

Sonic-FRD

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

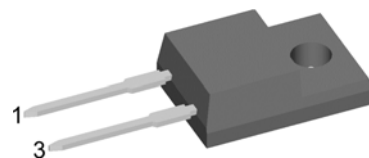
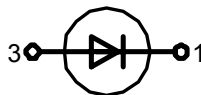
$$V_{RRM} = 1200 \text{ V}$$

$$I_{FAV} = 10 \text{ A}$$

$$t_{rr} = 75 \text{ ns}$$

Part number

DHG 10 I 1200PM



Backside: isolated

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-220FPAC
- Industry standard outline
- Plastic overmolded tab for electrical isolation
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

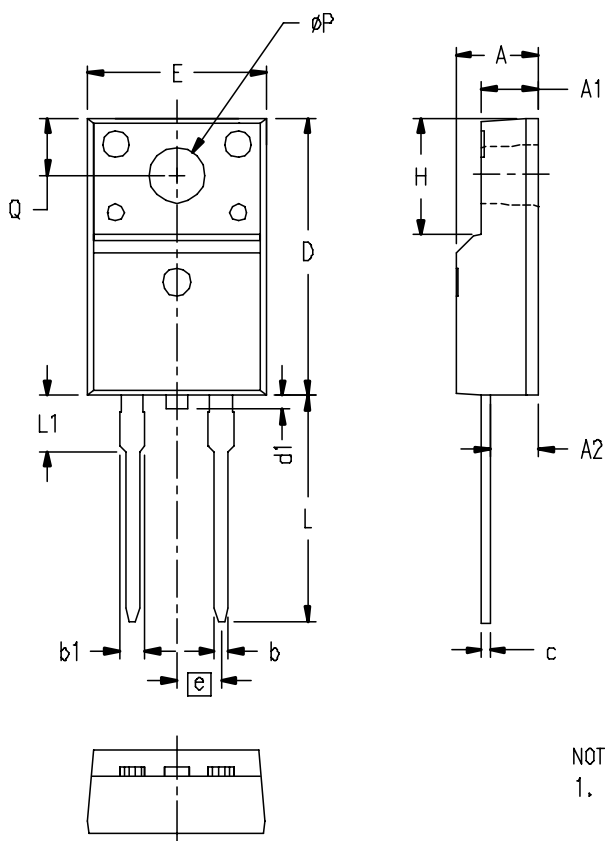
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
|------------|-------------------------------------|---|------|------|------|------------------|
| V_{RRM} | max. repetitive reverse voltage | $T_{VJ} = 25^\circ\text{C}$ | | | 1200 | V |
| I_R | reverse current | $V_R = 1200 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$ | | | 15 | μA |
| | | $V_R = 1200 \text{ V}$ $T_{VJ} = 125^\circ\text{C}$ | | | 1.5 | mA |
| V_F | forward voltage | $I_F = 10 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$ | | | 2.69 | V |
| | | $I_F = 20 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$ | | | 3.56 | V |
| | | $I_F = 10 \text{ A}$ $T_{VJ} = 125^\circ\text{C}$ | | | 2.38 | V |
| | | $I_F = 20 \text{ A}$ $T_{VJ} = 125^\circ\text{C}$ | | | 3.33 | V |
| I_{FAV} | average forward current | rectangular, $d = 0.5$ $T_C = 30^\circ\text{C}$ | | | 10 | A |
| V_{F0} | threshold voltage | } for power loss calculation only $T_{VJ} = 150^\circ\text{C}$ | | | 1.60 | V |
| r_F | slope resistance | | | | 73.6 | m Ω |
| R_{thJC} | thermal resistance junction to case | | | | 4.00 | K/W |
| T_{VJ} | virtual junction temperature | | -55 | | 150 | $^\circ\text{C}$ |
| P_{tot} | total power dissipation | $T_C = 25^\circ\text{C}$ | | | 31 | W |
| I_{FSM} | max. forward surge current | $t_p = 10 \text{ ms (50 Hz), sine}$ $T_{VJ} = 45^\circ\text{C}$ | | | 70 | A |
| I_{RM} | max. reverse recovery current | $I_F = 10 \text{ A};$ $T_{VJ} = 25^\circ\text{C}$ | | 8.5 | | A |
| | | $-di_F/dt = 350 \text{ A}/\mu\text{s}$ $T_{VJ} = 125^\circ\text{C}$ | | | | A |
| t_{rr} | reverse recovery time | $V_R = 800 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$ | | 75 | | ns |
| | | $T_{VJ} = 125^\circ\text{C}$ | | | | ns |
| C_J | junction capacitance | $V_R = 600 \text{ V}; f = 1 \text{ MHz}$ $T_{VJ} = 25^\circ\text{C}$ | | tbd | | pF |
| E_{AS} | non-repetitive avalanche energy | $I_{AS} = \text{tbd A}; L = 100 \mu\text{H}$ $T_{VJ} = 25^\circ\text{C}$ | | | 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* | | | 35 | A |
| R_{thCH} | thermal resistance case to heatsink | | | 0.50 | | K/W |
| M_D | mounting torque | | 0.4 | | 0.6 | Nm |
| F_C | mounting force with clip | | 20 | | 60 | N |
| T_{sta} | storage temperature | | -55 | | 150 | °C |
| Weight | | | | 2 | | g |

* 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.

Outlines TO-220FPAC



| SYM | INCHES | | MILLIMETERS | |
|-----|----------|------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | .177 | .193 | 4.50 | 4.90 |
| A1 | .092 | .108 | 2.34 | 2.74 |
| A2 | .101 | .117 | 2.56 | 2.96 |
| b | .028 | .035 | 0.70 | 0.90 |
| b1 | .050 | .058 | 1.27 | 1.47 |
| c | .018 | .024 | 0.45 | 0.60 |
| D | .617 | .633 | 15.67 | 16.07 |
| d1 | 0 | .043 | 0 | 1.10 |
| E | .392 | .408 | 9.96 | 10.36 |
| e | .100 BSC | | 2.54 BSC | |
| H | .255 | .271 | 6.48 | 6.88 |
| L | .499 | .523 | 12.68 | 13.28 |
| L1 | .119 | .135 | 3.03 | 3.43 |
| ØP | .121 | .129 | 3.08 | 3.28 |
| Q | .126 | .134 | 3.20 | 3.40 |

NOTE:

1. All metal surface are matte pure tin plated except trimmed area.