

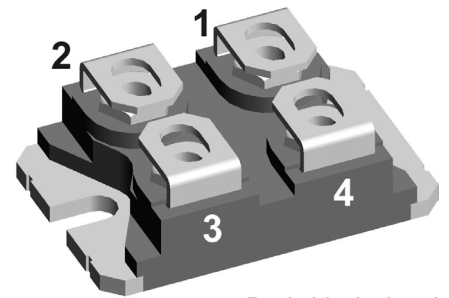
SiC Schottky Diode

$$V_{RRM} = 1200\text{ V}$$

$$I_{FAV} = 2 \times 25\text{ A}$$

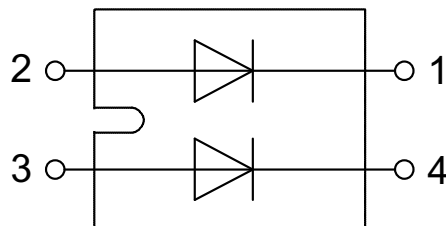
Ultra fast switching
Zero reverse recovery

Part number
DCG45X1200NA



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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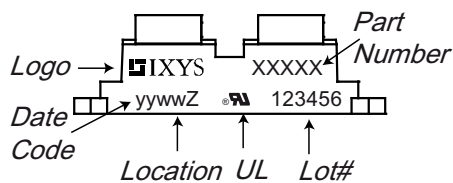


SiC Diode (per leg)				Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	
V _{RSM}	max. non-repetitive reverse blocking voltage	T _{VJ} = 25°C				1200	V
V _{RRM}	max. repetitive reverse blocking voltage	T _{VJ} = 25°C				1200	V
I _R	reverse current	V _R = V _{RRM}	T _{VJ} = 25°C T _{VJ} = 175°C		35 65	200 400	μA μA
V _F	forward voltage	I _F = 10 A I _F = 20 A	T _{VJ} = 25°C		1.2 1.5		V V
		I _F = 10 A I _F = 20 A	T _{VJ} = 175°C		1.45 2.20	3.0	V V
I _{FAV}	average forward current	T _C = 80°C T _C = 100°C	rectangular, d = 0.5	T _{VJ} = 175°C		25 22	A A
I _{F25}	forward current	based on typ. V _{F0} and r _F		T _C = 25°C		44	A
I _{F80}				T _C = 80°C		34	A
I _{F100}				T _C = 100°C		30	A
I _{FSM}	max forward surge current	t = 10 ms, half sine (50 Hz) t _p = 10 μs, pulse; V _R = 0 V	T _{VJ} = 25°C			1150	A A
V _{F0}	threshold voltage	for power loss calculation	T _{VJ} = 125°C 175°C		0.80 0.73		V V
r _F	slope resistance		T _{VJ} = 125°C 175°C		57.0 70.5		mΩ mΩ
Q _C	total capacitive charge		V _R = 800 V, I _F = 20A di/dt = 200 A/μs	T _{VJ} = 25°C		100	
C	total capacitance	V _R = 0 V V _R = 400 V V _R = 800 V	f = 1 MHz; T _{VJ} = 25°C		1500 93 67		pF pF pF
R _{thJC}	thermal resistance junction to case					0.9	K/W
R _{thJH}	thermal resistance junction to heatsink	with heatsink compound; IXYS test setup			1.05		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	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$ $t = 1 \text{ sec.}$ $t = 1 \text{ minute}$	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

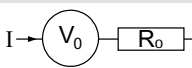


Part description

D = Diode
 C = SiC
 G = Extreme fast
 45 = Current Rating [A]
 X = Parallel legs
 1200 = Reverse Voltage [V]
 NA = SOT-227 (minibloc)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DCG45X1200NA	DCG45X1200NA	Tube	10	DCG45X1200NA

Equivalent Circuits for Simulation ^{*on die level, typical}

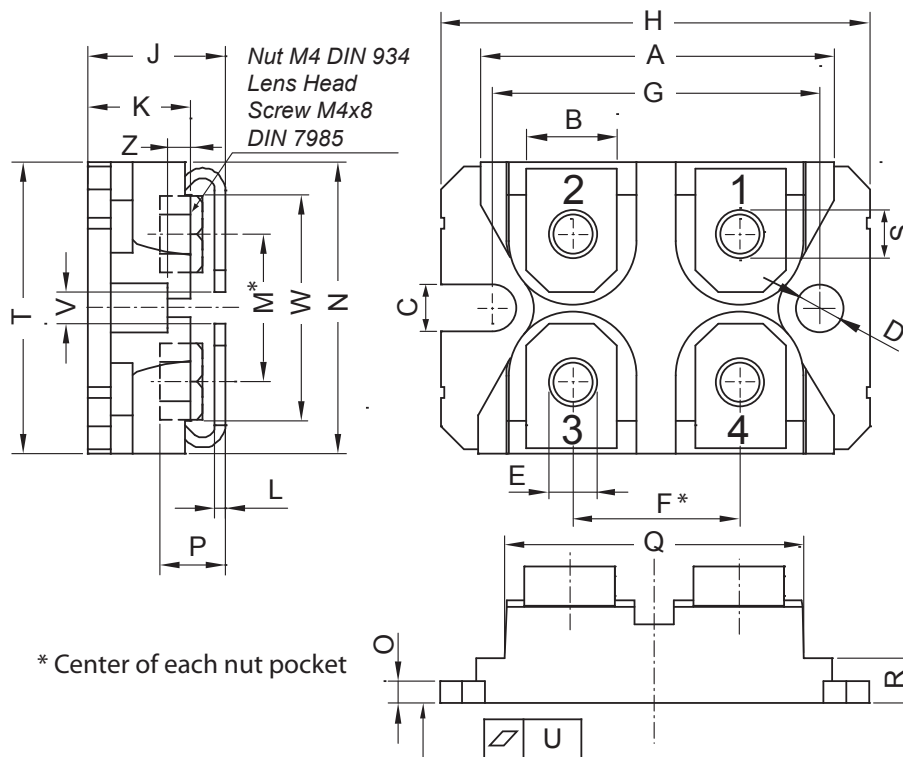
		$T_{VJ} = 125^{\circ}\text{C}$	$T_{VJ} = 175^{\circ}\text{C}$	
$V_{0 \max}$	threshold voltage	0.80	0.73	V
$R_{0 \max}$	slope resistance *	57.0	70.5	mΩ

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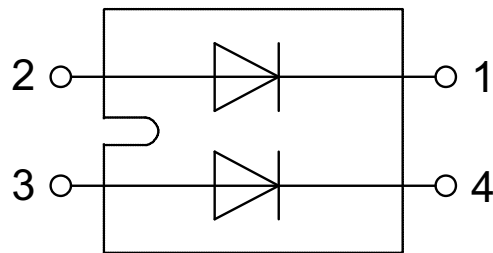
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Outlines SOT-227B (minibloc)


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



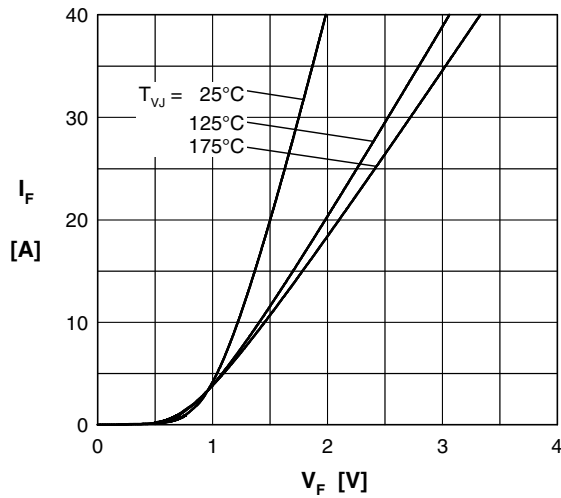
SiC Diode (per leg)


Fig. 1 Typ. forward characteristics.

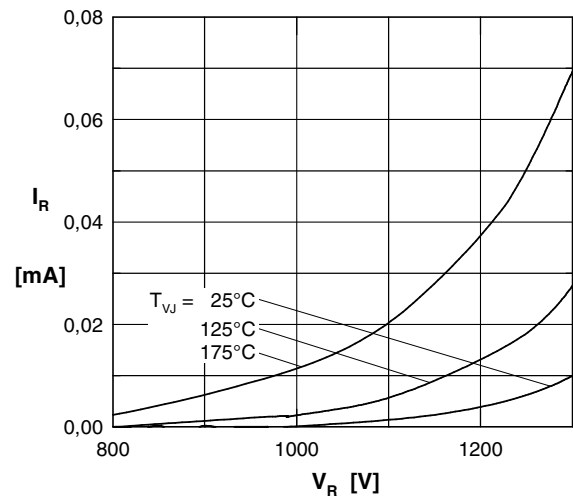


Fig. 2 Typ. reverse characteristics

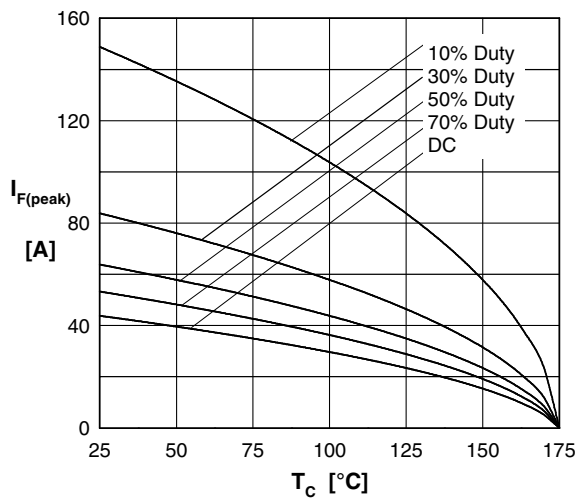


Fig. 3 Typ. current derating

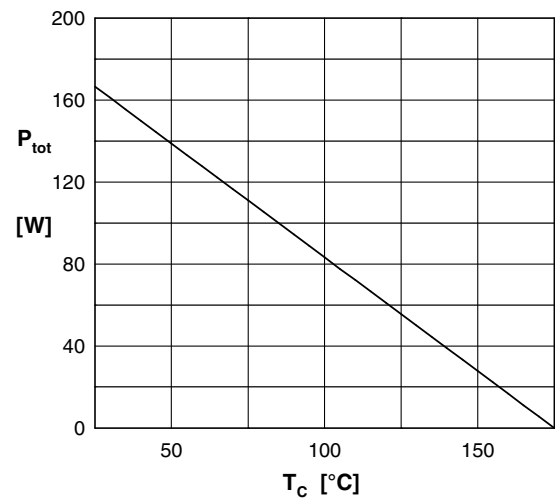


Fig. 4 Power derating

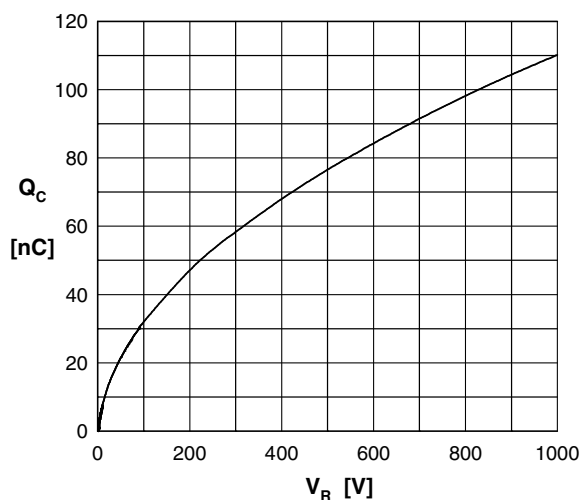


Fig. 5 Typ. recovery charge vs. reverse voltage

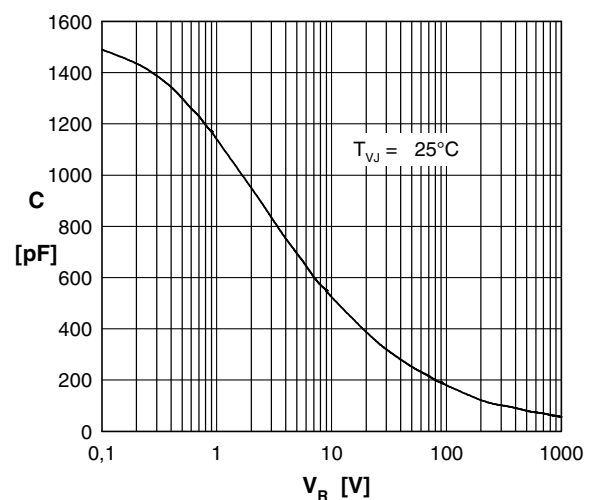


Fig. 6 Typ. junction capacitance vs. reverse Voltage

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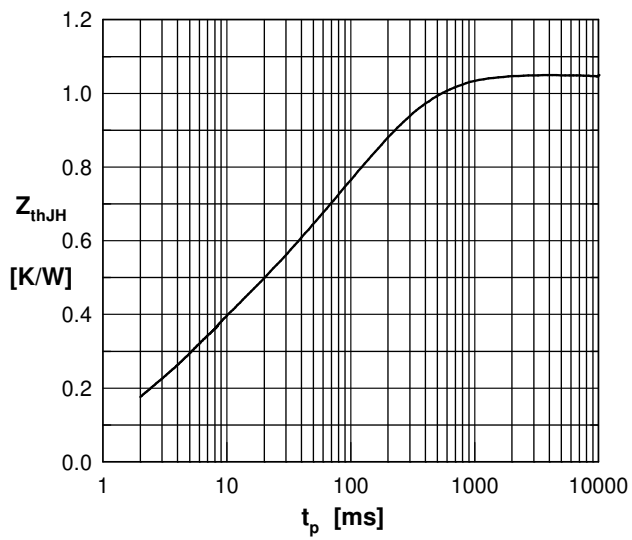


Fig. 7 Typ. transient thermal impedance