



## 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

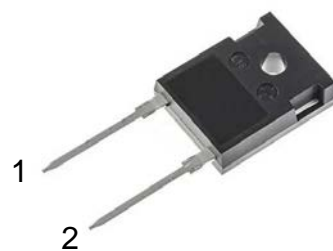
- Low conduction loss due to low  $V_F$
- Extremely low switching loss by tiny  $Q_C$
- Highly rugged due to better surge current
- Industrial standard quality and reliability

## Applications

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



Part Number	Package	Marking
HC3D20065H	TO-247-2L	H320065PP



TO-247-2L  
Package



## Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V	
$V_{RSM}$	Surge Peak Reverse Voltage	650	V	
$V_R$	DC Peak Reverse Voltage	650	V	
$I_F$	Continuous Forward Current	26	A	$T_C=135^{\circ}\text{C}$
$I_{FRM}$	Repetitive Peak Forward Surge Current	102 63	A	$T_C=25^{\circ}\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=1$ $T_C=110^{\circ}\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=1$
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	150 120	A	$T_C=25^{\circ}\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=1$ $T_C=110^{\circ}\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=1$
$P_{tot}$	Power Dissipation	150 65	W	$T_C=25^{\circ}\text{C}$ $T_C=110^{\circ}\text{C}$
$\int i^2 dt$	$i^2 dt$ value	112 72	$\text{A}^2\text{s}$	$T_C=25^{\circ}\text{C}$ , $t_p=10$ ms, Half Sine Pulse $T_C=110^{\circ}\text{C}$ , $t_p=10$ ms, Half Sine Pulse
$T_J$	Operating Junction Range	-55 to +175	$^{\circ}\text{C}$	
$T_{stg}$	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$	



## Electrical Characteristics

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	$V_F$	-	1.35	1.5	V	$I_F=20A$ $T_J=25^{\circ}C$ $T_J=175^{\circ}C$
Reverse Current	$I_R$	-	2	40	$\mu A$	$V_R=650V$ $T_J=25^{\circ}C$ $T_J=175^{\circ}C$
Total Capacitive Charge	$Q_C$	-	52	-	nC	$V_R=400V, T_J=25^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$
Total Capacitance	C	-	1018	-	pF	$T_J=25^{\circ}C, f=1MHz$ $V_R=0V$ $V_R=200V$ $V_R=400V$

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.00	$^{\circ}C/W$

## Typical Performance

Fig 1: Forward Characteristics

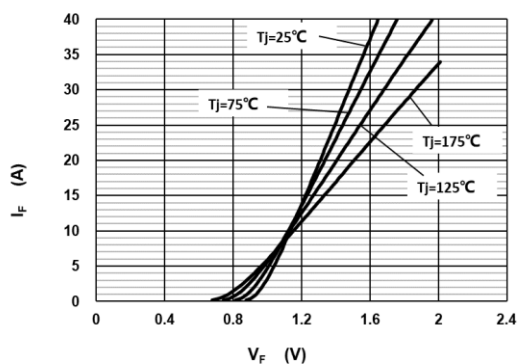


Fig 2: Reverse Characteristics

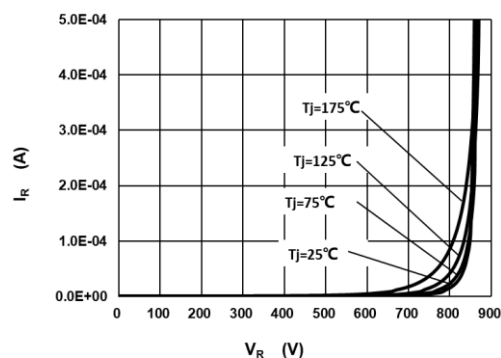




Fig 3: Current Derating

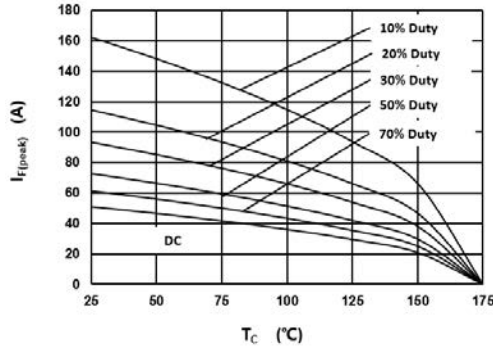


Fig 4: Power Derating

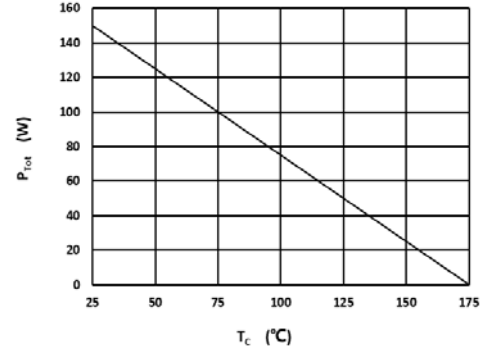


Fig 5: Capacitance vs. Reverse Voltage

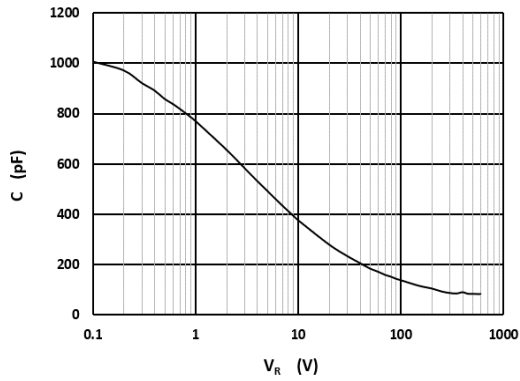


Fig 6: Reverse Charge vs. Reverse Voltage

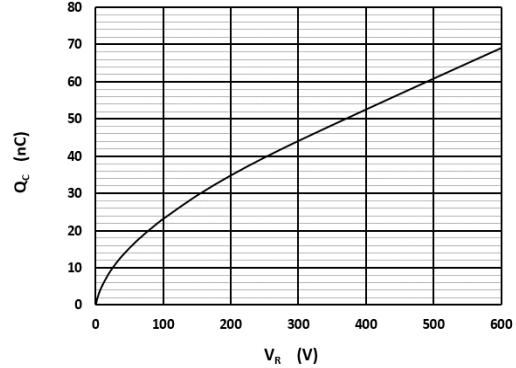


Fig 7: Typical Capacitance Stored Energy

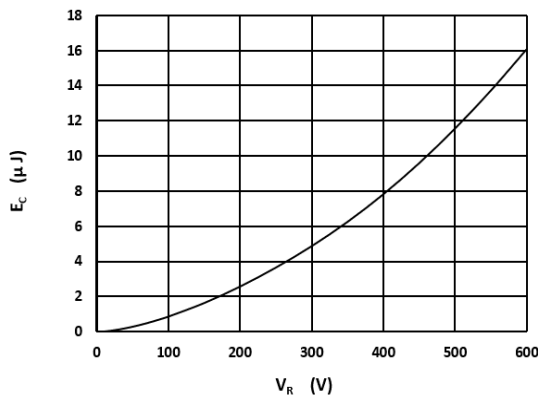
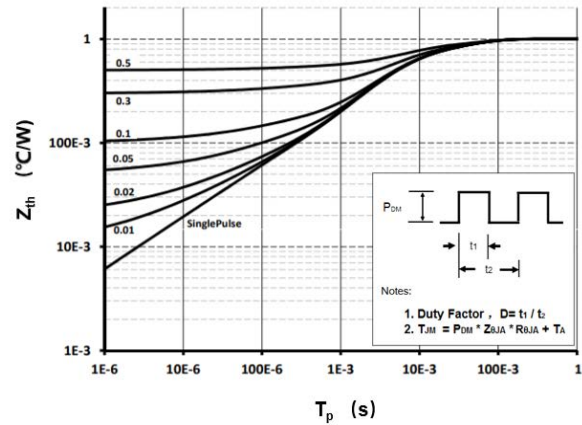


Fig 8: Transient Thermal Impedance

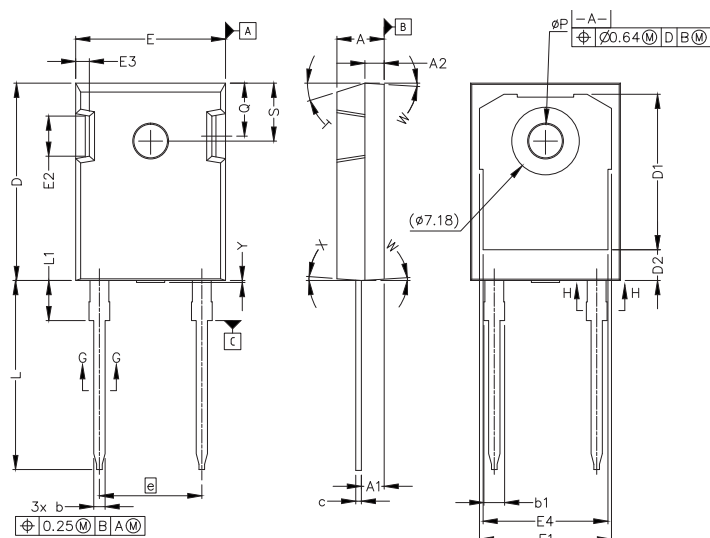




## Package Dimensions

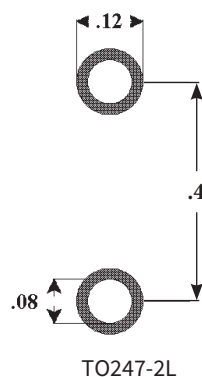
Package: TO247-2L

All dimensions in mm.



SYM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	.190	.205
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b'	1.07	1.28	.042	.050
b	1.07	1.33	.042	.052
b1	1.91	2.41	.075	.095
b2	1.91	2.16	.075	.085
c'	0.55	0.65	.022	.026
c	0.55	0.68	.022	.027
D	20.80	21.10	.819	.831
D1	16.25	17.35	.640	.683
D2	2.86	3.16	.112	.124
E	15.75	16.13	.620	.635
E1	13.10	14.15	.516	.557
E2	3.68	5.10	.145	.201
E3	1.00	1.90	.039	.075
E4	12.38	13.43	.487	.529
e	10.88 BSC		.428 BSC	
L	19.81	20.32	.780	.800
L1	4.10	4.40	.161	.173
øP	3.51	3.65	.138	.144
Q	5.49	6.00	.216	.236
S	6.04	6.30	.238	.248
T	17.5° REF.			
W	3.5° REF.			
X	4° REF.			
Y	0	0.50	0	0.020

## Recommended Solder Pad Layout



*all units are in inches*



### **Attention**

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.