

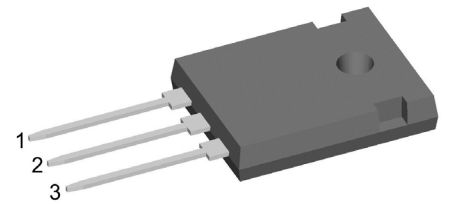
# SiC Schottky Diode

$$V_{RRM} = 2 \times 1200 \text{ V}$$

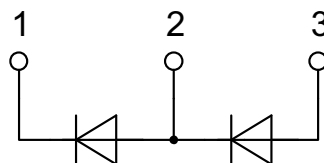
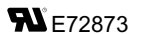
$$I_{FAV} = 18.5 \text{ A}$$

Ultra fast switching  
 Zero reverse recovery  
 Phase leg

Part number  
**DCG17P1200HR**



Backside: isolated



## Features / Advantages:

- Ultra fast switching
- Zero reverse recovery
- Zero forward recovery
- Temperature independent switching behavior
- Positive temperature coefficient of forward voltage
- $T_{VJM} = 175^{\circ}\text{C}$

## 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

## Disclaimer Notice

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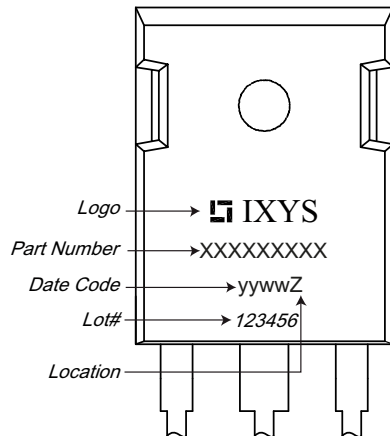


| SiC Diode (per diode)                  |                                                                                |                                                                          |                                                                  | Ratings                                         |                  |              |                   |
|----------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------|------------------|--------------|-------------------|
| Symbol                                 | Definitions                                                                    | Conditions                                                               |                                                                  | min.                                            | typ.             | max.         |                   |
| V <sub>RSM</sub>                       | max. non-repetitive reverse blocking voltage                                   |                                                                          |                                                                  |                                                 |                  | 1200         | V                 |
| V <sub>RRM</sub>                       | max. repetitive reverse blocking voltage                                       | T <sub>VJ</sub> = 25°C                                                   |                                                                  |                                                 |                  | 1200         | V                 |
| I <sub>R</sub>                         | reverse current                                                                | V <sub>R</sub> = V <sub>RRM</sub>                                        | T <sub>VJ</sub> = 25°C<br>T <sub>VJ</sub> = 175°C                |                                                 | 35<br>65         | 200<br>400   | μA<br>μA          |
| V <sub>F</sub>                         | forward voltage                                                                | I <sub>F</sub> = 20 A<br>I <sub>F</sub> = 40 A                           | T <sub>VJ</sub> = 25°C                                           |                                                 | 1.5              | 1.8          | V<br>V            |
|                                        |                                                                                | I <sub>F</sub> = 20 A<br>I <sub>F</sub> = 40 A                           | T <sub>VJ</sub> = 175°C                                          |                                                 | 2.2              | 3.0          | V<br>V            |
|                                        |                                                                                |                                                                          |                                                                  |                                                 |                  |              |                   |
| I <sub>FAV</sub>                       | average forward current                                                        | T <sub>C</sub> = 80°C<br>T <sub>C</sub> = 100°C                          |                                                                  | rectangular, d = 0.5<br>T <sub>VJ</sub> = 175°C |                  | 18.5<br>17.0 | A<br>A            |
| I <sub>F25</sub>                       | forward current                                                                | based on typ. V <sub>F0</sub> and r <sub>F</sub>                         |                                                                  | T <sub>C</sub> = 25°C                           |                  | 34           | A                 |
| I <sub>F80</sub>                       |                                                                                |                                                                          |                                                                  | T <sub>C</sub> = 80°C                           |                  | 26.5         | A                 |
| I <sub>F100</sub>                      |                                                                                |                                                                          |                                                                  | T <sub>C</sub> = 100°C                          |                  | 23           | A                 |
| I <sub>FSM</sub>                       | max forward surge current                                                      | t = 10 ms, half sine (50 Hz)<br>t <sub>p</sub> = 10 μs, pulse            | T <sub>VJ</sub> = 25°C<br>V <sub>R</sub> = 0V                    |                                                 |                  | 1000         | A<br>A            |
| V <sub>F0</sub>                        | threshold voltage                                                              | for power loss calculation                                               | T <sub>VJ</sub> = 125°C<br>175°C                                 |                                                 | 0.78<br>0.73     |              | V<br>V            |
| r <sub>F</sub>                         | slope resistance                                                               |                                                                          | T <sub>VJ</sub> = 125°C<br>175°C                                 |                                                 | 57.0<br>70.5     |              | mΩ<br>mΩ          |
| Q <sub>C</sub>                         | total capacitive charge                                                        |                                                                          | V <sub>R</sub> = 800 V, I <sub>F</sub> = 20A<br>dI/dt = 200 A/μs | T <sub>VJ</sub> = 25°C                          |                  | 99           |                   |
| C                                      | total capacitance                                                              | V <sub>R</sub> = 0 V<br>V <sub>R</sub> = 400 V<br>V <sub>R</sub> = 800 V | T <sub>VJ</sub> = 25°C, f = 1 MHz                                |                                                 | 1500<br>93<br>67 |              | pF<br>pF<br>pF    |
| R <sub>thJC</sub><br>R <sub>thJH</sub> | thermal resistance junction to case<br>thermal resistance junction to heatsink | with heatsink compound; IXYS test setup                                  |                                                                  |                                                 |                  | 1.6          | 1.4<br>K/W<br>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                               |
| <b>Weight</b>  |                                |                                  |         | 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<br>$t = 1$ minute |         | 3600<br>3000 |      | V<br>V                           |
|                |                                |                                  |         |              |      | 50/60 Hz; RMS; $I_{ISOL} < 1$ mA |

## Product Marking



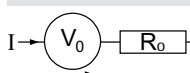
## Part description

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

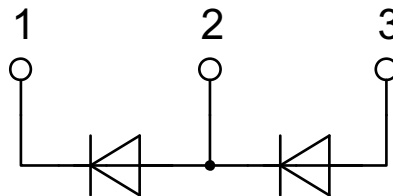
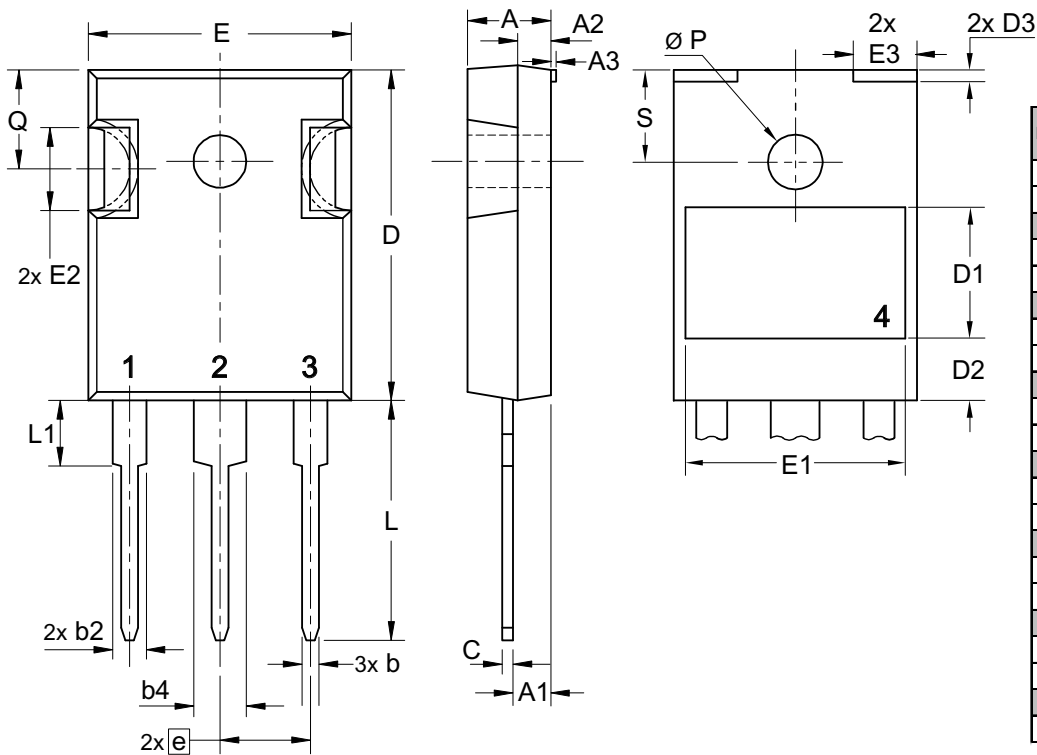
| Ordering | Part Name    | Marking on Product | Delivering Mode | Base Qty | Ordering Code |
|----------|--------------|--------------------|-----------------|----------|---------------|
| Standard | DCG17P1200HR | DCG17P1200HR       | Tube            | 30       | DCG17P1200HR  |

## Equivalent Circuits for Simulation

\*on die level, typical

|                                                                                     |                    |                                |                                |    |
|-------------------------------------------------------------------------------------|--------------------|--------------------------------|--------------------------------|----|
|  |                    | $T_{VJ} = 125^{\circ}\text{C}$ | $T_{VJ} = 175^{\circ}\text{C}$ |    |
| $V_{0\max}$                                                                         | threshold voltage  | 0.78                           | 0.73                           | V  |
| $R_{0\max}$                                                                         | slope resistance * | 57.0                           | 70.5                           | mΩ |

Outlines ISO247



**SiC Diode (per diode)**

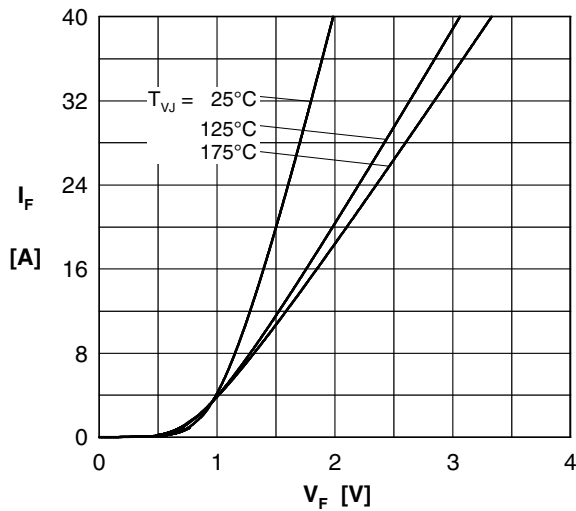


Fig. 1 Typ. forward characteristics.

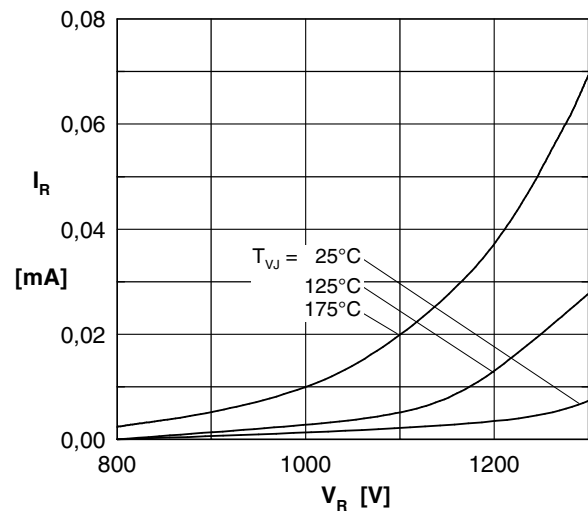


Fig. 2 Typ. reverse characteristics

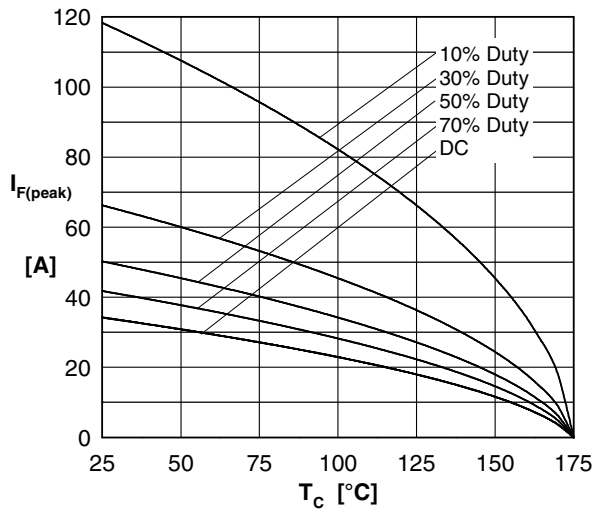


Fig. 3 Typ. current derating

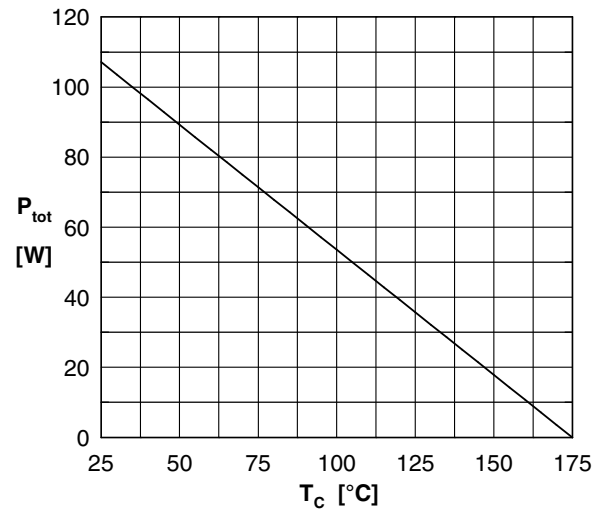


Fig. 4 Power derating

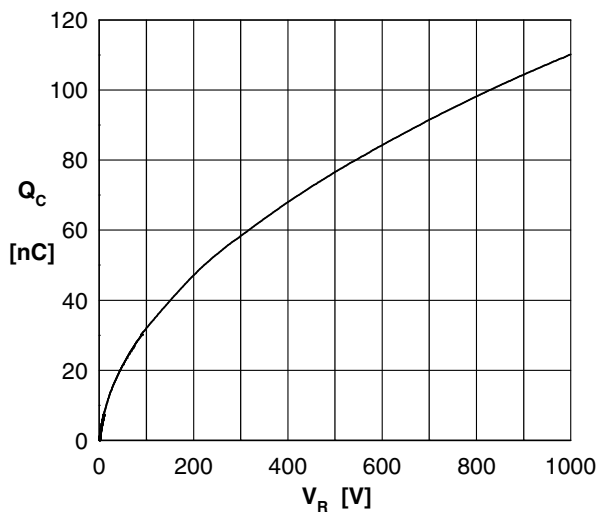


Fig. 5 Typ. recovery charge vs. reverse voltage

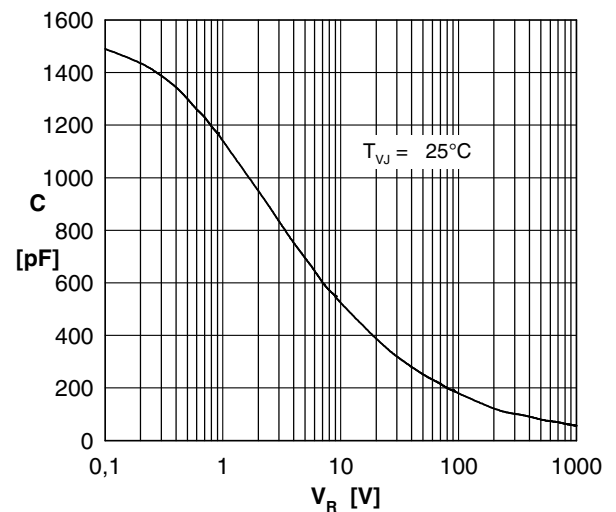


Fig. 6 Typ. junction capacitance vs. reverse Voltage

**SiC Diode (per diode)**

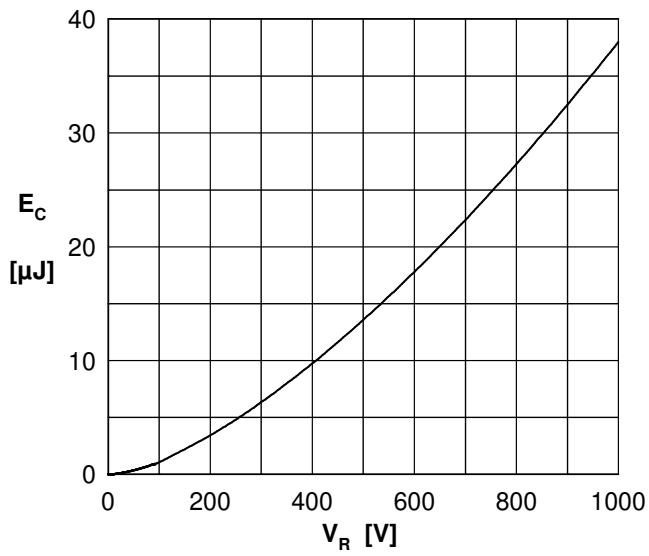


Fig. 7 Typical capacitance stored energy

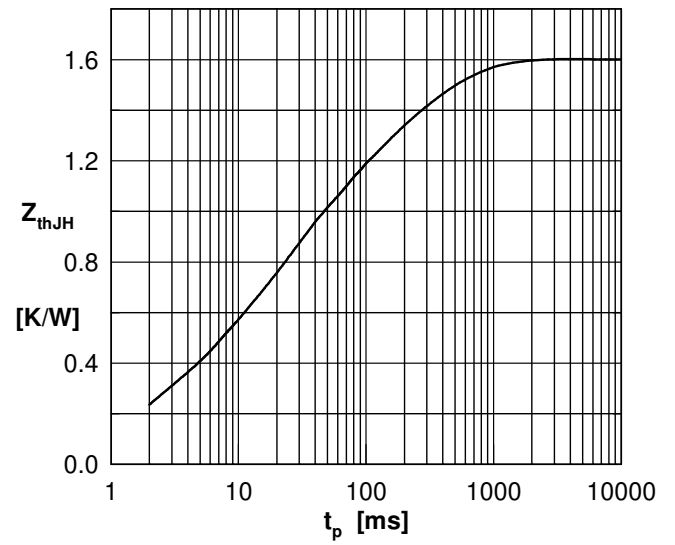


Fig. 8 Typ. transient thermal impedance junction to heatsink