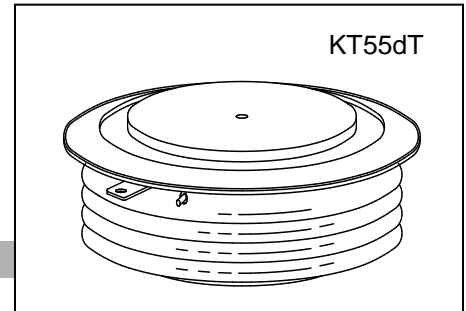




FREE FLOATING TYPE THYRISTOR FOR PHASE CONTROL APPLICATIONS

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 _{RRM} (1) | V _{DRM} (1) | V _{RSM} (1) |
|-------------|----------------------|----------------------|----------------------|
| KP580/74 | 7400 | 7400 | 7400 |
| KP580/80 | 8000 | 8000 | 8000 |
| KP580/85 | 8500 | 8500 | 8500 |

V_{RRM} = Repetitive peak reverse voltage
 V_{DRM} = Repetitive peak off state voltage
 V_{RSM} = 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_j = 115 °C.
- (4) Minimum value for linear and exponential waveshape to 67% rated V_{DRM}. Gate open. T_j = 115 °C.
- (5).The value of di/dt is established in accordance with JB/T 8950.2-2013

| | | |
|---|------------------------------------|--------------------|
| Repetitive peak reverse leakage and off state leakage | I _{RRM} /I _{DRM} | 10mA 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 _{T(AV)} | | 580 | | A | Sinewave, 180° conduction, T _c =70°C |
| RMS value of on-state current | I _{T(RMS)} | | 910 | | A | Nominal value |
| Peak one cycle surge (non repetitive) current | I _{TSM} | | 6000 | | A | 10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T _j = 115 °C |
| I square t | I ² t | | 1.8x10 ⁵ | | A ² s | 10 msec |
| Latching current | I _L | | 1000 | | mA | V _D = 12 V; R _L = 12 ohms |
| Holding current | I _H | | 200 | | mA | V _D = 12 V; I = 2.5 A |
| Peak on-state voltage | V _{TM} | | 2.80 | | V | I _{TM} =1000A; T _j =25°C |
| Threshold voltage, low-level | V _{TO} | | 1.30 | | V | T _j =115°C |
| Slope resistance, low-level | r _T | | 1.50 | | mΩ | 300A to1000A |
| Critical rate of rise of on-state current | di/dt | | 100 | | 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} | | 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 | | μs | $I_{FG} = 2.0\text{ A}; V_D = 0.4V_{DRM}; t_r = 0.5\mu\text{s}$ |
| Turn-off time (with $V_R = -5\text{ V}$) | t_q | | 800 | | μs | $I_{TM} = 1000\text{ A}; di/dt = -10\text{ A}/\mu\text{s}; V_R = 100\text{ V}; dV/dt = 30\text{ V}/\mu\text{s}; V_D = 67\%V_{DRM}; T_j = 115^\circ\text{C}$ |
| Reverse recovery charge | Q_{rr} | | 2000 | | μC | $I_{TM} = 1000\text{ A}; di/dt = -1\text{ A/s}; V_R = 100\text{ V}; T_j = 115^\circ\text{C}$ |

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 | $R_{\Theta(j-c)}$ | | 0.022 | | $^\circ\text{C}/\text{W}$ | Double sided cooled |
| Thermal resistance - case to heatsink | $R_{\Theta(c-s)}$ | | 0.005 | | $^\circ\text{C}/\text{W}$ | Double sided cooled |
| Mounting force | P | | | 22 | kN | |
| Weight | W | | | 0.65 | kg | |

* Mounting surfaces smooth, flat and greased

