



General Description

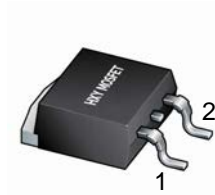
This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

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-263
Package



Ordering Part Number	Package	Marking
HC3D10120G	TO-263	HC3D10120G





Maximum Ratings (at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V
Surge Peak Reverse Voltage	V_{RSM}	1200	V
DC Peak Reverse Voltage	V_R	1200	V
Continuous Forward Current $T_c = 25^\circ\text{C}$ $T_c = 135^\circ\text{C}$ $T_c = 160^\circ\text{C}$	I_F	30 15 10	A
Repetitive Peak Forward Surge Current $T_c = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_c = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	I_{FRM}	57 41.5	A
Non-Repetitive Forward Surge Current $T_c = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_c = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	I_{FSM}	90 69.5	A
i^2dt value $T_c = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_c = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	$\int i^2dt$	40.5 24	A^2s
Power dissipation $T_c = 25^\circ\text{C}$ $T_c = 110^\circ\text{C}$	P_{tot}	115 50	W
Operating junction Range	T_j	-55 to +175	$^\circ\text{C}$
Storage temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case.	R_{thJC}	1.30	$^\circ\text{C/W}$



Electrical Characteristic (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	V_F	-	1.4	1.7	V	$I_F=10\text{A}$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$
Reverse Current	I_R	-	-	100	μA	$V_R=1200\text{V}$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$
Total Capacitive Charge	Q_C	-	48	-	nC	$V_R=800\text{V}, T_j=25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$
Total Capacitance	C	-	695	-	pF	$T_j=25^\circ\text{C}, f=1\text{MHz}$ $V_R=0\text{V}$ $V_R=400\text{V}$ $V_R=800\text{V}$

Characteristics Curve:

Fig 1: Forward Characteristics

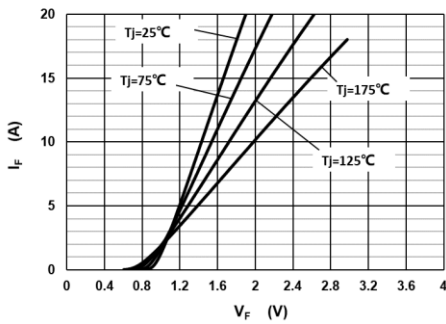


Fig 2: Reverse Characteristics

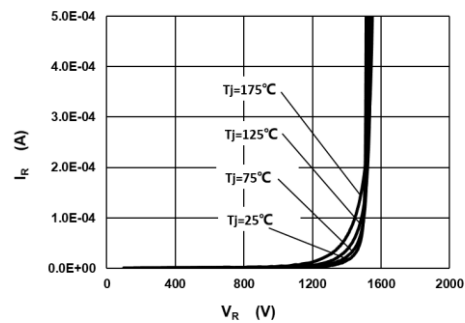


Fig 3: Current Derating

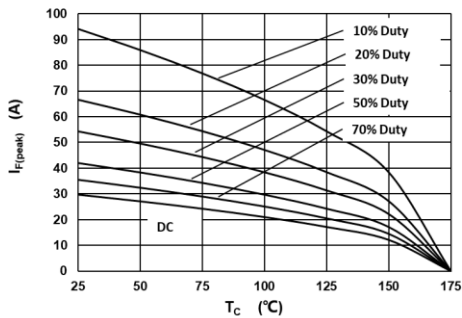


Fig 4: Power Derating

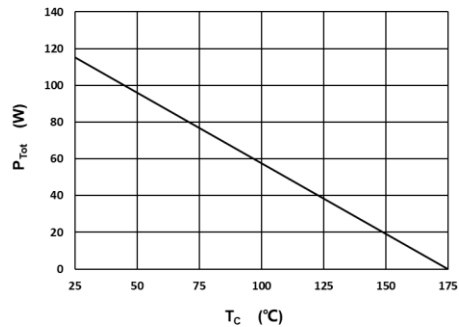




Fig 5: Capacitance vs. Reverse Voltage

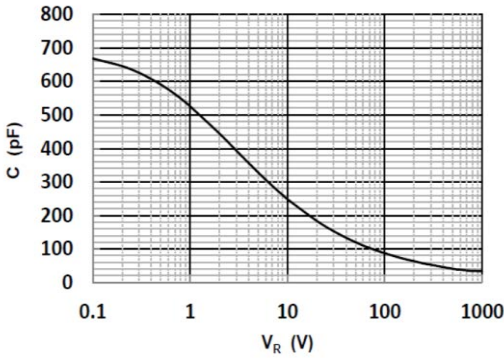


Fig 6: Reverse Charge vs. Reverse Voltage

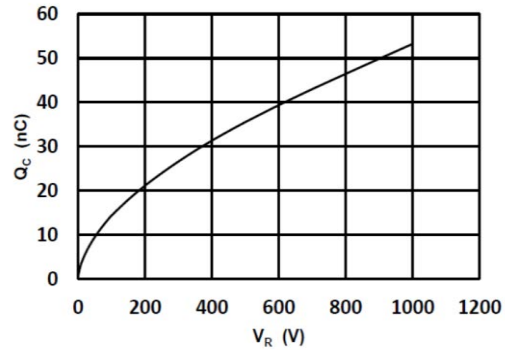


Fig 7: Typical Capacitance Stored Energy

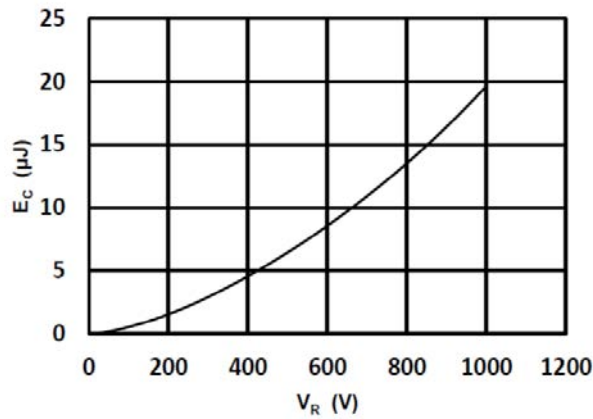
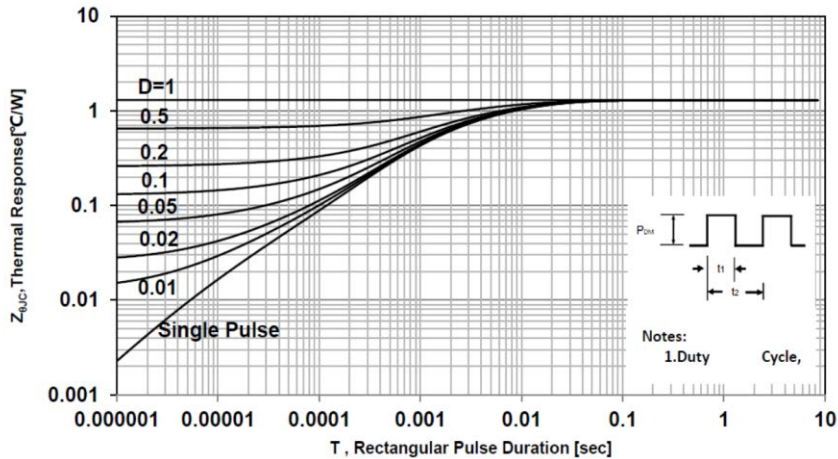


Fig 8: Transient Thermal Impandance





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