HC3D25170H

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
Package

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
HC3D25170H	TO-247-2L	HC3D25170H

Maximum Ratings (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	1700	V
Surge Peak Reverse Voltage	V_{RSM}	1700	V
DC Peak Reverse Voltage	V_R	1700	V
Continuous Forward Current T_C = 25°C T_C = 135°C T_C = 160°C	I_F	 74 38 25	A
Repetitive Peak Forward Surge Current T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	I_{FRM}	 140 88	A
Non-Repetitive Forward Surge Current T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	I_{FSM}	 225 180	A
i^2dt value T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	$\int i^2dt$	 253 162	A^2s
Power dissipation T_C = 25°C T_C = 110°C	P_{tot}	 375 162	W
Operating junction Range	T_j	-55 to +175	°C
Storage temperature Range	T_{stg}	-55 to +150	°C

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case.	R_{thJC}	0.26	°C/W

Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	V_F	-	1.4	1.7	V	I_F=30A, T_j=25°C
		-	2.2	-		T_j=175°C
Reverse Current	I_R	-	10	200	μA	V_R=1700V, T_j=25°C
		-	60	400		T_j=175°C
Total Capacitive Charge	Q_C	-	324	-	nC	V_R=1700V，T_j=25℃ $Q_C = \int_0^{V_R} C(V)dV$
Total Capacitance	C	-	3110	-	pF	T_j=25℃, f=1MHz, V_R=0V
		-	134	-		V_R=800V
		-	132	-		V_R=1700V

Characteristics Curve:

Fig 1: Forward Characteristics

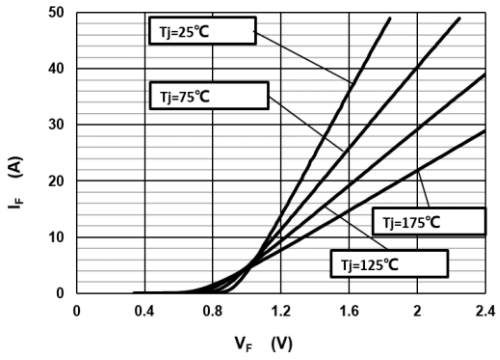


Fig 2: Reverse Characteristics

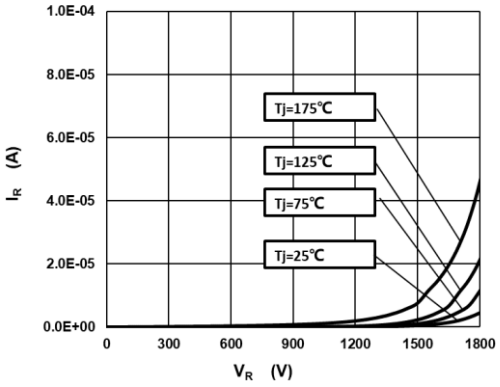


Fig 3: Current Derating

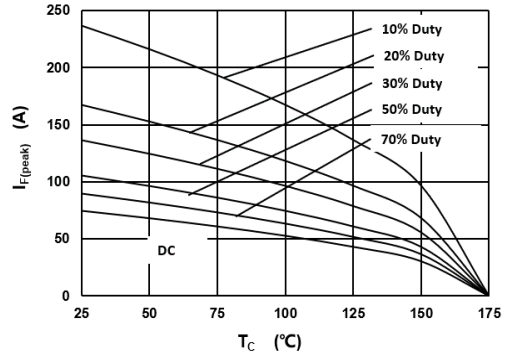


Fig 4: Power Derating

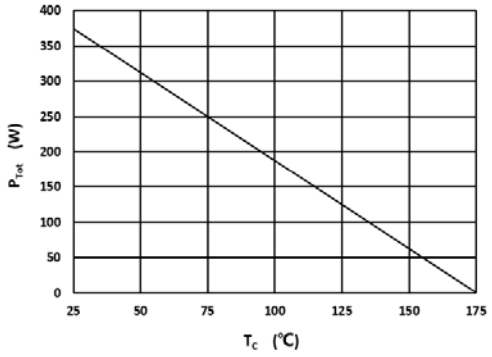


Fig 5: Capacitance vs. Reverse Voltage

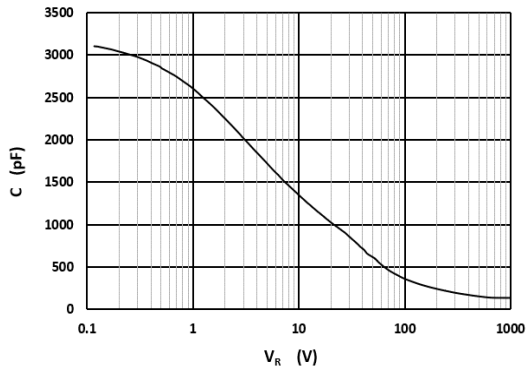


Fig 6: Reverse Charge vs. Reverse Voltage

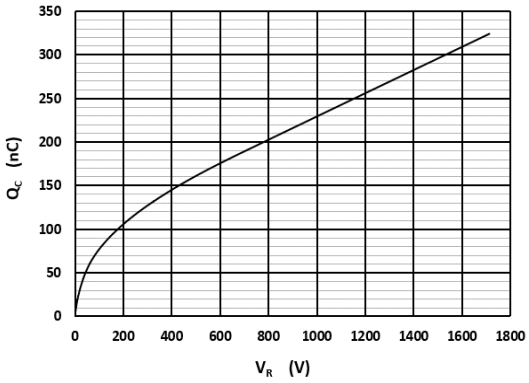


Fig 7: Typical Capacitance Stored Energy

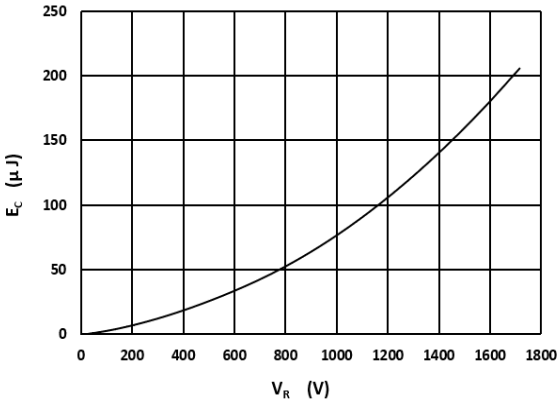
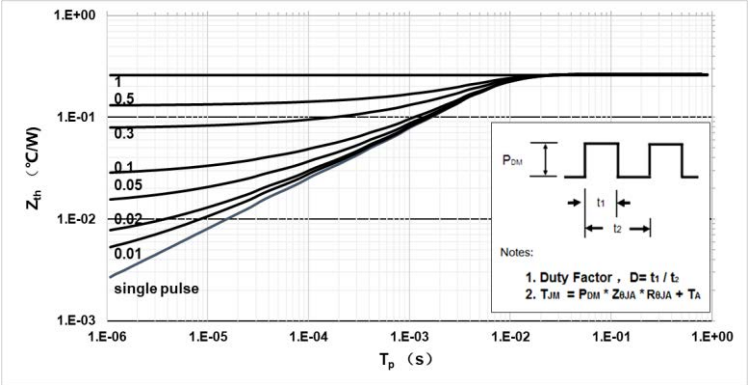


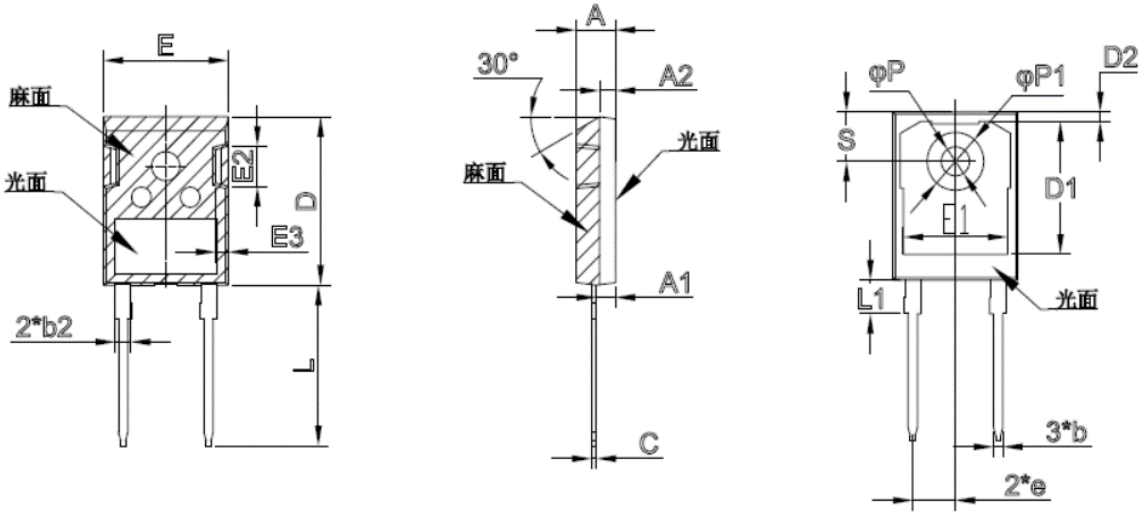
Fig 8: Transient Thermal Impandance



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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