

FEATURES

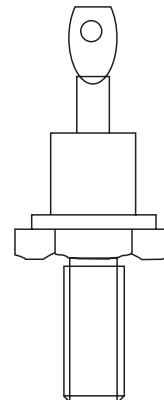
- 1). High surge current capability
- 2). Avalanche types available
- 3). Stud cathode and stud anode version
- 4). Wide current range
- 5). Types up to 1200V V_{RRM}

TYPICAL APPLICATIONS

- 1). Battery charges
- 2). Converters
- 3). Power supplies
- 4). Machine tool controls

MAJOR RATINGS AND CHARACTERISTICS

| Parameters | | 6F(R) | UNIT |
|--------------|--------|-------------|------------------|
| $I_{F(AV)}$ | | 6 | A |
| | @ TC | 160 | °C |
| $I_{F(RMS)}$ | | 9.5 | A |
| | @ 50Hz | 159 | A |
| I_{FSM} | @ 60Hz | 167 | A |
| | @ 50Hz | 134 | A ² s |
| I^2t | @ 60Hz | 141 | A ² s |
| | range | 100 to 1200 | V |
| V_{RRM} | range | - 65 to 175 | °C |



ELECTRICAL SPECIFICATIONS

1). Voltage Ratings

| Type number | Voltage Code | V_{RRM} , maximum repetitive peak reverse voltage | V_{RSM} , maximum non-repetitive peak reverse voltage | $V_{R(BR)}$, minimum avalanche voltage ^{*(1)} | I_{RRM} max. @ $T_J = 175^\circ\text{C}$ |
|-------------|--------------|---|---|---|--|
| | | V | V | V | mA |
| 6F(R) | 10 | 100 | 150 | -- | 12 |
| | 20 | 200 | 275 | -- | |
| | 40 | 400 | 500 | 500 | |
| | 60 | 600 | 725 | 750 | |
| | 80 | 800 | 950 | 950 | |
| | 100 | 1000 | 1200 | 1150 | |
| | 120 | 1200 | 1400 | 1350 | |

^{*(1)} Avalanche version only available from V_{RRM} 400V to 1200V.

2). Forward Conduction

| Parameters | | 6F(R) | Unit | Conditions | | |
|---------------|--|------------|---------------|--|----------------|---|
| $I_{F(AV)}$ | Max. average forward current | 6 | A | 180° conduction, half sine wave | | |
| | @ Case temperature | 160 | °C | | | |
| $I_{F(RMS)}$ | Max. RMS forward current | 9.5 | A | | | |
| P_R | Maximum non-repetitive peak reverse power | 4 | K/W | 10 μs square pulse, $T_J = T_{J \text{ max.}}$ see note *(2) | | |
| I_{FSM} | Max. peak, one-cycle forward, non-repetitive surge current | 159 | A | t = 10ms | No voltage | Sinusoidal half wave, Initial $T_J = T_{J \text{ max.}}$ |
| | | 167 | | t = 8.3ms | reapplied | |
| | | 134 | | t = 10ms | 100% V_{RRM} | |
| | | 141 | | t = 8.3ms | reapplied | |
| I^2t | Maximum I^2t for fusing | 127 | A^2s | t = 10ms | No voltage | |
| | | 116 | | t = 8.3ms | reapplied | |
| | | 90 | | t = 10ms | 100% V_{RRM} | |
| | | 82 | | t = 8.3ms | reapplied | |
| $I^2\sqrt{t}$ | Maximum $I^2\sqrt{t}$ for fusing | 1270 | $A^2\sqrt{s}$ | t = 0.1 to 10ms, no voltage reapplied | | |
| $V_{F(TO)1}$ | Low level value of threshold voltage | 0.63 | V | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_{J \text{ max.}}$ | | |
| $V_{F(TO)2}$ | High level value of threshold voltage | 0.86 | | $(I > \pi \times I_{F(AV)})$, $T_J = T_{J \text{ max.}}$ | | |
| r_{f1} | Low level value of forward slope resistance | 15.7 | mΩ | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_{J \text{ max.}}$ | | |
| r_{f2} | High level value of forward slope resistance | 5.6 | | $(I > \pi \times I_{F(AV)})$, $T_J = T_{J \text{ max.}}$ | | |
| V_{FM} | Max. forward voltage drop | 1.10 | V | $I_{pk} = 19A$, $T_J = 25^\circ C$, $t_p = 400 \mu s$ rectangular wave | | |
| T_J | Max. junction operating temperature range | -65 to 175 | °C | | | |
| T_{stg} | Max. storage temperature range | -65 to 200 | | | | |
| R_{thJC} | Max. thermal resistance, junction to case | 2.5 | K/W | DC operation | | |
| R_{thCS} | Max. thermal resistance, case to heatsink | 0.5 | Nm | Mounting surface, smooth, flat and greased | | |
| T | Mounting torque, ± 10% | 1.2 (1.5) | | Lubricated threads (Not lubricated threads) | | |
| wt | Approximate weight | 7 (0.25) | g (oz) | | | |
| | Case style | DO-4 | | See Outline Table | | |

*(2) Available only for Avalanche version, all other parameters the same as 6F.

ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

| Conduction angle | Sinusoidal conduction | Rectangular conduction | Units | Conditions |
|------------------|-----------------------|------------------------|-------|----------------------------|
| 180° | 0.34 | 0.29 | K/W | $T_J = T_{J \text{ max.}}$ |
| 120° | 0.44 | 0.48 | | |
| 90° | 0.57 | 0.63 | | |
| 60° | 0.85 | 0.88 | | |
| 30° | 1.37 | 1.39 | | |

PERFORMANCE CURVES FIGURE

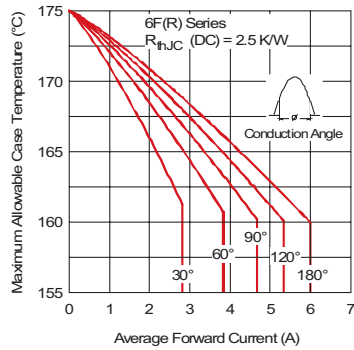


Fig. 1 - Current Ratings Characteristics

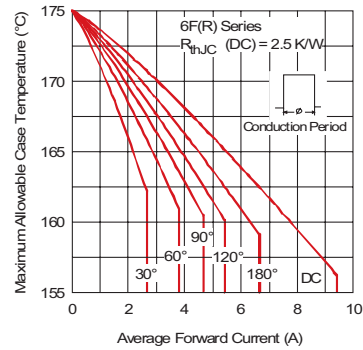


Fig. 2 - Current Ratings Characteristics

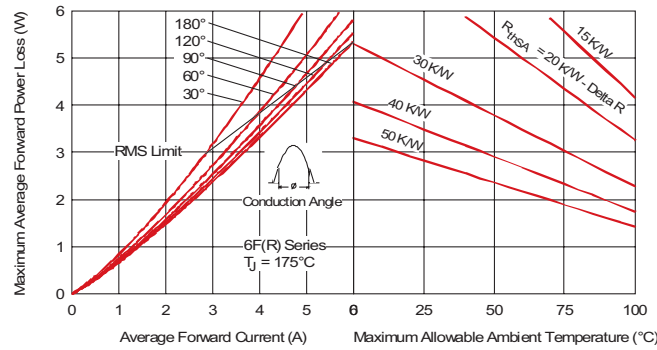


Fig. 3 - Forward Power Loss Characteristics

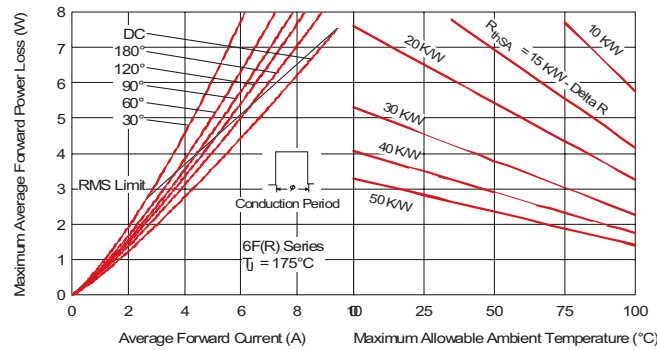


Fig. 4 - Forward Power Loss Characteristics

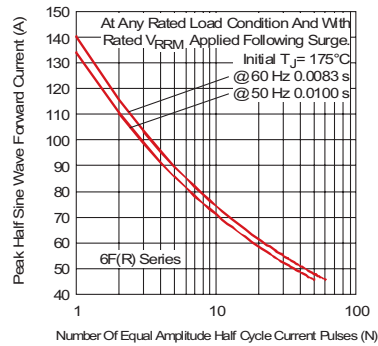


Fig. 5 - Maximum Non-Repetitive Surge Current

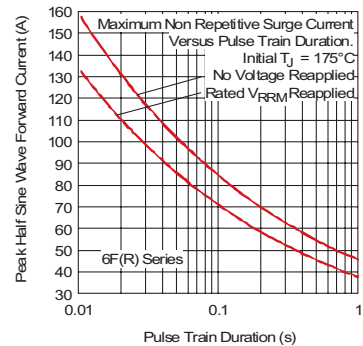


Fig. 6 - Maximum Non-Repetitive Surge Current

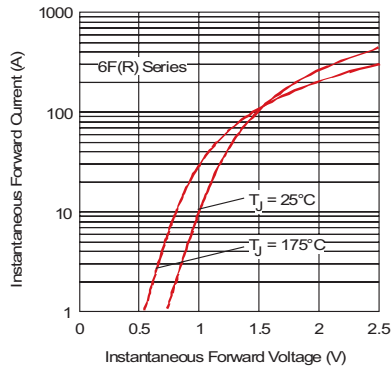


Fig. 7 - Forward Voltage Drop Characteristics

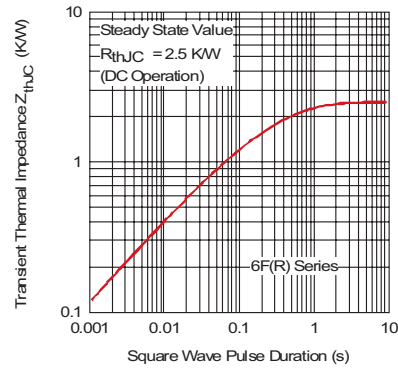
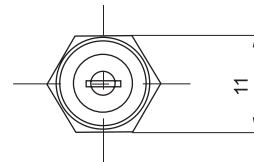
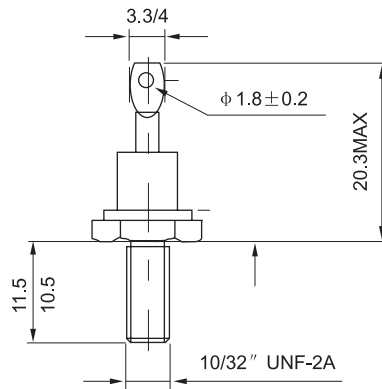


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

OUTLINE



For metric devices: M5×0.8

Case Style DO-4

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