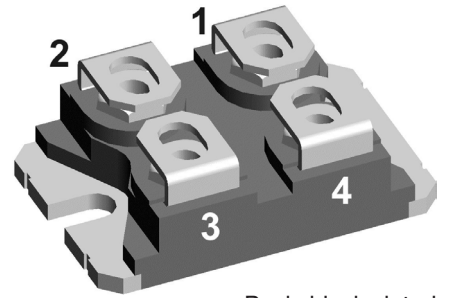


# SiC Schottky Diode


 $V_{RRM} = 1200\text{ V}$   
 $I_{FAV} = 2 \times 25\text{ A}$ 

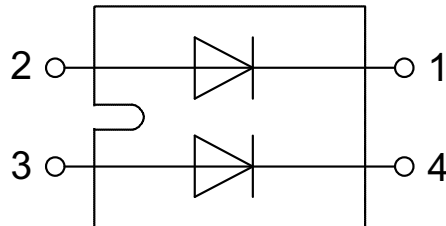
Ultra fast switching  
 Zero reverse recovery

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

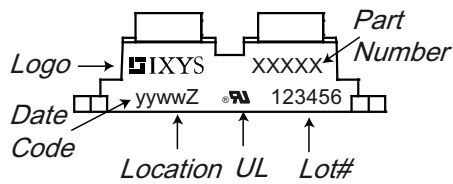
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SiC Diode (per leg)				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.		
$V_{RSM}$	max. non-repetitive reverse blocking voltage				1200	V	
$V_{RRM}$	max. repetitive reverse blocking voltage				1200	V	
$I_R$	reverse current	$V_R = V_{RRM}$		35 65	200 400	$\mu A$ $\mu A$	
$V_F$	forward voltage	$I_F = 10 A$ $I_F = 20 A$	$T_{VJ} = 25^\circ C$	1.2		V	
				1.5	1.8	V	
		$I_F = 10 A$ $I_F = 20 A$	$T_{VJ} = 175^\circ C$	1.45		V	
				2.20	3.0	V	
$I_{FAV}$	average forward current	$T_C = 80^\circ C$ $T_C = 100^\circ C$ } rectangular, d = 0.5	$T_{VJ} = 175^\circ C$		25 22	A A	
$I_{F25}$	forward current	based on typ. $V_{F0}$ and $r_F$	$T_C = 25^\circ C$		44	A	
$I_{F80}$			$T_C = 80^\circ C$		34	A	
$I_{F100}$			$T_C = 100^\circ C$		30	A	
$I_{FSM}$	max forward surge current	t = 10 ms, half sine (50 Hz) $t_p = 10 \mu s$ , pulse; $V_R = 0 V$	$T_{VJ} = 25^\circ C$		1150	A A	
$V_{F0}$	threshold voltage	} for power loss calculation	$T_{VJ} = 125^\circ C$	0.80		V	
$r_F$	slope resistance		$T_{VJ} = 175^\circ C$	0.73		V	
			$T_{VJ} = 125^\circ C$	57.0		m $\Omega$	
			$T_{VJ} = 175^\circ C$	70.5		m $\Omega$	
$Q_C$	total capacitive charge	$V_R = 800 V$ , $I_F = 20 A$ $di/dt = 200 A/\mu s$	$T_{VJ} = 25^\circ C$	100		nC	
$C$	total capacitance	$V_R = 0 V$ $V_R = 400 V$ $V_R = 800 V$ } f = 1 MHz;	$T_{VJ} = 25^\circ C$	1500		pF	
				93		pF	
				67		pF	
$R_{thJC}$	thermal resistance junction to case	with heatsink compound; IXYS test setup			0.9	K/W	
$R_{thJH}$	thermal resistance junction to heatsink			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
<b>Weight</b>				30		g
$M_D$	mounting torque <sup>1)</sup>	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

<sup>1)</sup> further information see application note IXAN0073 on [www.ixys.com/TechnicalSupport/appnotes.aspx](http://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)

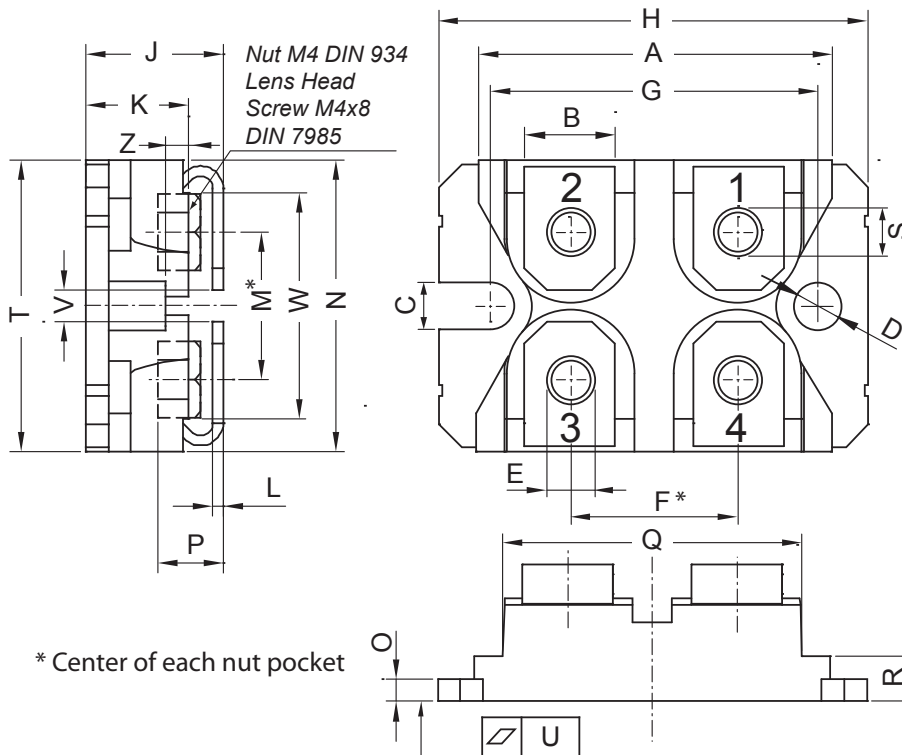
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DCG45X1200NA	DCG45X1200NA	Tube	10	DCG45X1200NA

### Equivalent Circuits for Simulation <sup>\*on die level, typical</sup>

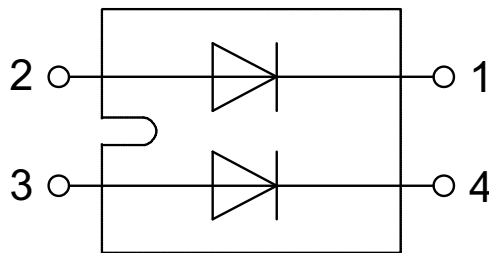
		$T_{VJ} = 125^\circ\text{C}$	$T_{VJ} = 175^\circ\text{C}$	
$V_0$	threshold voltage	0.80	0.73	V
$R_0$	slope resistance *	57.0	70.5	mΩ

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

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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)

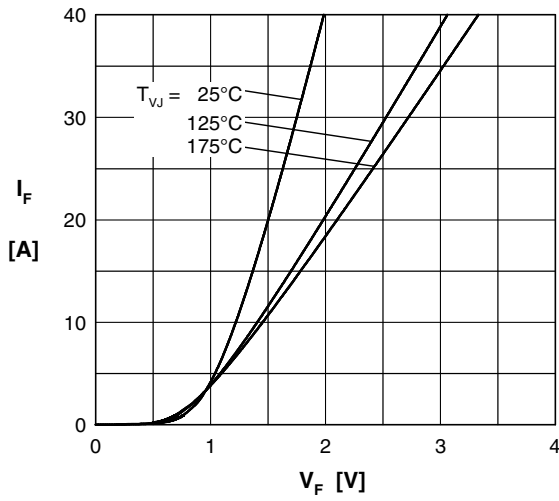


Fig. 1 Typ. forward characteristics.

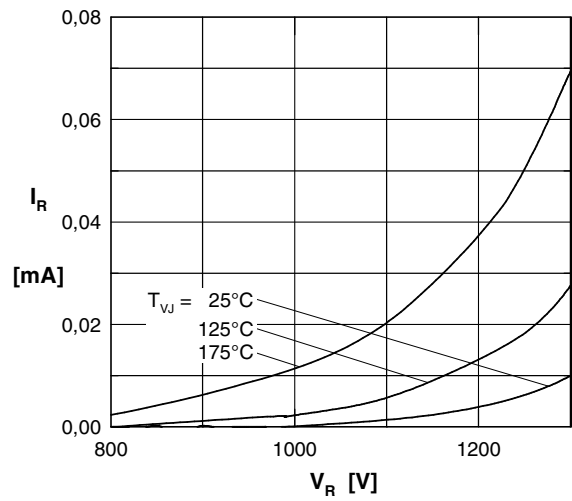


Fig. 2 Typ. reverse characteristics

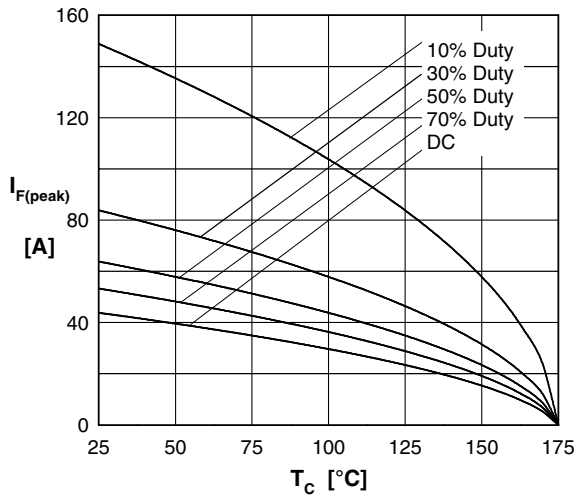


Fig. 3 Typ. current derating

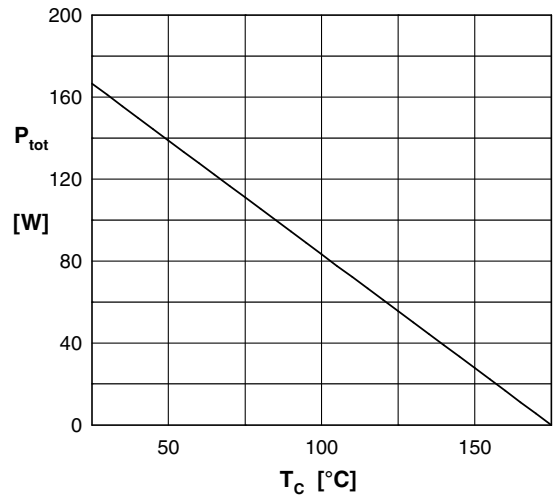


Fig. 4 Power derating

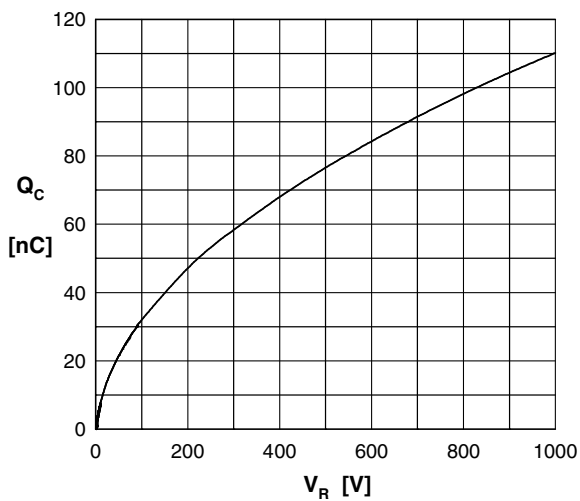


Fig. 5 Typ. recovery charge vs. reverse voltage

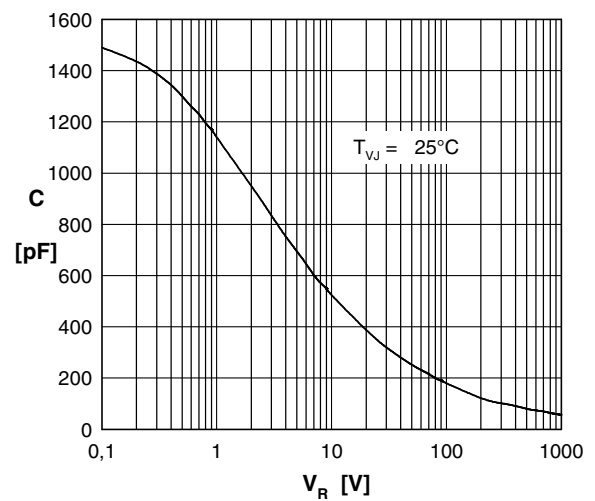


Fig. 6 Typ. junction capacitance vs. reverse Voltage

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SiC Diode (per leg)

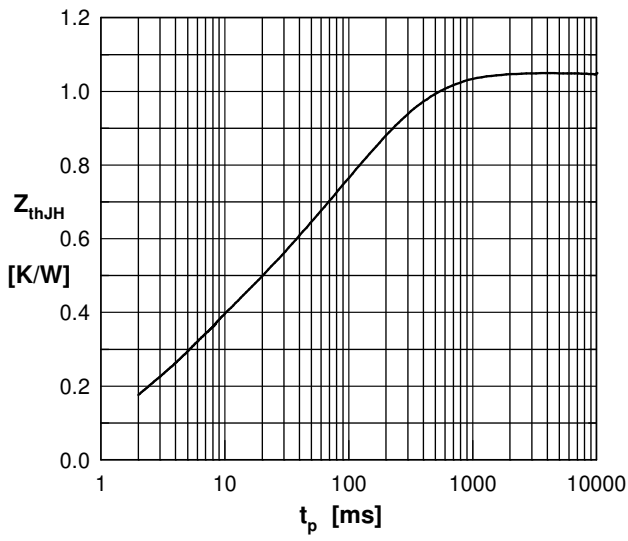


Fig. 7 Typ. transient thermal impedance