



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-220-2L	H4121TJ



TO-220-2L



AEC-Q101 Qualified

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	$T_C=25^\circ\text{C}, t_p = 10 \text{ ms}$, Half Sine Wave $T_C=110^\circ\text{C}, t_p = 10 \text{ ms}$, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	130 108	A	$T_C=25^\circ\text{C}, t_p = 10 \text{ ms}$, Half Sine Wave $T_C=110^\circ\text{C}, t_p = 10 \text{ ms}$, Half Sine Wave
$\int i^2 dt$	$i^2 dt$ value	84.5 58	A^2s	$T_C = 25^\circ\text{C}, t_p=10\text{ms}$, 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	μA	$V_R=1200V$ $T_j=25^{\circ}C$ $T_j=175^{\circ}C$
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

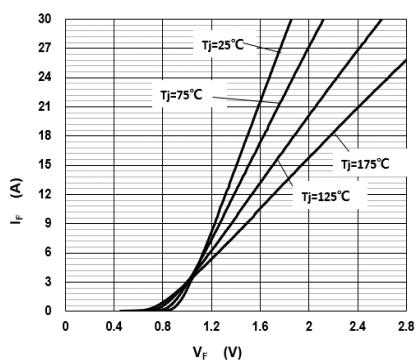


Fig 2: Reverse Characteristics

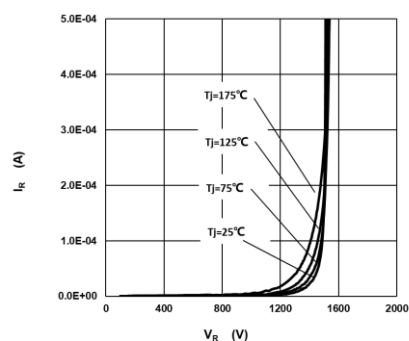




Fig 3: Current Derating

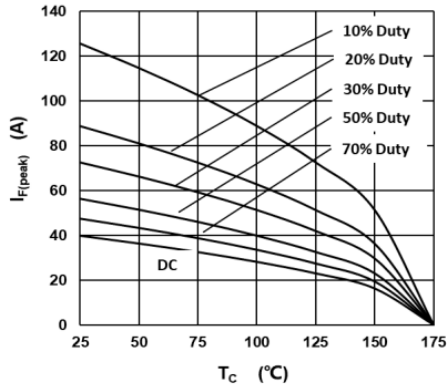


Fig 4: Power Derating

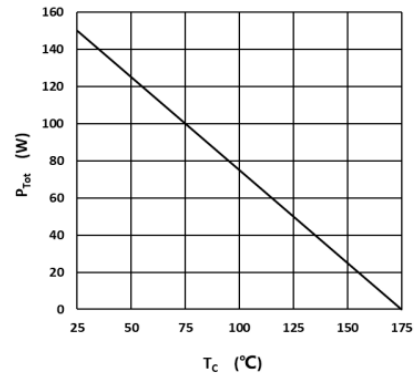


Fig 5: Capacitance vs. Reverse Voltage

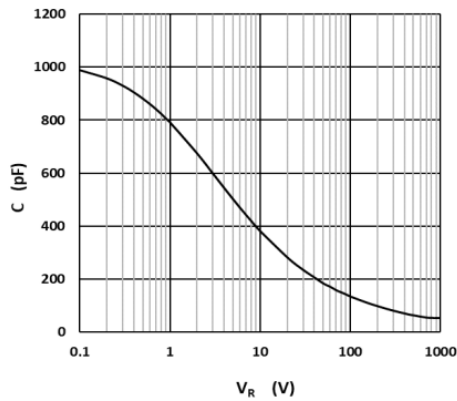


Fig 6: Reverse Charge vs. Reverse Voltage

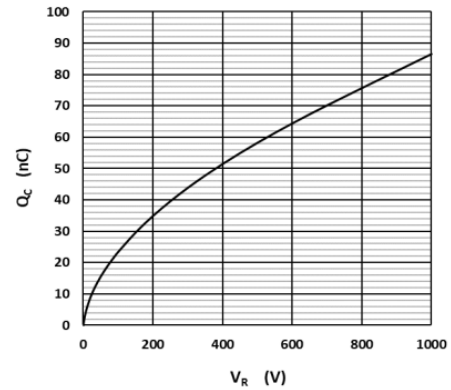


Fig 7: Typical Capacitance Stored Energy

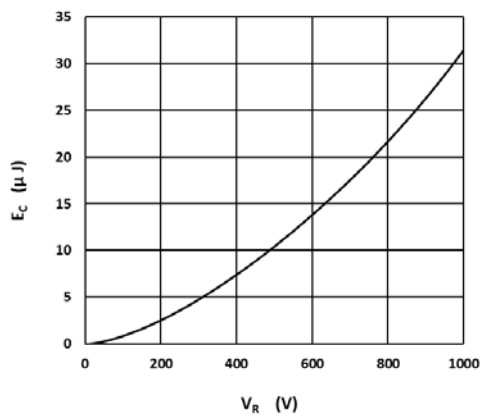
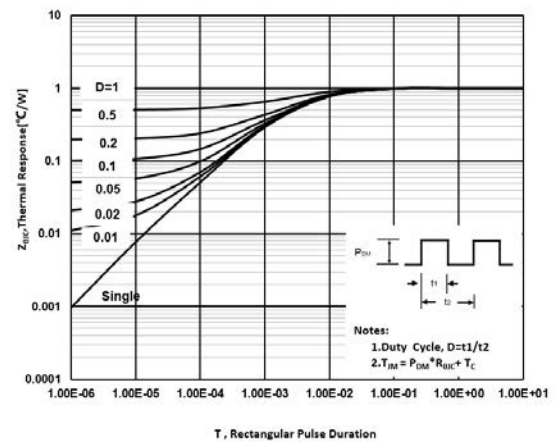
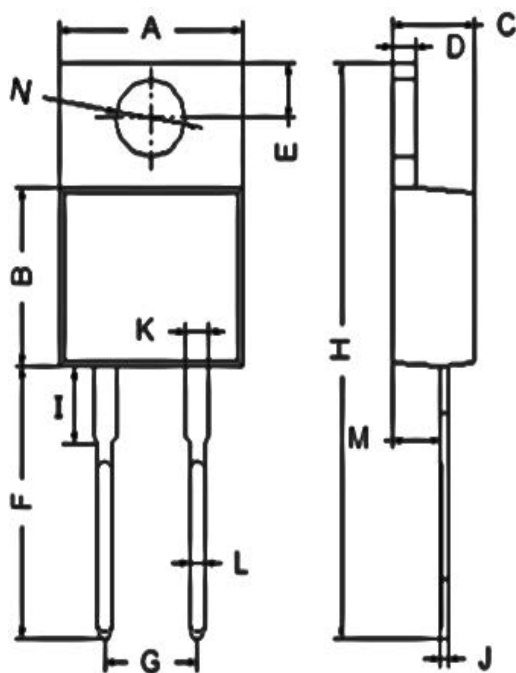


Fig 8: Transient Thermal Impedance





Package Information
TO-220-2L



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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