## LIXYS

## SiC Schottky Diode

Ultra fast switching Zero reverse recovery Phase leg

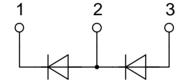
Part number **DCG10P1200HR** 

### tentative

$$V_{RRM} = 2x \ 1200 \ V_{FAV} = 12.5 \ A$$



Backside: isolated **F** E72873



#### Features / Advantages:

- Ultra fast switching
- · Zero reverse recovery
- · Zero forward recovery
- Temperature independent switching behavior
- · Positive temperature coefficient of forward voltage
- T<sub>VJM</sub> = 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

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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

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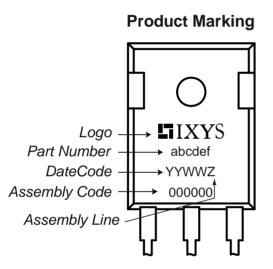
SiC Diod	e (per diode)	e) Ratings		s		
Symbol	Definitions	Conditions	min.	typ.	max.	
V <sub>RSM</sub>	max. non-repetitive reverse blocking voltage			ĺ	1200	V
V <sub>RRM</sub>	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V
I <sub>R</sub>	reverse current	$V_{R} = V_{RRM} \qquad \qquad T_{VJ} = 25^{\circ}C \\ T_{VJ} = 175^{\circ}C$		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	$ \begin{array}{ccc} T_c = & 80^{\circ}C \\ T_c = & 100^{\circ}C \end{array} \end{array} rectangular, d = 0.5 \\ T_{vJ} = & 175^{\circ}C \end{array} $			12.5 11	A A
<sub>F25</sub>   <sub>F80</sub>   <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) $t_P = 10 \ \mu$ s, pulse $\int T_{VJ} = 25^{\circ}C$ $V_R = 0V$			750	A A
V <sub>F0</sub>	threshold voltage	$T_{vJ} = 125^{\circ}C$		0.77		V
r <sub>F</sub>	slope resistance	$\begin{cases} \text{for power loss calculation} \\ T_{VJ} = \begin{array}{c} 175^{\circ}\text{C} \\ 125^{\circ}\text{C} \\ 175^{\circ}\text{C} \end{array} \end{cases}$		0.69 107 133		V mΩ mΩ
Q <sub>c</sub>	total capacitive charge	$V_{R} = 800 \text{ V}, I_{F} = 10 \text{ A}$ dI/dt = 200 A/µs		52		nC
С	total capacitance	$\left. \begin{array}{c} V_{R} = 0 \ V \\ V_{R} = 400 \ V \\ V_{R} = 800 \ V \end{array} \right\} \hspace{1.5cm} T_{VJ} = 25^{\circ}C, \ f = 1 \ MHz$		755 45 38		pF pF pF
R <sub>thJC</sub> R <sub>thJH</sub>	thermal resistance junction to case thermal resistance junction to heatsink	with heatsink compound; IXYS test setup		2.2	1.9	K/W K/W



### **DCG10P1200HR**

#### tentative

Package	ISO247			Ratings		
Symbol	Definitions	Conditions	min.	typ.	max.	
IRMS	RMS current	per terminal			70	A
T <sub>stg</sub>	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
M₀ Fc	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 terminal terminal to backside	2.7 4.1			mm mm
V <sub>ISOL</sub>	isolation voltage	t = 1 second t = 1 minute 50/60 Hz; RMS; $I_{ISOL} < 1 \text{ mA}$		3600 3000		V V



#### 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

Equiva	ent Circuits for Simulation	*on die level, typical				
	⊢R₀	$T_{vJ} = 125^{\circ}C$	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	mΩ		

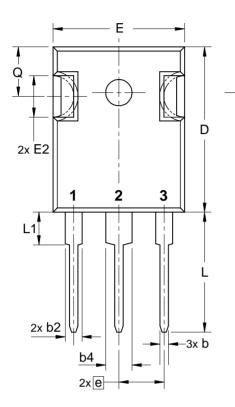
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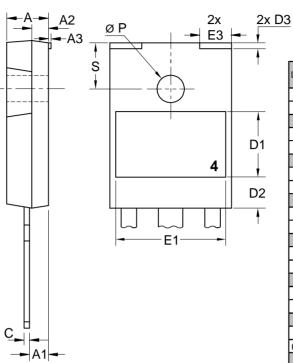
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## DCG10P1200HR

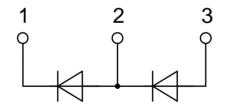
### tentative

#### Outlines ISO247





Dim.	Millimeter		Inches			
Dini.	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		
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		
С	0.38	0.89	0.015	0.035		
D	20.79	21.45	0.819	0.844		
D1	typ.	8.90	typ.	typ. 0.350 typ. 0.114		
D2	typ.	2.90	typ.			
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.	typ. 0.157		
е	5.46	BSC	0.215 BSC			
L	19.80	20.30	0.780	0.799		
L1	-	4.49	-	0.177 0.144 0.244		
ØΡ	3.55	3.65	0.140			
Q	5.38	6.19	0.212			
S	6.14	4 BSC 0.242 BSC				

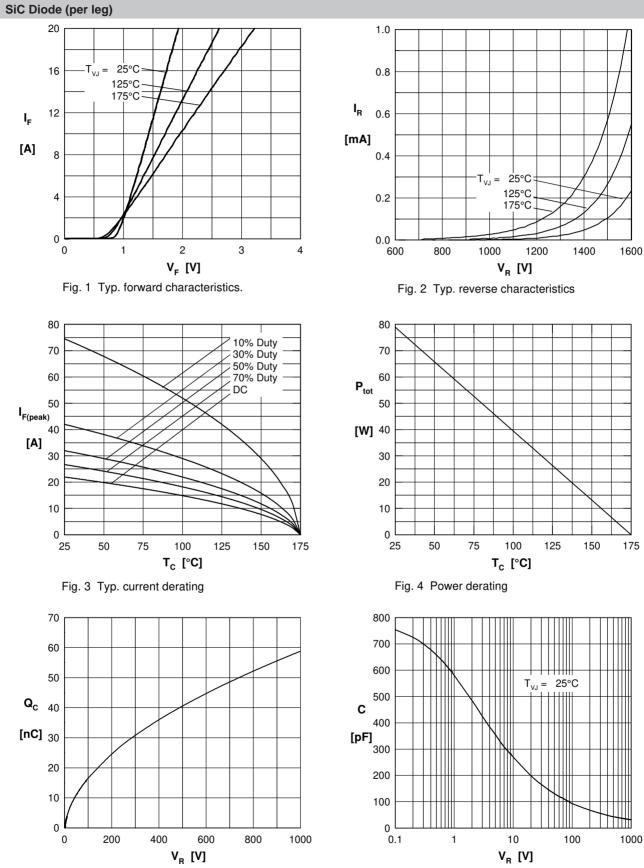


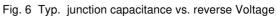
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## DCG10P1200HR

#### tentative





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Fig. 5 Typ. recovery charge vs. reverse voltage

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### DCG10P1200HR

tentative

#### SiC Diode (per leg)

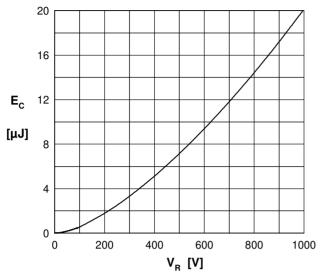


Fig. 7 Typical capacitance stored energy

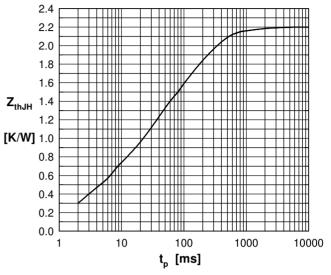


Fig. 8 Typ. transient thermal impedance

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