



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

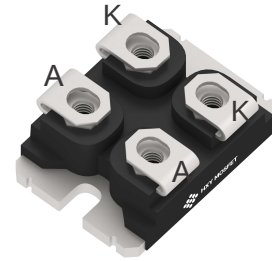
- Low conduction loss due to low V_F
- Extremely low switching loss by tiny Q_c
- Highly rugged due to better surge current
- Industrial standard quality and reliability

Applications

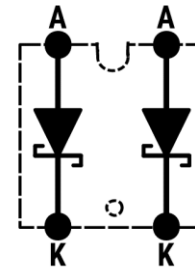
- Solar Inverters
- EV Fast Chargers
- High performance SMPS
- Induction Heating and Welding

Ordering Information

Part Number	Package	Qty(PCS)
DCG160X650NA	SOT-227	120



SOT-227



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

Symbol	Parameter	Value	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	650	V	
V_{RSM}	Surge Peak Reverse Voltage	650	V	
V_R	DC Blocking Voltage	650	V	
I_F	Continuous Forward Current	182/364 149/298 125/250	A	$T_C=25^\circ\text{C}$ $T_C=75^\circ\text{C}$ $T_C=103^\circ\text{C}$
I_{FRM}	Repetitive Peak Forward Surge Current	360 252	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	600 480	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	1800 1152	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	300 120	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$
T_{stg}	Storage temperature Range	-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	-	1.4	1.8	V	$I_F=125A$ $T_J=25^{\circ}C$ $T_J=175^{\circ}C$
Reverse Current	I_R	-	-	100	μA	$V_R=650V$ $T_J=25^{\circ}C$ $T_J=175^{\circ}C$
Total Capacitive Charge	Q_C	-	340	-	nC	$V_R=400V, T_J=25^{\circ}C$ $Q_C = \int_0^{V_R} C(V) dV$
Total Capacitance	C	-	6420	-	pF	$T_J=25^{\circ}C, f=1MHz$ $V_R=0V$ $V_R=200V$ $V_R=400V$

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.5	$^{\circ}C/W$

Characteristics Curve

Fig 1: Forward Characteristics

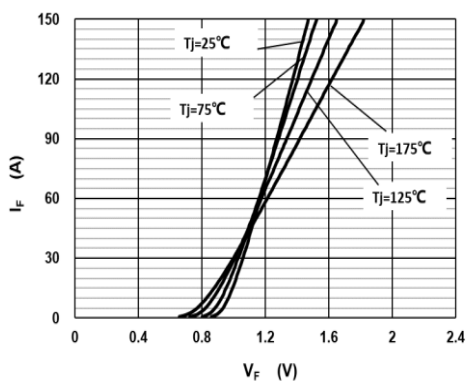


Fig 2: Reverse Characteristics

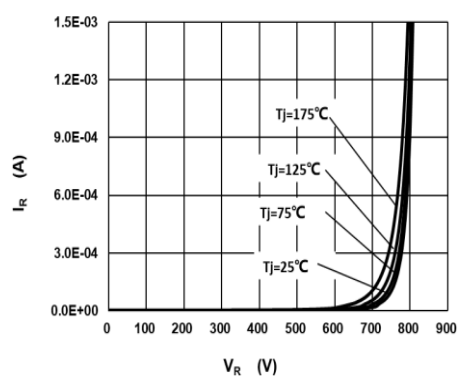




Fig 3: Current Derating

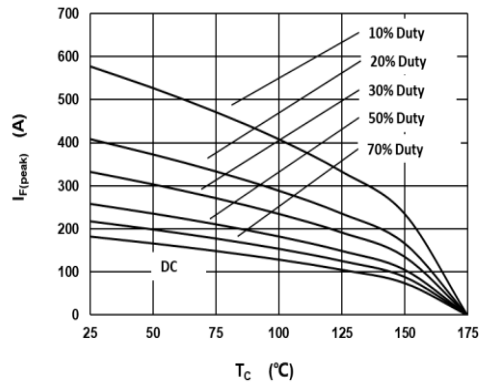


Fig 4: Power Derating

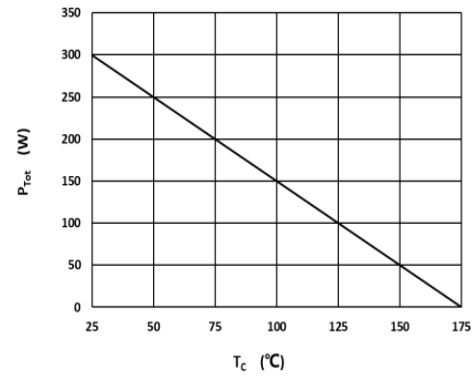


Fig 5: Capacitance vs. Reverse Voltage

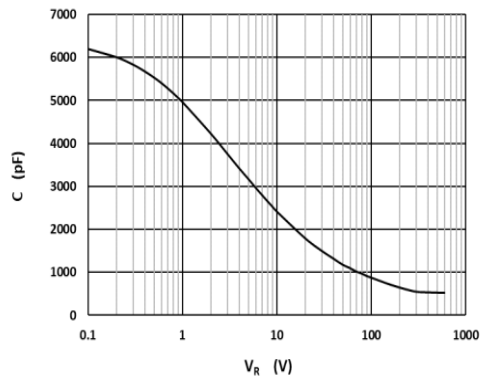


Fig 6: Reverse Charge vs. Reverse Voltage

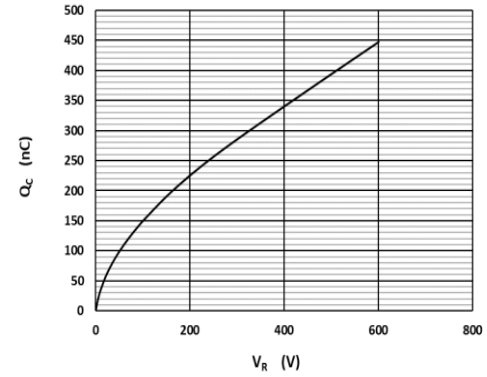


Fig 7: Typical Capacitance Stored Energy

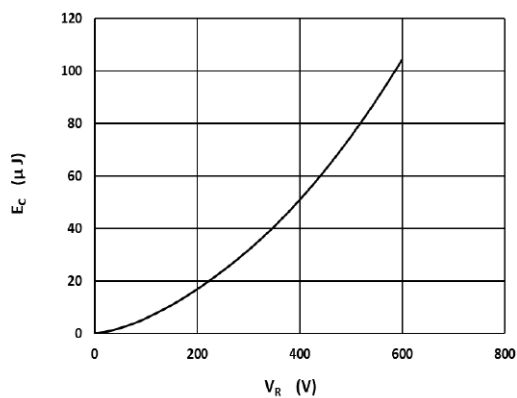
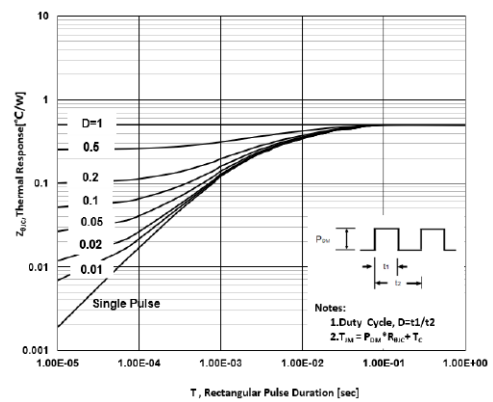
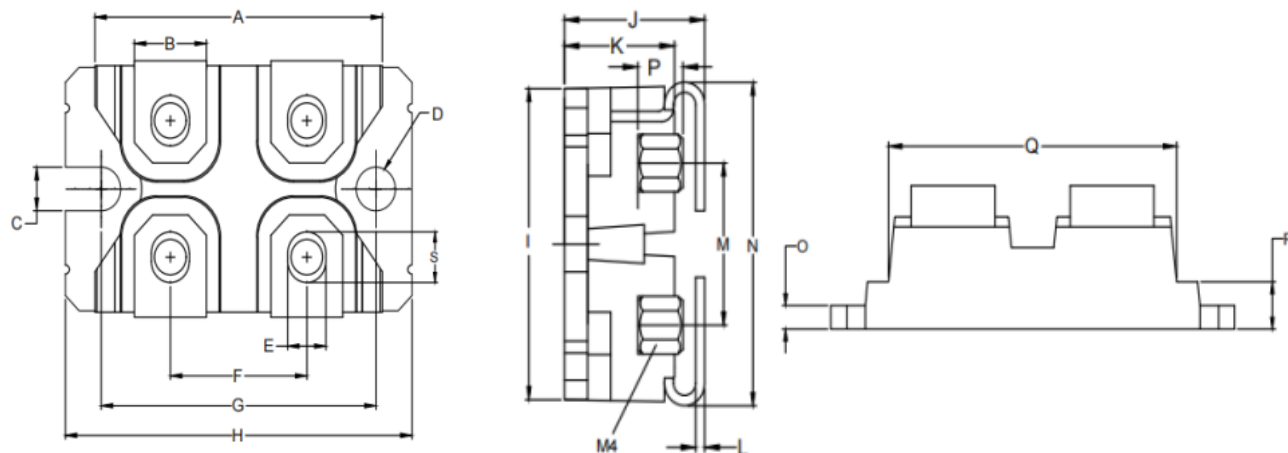


Fig 8: Transient Thermal Impedance





Package Information 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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