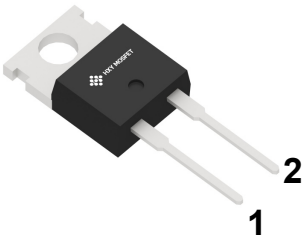
C3D06065I

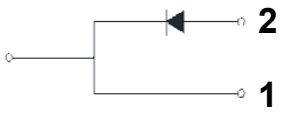
Silicon Carbide Schottky Diode

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-220C-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)
C3D06065I	TO-220C-2L	50

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	22.3 10.4 6	A	T_C=25˚C T_C=135˚C T_C=158.5˚C
I_{FRM}	Repetitive Peak Forward Surge Current	33	A	T_C=25˚C, t_P = 10 ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	66	A	T_C=25˚C, t_p = 10 ms, Half Sine Wave
P_{tot}	Power Dissipation	88 38	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

Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{DC}	DC Blocking Voltage	650			V	
V_F	Forward Voltage		1.36 1.64	1.7 2	V	I_F = 6 A T_J=25°C I_F = 6 A T_J=175°C
I_R	Reverse Current		0.12 0.91	50 100	μA	V_R = 650 V T_J=25°C V_R = 650 V T_J=175°C
Q_C	Total Capacitive Charge		22		nC	V_R = 400 V T_J = 25°C
C	Total Capacitance		440 42 41		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		5		μJ	V_R = 400 V

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.7	°C/W

Typical Performance

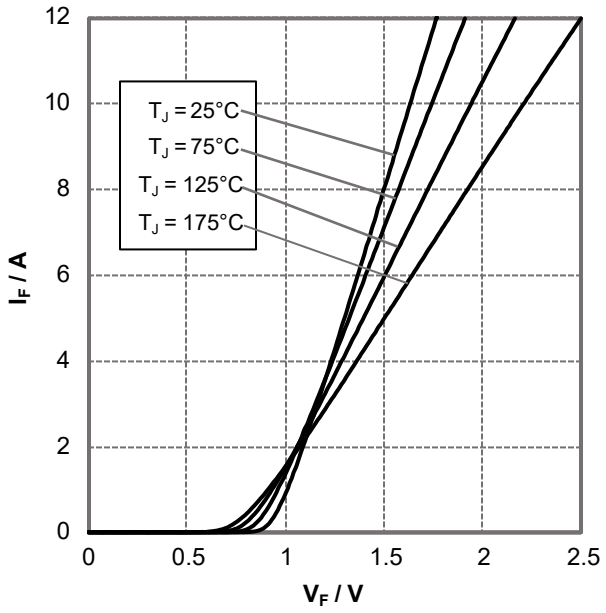


Figure 1. Forward Characteristics

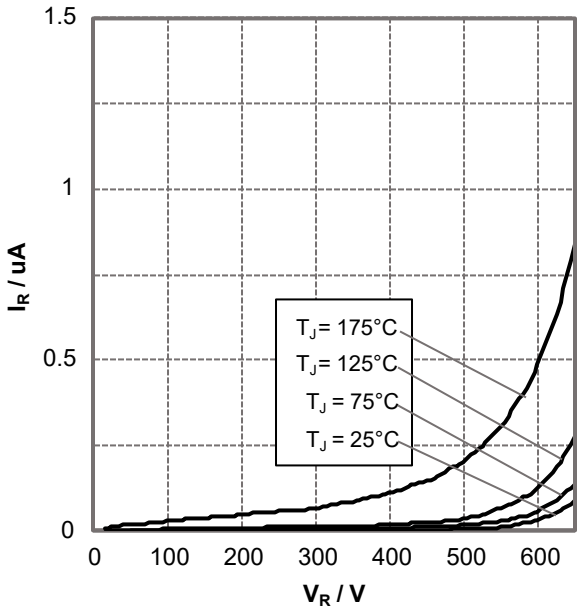


Figure 2. Reverse Characteristics

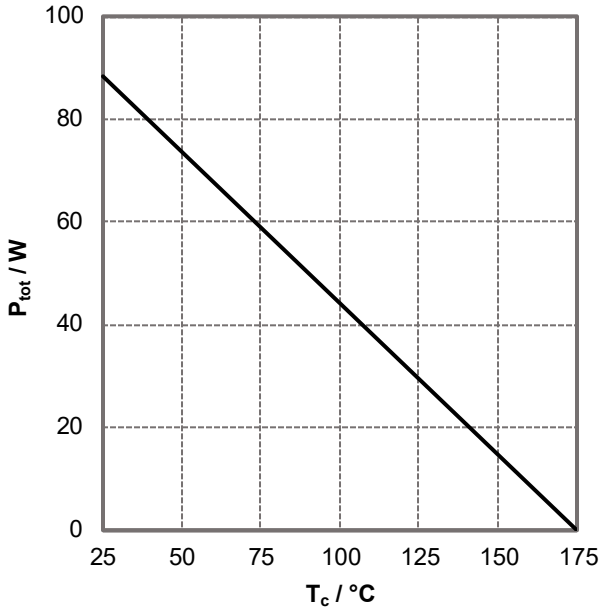


Figure 3. Power Derating

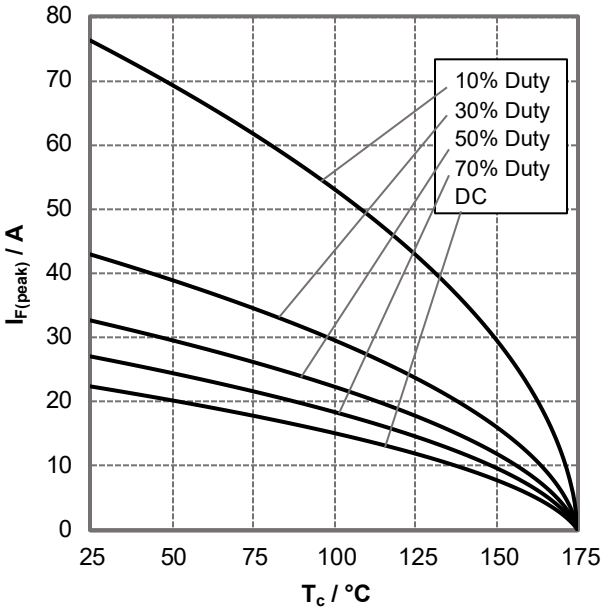


Figure 4. Current Derating

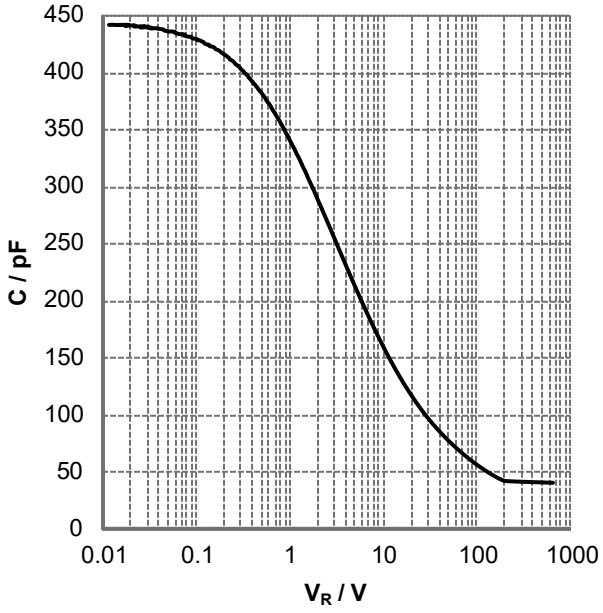


Figure 5. Capacitance vs. Reverse Voltage

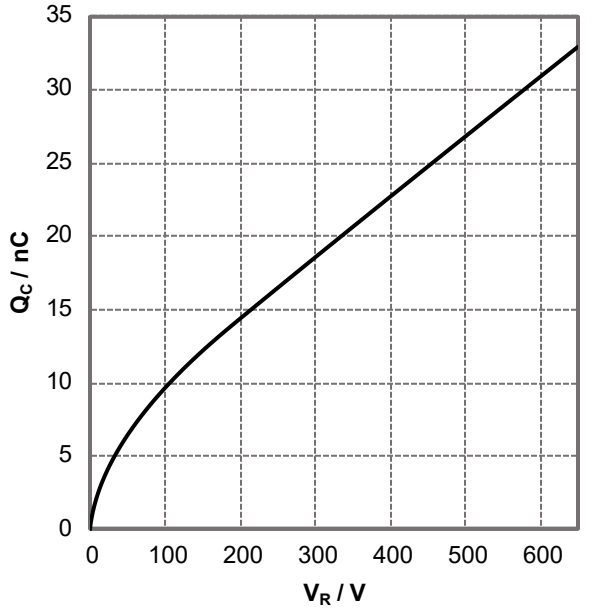


Figure 6. Total Capacitance Charge vs. Reverse Voltage

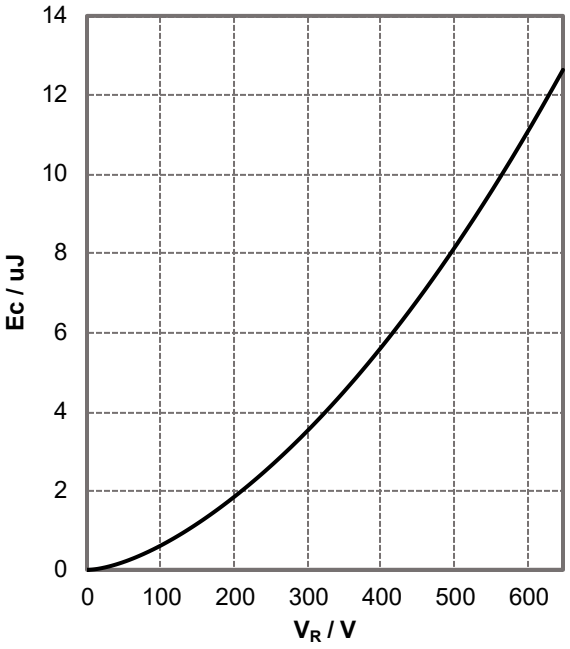


Figure 7. Capacitance Stored Energy

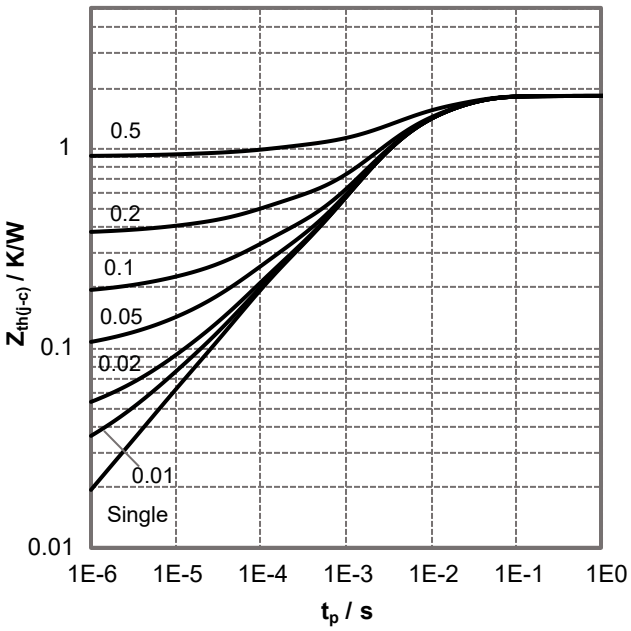
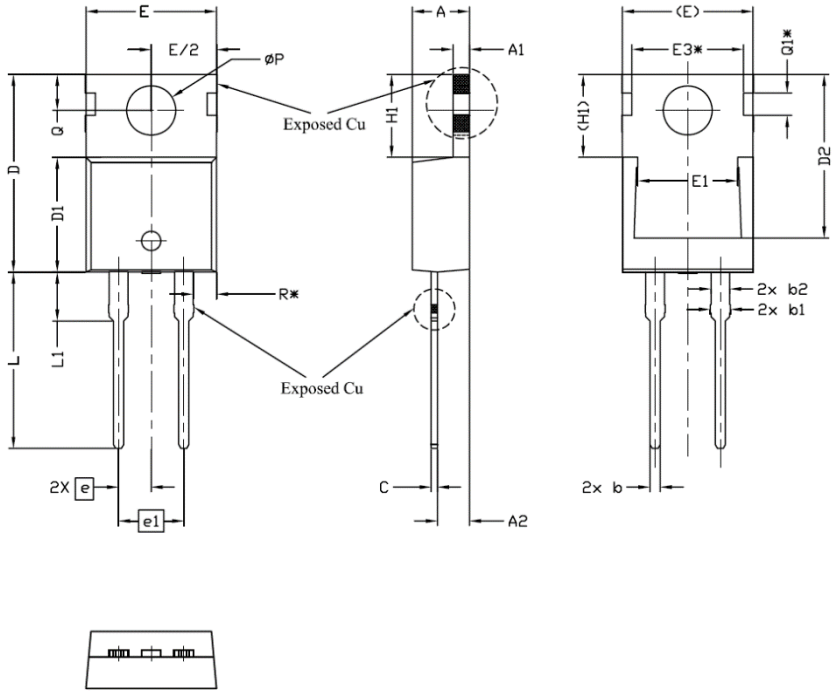


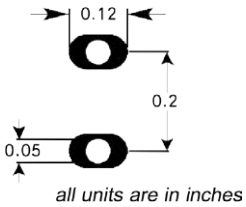
Figure 8. Transient Thermal Impedance

Package Information
TO-220C-2L



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.43	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.86	7.77	8.89	5
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6.30	6.45	6.60	5,6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
ØP	3.75	3.84	3.93	
Q	2.60	2.80	3.00	
Q1*	1.73REF.			
R*	1.82REF.			

Recommended Solder Pad Layout



TO-220C-2L

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AQ15C-01FTG HESD36VD3B HLY323BC1524L LM393DR-HXY BV05C-H HACPDQC5V0-HF HRCLAMP3371ZCTFT HSEN2411D3 HSEN3611D3 60N06 HSG3D15B3.3MA HSTS521050B331 HESDSLC3V3D3B PESDNC2XD5VBF PESDSC2FD5VU AZ4007-01H HSD15C.TCT PESDLC2FD3V3BH PESDNC2XD5VBL PJEC5V0M1FN2 RLSD32A121V ESD5L5.0C-HXY ESD5LM5.0C-HXY HAZ4007-01H TPSMB100CA-VR AZ4836-01L HCEZ36V,L3F HPTVSUC3D5VB TPSMB28A-VR PJSD24CW_R1