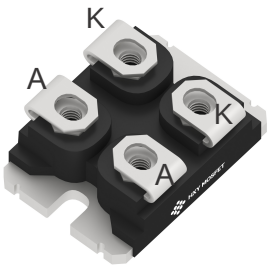
C3D250065S

Silicon Carbide Schottky Diode

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.



SOT-227

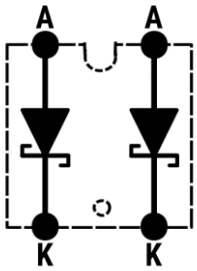
Features

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

Applications

- Solar Inverters
- EV battery chargers
- High performance SMPS
- Induction Heating and Welding

Equivalent circuit



Package Marking and Ordering Information

Ordering Part Number	Package	Brand
C3D250065S	SOT-227	HXY MOSFET

Maximum Ratings (T_C = 25 °C unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Surge Peak Reverse Voltage	V_{RSM}	650	V
DC Peak Reverse Voltage	V_R	650	V
Continuous Forward Current (Per Leg/Per Device) T_C =25°C T_C =75°C T_C = 103°C	I_F	 182/364 149/298 125/250	A
Repetitive Peak Forward Surge Current (Per Leg) T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	I_{FRM}	 360 252	A
Non-Repetitive Forward Surge Current(Per Leg) T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	I_{FSM}	 600 480	A
i^2dt value(Per Leg) T_C = 25°C,t_p=10ms,Half Sine Pulse T_C = 110°C,t_p=10ms,Half Sine Pulse	$\int i^2dt$	 1800 1152	A^2s
Power dissipation (Per Leg/Per Device) T_C = 25°C T_C = 110°C	P_{tot}	 300 120	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}	0.5	°C/W

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

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	V_F	- -	1.4 1.8	1.8	V	I_F=125A T_j=25°C T_j=175°C
Reverse Current	I_R	- -	- -	100 200	μA	V_R=650V T_j=25°C T_j=175°C
Total Capacitive Charge	Q_C	-	340	-	nC	V_R=400V，T_j=25°C $Q_C = \int_0^{V_R} C(V)dV$
Total Capacitance	C	- - -	6420 654 539	- - -	pF	T_j=25℃, f=1MHz V_R=0V V_R=200V V_R=400V

Characteristics Curve

Fig 1: Forward Characteristics

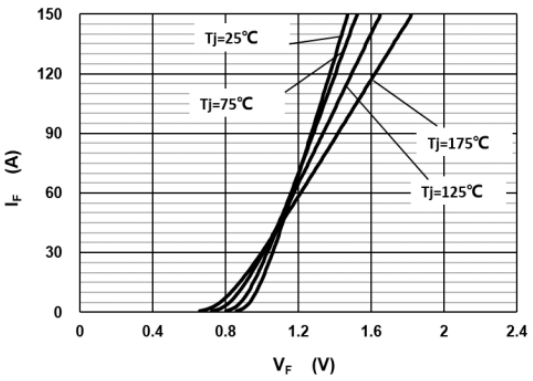


Fig 2: Reverse Characteristics

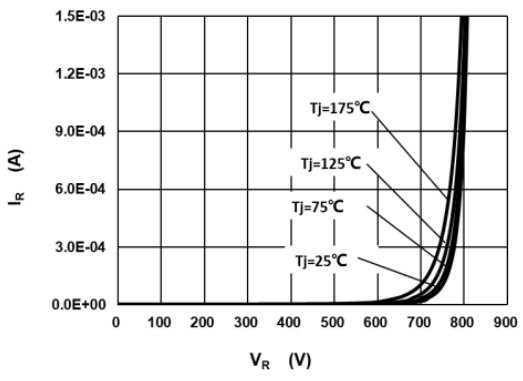


Fig 3: Current Derating

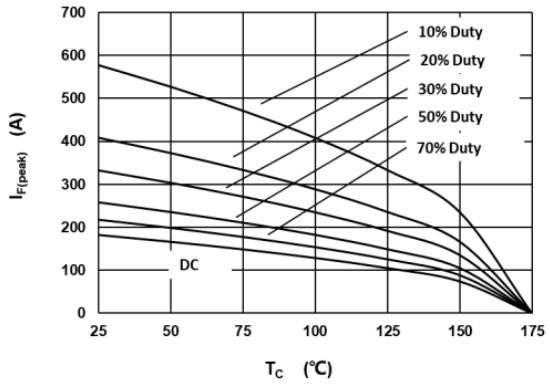


Fig 4: Power Derating

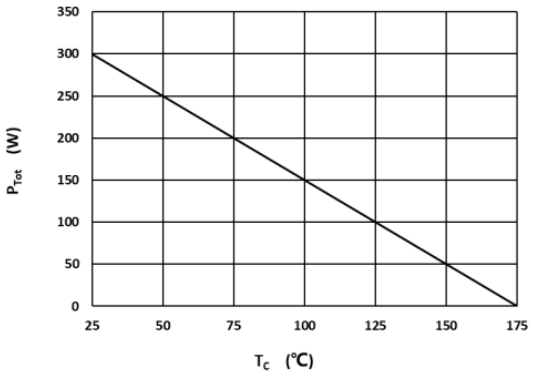


Fig 5: Capacitance vs. Reverse Voltage

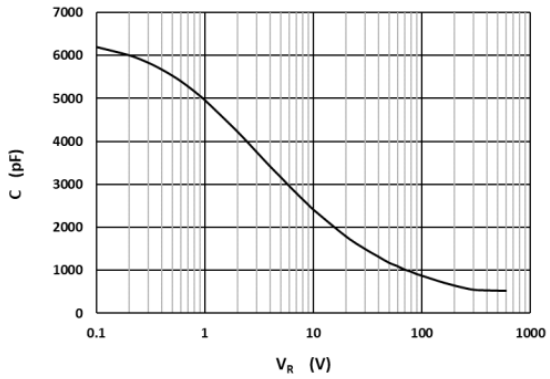


Fig 6: Reverse Charge vs. Reverse Voltage

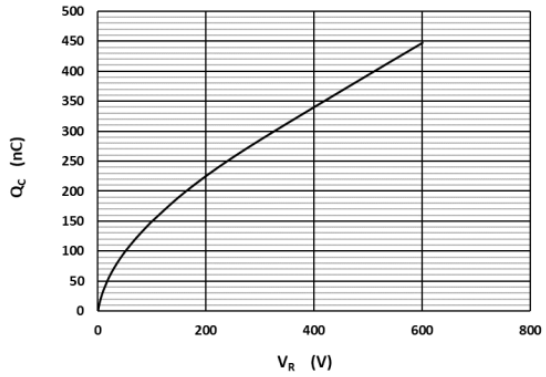


Fig 7: Typical Capacitance Stored Energy

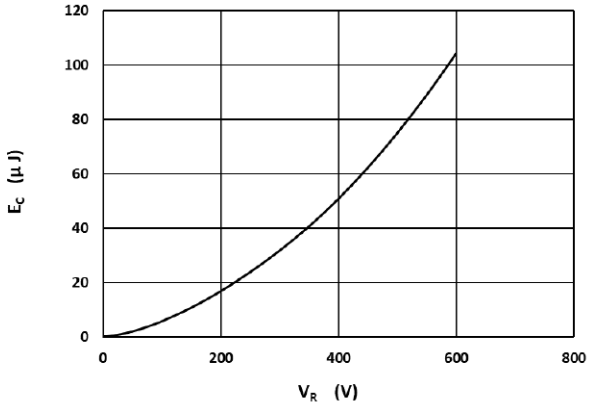
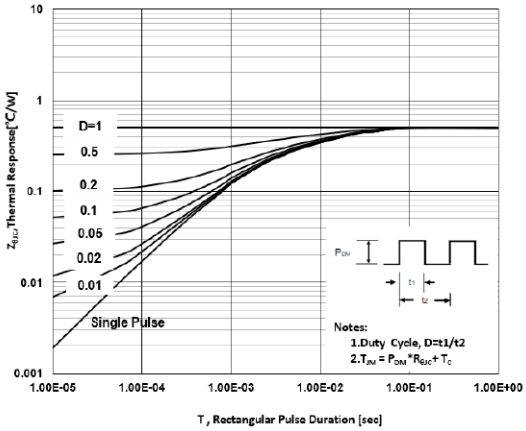
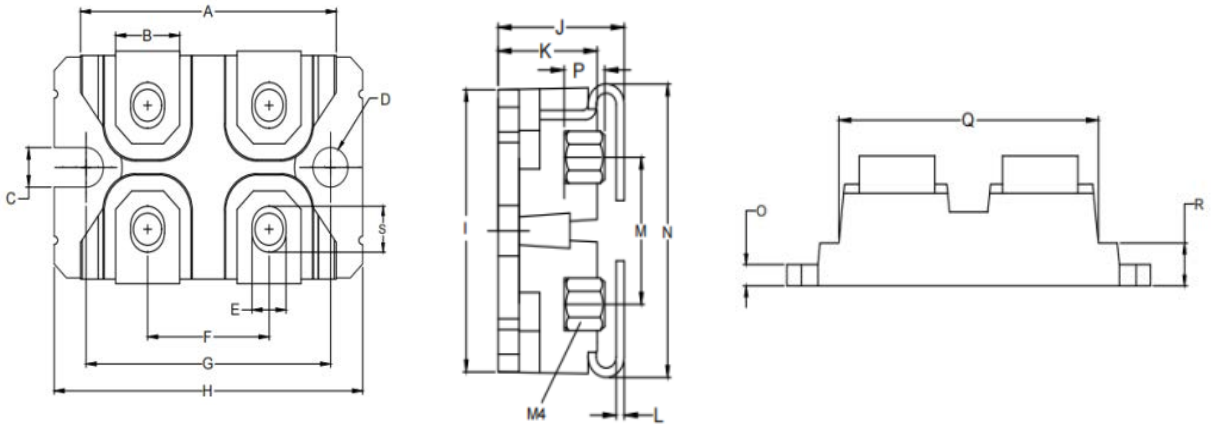


Fig 8: Transient Thermal Impandance



Package Dimensions

Package SOT-227



DiM	Millimeter	
	Min	Max
A	31.40	31.60
B	7.70	8.10
C	4.20	4.40
D	4.20	4.40
E	4.10	4.30
F	14.90	15.10
G	30.10	30.20
H	38.00	38.40
I	23.80	24.20
J	12.20	12.70
K	9.40	9.60
L	0.75	0.85
M	12.40	12.80
N	24.50	25.40
O	1.90	2.10
P	3.10	3.95
Q	26.60	27.00
R	3.80	4.20
S	5.10	5.40

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