advanced

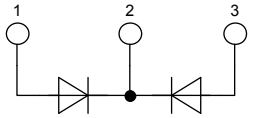
# Sonic Fast Recovery Diode

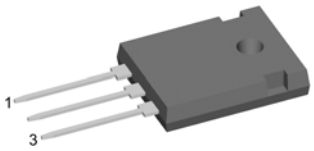
$V_{RRM}$ = 600 V
$I_{FAV}$ = 2x 20 A
$t_{rr}$ = 35 ns

High Performance Fast Recove
Low Loss and Soft Recovery
Common Cathode

**Part number**

DHG 40 C 600 HB




Backside: cathode

**Features / Advantages:**

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

**Applications:**

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

**Package:**

- Housing: TO-247
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

**Ratings**

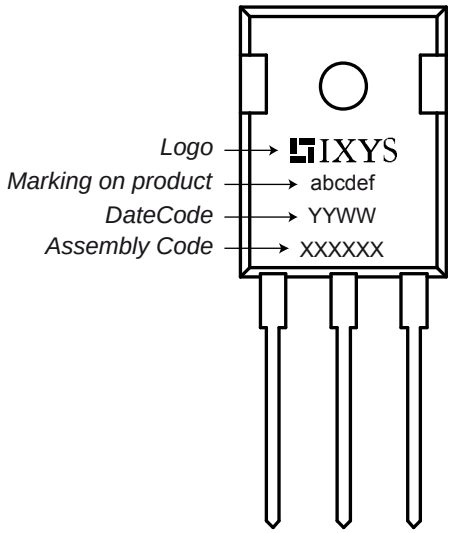
| Symbol | Definition | Conditions | | min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{RRM}$ | *max. repetitive reverse voltage* | | $T_{VJ}$ = 25°C | | | 600 | V |
| $I_R$ | *reverse current* | $V_R$ = 600 V | $T_{VJ}$ = 25°C | | | 30 | µA |
| | | $V_R$ = 600 V | $T_{VJ}$ = 125°C | | | 3 | mA |
| $V_F$ | *forward voltage* | $I_F$ = 20 A | $T_{VJ}$ = 25°C | | | 2.31 | V |
| | | $I_F$ = 40 A | | | | 3.80 | V |
| | | $I_F$ = 20 A | $T_{VJ}$ = 150°C | | | 2.15 | V |
| | | $I_F$ = 40 A | | | | 3.00 | V |
| $I_{FAV}$ | *average forward current* | rectangular, d = 0.5 | $T_C$ = 85°C | | | 20 | A |
| $V_{F0}$ | *threshold voltage* } *for power loss calculation only* | | $T_{VJ}$ = 150°C | | | 1.31 | V |
| $r_F$ | *slope resistance* } | | | | | 36.9 | mΩ |
| $R_{thJC}$ | *thermal resistance junction to case* | | | | | 0.90 | K/W |
| $T_{VJ}$ | *virtual junction temperature* | | | -55 | | 150 | °C |
| $P_{tot}$ | *total power dissipation* | | $T_C$ = 25°C | | | 140 | W |
| $I_{FSM}$ | *max. forward surge current* | t = 10 ms (50 Hz), sine | $T_{VJ}$ = 45°C | | | 150 | A |
| $I_{RM}$ | *max. reverse recovery current* | | $T_{VJ}$ = 25°C | | 8 | | A |
| | | $I_F$ = 20 A; $V_R$ = 400 V | $T_{VJ}$ = °C | | tbd | | A |
| $t_{rr}$ | *reverse recovery time* | $-di_F/dt$ = 400 A/µs | $T_{VJ}$ = 25°C | | 35 | | ns |
| | | | $T_{VJ}$ = °C | | tbd | | ns |
| $C_J$ | *junction capacitance* | $V_R$ = 300 V; f = 1 MHz | $T_{VJ}$ = 25°C | | tbd | | pF |

advanced

| Symbol | Definition | Conditions | Ratings min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|
| $I_{RMS}$ | *RMS current* | per pin [1] | | | 70 | A |
| $R_{thCH}$ | *thermal resistance case to heatsink* | | | 0.25 | | K/W |
| $T_{stg}$ | *storage temperature* | | -55 | | 150 | °C |
| **Weight** | | | | 6 | | g |
| $M_D$ | *mounting torque* | | 0.8 | | 1.2 | Nm |
| $F_C$ | *mounting force with clip* | | 20 | | 120 | N |

[1] $I_{RMS}$ is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.
In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

**Product Marking**



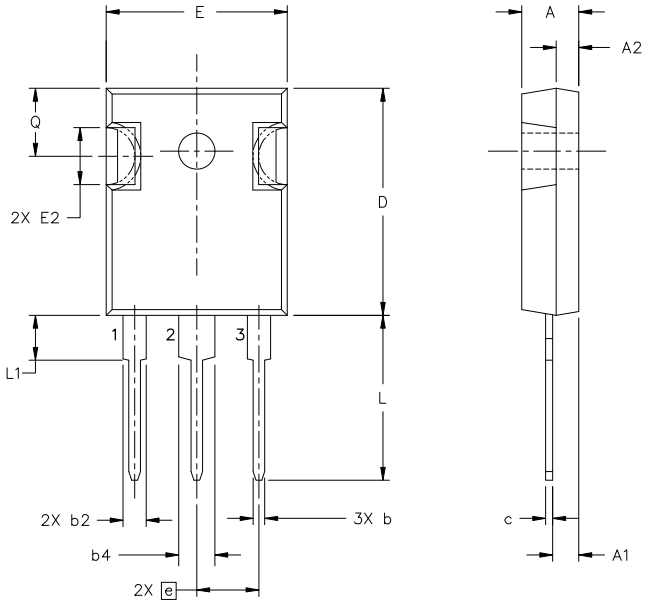

**Part number**

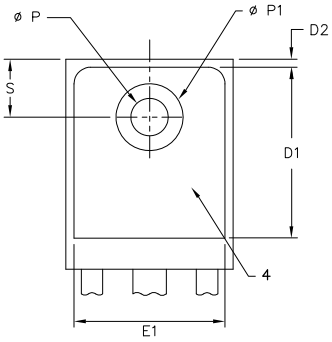
D = Diode
H = Sonic Fast Recovery Diode
G = extreme fast
40 = Current Rating [A]
C = Common Cathode
600 = Reverse Voltage [V]
HB = TO-247AD (3)

| Ordering | Part Name | Marking on Product | Delivering Mode | Base Qty | Code Key |
|---|---|---|---|---|---|
| **Standard** | DHG 40 C 600 HB | DHG40C600HB | Tube | 30 | 505145 |

| Similar Part | Package | Voltage class |
|---|---|---|
| DHG40C1200HB | TO-247 | 1200 |
| DHG40C1200PB | TO-220 | 1200 |
| DHG40C600PB | TO-220 | 600 |

## Outlines TO-247




| Symbol | Inches | | Millimeters | |
|---|---|---|---|---|
| | min | max | min | max |
| A | 0.185 | 0.209 | 4.70 | 5.30 |
| A1 | 0.087 | 0.102 | 2.21 | 2.59 |
| A2 | 0.059 | 0.098 | 1.50 | 2.49 |
| D | 0.819 | 0.845 | 20.79 | 21.45 |
| E | 0.610 | 0.640 | 15.48 | 16.24 |
| E2 | 0.170 | 0.216 | 4.31 | 5.48 |
| e | 0.215 BSC | | 5.46 BSC | |
| L | 0.780 | 0.800 | 19.80 | 20.30 |
| L1 | - | 0.177 | - | 4.49 |
| ØP | 0.140 | 0.144 | 3.55 | 3.65 |
| Q | 0.212 | 0.244 | 5.38 | 6.19 |
| S | 0.242 BSC | | 6.14 BSC | |
| b | 0.039 | 0.055 | 0.99 | 1.40 |
| b2 | 0.065 | 0.094 | 1.65 | 2.39 |
| b4 | 0.102 | 0.135 | 2.59 | 3.43 |
| c | 0.015 | 0.035 | 0.38 | 0.89 |
| D1 | 0.515 | - | 13.07 | - |
| D2 | 0.020 | 0.053 | 0.51 | 1.35 |
| E1 | 0.530 | - | 13.45 | - |
| ØP1 | - | 0.291 | - | 7.39 |