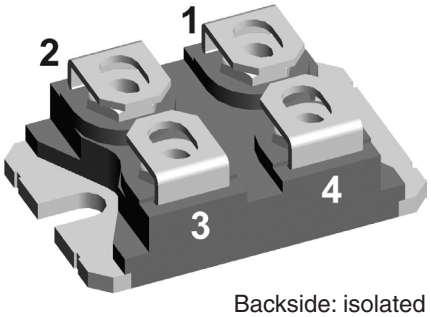
SiC Schottky Diode

V_{RRM} = 1200 V
I_{FAV} = 2x 41 A

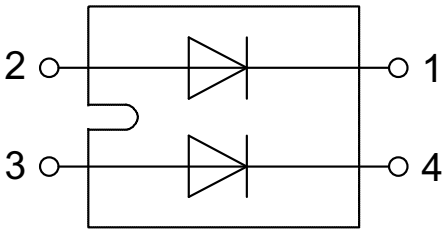
Ultra fast switching
Zero reverse recovery

Part number
DCG85X1200NA



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

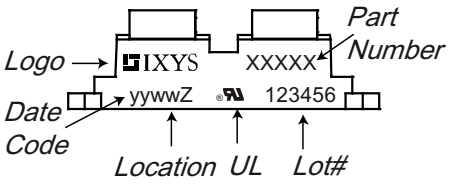
Package: SOT-227B (minibloc)
- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate with Aluminium nitride isolation for low thermal resistance
- Advanced power cycling

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		70	400	µA
			T_{VJ} = 175°C		130	800	µA
V_F	*forward voltage*	I_F = 20 A	T_{VJ} = 25°C		1.2		V
		I_F = 40 A			1.5	1.8	V
		I_F = 20 A	T_{VJ} = 175°C		1.3		V
		I_F = 40 A			2.20	3.0	V
I_{FAV}	*average forward current*	T_C = 80°C, rectangular, d = 0.5				41	A
		T_C = 100°C, T_{VJ} = 175°C				36	A
I_{F25}	*forward current*	based on typ. V_{F0} and r_F	T_C = 25°C			73	A
I_{F80}			T_C = 80°C			56	A
I_{F100}			T_C = 100°C			49	A
I_{FSM}	*max forward surge current*	t = 10 ms, half sine (50 Hz)	T_{VJ} = 25°C				A
		t_P = 10 µs, pulse; V_R = 0V				1150	A
V_{F0}	*threshold voltage*	*for power loss calculation*	T_{VJ} = 125°C		0.80		V
			175°C		0.73		V
r_F	*slope resistance*		T_{VJ} = 125°C		28.4		mΩ
			175°C		35.2		mΩ
Q_C	*total capacitive charge*	V_R = 800 V, I_F = 40A; dI/dt = 400 A/µs	T_{VJ} = 25°C		200		nC
C	*total capacitance*	V_R = 0 V	f = 1 MHz; T_{VJ} = 25°C		3000		pF
		V_R = 400 V			185		pF
		V_R = 800 V			135		pF
R_{thJC}	*thermal resistance junction to case*					0.60	K/W
R_{thJH}	*thermal resistance junction to heatsink*	with heatsink compound; IXYS test setup			0.72		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} d_{Spb}	*creepage distance on surface*	terminal to terminal terminal to backside	10.5 8.5			mm mm
d_{App} d_{Apb}	*striking distance through air*	terminal to terminal terminal to backside	3.2 6.8			mm 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



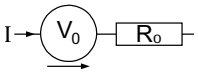
Part description

D = Diode
C = SiC
G = extreme fast
85 = 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	DCG85X1200NA	DCG85X1200NA	Tube	10	DCG85X1200NA

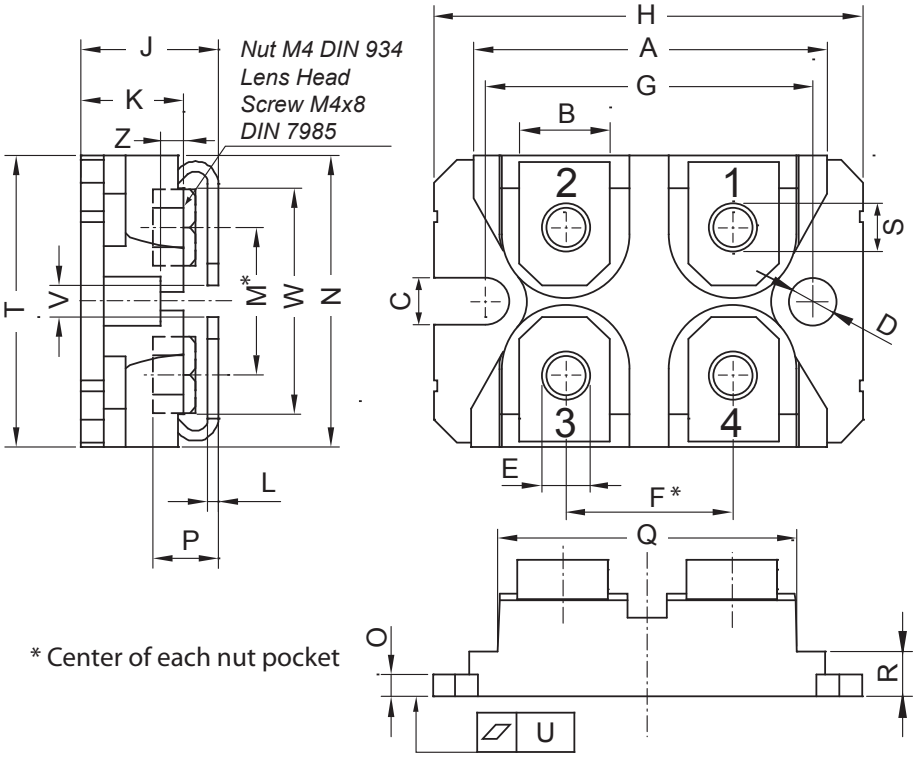
Equivalent Circuits for Simulation

*on die level, typical



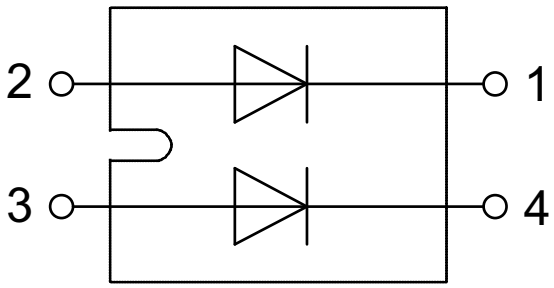
		T_{VJ} = 125°C	T_{VJ} = 175°C	
$V_{0\ max}$	*threshold voltage*	0.80	0.73	V
$R_{0\ max}$	*slope resistance* *	28.4	35.2	mΩ

Outlines SOT-227B (minibloc)



* Center of each nut pocket

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)

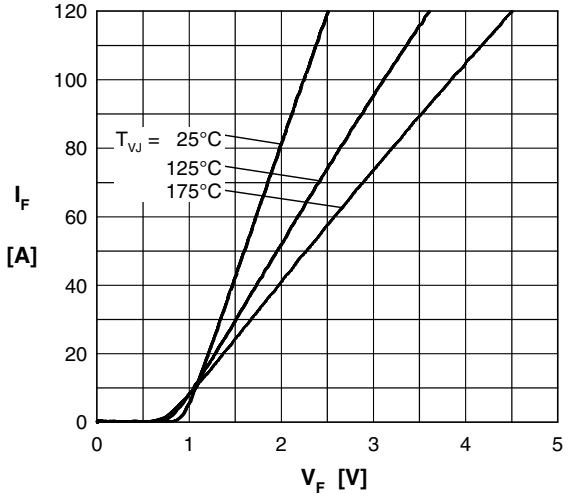


Fig. 1 Typ. forward characteristics

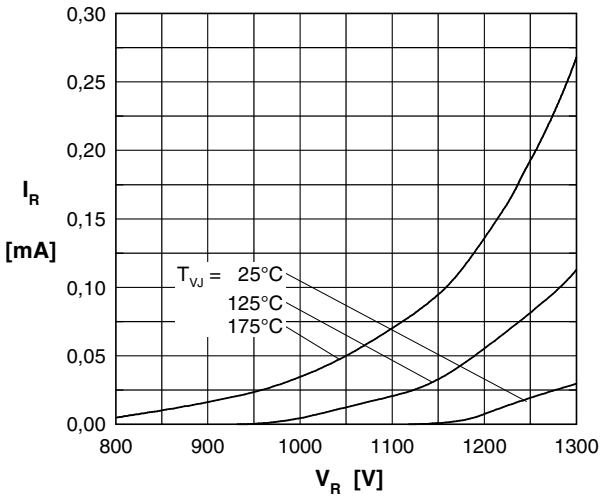


Fig. 2 Typ. reverse characteristics

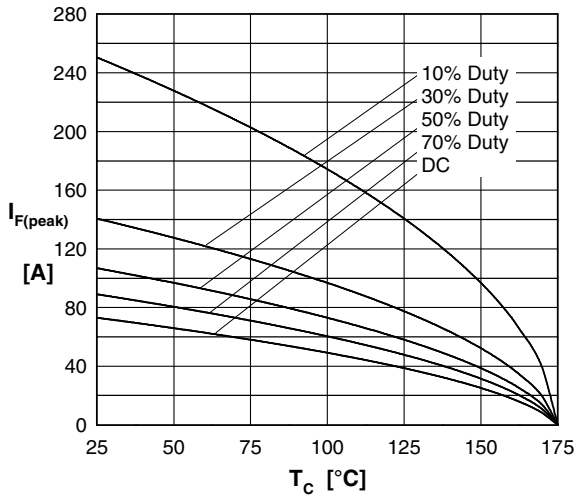


Fig. 3 Typ. current derating

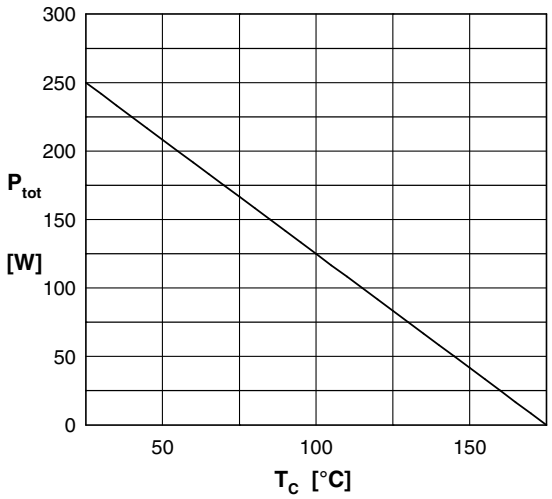


Fig. 4 Power derating

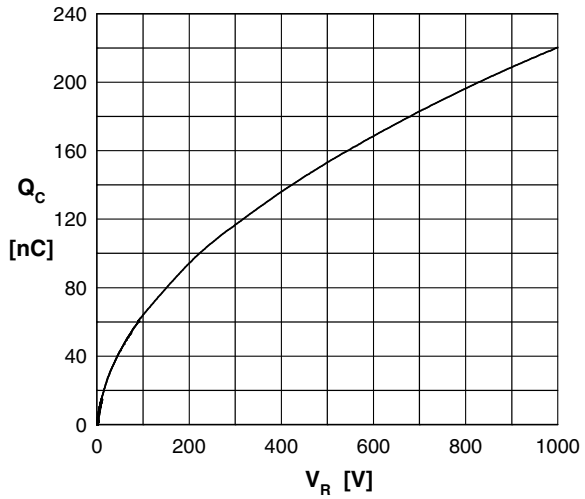


Fig. 5 Typ. recovery charge vs. reverse voltage

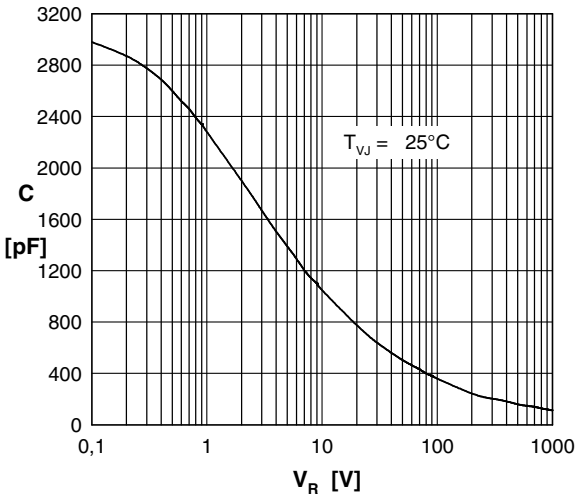


Fig. 6 Typ. junction capacitance vs. reverse Voltage

SiC Diode (per leg)

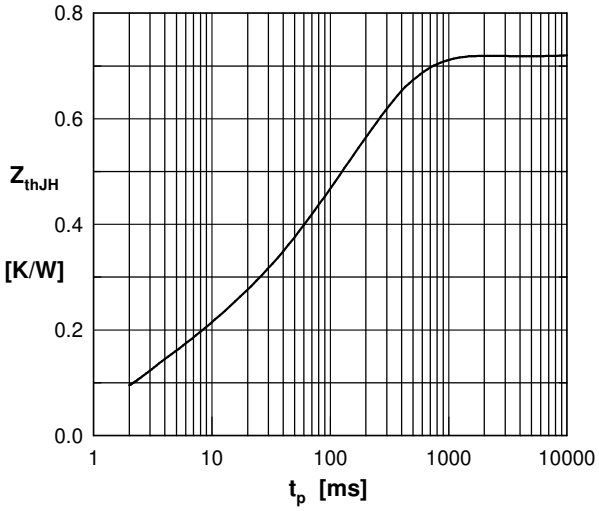


Fig. 7 Typ. transient thermal impedance