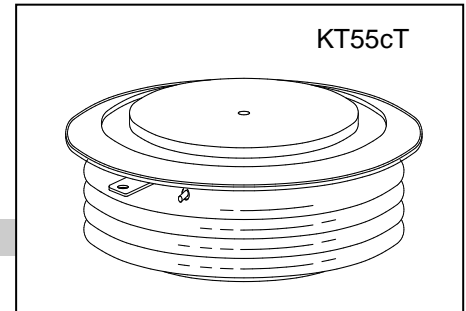




HIGH POWER THYRISTOR FOR INVERTER APPLICATION

Features:

- . All Diffused Structure
- . Amplifying Gate Configuration
- . Blocking capability up to 1400 volts
- . 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) |
|-------------|----------------------|----------------------|----------------------|
| KK1000/12 | 1200 | 1200 | 1400 |
| KK1000/14 | 1400 | 1400 | 1600 |

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} | 2 mA 20 mA (3) |
| Critical rate of voltage rise | dv/dt (4) | 1000 V/sec (min) |

Notes:

All ratings are specified for T_j=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_j=125 °C.

(4) Minimum value for linear and exponential waveshape to 67% rated V_{DRM}. Gate open, T_j=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 _{T(AV)} | | 1000 | | A | Sinewave, 180° conduction, T _c =55°C |
| RMS value of on-state current | I _{T(RMS)} | | 1570 | | A | Nominal value |
| Peak one cycle surge (non repetitive) current | I _{TSM} | | 15000 | | A | 10 msec (50Hz), sinusoidal waveshape, 180° conduction, T _j = 125 °C |
| I square t | I ² t | | 1.1x10 ⁶ | | A ² s | 10 msec |
| Latching current | I _L | | 1000 | | mA | V _D =12V; R _L =12ohms |
| Holding current | I _H | | 200 | | mA | V _D =12V; I=2.5A |
| Peak on-state voltage | V _{TM} | | 2.0 | | V | I _{TM} =3000A; T _j =25°C |
| Threshold voltage, low-level | V _{TO} | | 1.25 | | V | T _j =125°C |
| Slope resistance, low-level | r _T | | 0.25 | | mΩ | 1000A to 2500A |
| 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 | $V_D=12V; R_L=30\text{ohms}; T_j=+25^\circ\text{C}$ |
| Gate trigger voltage | V_{GT} | 0.70 | 3.0 | 2.5 | V | $V_D=12V; R_L=30\text{ohms}; T_j=+25^\circ\text{C}$ |
| Peak negative voltage | V_{GRM} | | 5 | | V | |

Dynamic

| Parameter | Symbol | Min. | Max. | Typ. | Units | Conditions |
|------------------------------------|----------|------|------|------|---------------|--|
| Delay time | t_d | | 3.0 | 2.5 | μs | $I_{TM}=50\text{A}; V_D=67\%V_{DRM}$ Gate pulse: $V_G=30\text{V}; R_G=10\text{ohms};$ $t_r=0.1\mu\text{s}; t_p=20\mu\text{s}$ |
| Turn-off time ($V_R=-5\text{V}$) | t_q | | 20 | | μs | $I_{TM}=1000\text{A}; di/dt=-10\text{A}/\mu\text{s};$ $V_R=50\text{V}; dV/dt=30\text{V}/\mu\text{s};$ $V_D=67\%V_{DRM}; T_j=125^\circ\text{C}$ |
| Reverse recovery current | Q_{rr} | | | | μC | $I_{TM}=1000\text{A}; di/dt=-10\text{A}/\mu\text{s};$ $V_R=50\text{V}; T_j=125^\circ\text{C}$ |

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 | +140 | | $^\circ\text{C}$ | |
| 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 | | | 25 | kN | |
| Weight | W | | | 0.46 | kg. | |

* Mounting surfaces smooth, flat and greased

