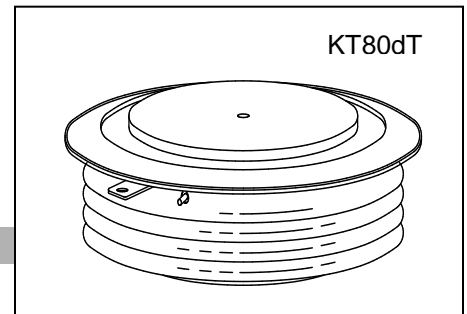




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**FREE FLOATING TYPE THYRISTOR FOR PHASE CONTROL APPLICATIONS**  
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**Features:**

- . Free-floating silicon technology
- . Low on-state and switching losses
- . Optimum power handling capability
- . Blocking capability up to 8500 volts
- . Distributed amplifying gate



**ELECTRICAL CHARACTERISTICS AND RATINGS**

**Blocking - Off State**

| Device Type | V <sub>RRM</sub> (1) | V <sub>DRM</sub> (1) | V <sub>RSM</sub> (1) |
|-------------|----------------------|----------------------|----------------------|
| KP1080/74   | 7400                 | 7400                 | 7400                 |
| KP1080/80   | 8000                 | 8000                 | 8000                 |
| KP1080/85   | 8500                 | 8500                 | 8500                 |

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

Notes:

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range 0 to +115 °C.
- (2) 10 msec. max. pulse width
- (3) Maximum value for T<sub>j</sub> = 115 °C.
- (4) Minimum value for linear and exponential waveshape to 67% rated V<sub>DRM</sub>. Gate open. T<sub>j</sub> = 115 °C.
- (5).The value of di/dt is established in accordance with JBT/ 8950.2-2013

|   |                                    |                    |
|---|------------------------------------|--------------------|
| Repetitive peak reverse leakage and off state leakage | I <sub>RRM</sub> /I <sub>DRM</sub> | 10mA<br>100 mA (3) |
| Critical rate of voltage rise                         | dv/dt (4)                          | 2000 V/sec (min)   |

**Conducting - On State**

| Parameter                                     | Symbol              | Min. | Max.                | Typ. | Units            | Conditions  |
|---|---------------------|------|---------------------|------|------------------|---|
| Average value of on-state current             | I <sub>T(AV)</sub>  |      | 1080                |      | A                | Sinewave, 180° conduction, T <sub>c</sub> =70°C                                   |
| RMS value of on-state current                 | I <sub>T(RMS)</sub> |      | 1700                |      | A                | Nominal value   |
| Peak one cycle surge (non repetitive) current | I <sub>TSM</sub>    |      | 11300               |      | A                | 10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T <sub>j</sub> = 115 °C |
| I square t                                    | I <sup>2</sup> t    |      | 6.3x10 <sup>5</sup> |      | A <sup>2</sup> s | 10 msec   |
| Latching current                              | I <sub>L</sub>      |      | 1000                |      | mA               | V <sub>D</sub> = 12 V; R <sub>L</sub> = 12 ohms                                   |
| Holding current                               | I <sub>H</sub>      |      | 200                 |      | mA               | V <sub>D</sub> = 12 V; I = 2.5 A  |
| Peak on-state voltage                         | V <sub>TM</sub>     |      | 2.80                |      | V                | I <sub>TM</sub> =1500A;T <sub>j</sub> =25°C                                       |
| Threshold voltage, low-level                  | V <sub>TO</sub>     |      | 1.15                |      | V                | T <sub>j</sub> =115°C   |
| Slope resistance, low-level                   | r <sub>T</sub>      |      | 1.10                |      |                  | 1000A to 3000A  |
| Critical rate of rise of on-state current     | di/dt               |      | 100                 |      | 6                | 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           | $I_{GT}$    |      | 300  |      | mA    | $V_D = 12\text{ V}; R_L = 3\text{ ohms}; T_j = +25\text{ }^\circ\text{C}$ |
| Gate- trigger voltage          | $V_{GT}$    | 0.8  | 3.0  |      | V     | $V_D = 12\text{ V}; R_L = 3\text{ ohms}; T_j = +25\text{ }^\circ\text{C}$ |
| Peak negative voltage          | $V_{GRM}$   |      | 10   |      | V     |   |

**Dynamic**

| Parameter                                 | Symbol   | Min. | Max. | Typ. | Units         | Conditions  |
|---|----------|------|------|------|---------------|---|
| Delay time                                | $t_d$    |      | 3.0  |      | $\mu\text{s}$ | $I_{FG} = 2.0\text{ A}; V_D = 0.4V_{DRM}; t_r = 0.5\mu\text{s}$   |
| Turn-off time (with $V_R = -5\text{ V}$ ) | $t_q$    |      | 800  |      | $\mu\text{s}$ | $I_{TM} = 1000\text{ A}; di/dt = -10\text{ A}/\mu\text{s}; V_R = 100\text{ V}; dV/dt = 30\text{ V}/\mu\text{s}; V_D = 67\%V_{DRM}; T_j = 115^\circ\text{C}$ |
| Reverse recovery charge                   | $Q_{rr}$ |      | 2000 |      | $\mu\text{C}$ | $I_{TM} = 1000\text{ A}; di/dt = -1\text{ A/s}; V_R = 100\text{ V}; T_j = 115^\circ\text{C}$  |

**THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS**

| Parameter                             | Symbol          | Min. | Max.  | Typ. | Units                     | Conditions          |
|---------------------------------------|-----------------|------|-------|------|---------------------------|---------------------|
| Operating temperature                 | $T_j$           | -40  | +115  |      | $^\circ\text{C}$          |                     |
| Storage temperature                   | $T_{stg}$       | -40  | +115  |      | $^\circ\text{C}$          |                     |
| Thermal resistance - junction to case | $R_{\square-c}$ |      | 0.01  |      | $^\circ\text{C}/\text{W}$ | Double sided cooled |
| Thermal resistance - case to heatsink | $R_{\square-s}$ |      | 0.003 |      | $^\circ\text{C}/\text{W}$ | Double sided cooled |
| Mounting force                        | P               |      |       | 60   | kN                        |                     |
| Weight                                | W               |      |       | 1.30 | kg                        |                     |

\* Mounting surfaces smooth, flat and greased

