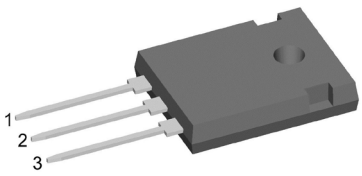
SiC Schottky Diode

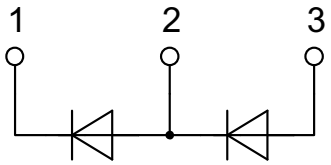
V_{RRM} = 2x 1200 V
I_{FAV} = 12.5 A

Ultra fast switching
Zero reverse recovery
Phase leg

Part number
DCG10P1200HR



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

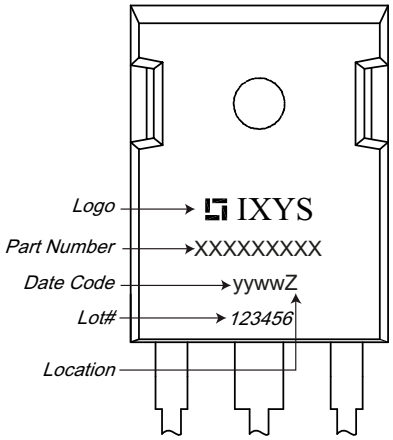
Applications:
- Solar inverter
- Uninterruptible power supply (UPS)
- Welding equipment
- Switched-mode power supplies
- Medical equipment
- High speed rectifier

Package: ISO247
- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

SiC Diode (per diode)				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
V_{RSM}	*max. non-repetitive reverse blocking voltage*					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		30	250	µA
			T_{VJ} = 175°C		55	350	µA
V_F	*forward voltage*	I_F = 10 A	T_{VJ} = 25°C		1.5	1.8	V
		I_F = 20 A					V
		I_F = 10 A	T_{VJ} = 175°C		2.2	3.0	V
		I_F = 20 A					V
I_{FAV}	*average forward current*	T_C = 80°C	rectangular, d = 0.5			12.5	A
		T_C = 100°C	T_{VJ} = 175°C			11.0	A
I_{F25}	*forward current*	based on typ. V_{F0} and r_F	T_C = 25°C			22	A
I_{F80}			T_C = 80°C			17	A
I_{F100}			T_C = 100°C			15	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			750	A
V_{F0}	*threshold voltage*	*for power loss calculation*	T_{VJ} = 125°C		0.77		V
			175°C		0.69		V
r_F	*slope resistance*		T_{VJ} = 125°C		107		mΩ
			175°C		133		mΩ
Q_C	*total capacitive charge*	V_R = 800 V, I_F = 10A	T_{VJ} = 25°C		52		nC
		dI/dt = 200 A/µs					
C	*total capacitance*	V_R = 0 V	T_{VJ} = 25°C, f = 1 MHz		755		pF
		V_R = 400 V			45		pF
		V_R = 800 V			38		pF
R_{thJC}	*thermal resistance junction to case*					1.9	K/W
R_{thJH}	*thermal resistance junction to heatsink*	with heatsink compound; IXYS test setup			2.2		K/W

Package ISO247			Ratings			
Symbol	**Definitions**	**Conditions**	**min.**	**typ.**	**max.**	
I_{RMS}	*RMS current*	per terminal			70	A
T_{stg}	*storage temperature*		-40		150	°C
T_{op}	*operation temperature*		-40		150	°C
T_{VJ}	*virtual junction temperature*		-40		175	°C
Weight				6		g
M_D	*mounting torque*		0.8		1.2	Nm
F_C	*mounting force with clip*		40		120	N
$d_{Spp/App}$	*creepage distance on surface /*	terminal to terminal	2.7			mm
$d_{Spb/Apb}$	*striking distance through air*	terminal to backside	4.1			mm
V_{ISOL}	*isolation voltage*	t = 1 second t = 1 minute 50/60 Hz; RMS; I_{ISOL} < 1 mA		3600 3000		V V

Product Marking



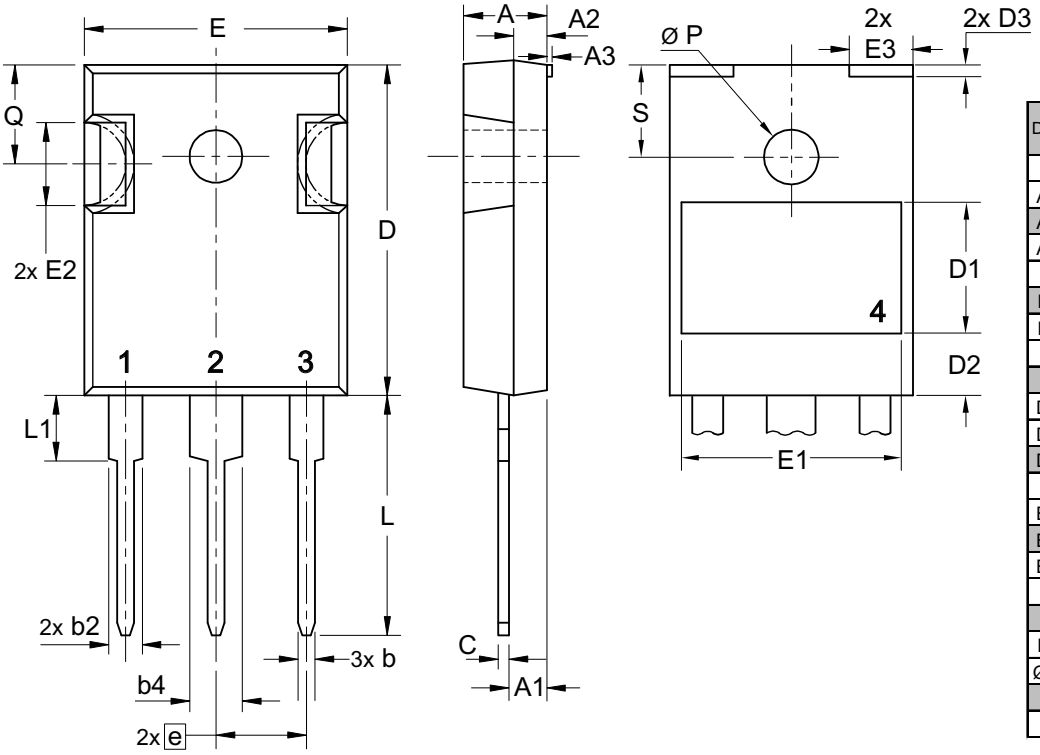
Part description

D = Diode
C = SiC
G = Extreme fast
10 = Current Rating [A]
P = Phase leg
1200 = Reverse Voltage [V]
HR = ISO247 (3)

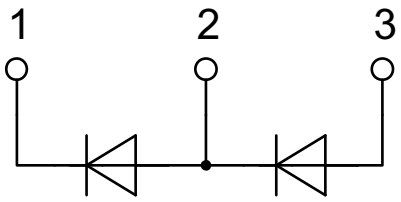
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DCG10P1200HR	DCG10P1200HR	Tube	30	DCG10P1200HR

Equivalent Circuits for Simulation	*on die level, typical			
I → V_0 — R_0		T_{VJ} = 125°C	T_{VJ} = 175°C	
$V_{0\ max}$	*threshold voltage*	0.77	0.68	V
$R_{0\ max}$	*slope resistance **	107	133	mΩ

Outlines ISO247



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
A3	typ. 0.05		typ. 0.002	
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.844
D1	typ. 8.90		typ. 0.350	
D2	typ. 2.90		typ. 0.114	
D3	typ. 1.00		typ. 0.039	
E	15.49	16.24	0.610	0.639
E1	typ. 13.45		typ. 0.530	
E2	4.31	5.48	0.170	0.216
E3	typ. 4.00		typ. 0.157	
e	5.46 BSC		0.215 BSC	
L	19.80	20.30	0.780	0.799
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	



SiC Diode (per diode)

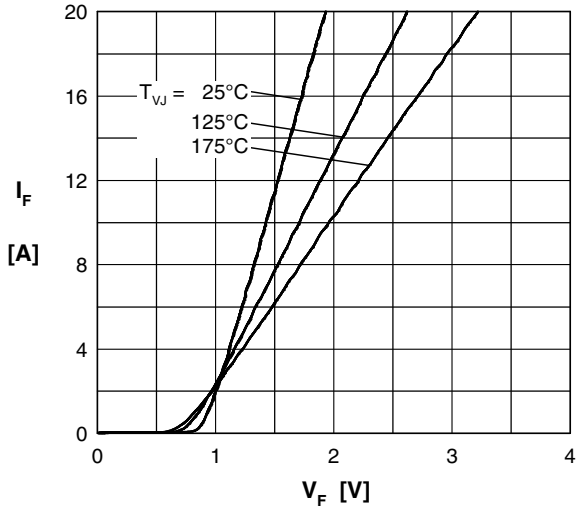


Fig. 1 Typ. forward characteristics.

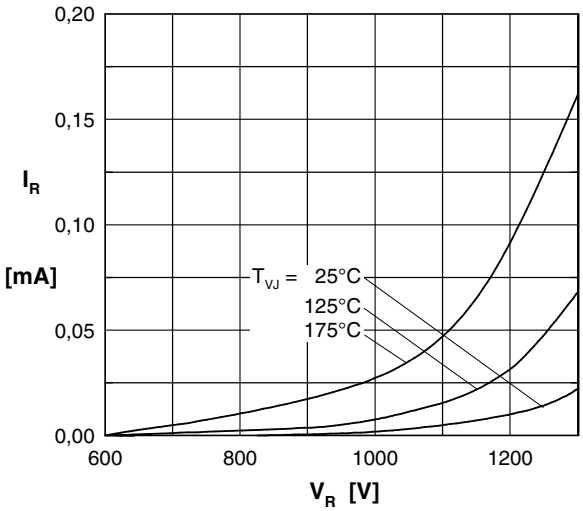


Fig. 2 Typ. reverse characteristics

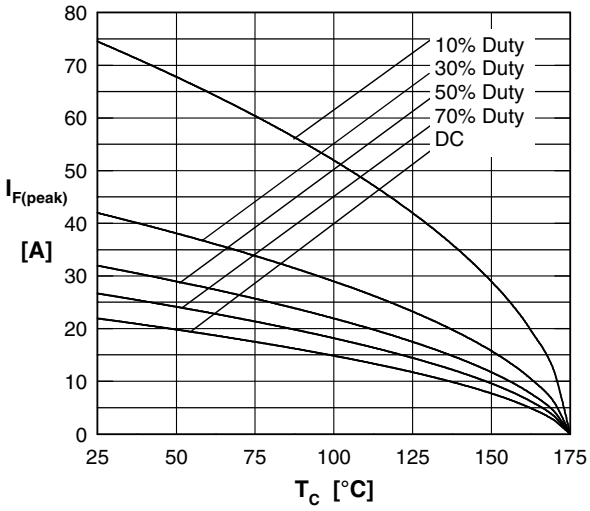


Fig. 3 Typ. current derating

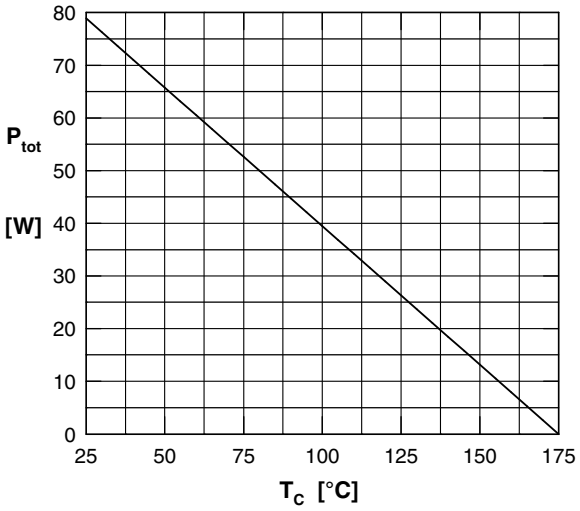


Fig. 4 Power derating

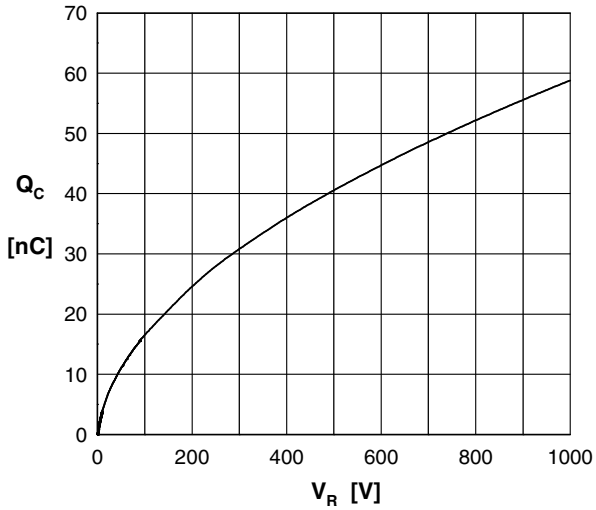


Fig. 5 Typ. recovery charge vs. reverse voltage

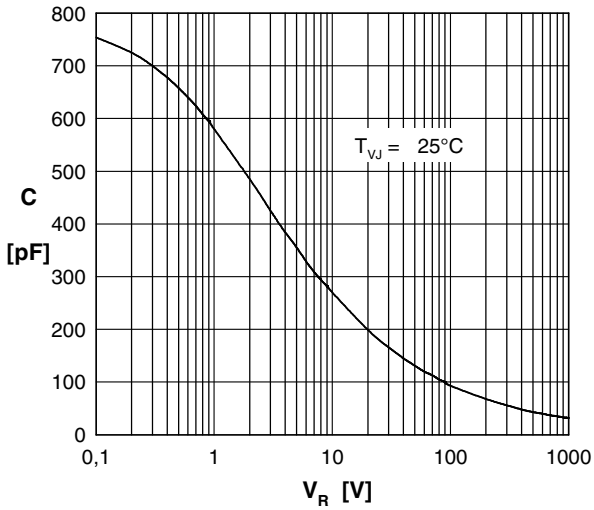


Fig. 6 Typ. junction capacitance vs. reverse Voltage

SiC Diode (per diode)

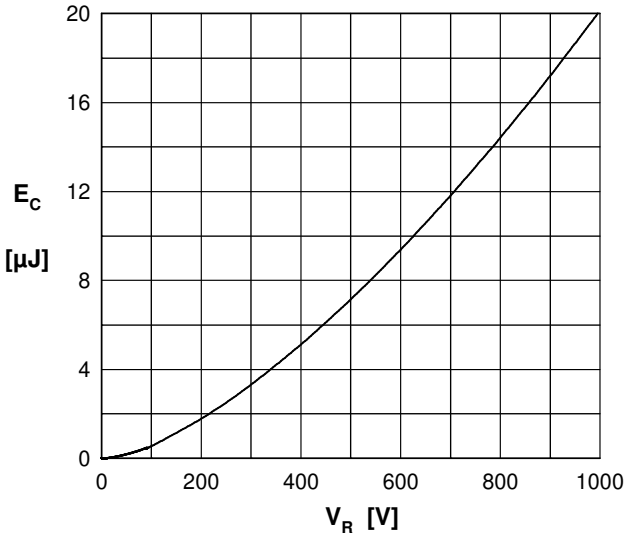


Fig. 7 Typical capacitance stored energy

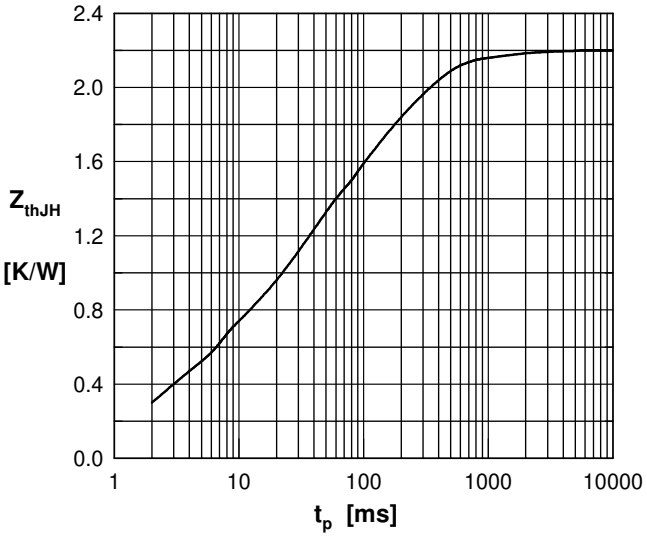


Fig. 8 Typ. transient thermal impedance junction to heatsink