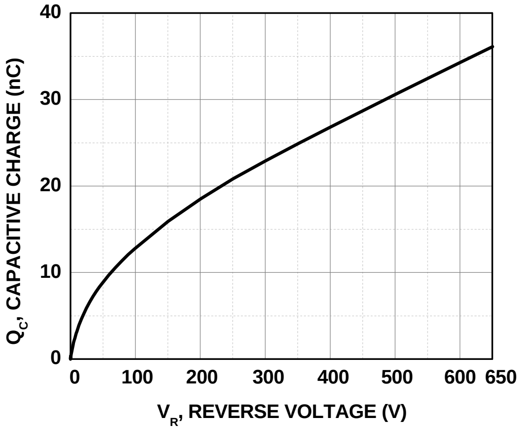


Figure 5. Capacitive Charge vs. Reverse Voltage

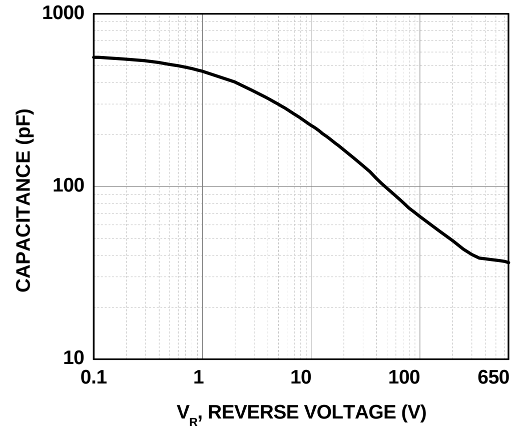


Figure 6. Capacitance vs. Reverse Voltage

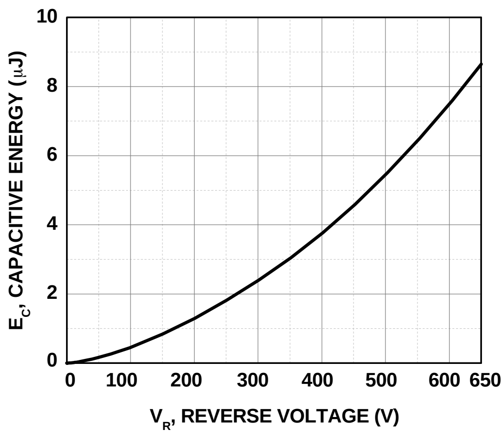


Figure 7. Capacitance Stored Energy

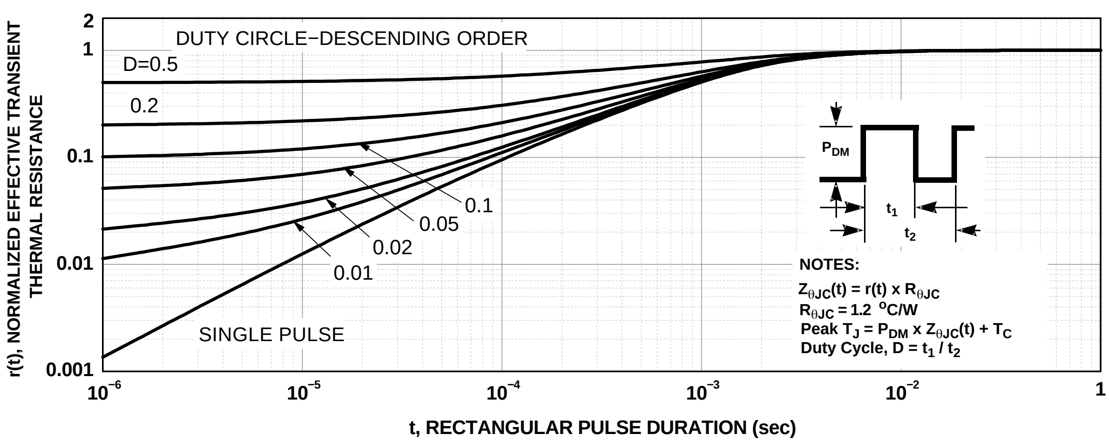


Figure 8. Junction−to−Case Transient Thermal Response Curve

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

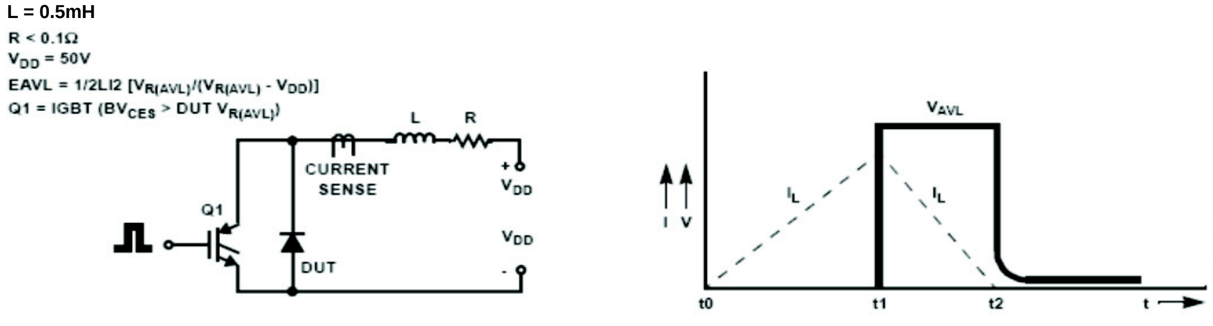
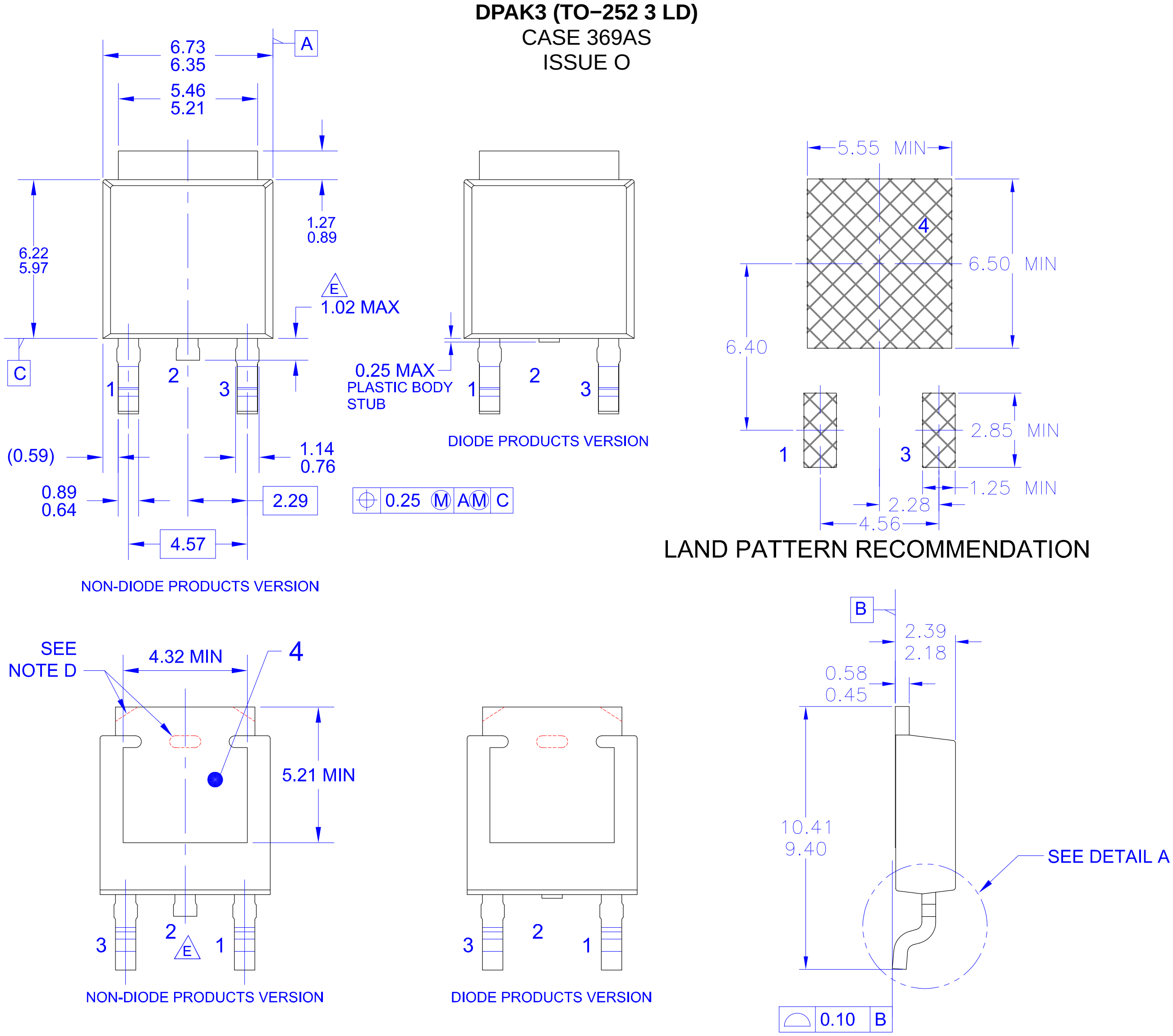


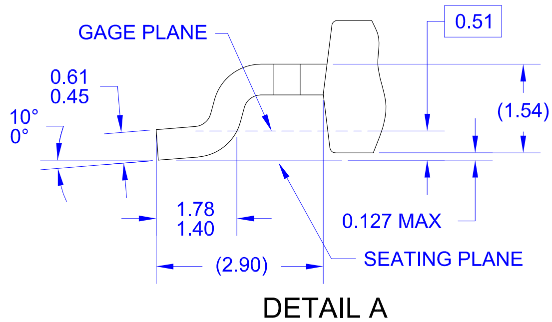
Figure 9. Unclamped Inductive Switching Test Circuit & Waveform

PACKAGE DIMENSIONS

DPAK3 (TO−252 3 LD)
CASE 369AS
ISSUE O



NOTES: UNLESS OTHERWISE SPECIFIED
- A) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE C, VARIATION AA.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
- D) SUPPLIER DEPENDENT MOLD LOCKING HOLES OR CHAMFERED CORNERS OR EDGE PROTRUSION.
- E) TRIMMED CENTER LEAD IS PRESENT ONLY FOR DIODE PRODUCTS
- F) DIMENSIONS ARE EXCLUSSIVE OF BURSS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- G) LAND PATTERN RECOMENDATION IS BASED ON IPC7351A STD TO228P991X239-3N.



DETAIL A
(ROTATED -90°)
SCALE: 12X

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
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- *Тестирование поставляемой продукции.*
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