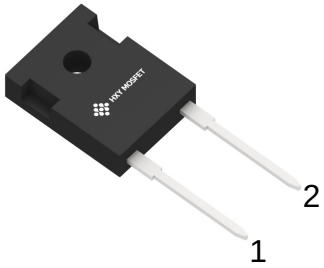
FFSH4065A

Silicon Carbide Schottky Diode

Features

- 650-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F



TO-247-2L

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives

Part Number	Package	Qty(PCS)
FFSH4065A	TO-247-2L	30

Maximum Ratings (T_C = 25 ˚C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	650	V	
V_{RSM}	Surge Peak Reverse Voltage	650	V	
I_F	Continuous Forward Current	93 42.8 40	A	T_C=25˚C T_C=135˚C T_C=139°C
I_{FRM}	Repetitive Peak Forward Surge Current	135	A	T_C=25˚C, t_P = 10 ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	270	A	T_C=25˚C, t_p = 10 ms, Half Sine Wave
P_{tot}	Power Dissipation	333 155	W	T_C=25˚C T_C=110˚C
T_J , T_{stg}	Operating Junction and Storage Temperature	-55 to +175	˚C	
	TO-220 Mounting Torque	1	Nm	M3 Screw
$\int i^2dt$	i^2dt value	364.5	A^2s	T_C=25˚C, t_p = 10 ms, Half Sine Wave

Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{DC}	DC Blocking Voltage	650			V	
V_F	Forward Voltage		1.47 2.02	1.7 2.5	V	I_F = 40 A T_J=25°C I_F = 40 A T_J=175°C
I_R	Reverse Current		1 5	50 100	μA	V_R = 650 V T_J=25°C V_R = 650 V T_J=175°C
Q_C	Total Capacitive Charge		96		nC	V_R = 400 V T_J = 25°C
C	Total Capacitance		1802 184 182		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 200 V, T_J = 25°C, f = 1 MHz V_R = 400 V , T_J = 25°C, f = 1 MHz
E_C	Capacitance Stored Energy		23		μJ	V_R = 400 V

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.45	°C/W

Typical Performance

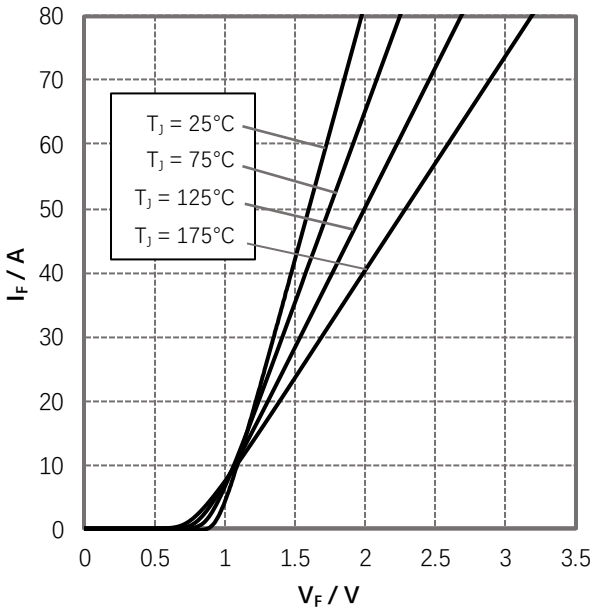


Figure 1. Forward Characteristics

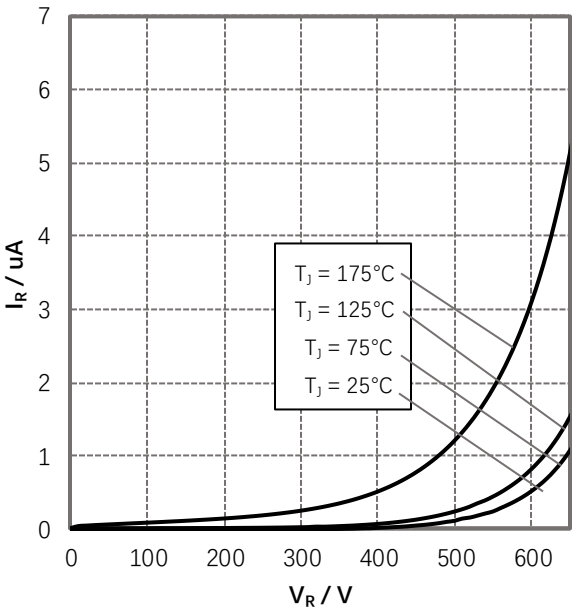


Figure 2. Reverse Characteristics

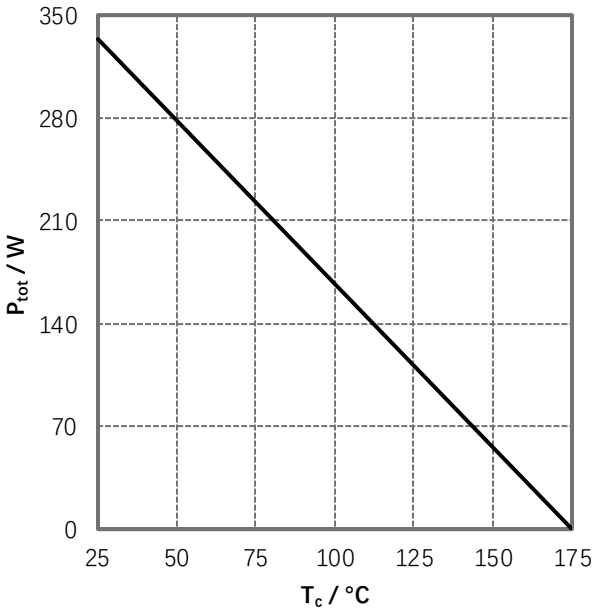


Figure 3. Power Derating

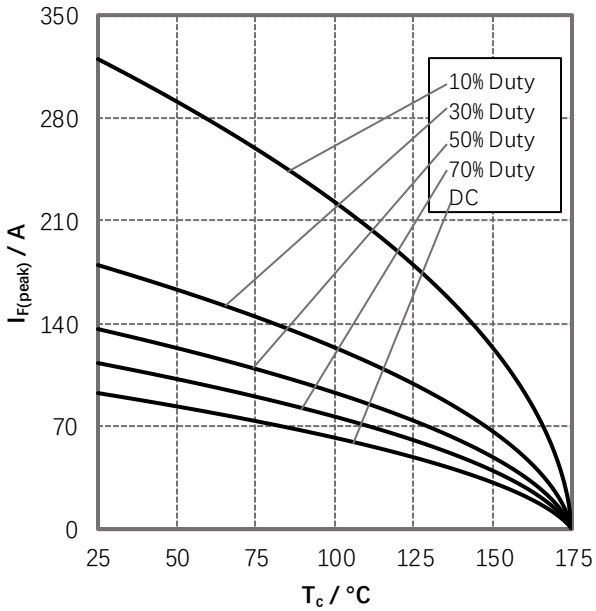


Figure 4. Current Derating

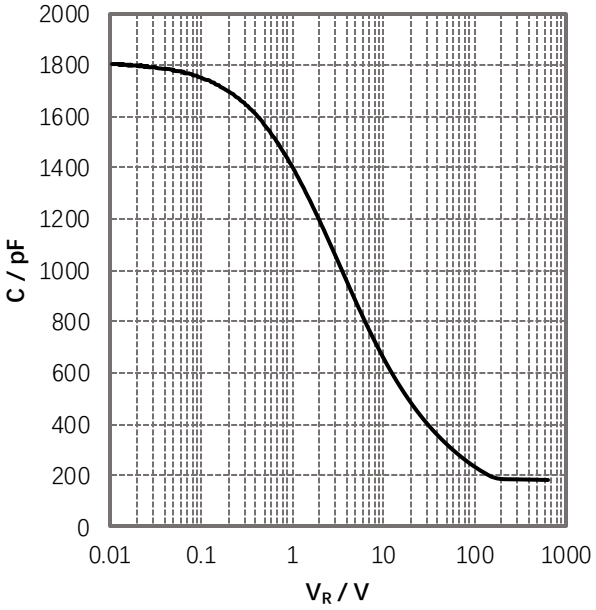


Figure 5. Capacitance vs. Reverse Voltage

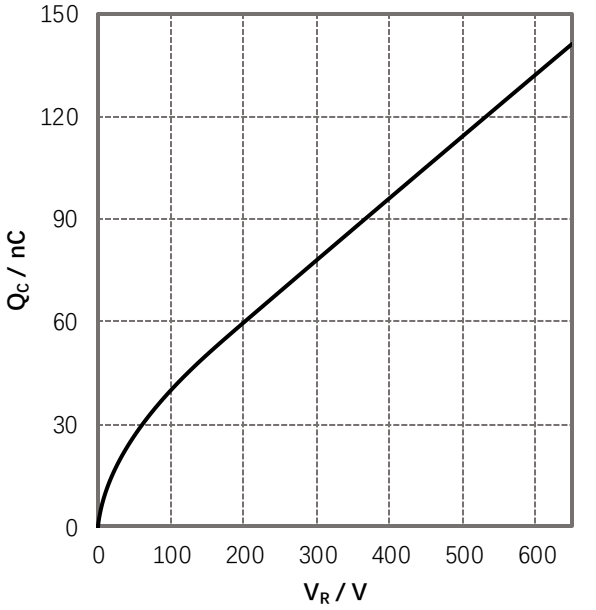


Figure 6. Total Capacitance Charge vs. Reverse Voltage

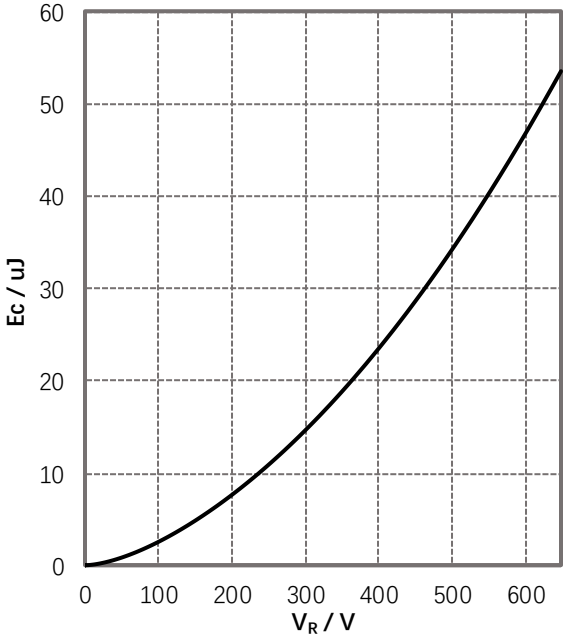


Figure 7. Capacitance Stored Energy

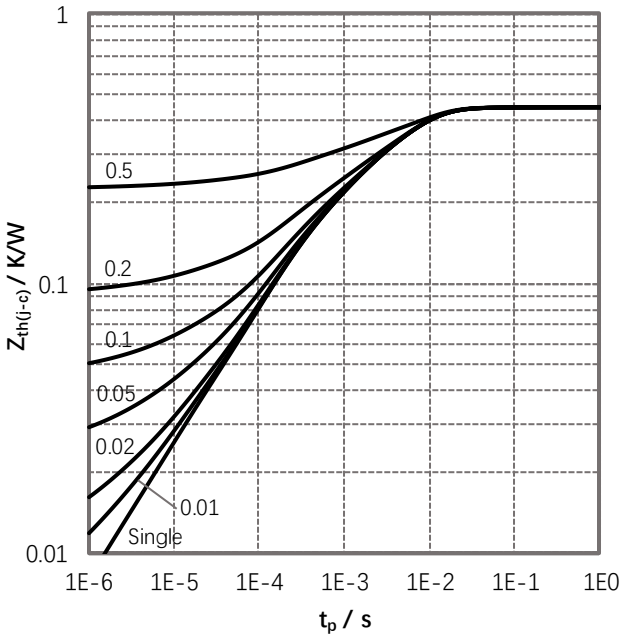
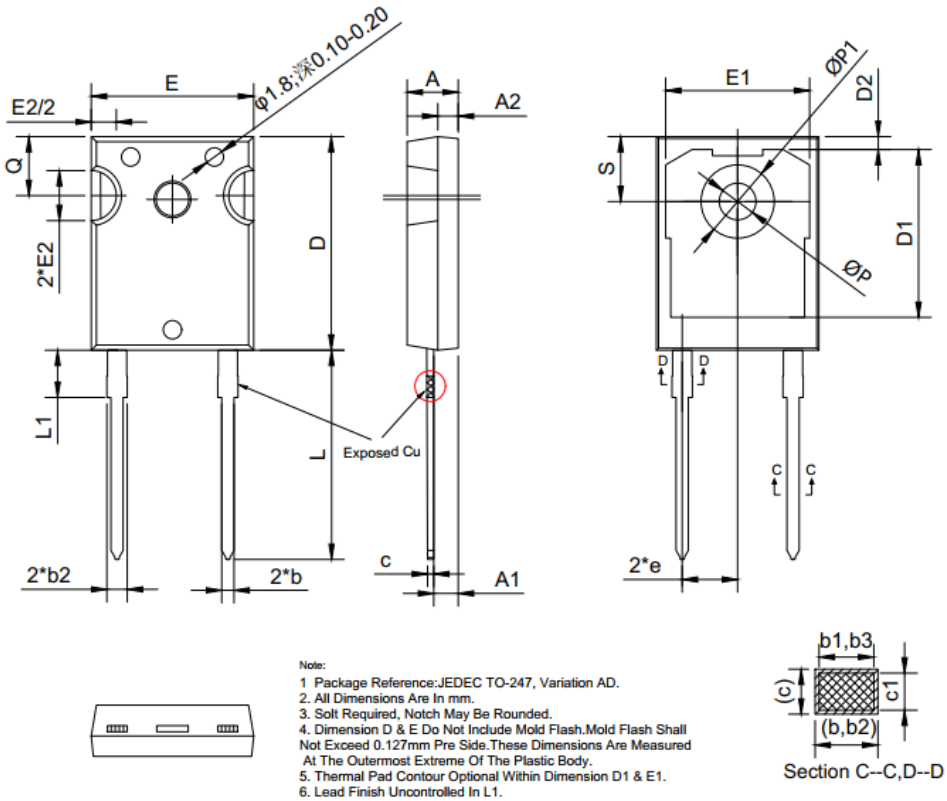


Figure 8. Transient Thermal Impedance

Package Information
TO-247-2L



SYMBOL	DIMENSIONS		NOTES
	MIN	MAX	
A	4.83	5.21	
A1	2.29	2.55	
A2	1.50	2.49	
b	1.07	1.33	
b1	1.07	1.28	
b2	1.91	2.41	6
b3	1.91	2.34	
c	0.55	0.69	6
c1	0.55	0.65	
D	20.80	21.10	4
D1	16.25	17.65	5
D2	0.51	1.35	
E	15.75	16.13	4
E1	13.10	14.16	5
E2	3.68	5.49	3
e	5.44BSC		
L	19.81	20.32	6
L1	3.90	4.40	7
ϕP	3.51	3.65	
ϕP1	7.19REF		
Q	5.39	6.20	
S	6.04	6.30	

Note:
1 Package Reference:JEDEC TO-247, Variation AD.
2. All Dimensions Are In mm.
3. Solt Required, Notch May Be Rounded.
4. Dimension D & E Do Not Include Mold Flash.Mold Flash Shall Not Exceed 0.127mm Pre Side.These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
5. Thermal Pad Contour Optional Within Dimension D1 & E1.
6. Lead Finish Uncontrolled In L1.
7. ϕP To Have A Maximum Draft Angle Of 1.5° To The Top Of The Part With A Maximum Hole Diameter Of 3.91mm.
8.Dimension"b2"And "b4"Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10mm Total In Excess Of "b2"And "b4" Dimension At Maximum Material Condition.

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