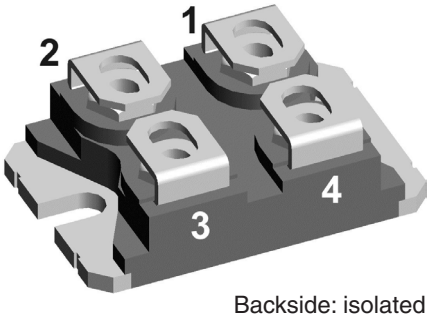
SiC Schottky Diode

V_{RRM} = 650 V
I_{FAV} = 2x 80 A

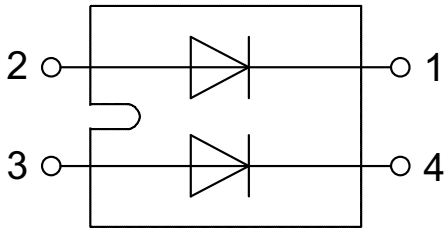
Ultra fast switching
Zero reverse recovery

Part number
DCG160X650NA



Backside: isolated

E72873



Features / Advantages:
- Ultra fast switching
- Zero reverse recovery
- Zero forward recovery
- Temperature independent switching behavior
- Positive temperature coefficient of forward voltage
- T_{VJM} = 175°C

Applications:
- Solar inverter
- Uninterruptible power supply (UPS)
- Welding equipment
- Switched-mode power supplies
- Medical equipment
- High speed rectifier

Package: SOT-227B (minibloc)
- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate with Aluminium nitride isolation for low thermal resistance
- Advanced power cycling

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

IXYS reserves the right to change limits, test conditions and dimensions.

© 2022 IXYS All rights reserved

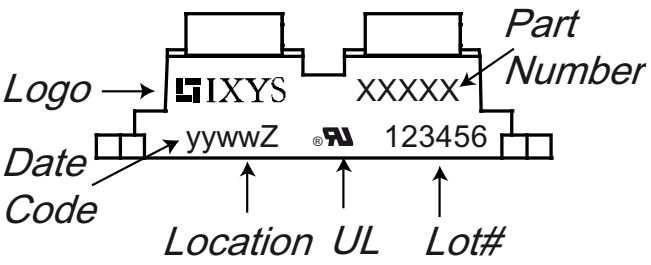
SiC Diode				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			650	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			650	V
I_R	*reverse current*	$V_R = V_{RRM}$	T_{VJ} = 25°C		0.1	1.0	mA
			T_{VJ} = 175°C		0.4	2.0	mA
V_F	*forward voltage*	I_F = 50 A	T_{VJ} = 25°C		1.25		V
		I_F = 100 A			1.55	1.85	V
		I_F = 50 A	T_{VJ} = 175°C		1.35		V
		I_F = 100 A			1.9	2.3	V
I_{FAV}	*average forward current*	T_C = 75°C, rectangular, d = 0.5	T_{VJ} = 175°C			80	A
		T_C = 100°C, rectangular, d = 0.5				67	A
I_{F25}	*forward current*	based on typ. V_{F0} and r_F	T_C = 25°C			134	A
I_{F80}			T_C = 80°C			101	A
I_{F100}			T_C = 100°C			87	A
I_{FSM}	*max forward surge current*	t = 10 ms,half sine (50 Hz)	T_{VJ} = 25°C			650	A
		t_P = 10 µs, pulse; V_R = 0V				3200	A
V_{F0}	*threshold voltage*	*for power loss calculation*	T_{VJ} = 125°C		0.83		V
			175°C		0.77		V
r_F	*slope resistance*		T_{VJ} = 125°C		9.5		mΩ
			175°C		11.3		mΩ
Q_C	*total capacitive charge*	V_R = 400 V, I_F = 100A	T_{VJ} = 25°C		220		nC
C	*total capacitance*	V_R = 0 V, f = 1 MHz	T_{VJ} = 25°C		3950		pF
		V_R = 200 V, f = 1 MHz	T_{VJ} = 25°C		400		pF
		V_R = 400 V, f = 1 MHz	T_{VJ} = 25°C		360		pF
R_{thJC}	*thermal resistance junction to case*					0.49	K/W
R_{thJH}	*thermal resistance junction to heatsink*	with heatsink compound; IXYS test setup			0.62		K/W

© 2022 IXYS All rights reserved

Package	Outlines SOT-227B (minibloc)		Ratings			
Symbol	**Definitions**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			100	A
T_{stg}	*storage temperature*		-40		150	°C
T_{op}	*operation temperature*		-40		150	°C
T_{VJ}	*virtual junction temperature*		-40		175	°C
Weight				30		g
M_D	*mounting torque* [1]	screws to heatsink terminal connection screws			1.5 1.3	Nm Nm
d_{Spp}	*creepage distance on surface*	terminal to terminal	10.5			mm
d_{Spb}		terminal to backside	8.5			mm
d_{App}	*striking distance through air*	terminal to terminal	3.2			mm
d_{Apb}		terminal to backside	6.8			mm
V_{ISOL}	*isolation voltage*	$I_{ISOL} \leq 1$ mA; 50/60 Hz t = 1 sec. t = 1 minute	3000 2500			V V
C_P	*coupling capacity per switch*	between shorted terminals of one diode and back side metallization		20		pF

[1] further information see application note IXAN0073 on www.ixys.com/TechnicalSupport/appnotes.aspx (General / Isolation, Mounting, Soldering, Cooling)

Product Marking

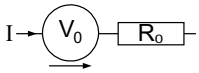


Part description

D = Diode
C = SiC
G = Extreme fast
160 = Current Rating [A]
X = Parallel legs
650 = Reverse Voltage [V]
NA = SOT-227 (minibloc)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DCG160X650NA	DCG160X650NA	Tube	10	DCG160X650NA

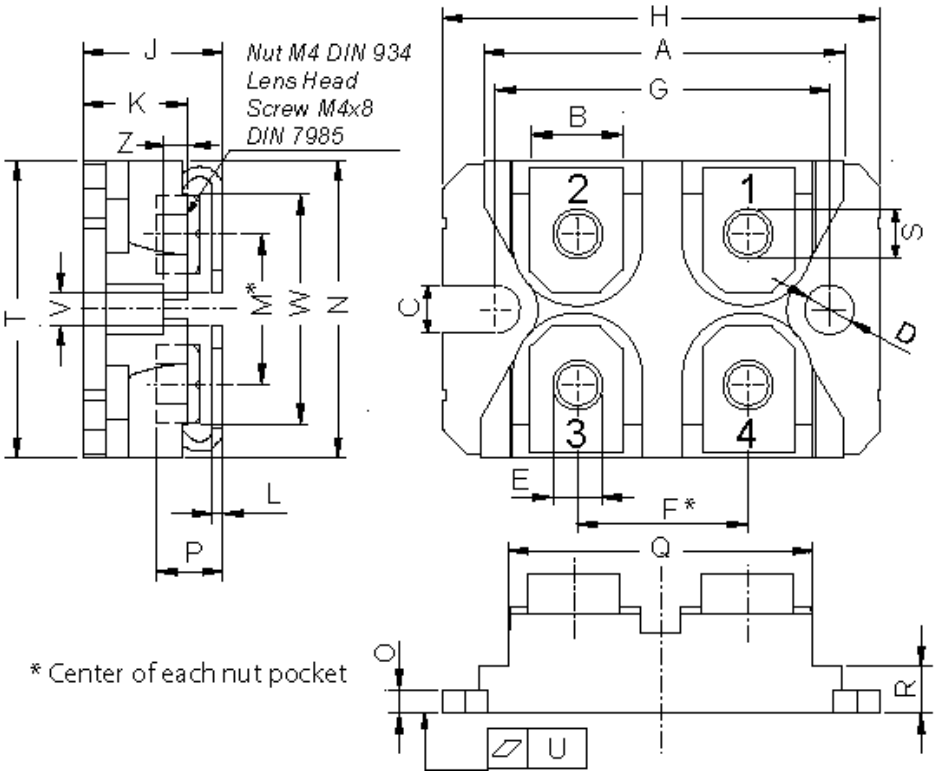
Equivalent Circuits for Simulation **on die level*



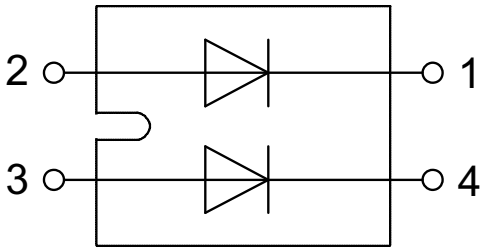
		T_{VJ} = 125°C	T_{VJ} = 175°C	
$V_{0\ max}$	*threshold voltage*	0.83	0.77	V
$R_{0\ max}$	*slope resistance* *	9.5	11.3	mΩ

© 2022 IXYS All rights reserved

Outlines SOT-227B (minibloc)



Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106



© 2022 IXYS All rights reserved

SiC Diode (per leg)

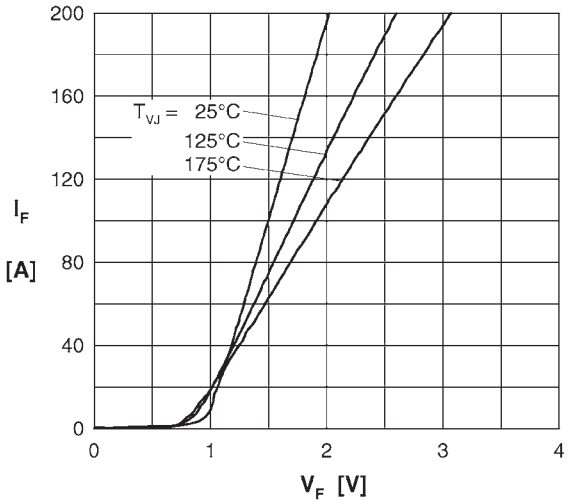


Fig. 1 Typ. forward characteristics

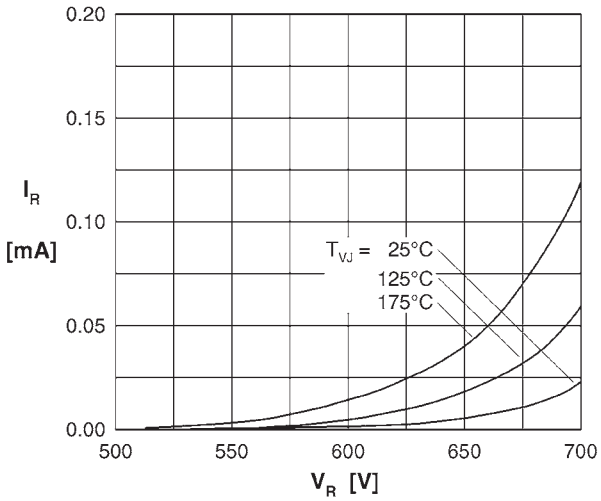


Fig. 2 Typ. reverse characteristics

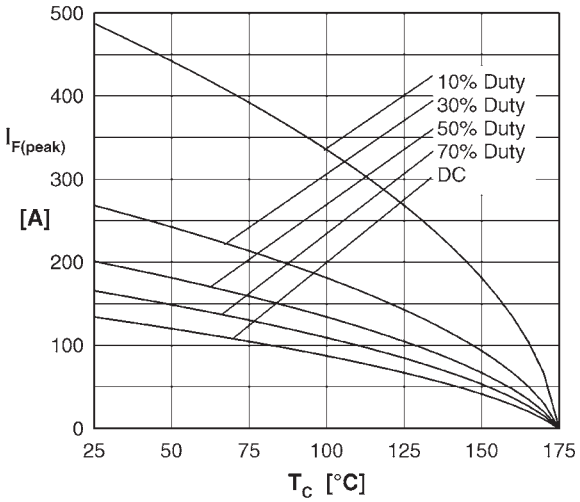


Fig. 3 Typ. current derating

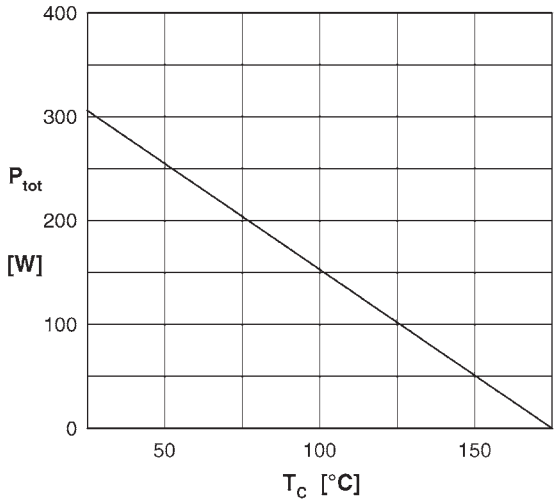


Fig. 4 Power derating

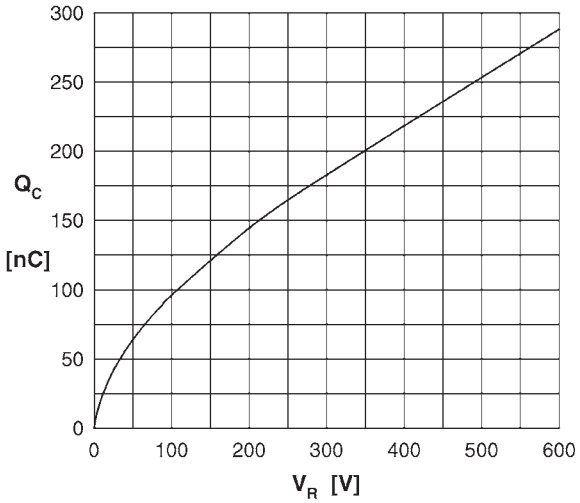


Fig. 5 Typ. recovery charge vs. reverse voltage

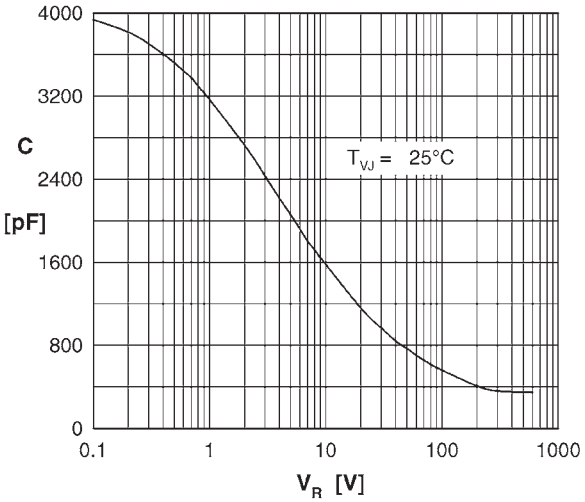


Fig. 6 Typ. junction capacitance vs. reverse Voltage

© 2022 IXYS All rights reserved

SiC Diode (per leg)

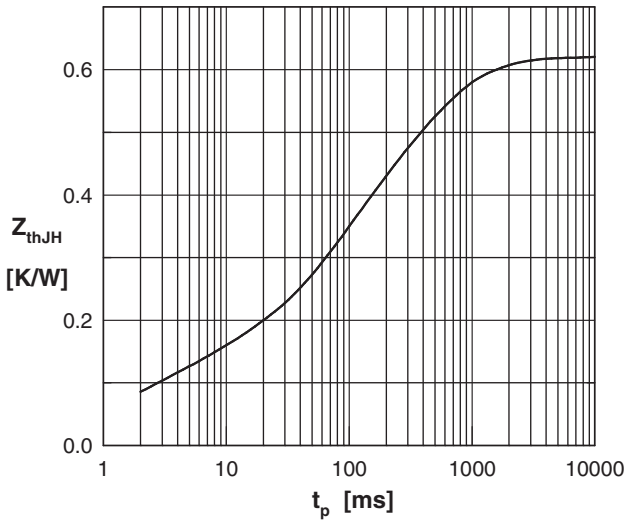


Fig. 7 Typ. transient thermal impedance

© 2022 IXYS All rights reserved