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**HIGH POWER THYRISTOR FOR INVERTER APPLICATION****Features:**

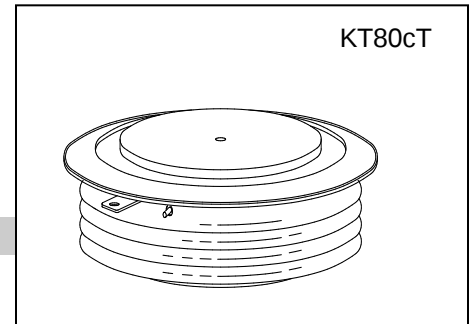
- . All Diffused Structure
- . Amplifying Gate Configuration
- . Blocking capability up to 3500 volts
- . High  $dv/dt$  Capability
- . Pressure Assembled Device

**ELECTRICAL CHARACTERISTICS AND RATINGS****Blocking-Off State**

| Device Type | V <sub>RRM</sub> (1) | V <sub>DRM</sub> (1) | V <sub>RSM</sub> (1) |
|-------------|----------------------|----------------------|----------------------|
| KK1800/32   | 3200                 | 3200                 | 3300                 |
| KK1800/35   | 3500                 | 3500                 | 3600                 |

V<sub>RRM</sub> = Repetitive peak reverse voltageV<sub>DRM</sub> = Repetitive peak off state voltageV<sub>RSM</sub> = Non Repetitive peak reverse voltage(2)

|                                                       |                                    |                    |
|-------------------------------------------------------|------------------------------------|--------------------|
| Repetitive peak reverse leakage and off state leakage | I <sub>RRM</sub> /I <sub>DRM</sub> | 5 mA<br>150 mA (3) |
| Critical rate of voltage rise                         | $dv/dt$ (4)                        | 1000 V/sec (min)   |

**Notes:**All ratings are specified for T<sub>j</sub>=25 °C unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range 0 to +125 °C

(2) 10 msec. Max. Pulse width

(3) Maximum value for T<sub>j</sub>=125 °C.(4) Minimum value for linear and exponential waveshape to 67% rated V<sub>DRM</sub>. Gate open, T<sub>j</sub>=125 °C(5) The value of  $di/dt$  is established in accordance with JB/T4193-2013.**Conducting-On State**

| Parameter                                     | Symbol             | Min. | Max.                | Typ. | Units            | Conditions                                                                     |
|-----------------------------------------------|--------------------|------|---------------------|------|------------------|--------------------------------------------------------------------------------|
| Average value of on-state current             | I <sub>T(AV)</sub> |      | 1800                |      | A                | Sinewave, 180° conduction, T <sub>c</sub> =55°C                                |
| RMS value of on-state current                 | I <sub>TRMS</sub>  |      | 2826                |      | A                | Nominal value                                                                  |
| Peak one cycle surge (non repetitive) current | I <sub>TSM</sub>   |      | 21600               |      | A                | 10 msec (50Hz), sinusoidal waveshape, 180° conduction, T <sub>j</sub> = 125 °C |
| I square t                                    | I <sup>2</sup> t   |      | 2.3x10 <sup>6</sup> |      | A <sup>2</sup> s | 10 msec                                                                        |
| Latching current                              | I <sub>L</sub>     |      | 1000                |      | mA               | V <sub>D</sub> =12V; R <sub>L</sub> =12ohms                                    |
| Holding current                               | I <sub>H</sub>     |      | 200                 |      | mA               | V <sub>D</sub> =12V; I=2.5A                                                    |
| Peak on-state voltage                         | V <sub>TM</sub>    |      | 2.90                |      | V                | I <sub>TM</sub> = 3000A; T <sub>j</sub> =25°C                                  |
| Threshold voltage, low level                  | V <sub>TO</sub>    |      | 1.8                 |      | V                | T <sub>j</sub> =125°C                                                          |
| Slope resistance, low-level                   | r <sub>T</sub>     |      | 0.35                |      | mΩ               | 2500A to 5000A                                                                 |
| Critical rate of rise of on-state current(5)  | di/dt              |      | 200                 |      | A/μs             | Repetition                                                                     |

### Gating

| Parameter                      | Symbol      | Min. | Max. | Typ. | Units | Conditions                               |
|--------------------------------|-------------|------|------|------|-------|------------------------------------------|
| Peak gate power dissipation    | $P_{GM}$    |      | 20   |      | W     |                                          |
| Average gate power dissipation | $P_{G(AV)}$ |      | 4    |      | W     |                                          |
| Gate trigger current           | $I_{GT}$    |      | 200  | 150  | mA    | $V_D=12V; R_L=30\Omega; T_j=+25^\circ C$ |
| Gate trigger voltage           | $V_{GT}$    | 0.70 | 3.0  | 2.5  | V     | $V_D=12V; R_L=30\Omega; T_j=+25^\circ C$ |
| Peak negative voltage          | $V_{GRM}$   |      | 5    |      | V     |                                          |

### Dynamic

| Parameter                   | Symbol   | Min. | Max. | Typ. | Units   | Conditions                                                                                               |
|-----------------------------|----------|------|------|------|---------|----------------------------------------------------------------------------------------------------------|
| Delay time                  | $t_d$    |      | 3.0  | 2.5  | $\mu s$ | $I_{TM}=50A; V_D=67\%V_{DRM}$<br>Gate pulse: $V_G=30V; R_G=10\Omega$ ; $t_r=0.1\mu s; t_p=20\mu s$       |
| Turn-off time ( $V_R=-5V$ ) | $t_q$    |      | 80   |      | $\mu s$ | $I_{TM}=1800A; di/dt=-10A/\mu s$ ;<br>$V_R=50V; dV/dt=30V/\mu s$ ;<br>$V_D=67\%V_{DRM}; T_j=125^\circ C$ |
| Reverse recovery current    | $Q_{rr}$ |      |      |      | $\mu C$ | $I_{TM}=1800A; di/dt=-10A/\mu s$ ;<br>$V_R=50V; T_j=125^\circ C$                                         |

### THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

| Parameter                             | Symbol            | Min. | Max.  | Typ. | Units        | Conditions          |
|---------------------------------------|-------------------|------|-------|------|--------------|---------------------|
| Operating temperature                 | $T_j$             | -40  | +125  |      | $^\circ C$   |                     |
| Storage temperature                   | $T_{stg}$         | -40  | +140  |      | $^\circ C$   |                     |
| Thermal resistance-junction to case   | $R_{\theta(j-c)}$ |      | 0.01  |      | $^\circ C/W$ | Double sided cooled |
| Thermal resistance - case to heatsink | $R_{\theta(c-s)}$ |      | 0.003 |      | $^\circ C/W$ | Double sided cooled |
| Mounting force                        | P                 | 32   | 39    | 35   | kN           |                     |
| Weight                                | W                 |      |       | 1.10 | kg.          |                     |

\* Mounting surfaces smooth, flat and greased

