## 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

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 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.

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SiC Diod	e (per diode)		Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	
V <sub>RSM</sub>	max. non-repetitive reverse blocking voltage				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 $T_{VJ} = 25^{\circ}C$ $V_R = 0V$			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**

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Package	ISO247			Rating	s	
Symbol	Definitions	Conditions	min.	typ.	max.	
I <sub>RMS</sub>	RMS current	per terminal			70	A
$\mathbf{T}_{stg}$	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
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 <sub>ISOL</sub> < 1 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

Equival	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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#### Outlines ISO247





A

C\_

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. 0.0			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.	typ. 1.00 typ. 0.03				
Е	15.49	16.24	0.610	0.639		
E1	typ. 13.45 ty			. 0.530		
E2	4.31	5.48	0.170	0.216		
E3	typ.	rp. 4.00 typ. 0.15		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			



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Fig. 5 Typ. recovery charge vs. reverse voltage

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#### SiC Diode (per leg)



Fig. 7 Typical capacitance stored energy



Fig. 8 Typ. transient thermal impedance

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