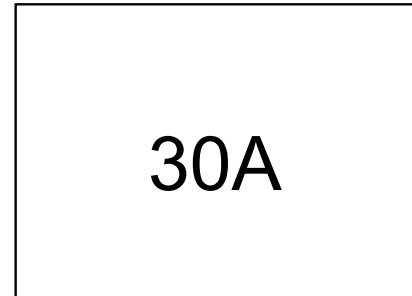


**T30N-1200**

**Features**

- Hermetic glass -metal seal
- tested according to IEC standards

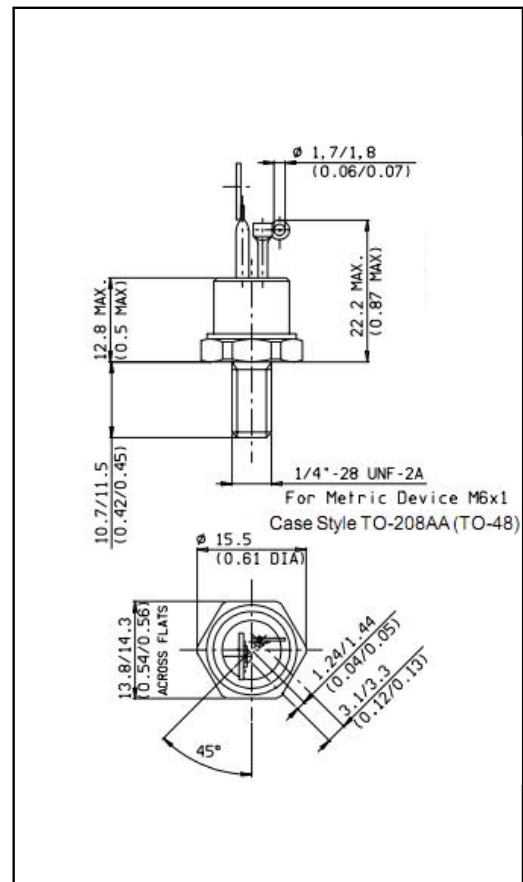


**Typical Applications**

- DC motor controls
- Controlled DC power supplies
- AC switch and thermal control
- Synchronous motor excitation

**Major Ratings and Characteristics**

| Parameters          | T30N12      | Units            |
|---------------------|-------------|------------------|
| $I_{T(AV)}$         | 30          | A                |
| @ $T_c$             | 85          | °C               |
| $I_{T(RMS)}$        | 48          | A                |
| $I_{TSM}$ @ 50Hz    | 310         | A                |
| @ 60Hz              | 322         | A                |
| $I^2 t$ @ 50Hz      | 523         | A <sup>2</sup> s |
| @ 60Hz              | 477         | A <sup>2</sup> s |
| $V_{DRM} / V_{RRM}$ | 1200        | V                |
| $T_q$ typical       | 300         | μs               |
| $T_j$ range         | - 40 to 125 | °C               |



**T30N-1200**

**ELECTRICAL SPECIFICATIONS**

**Voltage Ratings**

| Type number | Voltage Code | $V_{RRM} / V_{DRM}$ , maximum repetitive peak reverse voltage<br>V | $V_{RSM}$ , maximum non-repetitive peak rev. voltage<br>V | $I_{RRM} / I_{DRM}$ max.<br>@ $T_J = T_{J \text{ max.}}$<br>mA |
|-------------|--------------|--|---|--|
| T30N12      | 04           | 400  | 500   | 10   |
|             | 08           | 800  | 900   |  |
|             | 12           | 1200   | 1300  |  |
|             | 14           | 1400   | 1500  |  |
|             | 16           | 1600   | 1700  |  |

**On-state Conduction**

| Parameter  | T30N12 | Units          | Conditions  |                |   |
|--|--------|----------------|---|----------------|---|
| $I_{T(AV)}$ Maximum average on-state current<br>@ Case temperature | 30     | A              | 180° conduction, half sine wave                                   |                |   |
|  | 85     | °C             |   |                |   |
| $I_{T(RMS)}$ Maximum RMS on-state current                          | 48     | A              |   |                |   |
| $I_{TSM}$ Maximum peak, one-cycle non-repetitive surge current     | 310    | A              | t = 10ms  | No voltage     | Sinusoidal half wave,<br>Initial $T_J = T_{J \text{ max.}}$ |
|  | 322    |                | t = 8.3ms   | reapplied      |   |
|  | 260    |                | t = 10ms  | 100% $V_{RRM}$ |   |
|  | 272    |                | t = 8.3ms   | reapplied      |   |
| $I^2 t$ Maximum $I^2 t$ for fusing                                 | 522    | $A^2 s$        | t = 10ms  | No voltage     |   |
|  | 477    |                | t = 8.3ms   | reapplied      |   |
|  | 368    |                | t = 10ms  | 100% $V_{RRM}$ |   |
|  | 336    |                | t = 8.3ms   | reapplied      |   |
| $I^2 \sqrt{t}$ Maximum $I^2 \sqrt{t}$ for fusing                   | 5227   | $A^2 \sqrt{s}$ | t = 0.1 to 10ms, no voltage reapplied, $T_J = T_{J \text{ max.}}$ |                |   |
| $V_{TM}$ Maximum on-state or forward                               | 1.64   | V              | I <sub>pk</sub> = 63 A, $T_J = 25^\circ C$                        |                |   |
| $I_H$ Maximum holding current                                      | 130    | mA             | $T_J = 25^\circ C$ , anode supply 6V resistive load               |                |   |
| $I_L$ Typical latching current                                     | 200    |                |   |                |   |

**Switching**

| Parameter                                    | T30N12 | Units | Conditions   |
|--|--------|-------|--|
| di/dt Max. rate of rise of turned-on current | 200    | A/μs  | Gate pulse 20V, 15Ω, $t_r \leq 1\mu s$ , $T_J = T_{J \text{ max}}$   |
| t <sub>d</sub> ical delay time               | 0.9    | μs    | Gate current 1A, $di_g/dt = 1A/\mu s$<br>$V_d = 0.67\% V_{DRM}$ , $T_J = 25^\circ C$   |
| T <sub>q</sub> ical turn-off time            | 300    | μs    | $I_{TM} = I_{T(AV)}$ , $T_J = T_{J \text{ max}}$ , $t_p > 200\mu s$ , $V_R = 100V$ ,<br>$di/dt = -10A/\mu s$ , $dv/dt = 20V/\mu s$ , |

**T30N-1200**

1

**Blocking**

| Parameter  | T30N12 | Units | Conditions  |
|--|--------|-------|---|
| dv/dt Maximum critical rate of rise of off-state voltage | 100    | V/μs  | T <sub>J</sub> = T <sub>J</sub> max linear to 100% rated V <sub>DRM</sub> |

**Triggering**

| Parameter   | T30N12            | Units | Conditions  |   |
|---|-------------------|-------|---|---|
| P <sub>GM</sub> Maximum peak gate power             | 8.0               | W     | T <sub>J</sub> = T <sub>J</sub> max   |   |
| P <sub>G(AV)</sub> Maximum average gate power       | 2.0               |       |   |   |
| I <sub>GM</sub> Max. peak positive gate current     | 1.5               | A     | T <sub>J</sub> = T <sub>J</sub> max   |   |
| -V <sub>GM</sub> Maximum peak negative gate voltage | 10                | V     | T <sub>J</sub> = T <sub>J</sub> max   |   |
| I <sub>GT</sub> DC gate current required to trigger | 90<br>60<br>35    | mA    | T <sub>J</sub> = - 40°C<br>T <sub>J</sub> = 25°C<br>T <sub>J</sub> = 125°C<br>Max. required gate trigger current/ voltage are the lowest value which will trigger all units 6V anode-to-cathode applied |   |
| V <sub>GT</sub> DC gate voltage required to trigger | 3.0<br>2.0<br>1.0 |       |   | V |
| I <sub>GD</sub> DC gate current not to trigger      | 2.0               |       |   |   |
| V <sub>GD</sub> DC gate voltage not to trigger      | 0.25              | V     | T <sub>J</sub> = T <sub>J</sub> max. V <sub>DRM</sub> =rated value<br>Max. gate current/ voltage not to trigger is the max. value which will not trigger any unit with rated V anode-to-cathode applied |   |

**Thermal and Mechanical Specification**

| Parameter   | T30N12     | Units | Conditions                                 |
|---|------------|-------|--|
| T <sub>J</sub> Max. operating temperature range               | -40 to 125 | °C    |  |
| T <sub>stg</sub> Max. storage temperature range               | -40 to 125 |       |  |
| R <sub>thJC</sub> Max. thermal resistance, junction to case   | 0.86       | K/W   | DC operation                               |
| R <sub>thCS</sub> Max. thermal resistance, c case to heatsink | 0.35       |       | Mounting surface, smooth, flat and greased |
| T Mounting torque, ± 10%                                      | 2.8        | Nm    |  |
| wt Approximate weight   | 160        | g     |  |

**T30N-1200**

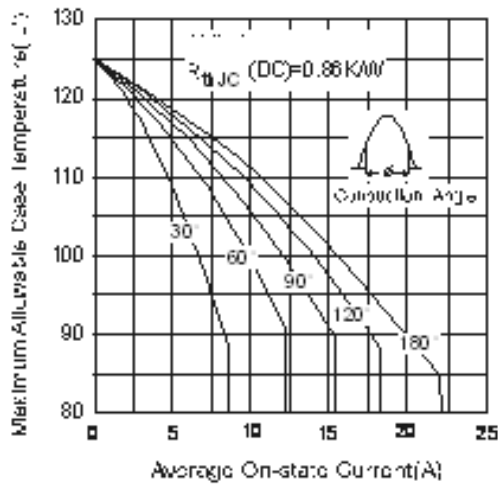


Fig. 1-Current Ratings Characteristics

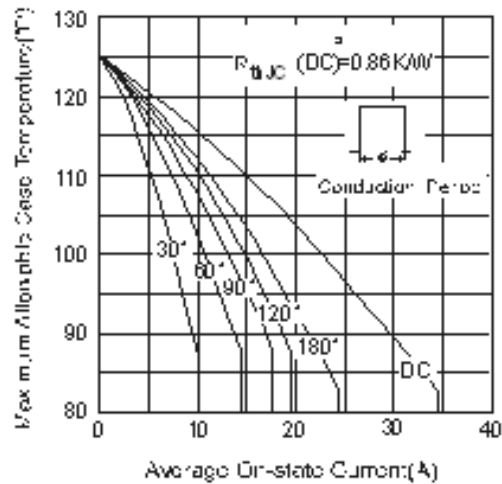


Fig. 2-Current Ratings Characteristics

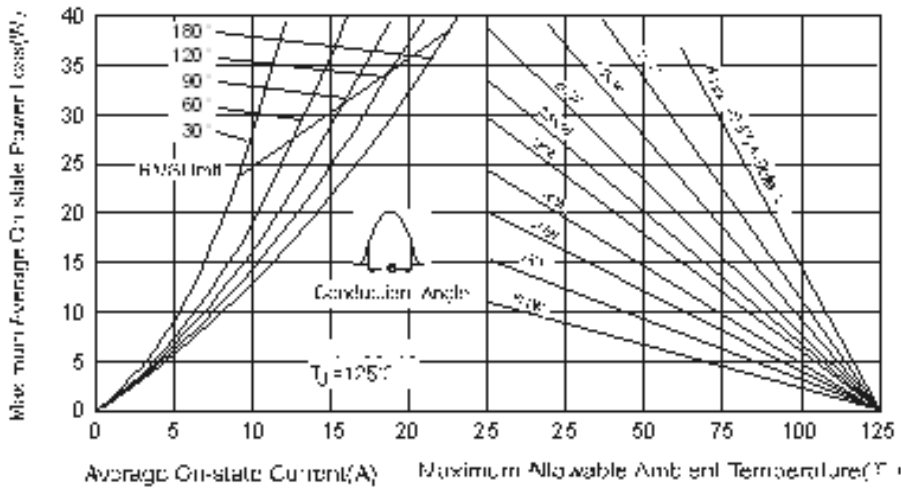


Fig. 3-On-state Power Loss Characteristics

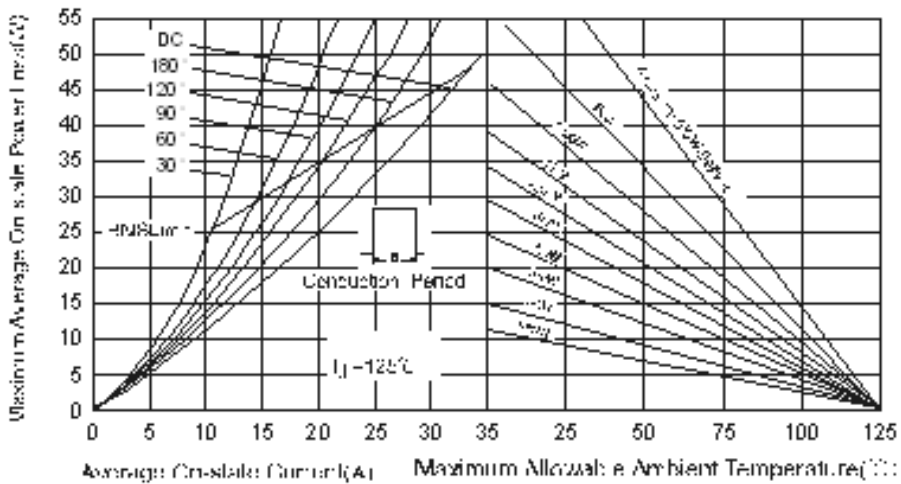


Fig. 4-On-state Power Loss Characteristics

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