

# **DCG10P1200HR**

tentative

 $V_{RRM} = 2x 1200 V$ 

12.5 A

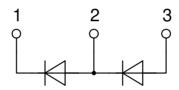
# SiC Schottky Diode

Ultra fast switching Zero reverse recovery Phase leg

Part number DCG10P1200HR



Backside: isolated **FL** 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: 3600 V~
- · Industry standard outline
- · RoHS compliant
- Epoxy meets UL 94V-0
- · Soldering pins for PCB mounting
- · Backside: DCB ceramic
- · Reduced weight
- · Advanced power cycling

Terms & Conditions of Usage
The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you. Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you. Should you intend to use the product in aviation, in health or live endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;

- the conclusion of quality agreements;
   to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

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

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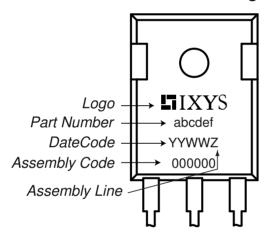
SiC Diode (per diode)					Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.		
V <sub>RSM</sub>	max. non-repetitive reverse blocking voltage				1200	V	
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
I <sub>R</sub>	reverse current	$\begin{aligned} V_{\text{R}} = V_{\text{RRM}} & T_{\text{VJ}} = 25^{\circ}\text{C} \\ T_{\text{VJ}} = 175^{\circ}\text{C} \end{aligned}$		30 55	250 350	μA μA	
V <sub>F</sub>	forward voltage	$I_F = 10 \text{ A}$ $T_{VJ} = 25^{\circ}\text{C}$ $I_F = 20 \text{ A}$		1.5	1.8	V V	
		$I_F = 10 \text{ A}$ $T_{VJ} = 175^{\circ}\text{C}$ $I_F = 20 \text{ A}$		2.2	3.0	V V	
I <sub>FAV</sub>	average forward current	$T_{C} = 80^{\circ}C$ rectangular, $d = 0.5$ $T_{C} = 100^{\circ}C$ $T_{VJ} = 175^{\circ}C$			12.5 11	A A	
I <sub>F25</sub> I <sub>F80</sub> I <sub>F100</sub>	forward current	based on typ. $V_{F0}$ and $r_{F}$ $ T_{C} = 25^{\circ}C $ $ T_{C} = 80^{\circ}C $ $ T_{C} = 100^{\circ}C $			22 17 15	A A A	
I <sub>FSM</sub>	max forward surge current	t = 10 ms,half sine (50 Hz) $T_{VJ} = 25^{\circ}\text{C}$ t <sub>P</sub> = 10 µs, pulse $V_{R} = 0V$			750	A A	
V <sub>F0</sub>	threshold voltage	$T_{VJ} = 125^{\circ}C$		0.77		V	
r <sub>F</sub>	slope resistance			0.69 107 133		$\begin{array}{c} V \\ m\Omega \\ m\Omega \end{array}$	
Q <sub>c</sub>	total capacitive charge	$V_R = 800 \text{ V}, I_F = 10 \text{A}$ $T_{VJ} = 25 ^{\circ}\text{C}$ $dI/dt = 200 \text{ A}/\mu\text{s}$		52		nC	
С	total capacitance	$ \begin{array}{c} V_{R} = 0 \; V \\ V_{R} = 400 \; V \\ V_{R} = 800 \; V \end{array} \right\} \hspace{1cm} T_{VJ} = 25 ^{\circ} C, \; f = 1 \; MHz \\ \end{array} $		755 45 38		pF pF pF	
$R_{thJC}$ $R_{thJH}$	thermal resistance junction to case thermal resistance junction to heatsink	with heatsink compound; IXYS test setup		2.2	1.9	K/W K/W	





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

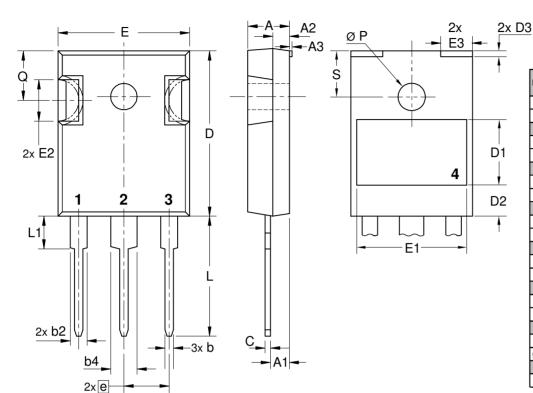
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DCG10P1200HR	DCG10P1200HR	Tube	30	522967

Equival	ent Circuits for Simulation	*on die level, typical			
$I \rightarrow V_0$	- R <sub>o</sub> -	T <sub>VJ</sub> = 125°C	T <sub>VJ</sub> = 175°C		
V <sub>0 max</sub>	threshold voltage	0.77	0.68	V	
$R_{0  max}$	slope resistance *	107	133	$m\Omega$	

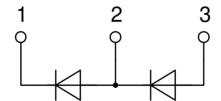




# Outlines ISO247



Millimeter Inches					
Dim.	Millimeter				
	min	max	min	max	
Α	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	
А3	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	
С	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		
Е	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		
е	5.46 BSC		0.215 BSC		
L	19.80	20.30	0.780	0.799	
L1	-	4.49	-	0.177	
ØΡ	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 leg)

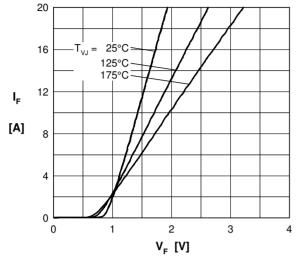


Fig. 1 Typ. forward characteristics.

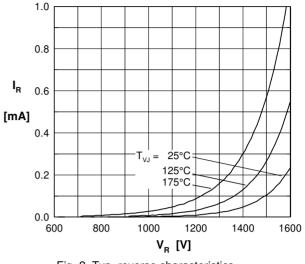


Fig. 2 Typ. reverse characteristics

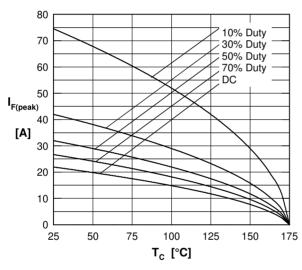


Fig. 3 Typ. current derating

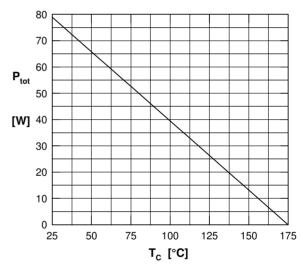


Fig. 4 Power derating

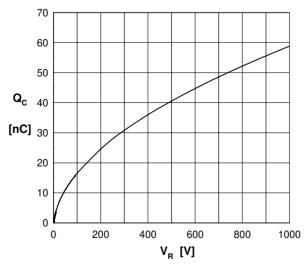


Fig. 5 Typ. recovery charge vs. reverse voltage

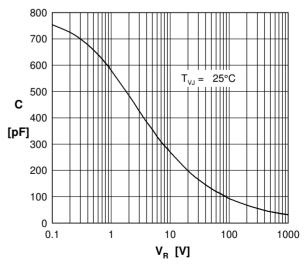


Fig. 6 Typ. junction capacitance vs. reverse Voltage

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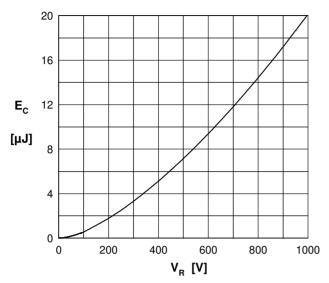


Fig. 7 Typical capacitance stored energy

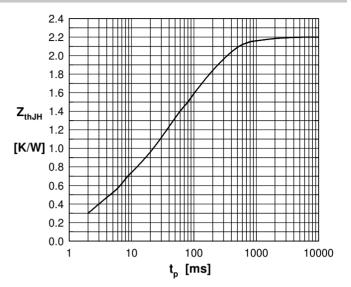


Fig. 8 Typ. transient thermal impedance