T1D12120A

Silicon Carbide Schottky Diode 1200 V, 12 A

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.

Product Summary

V_{RRM}	1200 V
I_F (T_C 160°C)	12 A
V_F (T_j 25℃)	1.35 V

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

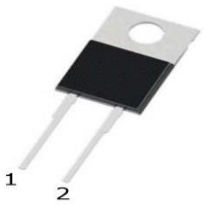
RoHS

Halogen Free

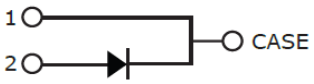
Applications

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

TO-220-2



Equivalent circuit



Package Marking and Ordering Information

Part #	Marking	Package
T1D12120A	1D12120A	TO-220-2

Maximum Ratings (at Tc = 25 °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°C T_C = 135°C T_C = 160°C	I_F	 39 20 12	A
Repetitive Peak Forward Surge Current T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	I_{FRM}	 84 63	A
Non-Repetitive Forward Surge Current T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	I_{FSM}	 130 108	A
i^2dt value T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	$\int i^2dt$	 84.5 58	A^2s
Power dissipation T_C = 25°C T_C = 110°C	P_{tot}	 150 65	W
Operating junction Range	T_j	-55 to +175	°C
Storage temperature Range	T_{stg}	-55 to +150	°C

Thermal Resistance

Parameter	Symbol	Typ.	Unit
Thermal resistance, junction – case.	R_{thJC}	1.0	°C/W

Electrical Characteristic (at Tc = 25 °C, unless otherwise specified)

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

Characteristics Curve:

Fig 1: Forward Characteristics

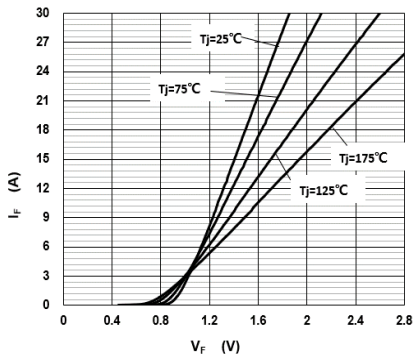


Fig 2: Reverse Characteristics

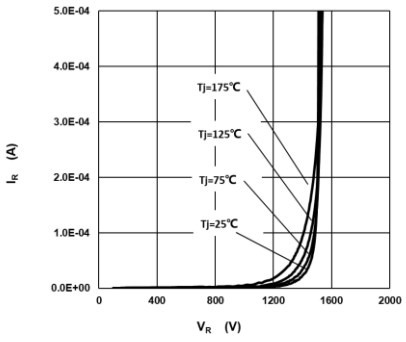


Fig 3: Current Derating

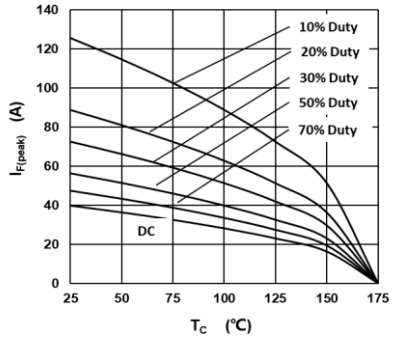


Fig 4: Power Derating

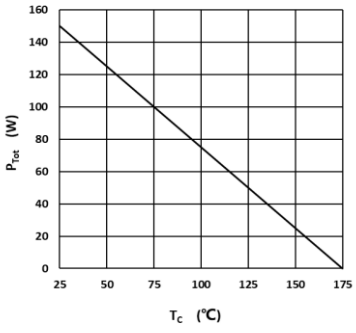


Fig 5: Capacitance vs. Reverse Voltage

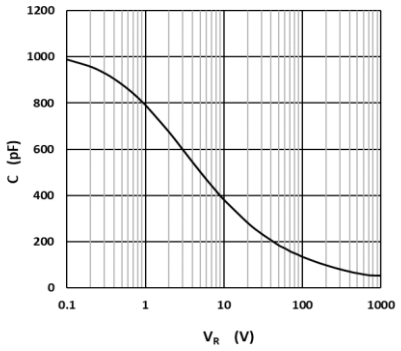


Fig 6: Reverse Charge vs. Reverse Voltage

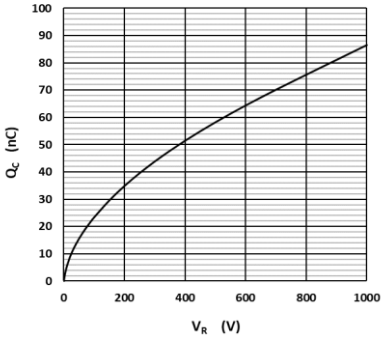


Fig 7: Typical Capacitance Stored Energy

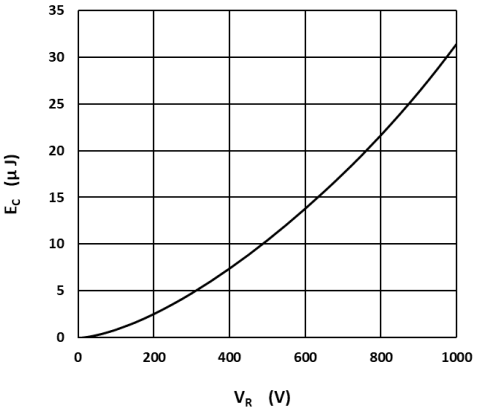
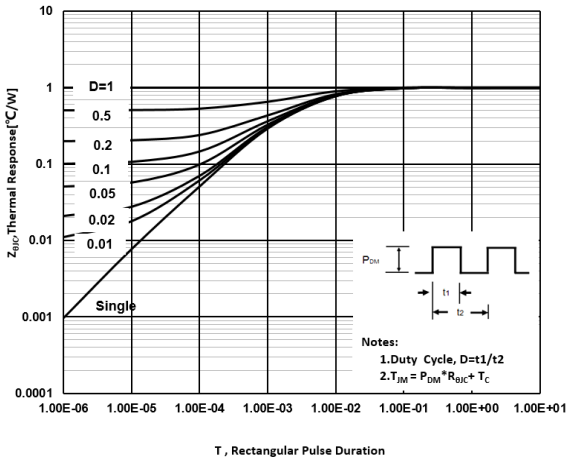
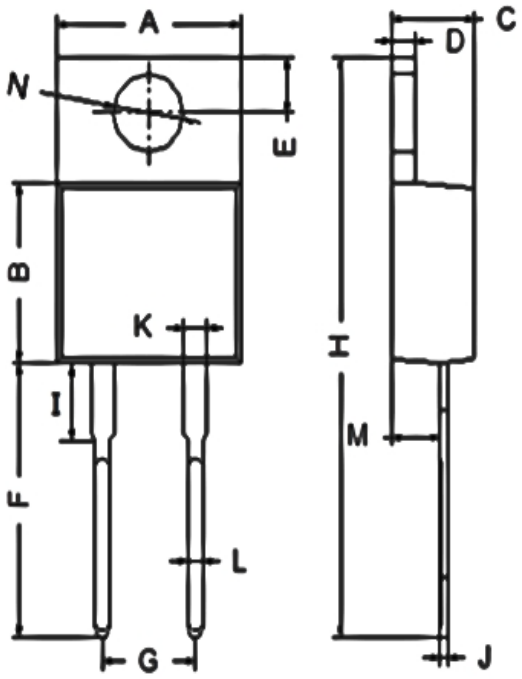


Fig 8: Transient Thermal Impandance



Mechanical Dimensions:



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

Contact Information

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