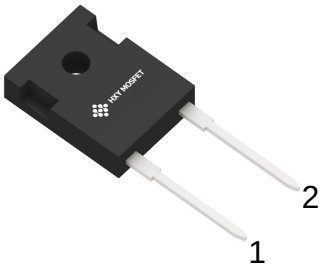
HC5D20170H

Silicon Carbide Schottky Diode

General Description

This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.



TO-247-2L

Features

- Low conduction loss due to low V_F
- Extremely low switching loss by tiny Q_C
- Highly rugged due to better surge current
- Industrial standard quality and reliability

Applications

- UPS
- Power Inverter
- High performance SMPS
- Power factor correction

Ordering Part Number	Package	Marking
HC5D20170H	TO-247-2L	HC5D20170H

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1700	V		
V_{RSM}	Surge Peak Reverse Voltage	1700	V		
V_{DC}	DC Blocking Voltage	1700	V		
I_F	Continuous Forward Current	20	A	T_C<150˚C	
I_{FRM}	Repetitive Peak Forward Surge Current	99 57	A	T_C=25˚C, t_P=10 ms, Half Sine Wave, D=1 T_C=110˚C, t_P=10 ms, Half Sine Wave, D=1	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	117 88	A	T_C=25˚C, t_P=10ms, Half Sine Wave, D=1 T_C=110˚C, t_P=10 ms, Half Sine Wave, D=1	
P_{tot}	Power Dissipation	377 163	W	T_C=25˚C T_C=110˚C	
T_c	Maximum Case Temperature	150	˚C		
T_J	Operating Junction Range	-55 to +175	˚C		
T_{stg}	Storage Temperature Range	-55 to +150	˚C		
	TO-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.5 3.0	2.2 3.5	V	I_F = 20 A T_J=25°C I_F = 20 A T_J=175°C	
I_R	Reverse Current	20 100	100 400	μA	V_R = 1700 V T_J=25°C V_R = 1700 V T_J=175°C	
Q_C	Total Capacitive Charge	205		nC	V_R = 1700 V, I_F = 20 A di/dt = 200 A/μs T_J = 25°C	
C	Total Capacitance	2079 187.5 97		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 = 800 V, T_J = 25˚C, f = 1 MHz	

Note:
1. This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.4	°C/W

Typical Performance

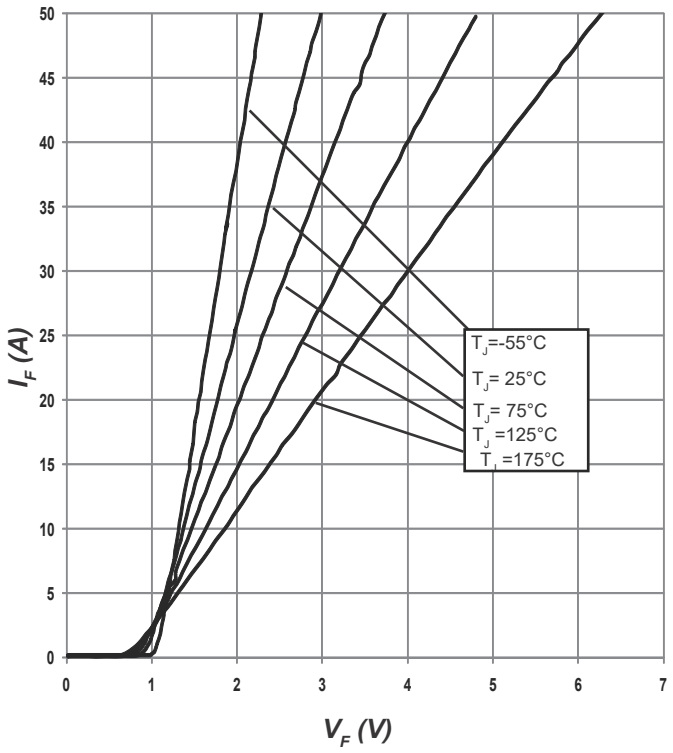


Figure 1. Forward Characteristics

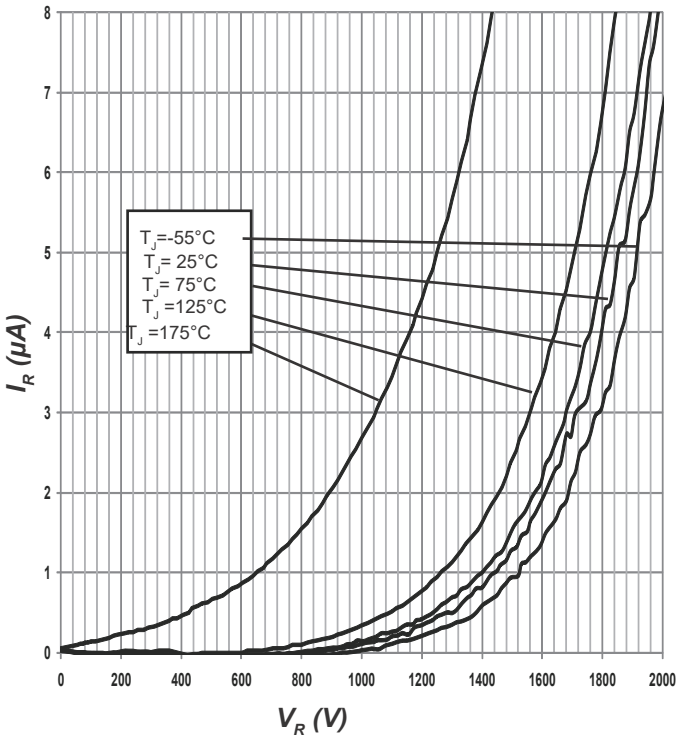


Figure 2. Reverse Characteristics

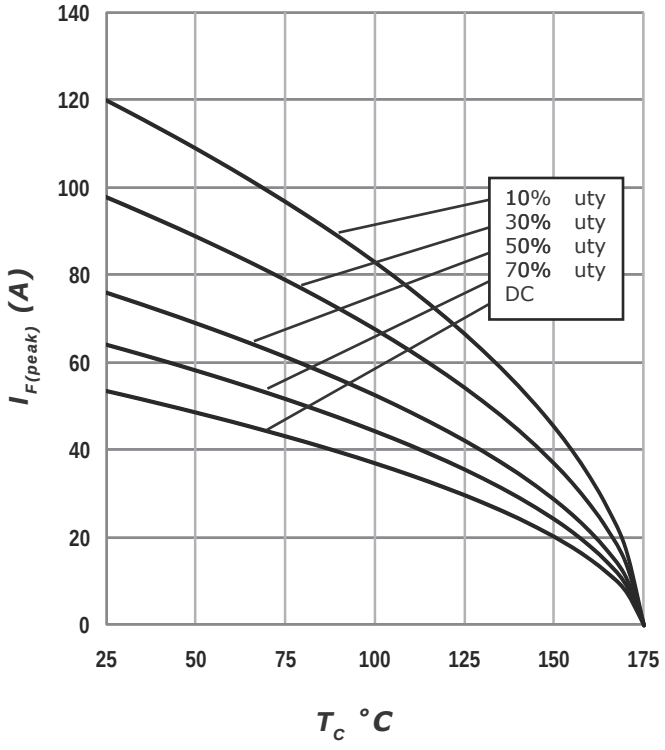


Figure 3. Current Derating

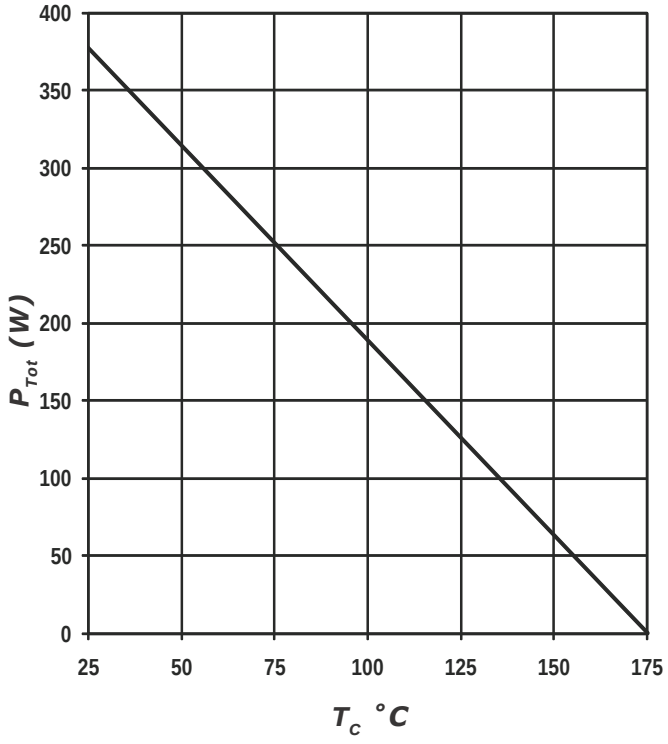


Figure 4. Power Derating

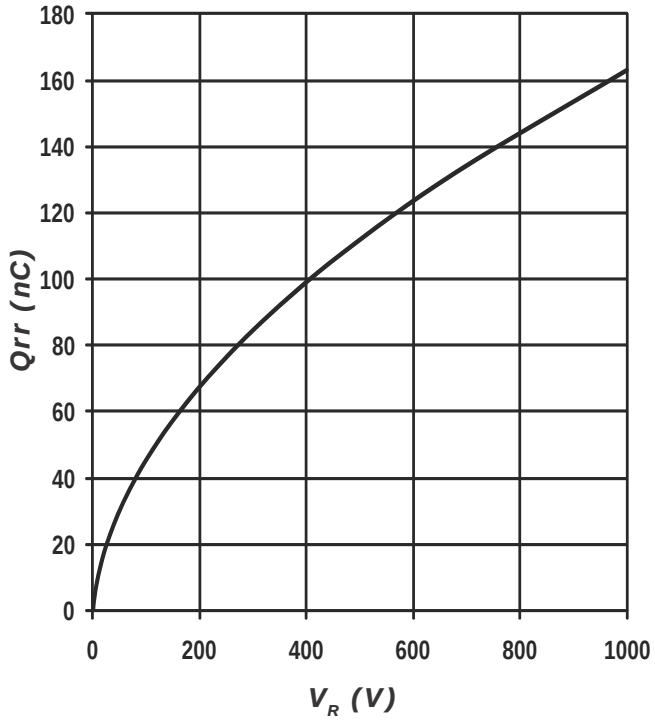


Figure 5. Recovery Charge vs. Reverse Voltage

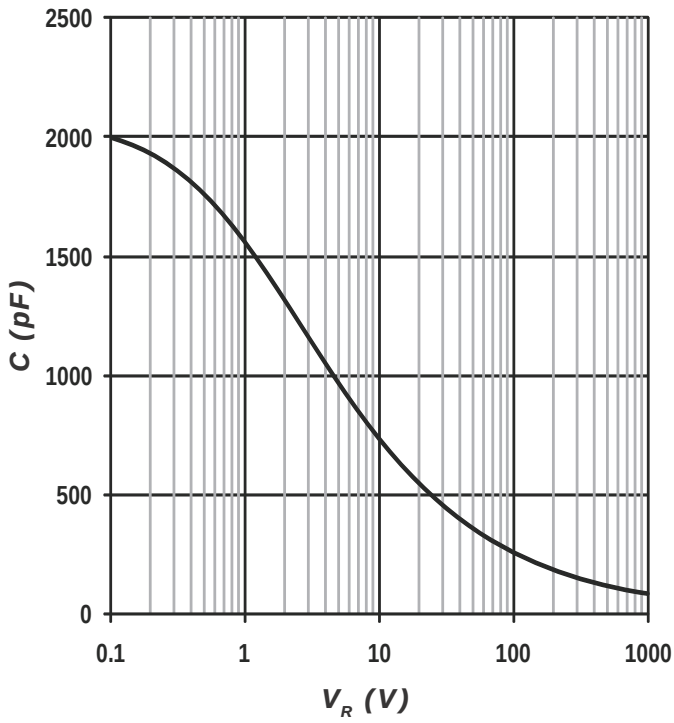


Figure 6. Capacitance vs. Reverse Voltage

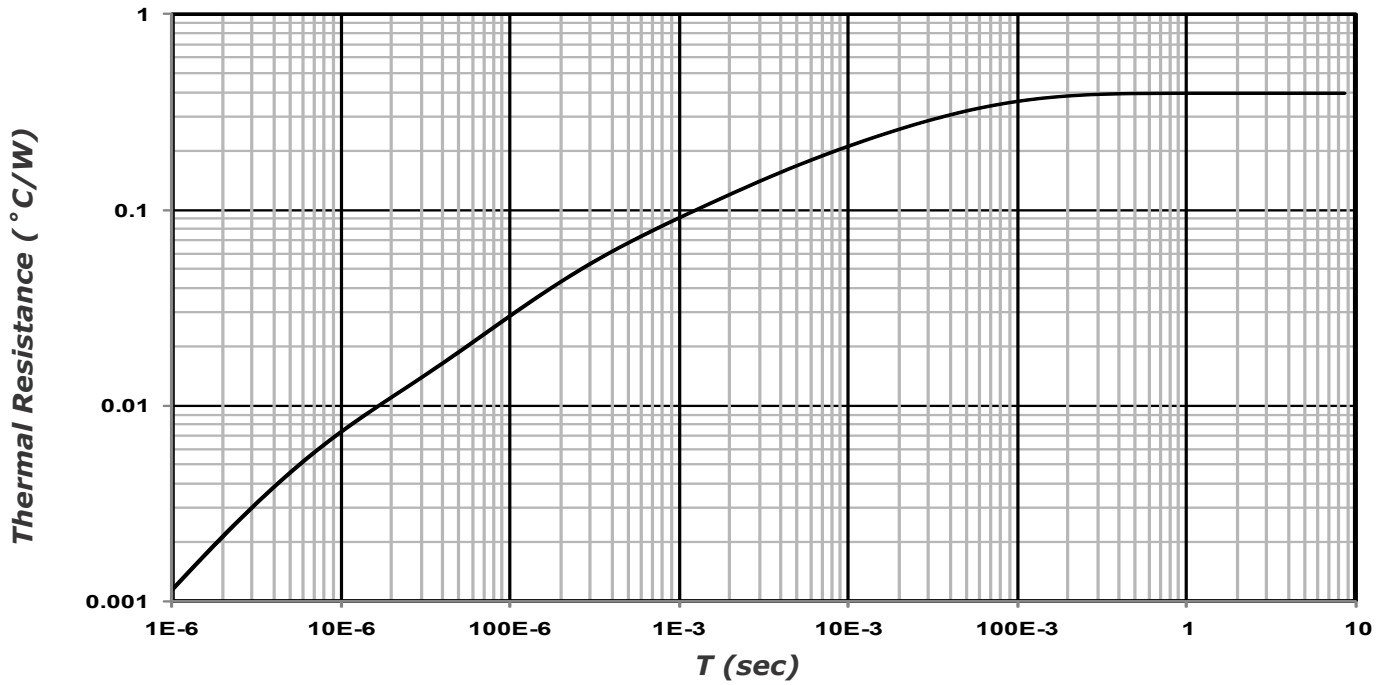
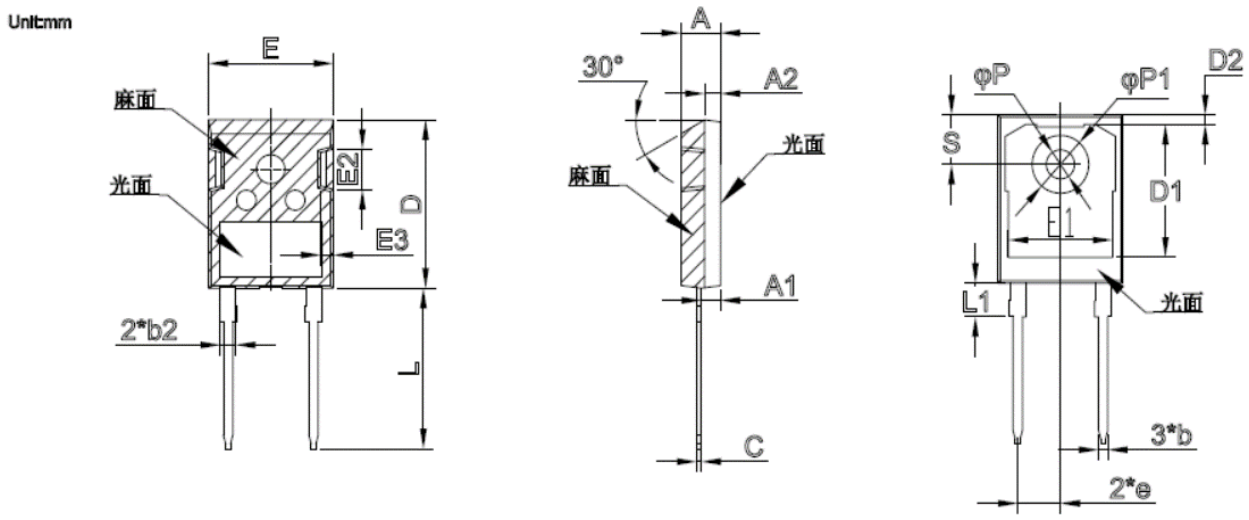


Figure 7. Transient Thermal Impedance

Package Dimensions

Package TO-247-2L

Unit:mm



	Min	Nom	Max		Min	Nom	Max
A	4.70	5.00	5.20	E1	13.06	13.26	13.56
A1	2.30		2.50	E2	4.90	5.00	5.10
A2	1.90	2.00	2.10	E3	1.50	1.60	1.70
b	1.10	1.20	1.30	e	5.34	5.44	5.54
b2		2.00		L	19.80	20.00	20.32
				L1		4.17	4.50
C	0.5	0.6	0.7	P	3.50	3.60	3.70
D	20.8	20.95	21.1	P1	7.00	7.19	7.40
D1		16.55		S	6.04	6.15	6.3
D2	0.95	1.17	1.35				
E	15.48	15.88	16.28				

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