



## 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

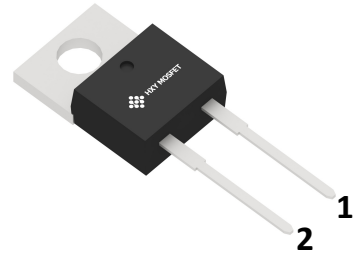
- Low conduction loss due to low  $V_F$
- Extremely low switching loss by tiny  $Q_C$
- Highly rugged due to better surge current
- Industrial standard quality and reliability

## Applications

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



Part Number	Package	Marking
HC4D12120A	TO-220H-2L	H4121TJ



TO-220H-2L



## Maximum Ratings ( $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
$V_{RRM}$	Repetitive Peak Reverse Voltage	1200	V	
$V_{RSM}$	Surge Peak Reverse Voltage	1200	V	
$V_R$	DC Blocking Voltage	1200	V	
$I_F$	Continuous Forward Current	39 20 12	A	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=153^\circ\text{C}$
$I_{FRM}$	Repetitive Peak Forward Surge Current	84 63	A	$T_C=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave $T_C=110^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	130 108	A	$T_C=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave $T_C=110^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$\int i^2 dt$	$i^2 dt$ value	84.5 58	$\text{A}^2\text{s}$	$T_C = 25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse $T_C = 110^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse
$P_{tot}$	Power Dissipation	150 65	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +150	$^\circ\text{C}$	
$T_J$	Operating junction Range	-55 to +175	$^\circ\text{C}$	



## Electrical Characteristics

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	$V_F$	-	1.35	1.7	V	$I_F=12A$ $T_j=25^{\circ}C$ $T_j=175^{\circ}C$
Reverse Current	$I_R$	-	-	150	$\mu A$	$V_R=1200V$ $T_j=25^{\circ}C$ $T_j=175^{\circ}C$
Total Capacitive Charge	$Q_C$	-	75.6	-	nC	$V_R=800V, T_j=25^{\circ}C$ $Q_C = \int_0^{V_R} C(V) dV$
Total Capacitance	C	-	1022	-	pF	$T_j=25^{\circ}C, f=1MHz$ $V_R=0V$ $V_R=400V$ $V_R=800V$

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.0	$^{\circ}C/W$

## Characteristics Curve

Fig 1: Forward Characteristics

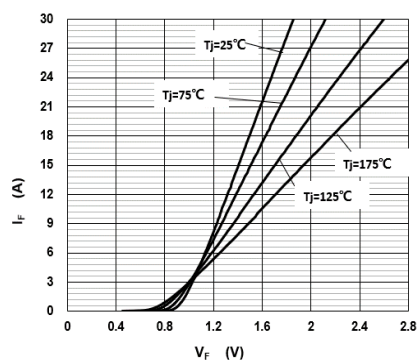


Fig 2: Reverse Characteristics

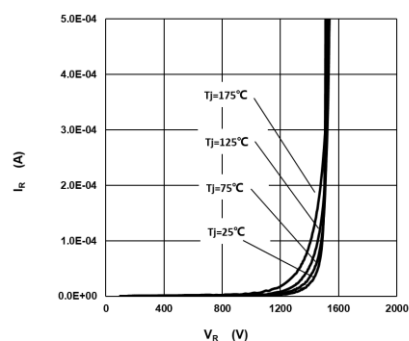




Fig 3: Current Derating

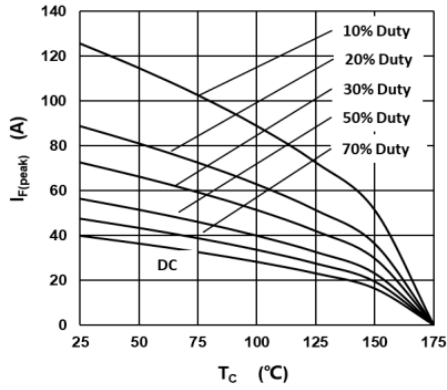


Fig 4: Power Derating

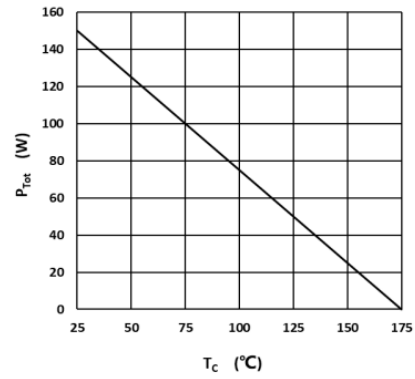


Fig 5: Capacitance vs. Reverse Voltage

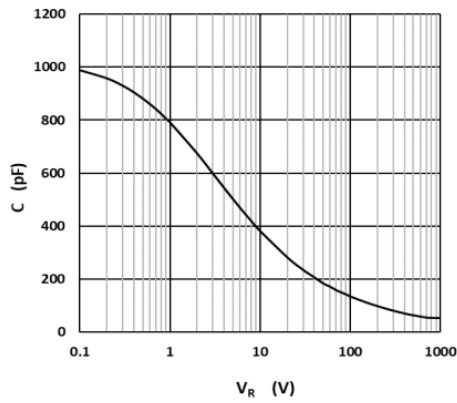


Fig 6: Reverse Charge vs. Reverse Voltage

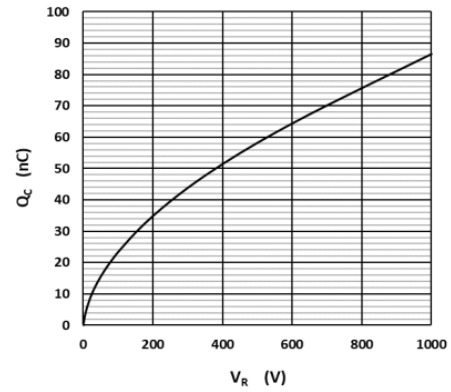


Fig 7: Typical Capacitance Stored Energy

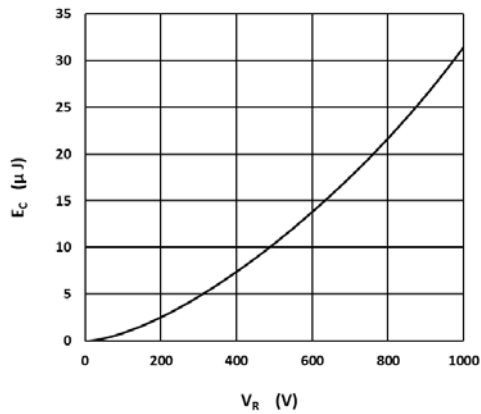
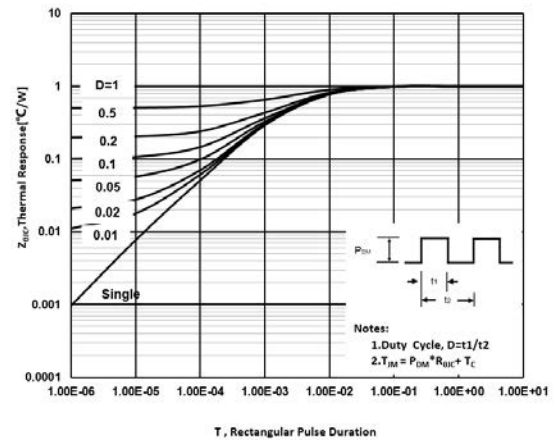
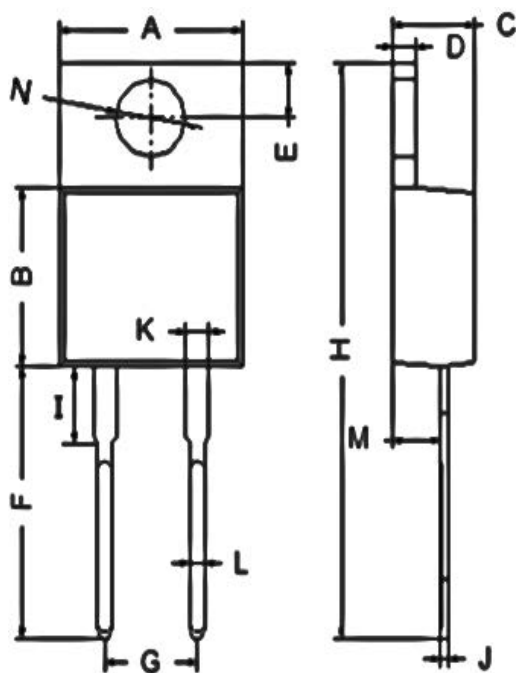


Fig 8: Transient Thermal Impedance





Package Information  
TO-220H-2L



POS	Millimeters	
	Min.	Max.
A	9.80	10.50
B	8.60	9.20
C	4.37	4.77
D	1.07	1.47
E	2.40	3.00
F	13.14	14.20
G	4.90	5.24
H	28.00	29.20
I	3.50	4.00
J	0.28	0.50
K	1.20	1.50
L	0.70	0.90
M	2.40	2.90
N	3.70	4.00



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