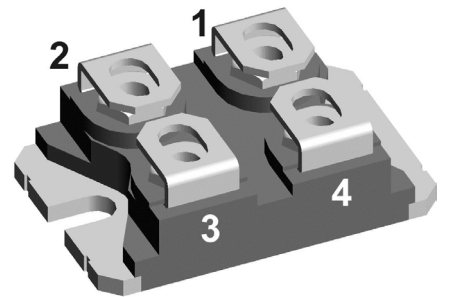


SiC Schottky Diode

 $V_{RRM} = 650\text{ V}$
 $I_{FAV} = 2 \times 80\text{ A}$

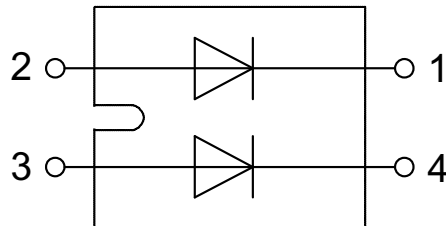
Ultra fast switching
 Zero reverse recovery

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
- $T_{VJM} = 175^{\circ}\text{C}$

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

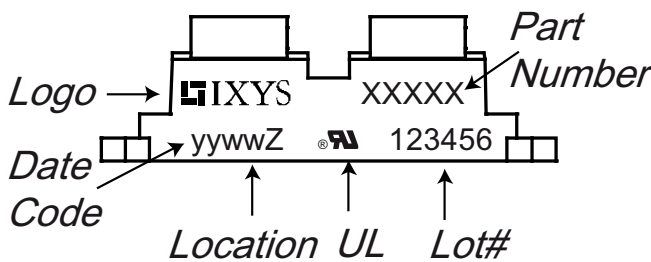
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SiC Diode				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.		
V_{RSM}	max. non-repetitive reverse blocking voltage				650	V	
V_{RRM}	max. repetitive reverse blocking voltage				650	V	
I_R	reverse current	$V_R = V_{RRM}$		0.1 0.4	1.0 2.0	mA mA	
V_F	forward voltage	$I_F = 50\text{ A}$ $I_F = 100\text{ A}$	$T_{VJ} = 25^\circ\text{C}$	1.25		V	
				1.55	1.85	V	
		$I_F = 50\text{ A}$ $I_F = 100\text{ A}$	$T_{VJ} = 175^\circ\text{C}$	1.35		V	
				1.9	2.3	V	
I_{FAV}	average forward current	$T_C = 75^\circ\text{C}$ $T_C = 100^\circ\text{C}$ } rectangular, d = 0.5	$T_{VJ} = 175^\circ\text{C}$		80 67	A A	
I_{F25}	forward current	based on typ. V_{F0} and r_F	$T_C = 25^\circ\text{C}$		134	A	
I_{F80}			$T_C = 80^\circ\text{C}$		101	A	
I_{F100}			$T_C = 100^\circ\text{C}$		87	A	
I_{FSM}	max forward surge current	t = 10 ms, half sine (50 Hz) $t_p = 10\ \mu\text{s}$, pulse; $V_R = 0\text{V}$	$T_{VJ} = 25^\circ\text{C}$		650 3200	A A	
V_{F0}	threshold voltage		$T_{VJ} = 125^\circ\text{C}$ 175°C	0.83 0.77		V V	
r_F	slope resistance	for power loss calculation	$T_{VJ} = 125^\circ\text{C}$ 175°C	9.5 11.3		m Ω m Ω	
Q_C	total capacitive charge	$V_R = 400\text{ V}$, $I_F = 100\text{ A}$	$T_{VJ} = 25^\circ\text{C}$	220		nC	
C	total capacitance	$V_R = 0\text{ V}$ $V_R = 200\text{ V}$ $V_R = 400\text{ V}$ } f = 1 MHz; $T_{VJ} = 25^\circ\text{C}$		3950 400 360		pF pF 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	

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	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	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

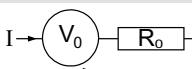


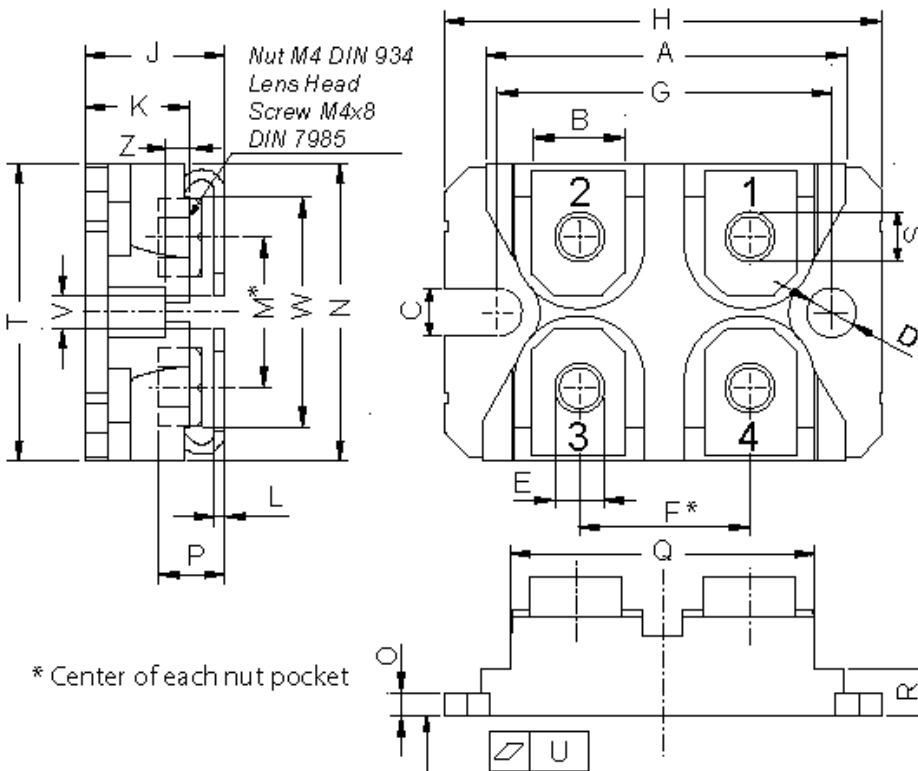
Part description

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

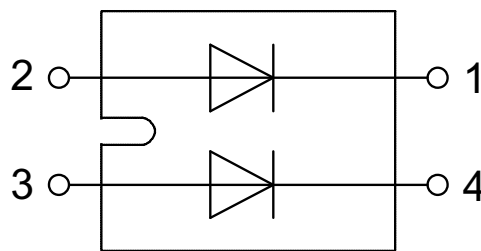
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DCG160X650NA	DCG160X650NA	Tube	10	DCG160X650NA

Equivalent Circuits for Simulation ^{*on die level}

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

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



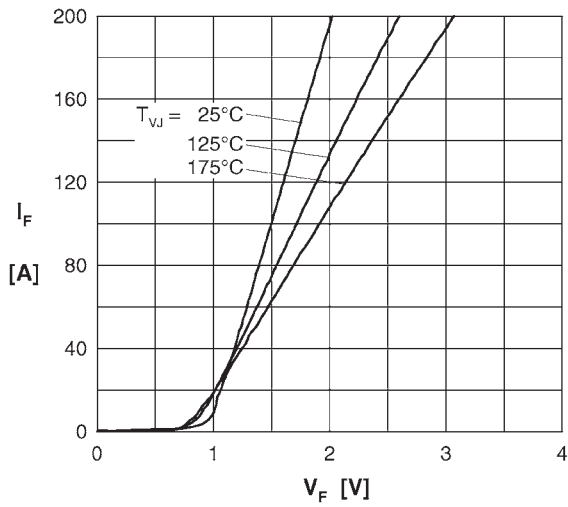
SiC Diode (per leg)


Fig. 1 Typ. forward characteristics

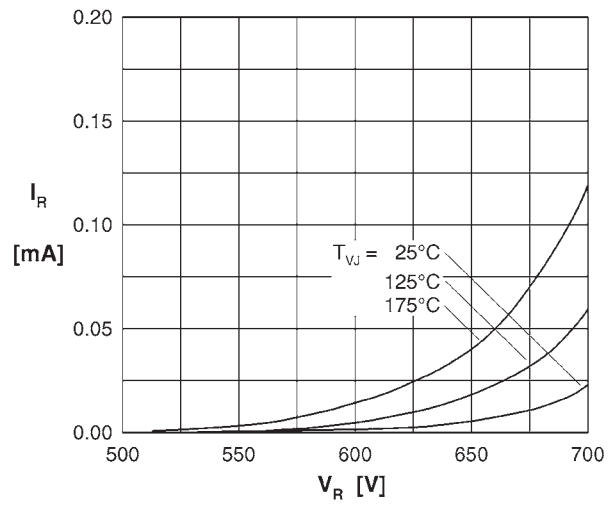


Fig. 2 Typ. reverse characteristics

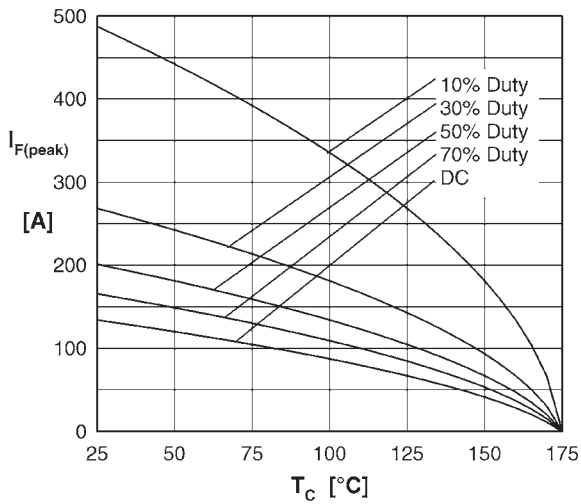


Fig. 3 Typ. current derating

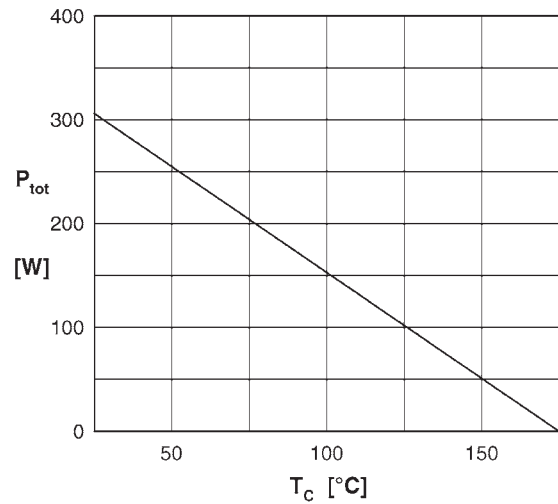


Fig. 4 Power derating

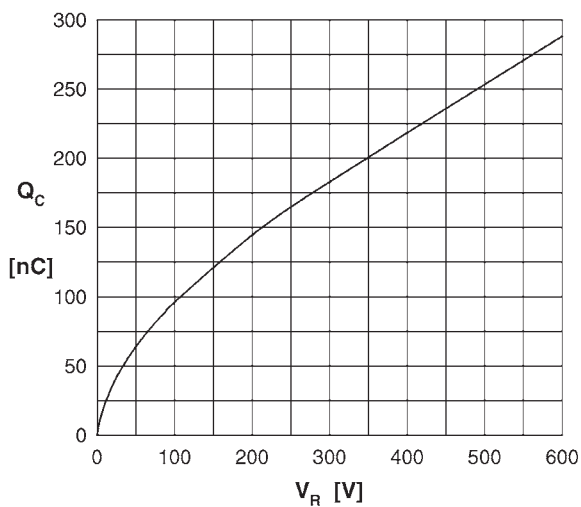


Fig. 5 Typ. recovery charge vs. reverse voltage

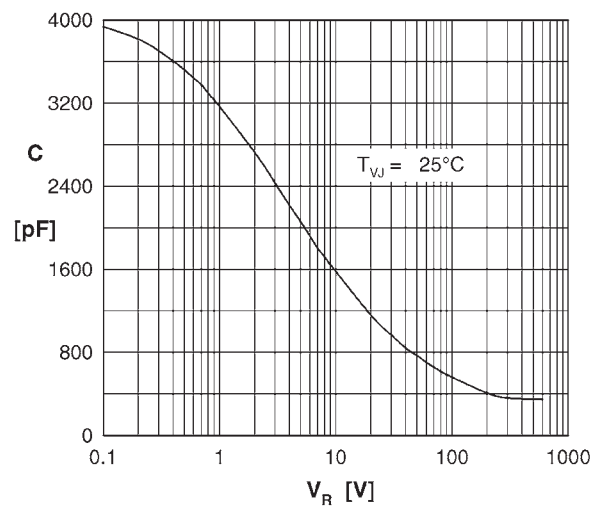


Fig. 6 Typ. junction capacitance vs. reverse Voltage

SiC Diode (per leg)

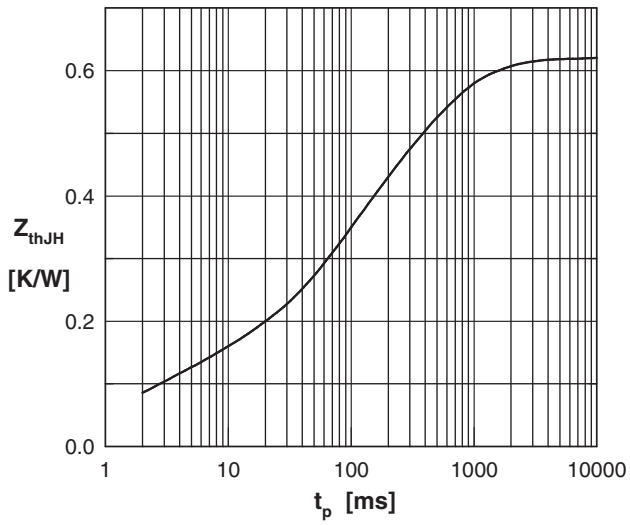


Fig. 7 Typ. transient thermal impedance