



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.

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



TO-247-2L
Package



Ordering Part Number	Package	Marking
HC4D50120H	TO-247-2L	HC4D50120H



Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	$T_C = 25^\circ\text{C}$	
V_{RSM}	Surge Peak Reverse Voltage	1200	V	$T_C = 25^\circ\text{C}$	
V_R	DC Blocking Voltage	1200	V	$T_C = 25^\circ\text{C}$	
I_F	Forward Current	62 50	A	$T_C \leq 135^\circ\text{C}$ $T_C \leq 147^\circ\text{C}$	
I_{FSM}	Non-Repetitive Forward Surge Current	350	A	$T_C = 25^\circ\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave	
P_{tot}	Power Dissipation	600	W	$T_C = 25^\circ\text{C}$	Fig.3
T_C	Maximum Case Temperature	147	$^\circ\text{C}$		
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	$^\circ\text{C}$		
	TO-247 Mounting Torque	1	Nm	M3 Screw	



Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.6 2.25	1.8 2.7	V	$I_F = 50A$, $T_J = 25^\circ C$ $I_F = 50A$, $T_J = 175^\circ C$	Fig.1
I_R	Reverse Current	30 100	150 1000	μA	$V_R = 1200V$, $T_J = 25^\circ C$ $V_R = 1200V$, $T_J = 175^\circ C$	Fig.2
C	Total Capacitance	3100 220 180	/	pF	$V_R = 0V$, $T_J = 25^\circ C$, $f = 1MHz$ $V_R = 400V$, $T_J = 25^\circ C$, $f = 1MHz$ $V_R = 800V$, $T_J = 25^\circ C$, $f = 1MHz$	Fig.5
Q_C	Total Capacitive Charge	143	/	nC	$V_R = 800V$, $I_F = 50A$ $di/dt = 200A/\mu s$, $T_J = 25^\circ C$	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.25	$^\circ C/W$	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	$^\circ C/W$	
T_{solder}	Soldering Temperature	260	$^\circ C$	

Typical Performance

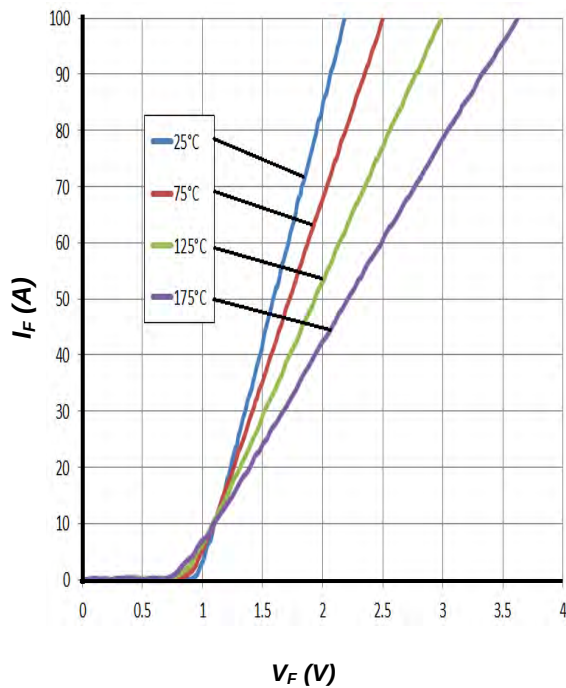


Figure 1. Forward Characteristics

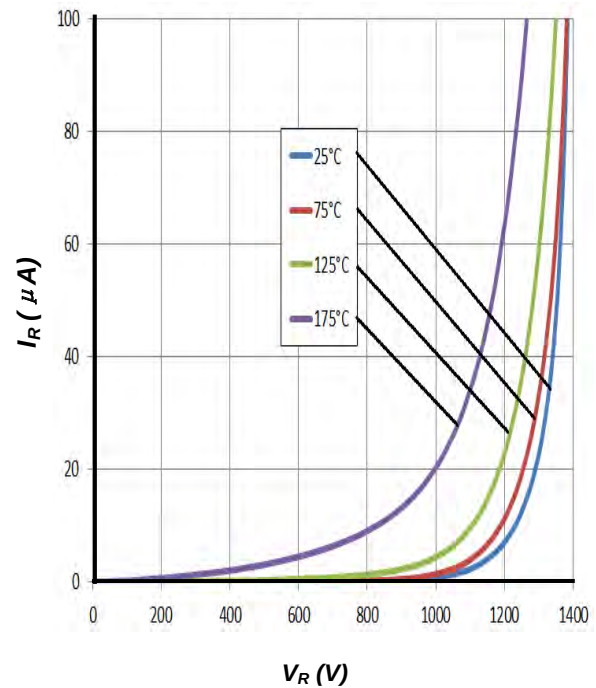


Figure 2. Reverse Characteristics

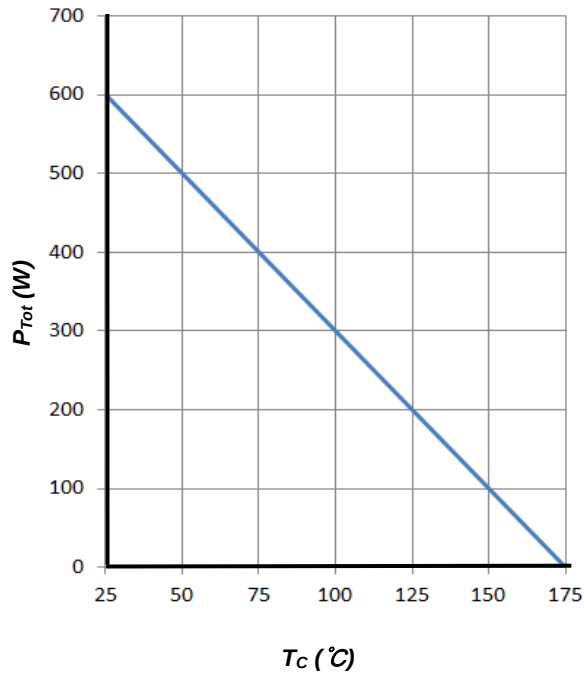


Figure 3. Power Derating

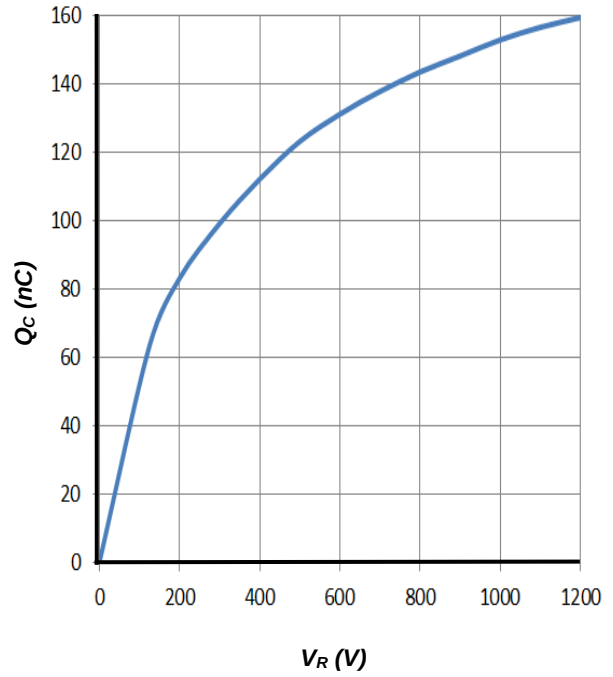


Figure 4. Total Capacitive Charge vs. Reverse Voltage

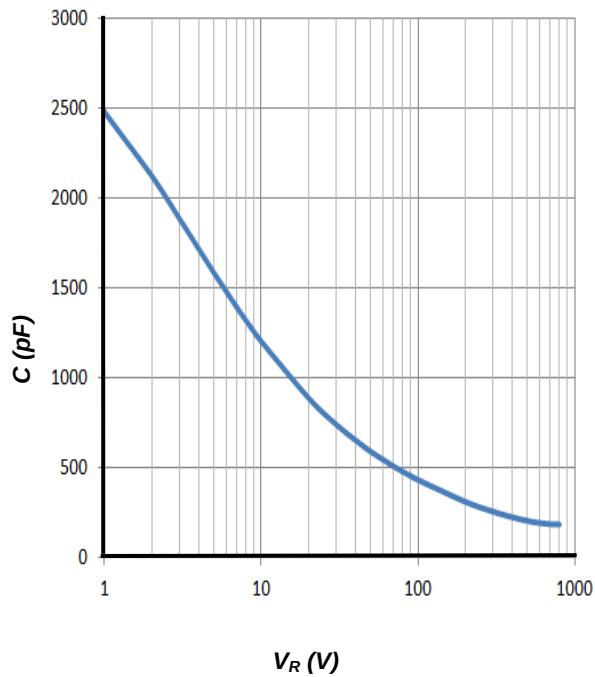


Figure 5. Total Capacitance vs. Reverse Voltage

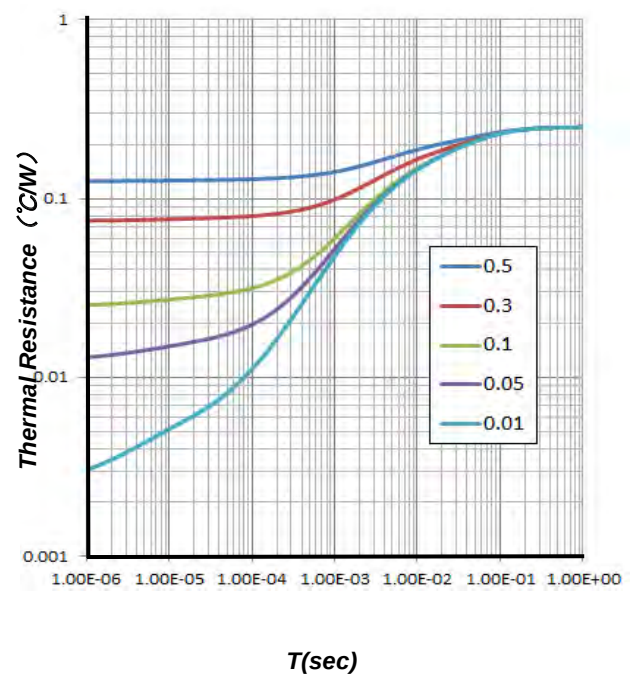


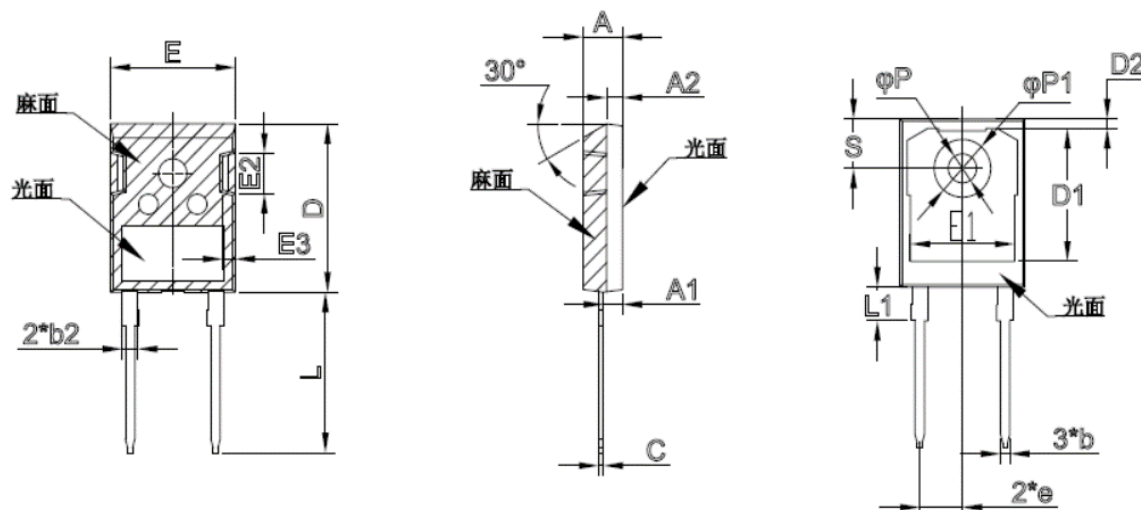
Figure 6. Transient Thermal Impedance



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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