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FFSH4065ADN-F155

Silicon Carbide Schottky Diode
650 V, 40 A

Features

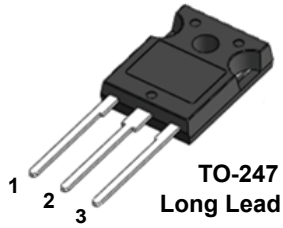
- Max Junction Temperature 175 °C
- Avalanche Rated 95 mJ
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery / No Forward Recovery

Applications

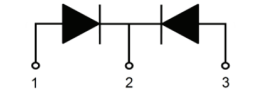
- General Purpose
- SMPS, Solar Inverter, UPS
- Power Switching Circuits

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 & cost.



TO-247
Long Lead



1. Anode 2. Cathode/ Case 3. Anode

Absolute Maximum Ratings T_C = 25°C unless otherwise noted.

Symbol	Parameter		FFSH4065ADN-F155	Unit
V_{RRM}	Peak Repetitive Reverse Voltage		650	V
E_{AS}	Single Pulse Avalanche Energy (Note 1)		95	mJ
I_F	Continuous Rectified Forward Current @ T_C < 140 °C		20*40**	A
	Continuous Rectified Forward Current @ T_C < 135 °C		22*/44*	
$I_{F, Max}$	Non-Repetitive Peak Forward Surge Current	T_C = 25 °C, 10 μs	1100	A
		T_C = 150 °C, 10 μs	1000	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	Half-Sine Pulse, t_p = 8.3 ms	105	A
$I_{F,RM}$	Repetitive Forward Surge Current	Half-Sine Pulse, t_p = 8.3 ms	58	A
Ptot	Power Dissipation	T_C = 25 °C	150	W
		T_C = 150 °C	25	W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	°C
	TO247 Mounting Torque, M3 Screw		60	Ncm

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max. (Note 1)	1.0*/0.5**	°C/W

* Per leg, ** Per Device

Semiconductor Components Industries, LLC, 2017
Dec, 2017, Rev.O

Publication Order Number:
FFSH4065ADN-F155/D

Package Marking and Ordering Information

Part Number	Top Mark	Package	Packing Method	Reel Size	Tape Width	Quantity
FFSH4065ADN-F155	FFSH4065ADN	TO-247 Long Lead	Tube	N/A	N/A	30 units

Electrical Characteristics T_C = 25 °C unless otherwise noted.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	I_F = 20 A, T_C = 25 °C	-	1.5	1.75	V
		I_F = 20 A, T_C = 125 °C	-	1.6	2.0	
		I_F = 20 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	-	64	-	nC
C	Total Capacitance	V_R = 1 V, f = 100 kHz	-	1085	-	pF
		V_R = 200 V, f = 100 kHz	-	117	-	
		V_R = 400 V, f = 100 kHz	-	88	-	

Notes:

1. E_{AS} of 95 mJ is based on starting T_J = 25 °C, L = 0.5 mH, I_{AS} = 19.5 A, V = 50 V.

Typical Characteristics T_J = 25 °C unless otherwise noted.

Figure 1. Forward Characteristics

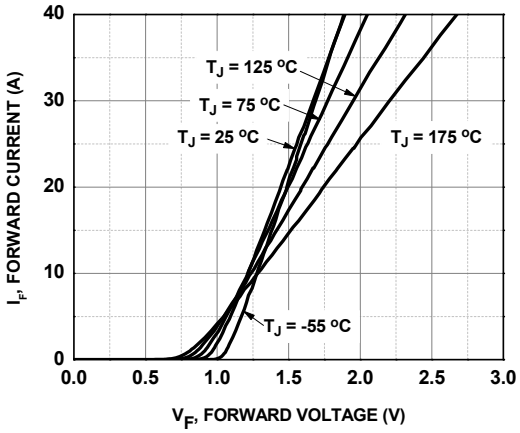


Figure 2. Reverse Characteristics

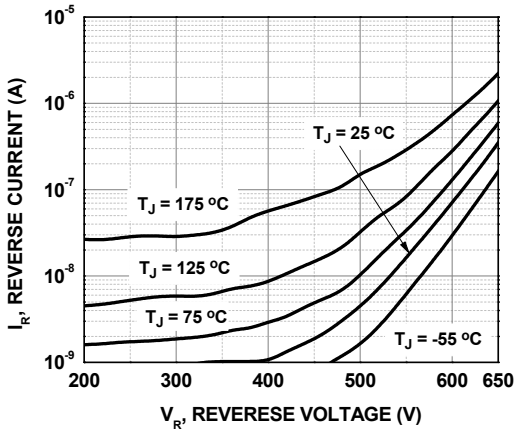


Figure 3. Current Derating

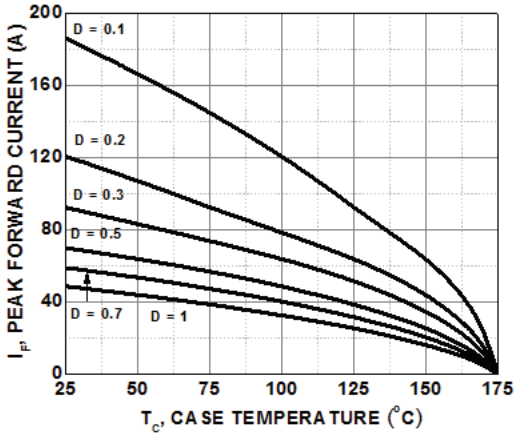
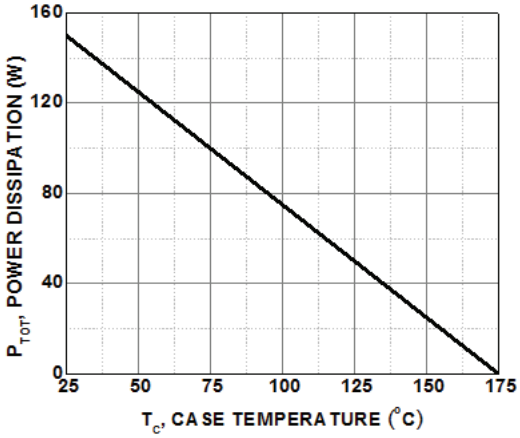


Figure 4. Power Derating



Typical Characteristics T_J = 25 °C unless otherwise noted.

Figure 5. Capacitive Charge vs. Reverse Voltage

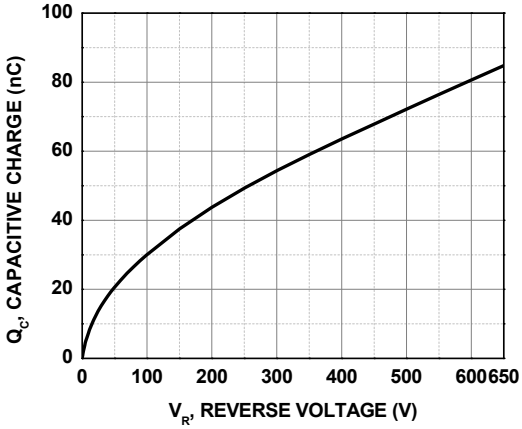


Figure 6. Capacitance vs. Reverse Voltage

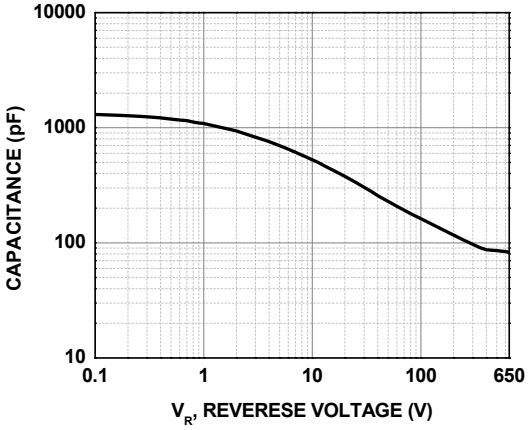


Figure 7. Capacitance Stored Energy

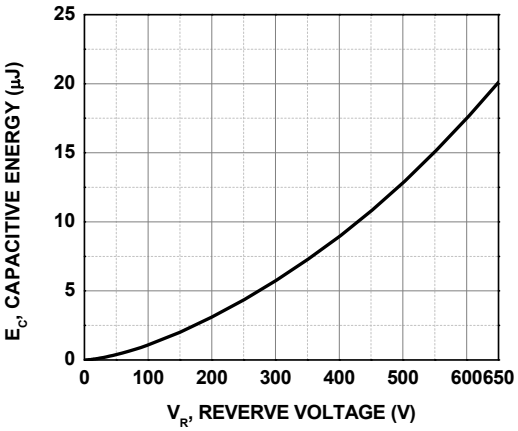
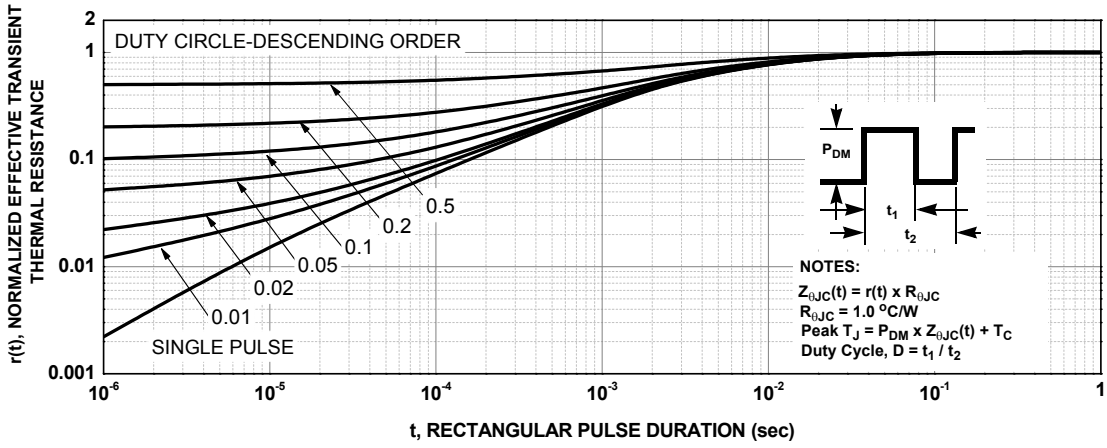
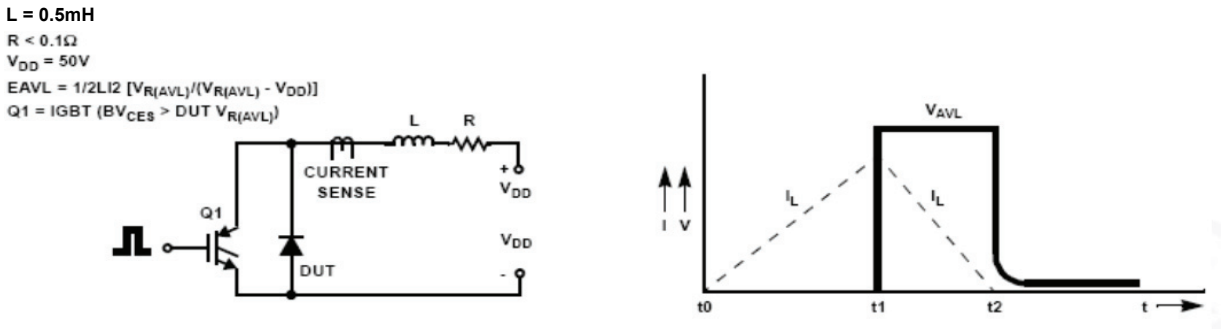


Figure 8. Junction-to-Case Transient Thermal Response Curve

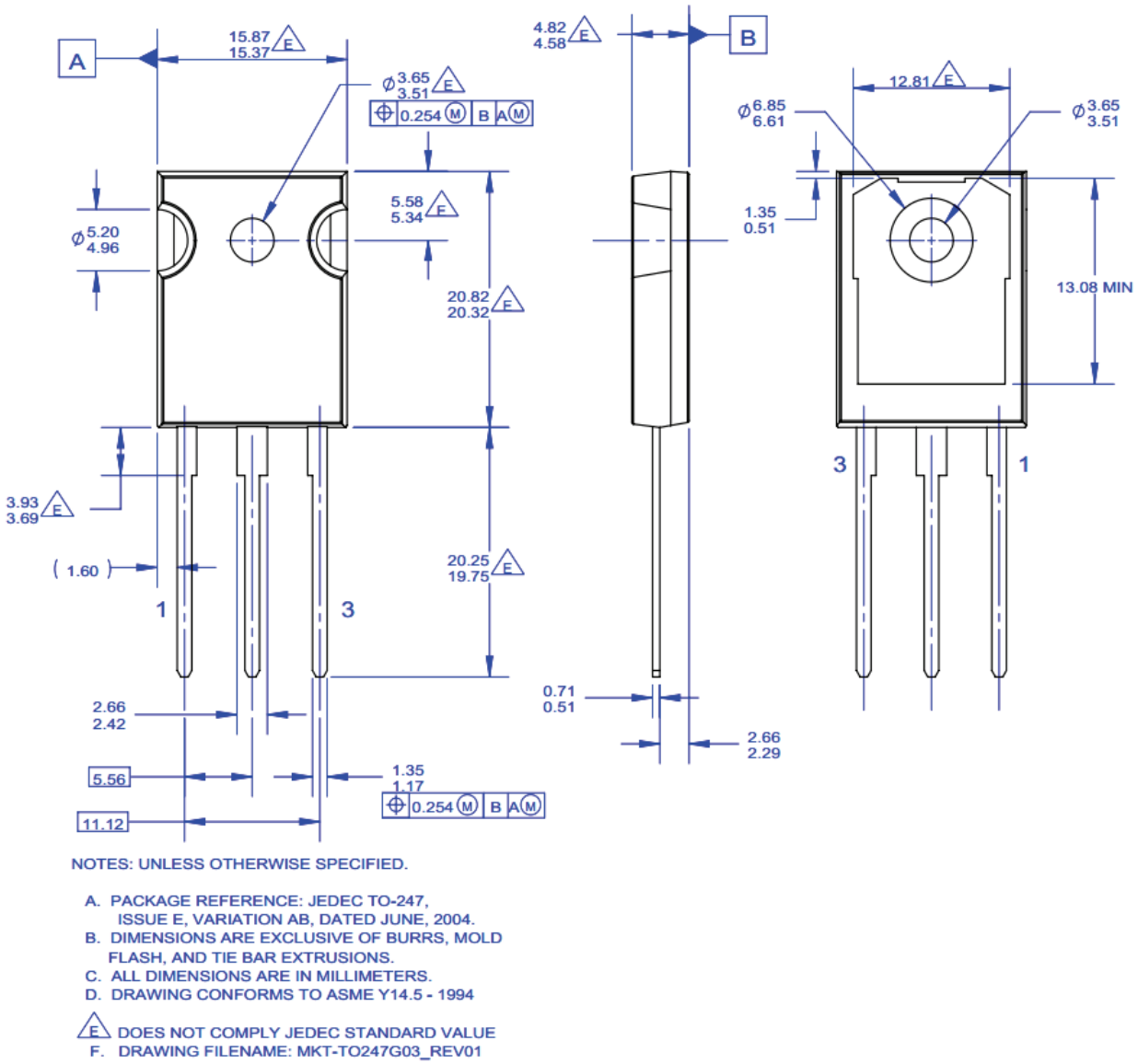


Test Circuit and Waveforms

Figure 9. Unclamped Inductive Switching Test Circuit & Waveform



Mechanical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED.

A. PACKAGE REFERENCE: JEDEC TO-247, ISSUE E, VARIATION AB, DATED JUNE, 2004.
B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
C. ALL DIMENSIONS ARE IN MILLIMETERS.
D. DRAWING CONFORMS TO ASME Y14.5 - 1994

E DOES NOT COMPLY JEDEC STANDARD VALUE
F. DRAWING FILENAME: MKT-TO247G03_REV01

Figure 10. TO-247, Molded, 3 Lead, Jedec AB Long Leads