



## 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
HC4D50120H	TO-247-2L	HC4D50120H



## Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	1200	V	$T_C = 25^\circ C$	
$V_{RSM}$	Surge Peak Reverse Voltage	1200	V	$T_C = 25^\circ C$	
$V_R$	DC Blocking Voltage	1200	V	$T_C = 25^\circ C$	
$I_F$	Forward Current	62 50	A	$T_C \leq 135^\circ C$ $T_C \leq 147^\circ C$	
$I_{FSM}$	Non-Repetitive Forward Surge Current	350	A	$T_C = 25^\circ C, t_p = 8.3ms$ , Half Sine Wave	
$P_{tot}$	Power Dissipation	600	W	$T_C = 25^\circ C$	Fig.3
$T_C$	Maximum Case Temperature	147	$^\circ C$		
$T_J, T_{STG}$	Operating Junction and Storage Temperature	-55 to 175	$^\circ C$		
	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	$\mu A$	$V_R = 1200V, T_J = 25^\circ C$ $V_R = 1200V, T_J = 175^\circ C$	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	°C/W	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	°C/W	
$T_{sold}$	Soldering Temperature	260	°C	

## Typical Performance

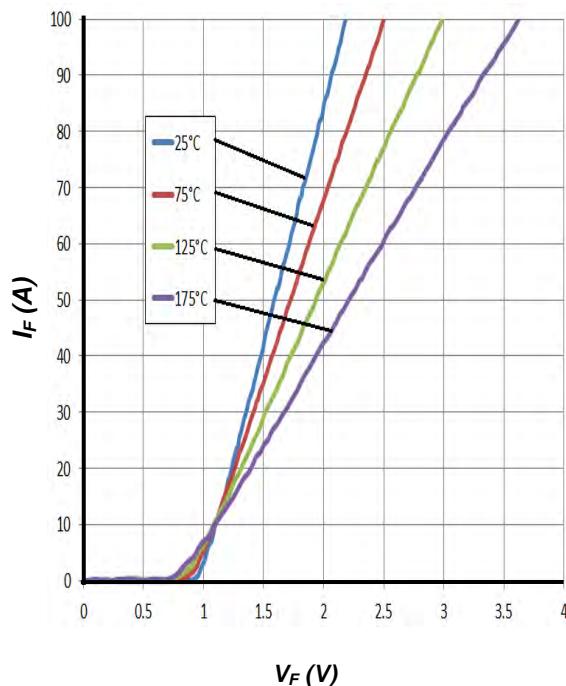


Figure 1. Forward Characteristics

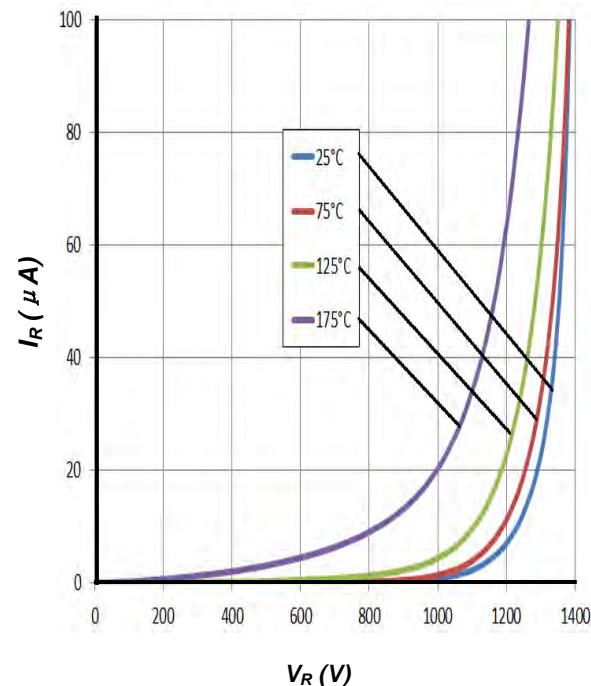


Figure 2. Reverse Characteristics

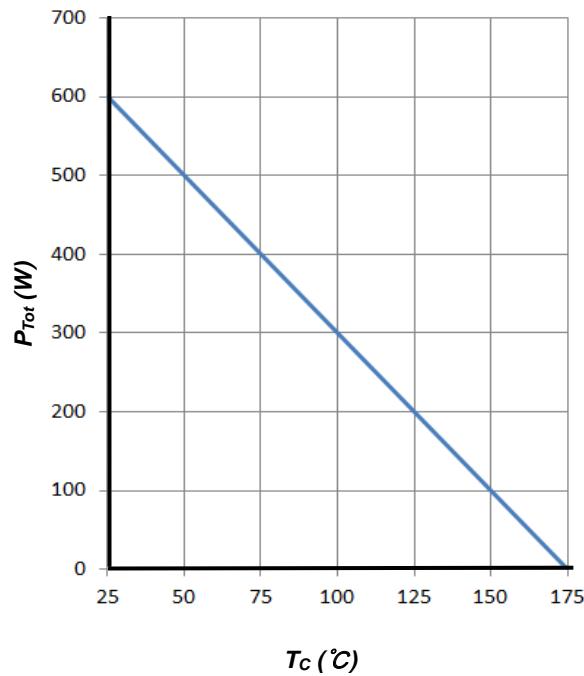


Figure 3. Power Derating

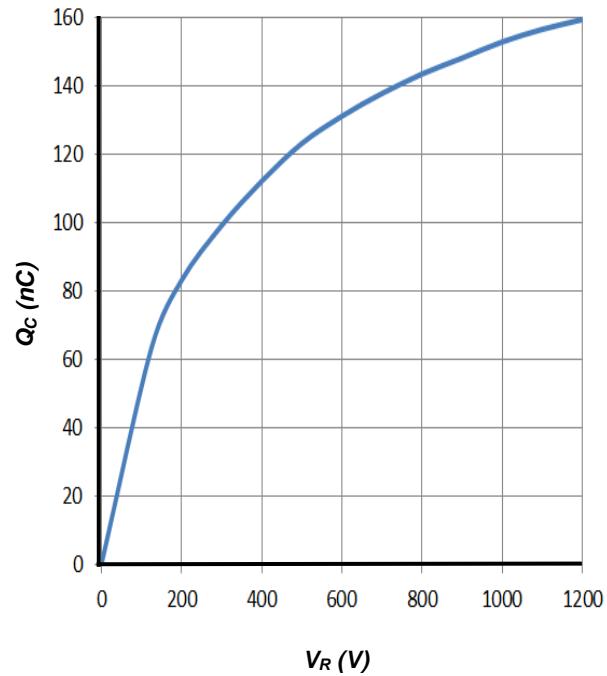


Figure 4. Total Capacitive Charge vs. Reverse Voltage

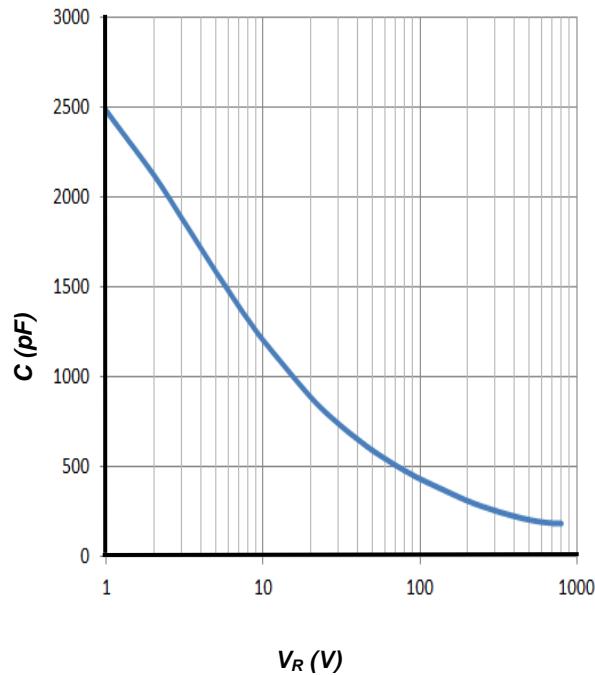


Figure 5. Total Capacitance vs. Reverse Voltage

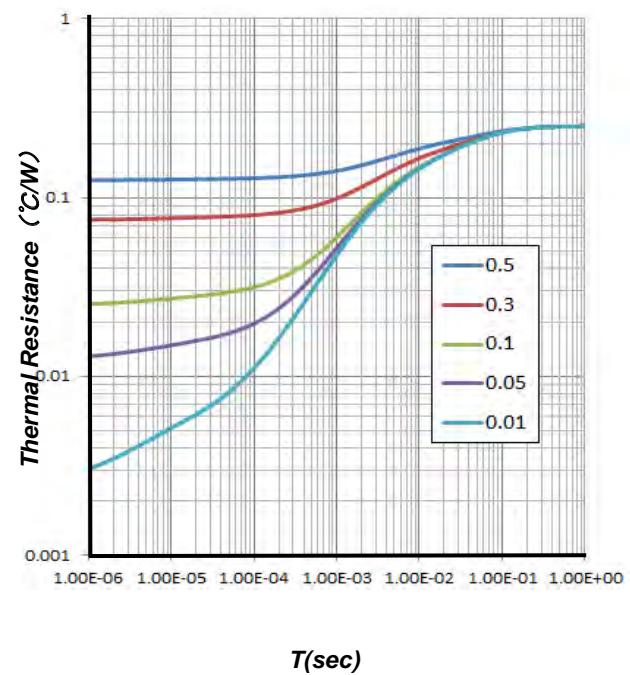


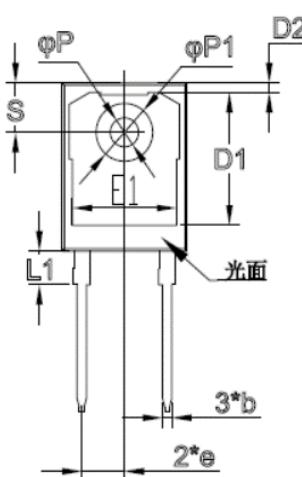
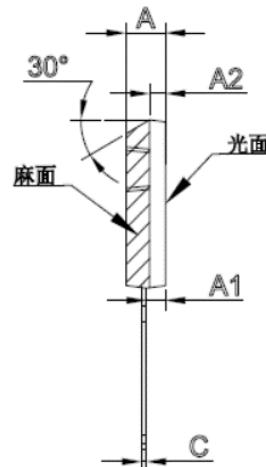
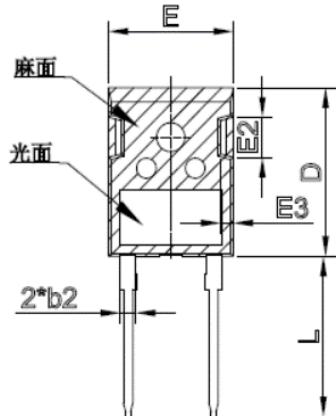
Figure 6. Transient Thermal Impedance



## 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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