

T805-750-500V~1600V

Features

- All Diffused Structure
- Interdigitated Amplifying Gate Configuration
- Blocking capability up to 1600 volts
- Guaranteed Maximum Turn-Off Time
- High dV/dt Capability
- Pressure Assembled Device

Electrical Characteristics and Ratings

Blocking - Off State

| Device Type | V_{RRM} (1) | V_{DRM} (1) | V_{RSM} (1) |
|-------------|---------------|---------------|---------------|
| T805-750-05 | 500 | 500 | 600 |
| T805-750-06 | 600 | 600 | 720 |
| T805-750-08 | 800 | 800 | 960 |
| T805-750-10 | 1000 | 1000 | 1150 |
| T805-750-12 | 1200 | 1200 | 1300 |
| T805-750-14 | 1400 | 1400 | 1500 |
| T805-750-16 | 1600 | 1600 | 1700 |

V_{RRM} = Repetitive peak reverse voltage

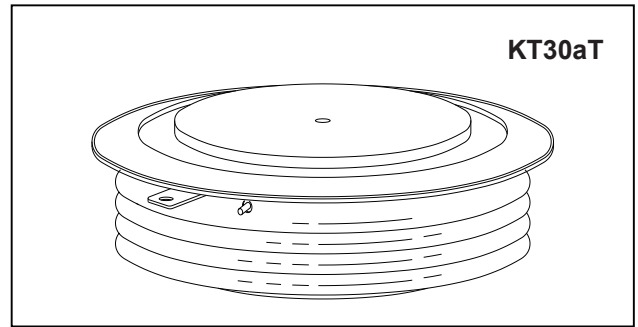
V_{DRM} = Repetitive peak off state voltage

V_{RSM} = Non repetitive peak reverse voltage (2)

| | | |
|---|---------------------|--------------------|
| Repetitive peak reverse leakage and off state leakage | I_{RRM} / I_{DRM} | 15 mA 35 mA (3) |
| Critical rate of voltage rise | dV/dt (4) | 200 V/ μ sec |

Conducting - on state

| Parameter | Symbol | Min | Max | Typ | Units | Conditions |
|--|-------------|-----|--------|-----|----------------------|---|
| Average value of on-state current | $I_{T(AV)}$ | | 750 | | A | Sinewave, 180° conduction, $T_c=65^\circ\text{C}$ |
| RMS value of on-state current | I_{TRMS} | | 1000 | | A | Nominal value |
| Peak one cycle surge (non repetitive) current | I_{TSM} | | 8000 | | A | 8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$ |
| | | | 7400 | | A | 10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$ |
| I square t | I^2t | | 265000 | | A^2s | 8.3 msec |
| Latching current | I_L | | 800 | | mA | $V_D = 24\text{ V}; R_L = 12\text{ ohms}$ |
| Holding current | I_H | | 400 | | mA | $V_D = 24\text{ V}; I = 2.5\text{ A}$ |
| Peak on-state voltage | V_{TM} | | 2.20 | | V | $I_{TM} = 2000\text{ A};$ |
| Critical rate of rise of on-state current (5, 6) | di/dt | | 400 | | A/ μ s | Switching from $V_{DRM} \leq 1000\text{ V}$, non-repetitive |
| Critical rate of rise of on-state current (6) | di/dt | | 150 | | A/ μ s | Switching from $V_{DRM} \leq 1000\text{ V}$ |



Notes:

All ratings are specified for $T_j=25^\circ\text{C}$ unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+125^\circ\text{C}$.

(2) 10 msec. max. pulse width

(3) Maximum value for $T_j = 125^\circ\text{C}$.

(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM} . Gate open. $T_j = 125^\circ\text{C}$.

(5) Non-repetitive value.

(6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-2-6. The value defined would be in addition to that obtained from a snubber circuit, comprising a 0.2 F capacitor and 20 ohms resistance in parallel with the thyristor under test.

Gating

| Parameter | Symbol | Min | Max | Typ | Units | Conditions |
|--|-------------|------|-------------------|-----|----------------|---|
| Peak gate power dissipation | P_{GM} | | 200 | | W | $t_p = 40 \mu s$ |
| Average gate power dissipation | $P_{G(AV)}$ | | 5 | | W | |
| Peak gate current | I_{GM} | | 10 | | A | |
| Gate current required to trigger all units | I_{GT} | | 300 200 125 | | mA mA mA | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40 \text{ }^\circ\text{C}$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +25 \text{ }^\circ\text{C}$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +125 \text{ }^\circ\text{C}$ |
| Gate voltage required to trigger all units | V_{GT} | 0.30 | 5 3 | | V V V | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40 \text{ }^\circ\text{C}$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = 0-125 \text{ }^\circ\text{C}$ $V_D = \text{Rated } V_{DRM}; R_L = 1000 \text{ ohms}; T_j = +125 \text{ }^\circ\text{C}$ |
| Peak negative voltage | V_{GRM} | | 5 | | V | |

Dynamic

| Parameter | Symbol | Min. | Max. | Typ. | Units | Conditions |
|--|----------|------|------|------|---------|--|
| Delay time | t_d | | 1.5 | 0.7 | μs | $I_{TM} = 50 \text{ A}; V_D = 67\% V_{DRM}$ Gate pulse: $V_G = 30 \text{ V}; R_G = 10 \text{ ohms}; t_r = 0.1 \mu s; t_p = 20 \mu s$ |
| Turn-off time (with $V_R = -5 \text{ V}$) | t_q | | 250 | 125 | μs | $I_{TM} > 1000 \text{ A}; di/dt = 25 \text{ A}/\mu s;$ $V_R \mu -5 \text{ V}; \text{ Re-applied } dV/dt = 20 \text{ V}/\mu s \text{ linear to } 67\% V_{DRM};$ $T_j = 125 \text{ }^\circ\text{C}; \text{ Duty cycle } \geq 0.01\%$ |
| Reverse recovery charge | I_{rr} | | | | μC | $I_{TM} > 1000 \text{ A}; di/dt = 25 \text{ A}/\mu s;$ $V_R \geq -50 \text{ V}; T_j = 125 \text{ }^\circ\text{C}$ |

Thermal and Mechanical Characteristics and Ratings

| Parameter | Symbol | Min. | Max. | Typ. | Units | Conditions |
|---------------------------------------|-------------------|------------|----------------|-----------|---------------------------|--|
| Operating temperature | T_j | -40 | +125 | | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | -40 | +150 | | $^\circ\text{C}$ | |
| Thermal resistance - junction to case | $R_{\Theta(j-c)}$ | | 0.055 0.110 | | $^\circ\text{C}/\text{W}$ | Double sided cooled Single sided cooled |
| Thermal resistance - case to sink | $R_{\Theta(c-s)}$ | | 0.030 0.060 | | $^\circ\text{C}/\text{W}$ | Double sided cooled * Single sided cooled |
| Mounting force | P | 800 3.6 | 2500 11.2 | | lb. kN | |
| Weight | W | | | 2.5 70 | oz g. | |

* Mounting surfaces smooth, flat and greased

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Case Outline and Dimensions