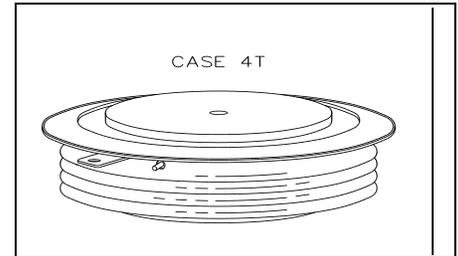


PSTATA644S28

Asymmetric thyristors

Features:

- . All Diffused Structure
- . Center Amplifying Gate Configuration
- . Blocking capability up to 2100 volts
- . Guaranteed Maximum Turn-Off Time
- . High dV/dt Capability
- . Pressure Assembled Device



ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

| | | |
|---------------|---------------|---------------|
| V_{RRM} (1) | V_{DRM} (1) | V_{RSM} (1) |
| 20 | 2800 | 2100 |

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 | I_{RRM} I_{DRM} | 1000 mA 200 mA (3) |
| Critical rate of voltage rise | dV/dt (4) | 500 V/ μ sec |

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 μF capacitor and 20 ohms resistance in parallel with the thyristor under test.

Conducting - on state

| Parameter | Symbol | Min. | Max. | Typ. | Units | Conditions |
|--|-------------|------|--------------------|------|----------------------|---|
| Average value of on-state current | $I_{T(AV)}$ | | 1000 | | A | Sinewave, 180° conduction, $T_c=55^\circ\text{C}$ |
| RMS value of on-state current | I_{TRMS} | | - | | A | Nominal value |
| Peak one cPSTCle surge (non repetitive) current | I_{TSM} | | - 16 | | KA KA | 8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$ 10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$ |
| I square t | I^2t | | 1.28×10^6 | | A^2s | 8.3 msec and 10.0 msec |
| Latching current | I_L | | - | | mA | $V_D = 24\text{ V}$; $R_L = 12\text{ ohms}$ |
| Holding current | I_H | | - | | mA | $V_D = 24\text{ V}$; $I = 2.5\text{ A}$ |
| Threshold voltage | V_{TO} | | 1.45 | | V | |
| Slope resistance | r_T | | 0.3 | | m Ω | |
| Peak on-state voltage | V_{TM} | | 1.45 | | V | $I_{TM} = 1000\text{ A}$; Duty Cycle $\leq 0.01\%$; $T_j = 125^\circ\text{C}$ |
| Critical rate of rise of on-state current (5, 6) | di/dt | | - | | A/ μs | Switching from $V_{DRM} \leq 1000\text{ V}$, non-repetitive |
| Critical rate of rise of on-state current (6) | di/dt | | 300 | | A/ μs | Switching from $V_{DRM} \leq 1000\text{ V}$ |

ELECTRICAL CHARACTERISTICS AND RATINGS

Gating

| Parameter | Symbol | Min. | Max. | Typ. | Units | Conditions |
|--|-------------|------|------|------|-------|--|
| Peak gate power dissipation | P_{GM} | | - | | W | $t_p = 40 \mu s$ |
| Average gate power dissipation | $P_{G(AV)}$ | | - | | W | |
| Peak gate current | I_{GM} | | - | | A | |
| Gate current required to trigger all units | I_{GT} | | - | | mA | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ |
| | | | 300 | | mA | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +25^\circ C$ |
| | | | - | | mA | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +125^\circ C$ |
| Gate voltage required to trigger all units | V_{GT} | | - | | V | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ |
| | | | 2.5 | | V | $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = 0-125^\circ C$ |
| | | | - | | V | $V_D = \text{Rated } V_{DRM}; R_L = 1000 \text{ ohms}; T_j = +125^\circ C$ |
| Peak negative voltage | V_{GRM} | | 20 | | V | |

Dynamic

| Parameter | Symbol | Min. | Max. | Typ. | Units | Conditions |
|-------------------------------------|----------|------|------|------|---------|--|
| Delay time | t_d | | - | 2.2 | μs | $I_{TM} = 50 A; V_D = \text{Rated } V_{DRM}$ Gate pulse: $V_G = 20 V; R_G = 20 \text{ ohms}; t_r = 0.1 \mu s; t_p = 20 \mu s$ |
| Turn-off time (with $V_R = -50 V$) | t_q | | - | 50 | μs | $I_{TM} = 1000 A; di/dt = 25 A/\mu s;$ $V_R \geq -50 V; \text{Re-applied } dV/dt = 20 V/\mu s \text{ linear to } 80\% V_{DRM}; V_G = 0;$ $T_j = 125^\circ C; \text{Duty cPSTCl} \geq 0.01\%$ |
| Reverse recovery charge | Q_{rr} | | * | | μC | $I_{TM} = 1000 A; di/dt = 25 A/\mu s;$ $V_R \geq -50 V$ |

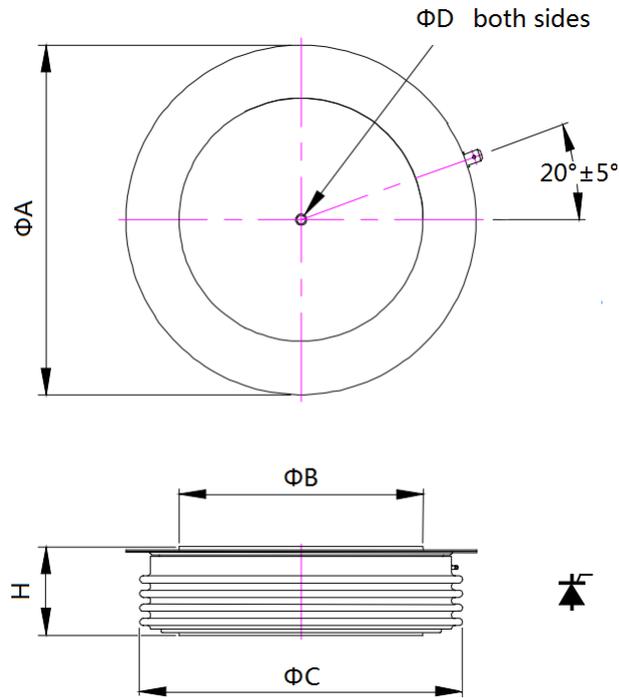
* For guaranteed max. value, contact factory.

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 | +125 | | $^\circ C$ | |
| Thermal resistance - junction to case | $R_{\Theta(j-c)}$ | | - | | $^\circ C/kW$ | Double sided cooled |
| | | | - | | | Single sided cooled |
| Thermal resistamce - case to heatsink | $R_{\Theta(c-h)}$ | | - | | $^\circ C/kW$ | Double sided cooled * |
| | | | - | | | Single sided cooled * |
| Thermal resistance - junction to heatsink | $R_{\Theta(j-h)}$ | | 21 | | $^\circ C/kW$ | Double sided cooled |
| | | | - | | | Single sided cooled |
| Mounting force | P | 22.0 | 24.0 | | kN | |
| Weight | W | | | 560 | g | About |

* Mounting surfaces smooth, flat and greased

CASE OUTLINE AND DIMENSIONS



| | | | | | |
|-----|----|----|----|-------|------|
| Sym | A | B | C | D | H |
| mm | 75 | 47 | 66 | 3.5x3 | 26±1 |