

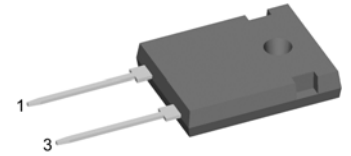
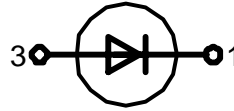
Sonic-FRD

High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Single Diode

$V_{RRM} = 600 \text{ V}$
 $I_{FAV} = 30 \text{ A}$
 $t_{rr} = 35 \text{ ns}$

Part number (Marking on product)

DHG 30 I 600HA



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{RM} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} 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:

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

Ratings

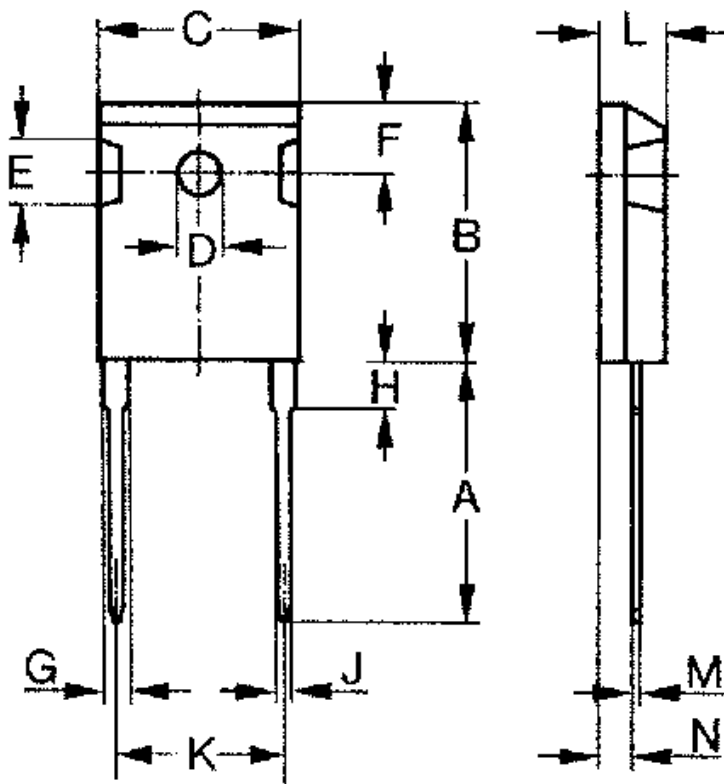
| Symbol | Definition | Conditions | Ratings | | | Unit | |
|------------|---|--|---------------------------------------|------|------|------------------|------------------|
| | | | min. | typ. | max. | | |
| V_{RRM} | max. repetitive reverse voltage | $T_{VJ} = 25 \text{ }^\circ\text{C}$ | | | 600 | V | |
| I_R | reverse current | $V_R = 600 \text{ V}$ | | | 50 | μA | |
| | | $V_R = 600 \text{ V}$ | | | 5 | mA | |
| V_F | forward voltage | $I_F = 30 \text{ A}$ | | | 2.36 | V | |
| | | $I_F = 60 \text{ A}$ | | | | V | |
| | | $I_F = 30 \text{ A}$ | $T_{VJ} = 125 \text{ }^\circ\text{C}$ | | | 2.20 | V |
| | | $I_F = 60 \text{ A}$ | $T_{VJ} = 125 \text{ }^\circ\text{C}$ | | | | V |
| I_{FAV} | average forward current | rectangular, $d = 0.5$ | | | 30 | A | |
| V_{FO} | threshold voltage } for power loss calculation only | | | | 1.31 | V | |
| r_F | | | | | | | slope resistance |
| R_{thJC} | thermal resistance junction to case | | | | 0.70 | K/W | |
| T_{VJ} | virtual junction temperature | | -55 | | 150 | $^\circ\text{C}$ | |
| P_{tot} | total power dissipation | | | | 180 | W | |
| I_{FSM} | max. forward surge current | $t_p = 10 \text{ ms (50 Hz), sine}$ | | | 200 | A | |
| I_{RM} | max. reverse recovery current | $I_F = 30 \text{ A};$ | $T_{VJ} = 25 \text{ }^\circ\text{C}$ | | 12 | A | |
| | | | $T_{VJ} = 125 \text{ }^\circ\text{C}$ | | | A | |
| t_{rr} | reverse recovery time | $-di_F/dt = 600 \text{ A}/\mu\text{s}$ | $T_{VJ} = 25 \text{ }^\circ\text{C}$ | | 35 | ns | |
| | | $V_R = 400 \text{ V}$ | $T_{VJ} = 125 \text{ }^\circ\text{C}$ | | | ns | |
| C_J | junction capacitance | $V_R = 300 \text{ V}; f = 1 \text{ MHz}$ | $T_{VJ} = 25 \text{ }^\circ\text{C}$ | | | pF | |
| E_{AS} | non-repetitive avalanche energy | $I_{AS} = \text{ A}; L = 100 \mu\text{H}$ | $T_{VJ} = 25 \text{ }^\circ\text{C}$ | | tbd | mJ | |
| I_{AR} | repetitive avalanche current | $V_A = 1.5 \cdot V_R \text{ typ.}; f = 10 \text{ kHz}$ | | | tbd | A | |

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

* Irms 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.

Outlines TO-247AD



| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 19.81 | 20.32 | 0.780 | 0.800 |
| B | 20.80 | 21.46 | 0.819 | 0.845 |
| C | 15.75 | 16.26 | 0.610 | 0.640 |
| D | 3.55 | 3.65 | 0.140 | 0.144 |
| E | 4.32 | 5.49 | 0.170 | 0.216 |
| F | 5.4 | 6.2 | 0.212 | 0.244 |
| G | 1.65 | 2.13 | 0.065 | 0.084 |
| H | - | 4.5 | - | 0.177 |
| J | 1.0 | 1.4 | 0.040 | 0.055 |
| K | 10.8 | 11.0 | 0.426 | 0.433 |
| L | 4.7 | 5.3 | 0.185 | 0.209 |
| M | 0.4 | 0.8 | 0.016 | 0.031 |
| N | 1.5 | 2.49 | 0.087 | 0.102 |