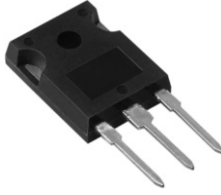
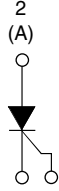


Phase Control SCR, 20 A



TO-247AC



1 (K) (G) 3

DESCRIPTION/FEATURES

The 30TPS... High Voltage Series of silicon controlled rectifiers are specifically designed for medium power switching and phase control applications. The glass passivation technology used has reliable operation up to 125 °C junction temperature.

Typical applications are in input rectification (soft start) and these products are designed to be used with Vishay HPP input diodes, switches and output rectifiers which are available in identical package outlines.

This product has been designed and qualified for industrial level.

PRODUCT SUMMARY

| | |
|---------------|------------|
| V_T at 20 A | < 1.3 V |
| I_{TSM} | 300 A |
| V_{RRM} | 800/1200 V |

MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
|-------------------|----------------------------|-------------|------------|
| $I_{T(AV)}$ | Sinusoidal waveform | 20 | A |
| I_{RMS} | | 30 | |
| V_{RRM}/V_{DRM} | | 800/1200 | V |
| I_{TSM} | | 300 | A |
| V_T | 20 A, $T_J = 25\text{ °C}$ | 1.3 | V |
| dV/dt | | 500 | V/ μ s |
| dI/dt | | 150 | A/ μ s |
| T_J | | - 40 to 125 | °C |

VOLTAGE RATINGS

| PART NUMBER | V_{RRM}/V_{DRM} , MAXIMUM REPETITIVE PEAK AND OFF-STATE VOLTAGE V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | I_{RRM}/I_{DRM} AT 125 °C mA |
|-------------|--|--|-----------------------------------|
| 30TPS08 | 800 | 900 | 10 |
| 30TPS12 | 1200 | 1300 | |

30TPS... High Voltage Series



Vishay High Power Products Phase Control SCR, 20 A

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|--|-----------------|---|--|--------|---------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average on-state current | $I_{T(AV)}$ | $T_C = 95\text{ }^\circ\text{C}$, 180° conduction half sine wave | | 20 | A |
| Maximum RMS on-state current | I_{RMS} | | | 30 | |
| Maximum peak, one-cycle non-repetitive surge current | I_{TSM} | 10 ms sine pulse, rated V_{RRM} applied | | 250 | |
| | | 10 ms sine pulse, no voltage reapplied | | 300 | |
| Maximum I^2t for fusing | I^2t | 10 ms sine pulse, rated V_{RRM} applied | | 310 | A^2s |
| | | 10 ms sine pulse, no voltage reapplied | | 442 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | $t = 0.1$ to 10 ms, no voltage reapplied | | 4420 | $A^2\sqrt{s}$ |
| Maximum on-state voltage drop | V_{TM} | 20 A, $T_J = 25\text{ }^\circ\text{C}$ | | 1.3 | V |
| On-state slope resistance | r_t | $T_J = 125\text{ }^\circ\text{C}$ | | 12 | $m\Omega$ |
| Threshold voltage | $V_{T(TO)}$ | | | 1.0 | V |
| Maximum reverse and direct leakage current | I_{RM}/I_{DM} | $T_J = 25\text{ }^\circ\text{C}$ | | 0.5 | mA |
| | | $T_J = 125\text{ }^\circ\text{C}$ | | 10 | |
| | | $V_R = \text{Rated } V_{RRM}/V_{DRM}$ | | | |
| Maximum holding current | I_H | Anode supply = 6 V, resistive load, initial $I_T = 1$ A | | 100 | |
| Maximum latching current | I_L | Anode supply = 6 V, resistive load | | 200 | |
| Maximum rate of rise of off-state voltage | dV/dt | | | 500 | $V/\mu s$ |
| Maximum rate of rise of turned-on current | dI/dt | | | 150 | $A/\mu s$ |

| TRIGGERING | | | | | |
|---|-------------|---|--|--------|-------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum peak gate power | P_{GM} | | | 8.0 | W |
| Maximum average gate power | $P_{G(AV)}$ | | | 2.0 | |
| Maximum peak positive gate current | $+I_{GM}$ | | | 1.5 | A |
| Maximum peak negative gate voltage | $-V_{GM}$ | | | 10 | V |
| Maximum required DC gate current to trigger | I_{GT} | Anode supply = 6 V, resistive load, $T_J = -10\text{ }^\circ\text{C}$ | | 60 | mA |
| | | Anode supply = 6 V, resistive load, $T_J = 25\text{ }^\circ\text{C}$ | | 45 | |
| | | Anode supply = 6 V, resistive load, $T_J = 125\text{ }^\circ\text{C}$ | | 20 | |
| Maximum required DC gate voltage to trigger | V_{GT} | Anode supply = 6 V, resistive load, $T_J = -10\text{ }^\circ\text{C}$ | | 2.5 | V |
| | | Anode supply = 6 V, resistive load, $T_J = 25\text{ }^\circ\text{C}$ | | 2.0 | |
| | | Anode supply = 6 V, resistive load, $T_J = 125\text{ }^\circ\text{C}$ | | 1.0 | |
| Maximum DC gate voltage not to trigger | V_{GD} | $T_J = 125\text{ }^\circ\text{C}$, $V_{DRM} = \text{Rated value}$ | | 0.25 | |
| Maximum DC gate current not to trigger | I_{GD} | | | 2.0 | mA |

| SWITCHING | | | | | |
|-------------------------------|----------|-----------------------------------|--|--------|---------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Typical turn-on time | t_{gt} | $T_J = 25\text{ }^\circ\text{C}$ | | 0.9 | μs |
| Typical reverse recovery time | t_{rr} | $T_J = 125\text{ }^\circ\text{C}$ | | 4 | |
| Typical turn-off time | t_q | | | 110 | |



30TPS... High Voltage Series

Phase Control SCR, 20 A Vishay High Power Products

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | |
|---|----------------|--------------------------------------|-------------|------------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | - 40 to 125 | °C |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | 0.8 | °C/W |
| Maximum thermal resistance, junction to ambient | R_{thJA} | | 40 | |
| Maximum thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth and greased | 0.2 | |
| Approximate weight | | | 6 | g |
| | | | 0.21 | oz. |
| Mounting torque | minimum | | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | 12 (10) | |
| Marking device | | Case style TO-247AC (JEDEC) | 30TPS08 | |
| | | | 30TPS12 | |

30TPS... High Voltage Series



Vishay High Power Products Phase Control SCR, 20 A

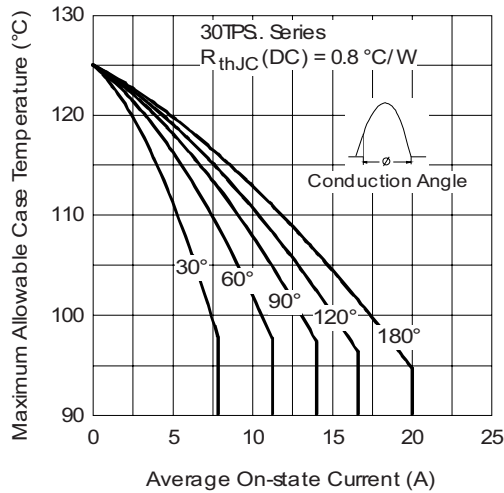


Fig. 1 - Current Rating Characteristics

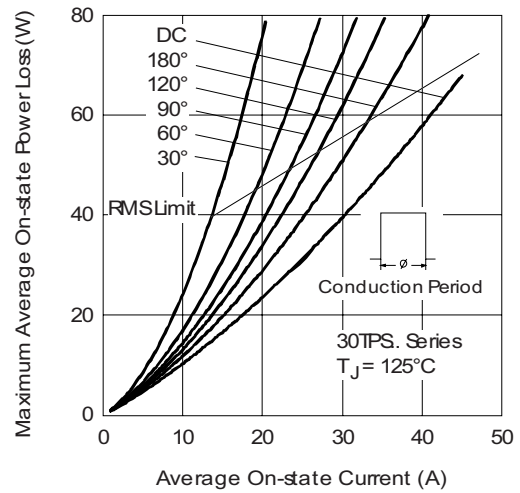


Fig. 4 - On-State Power Loss Characteristics

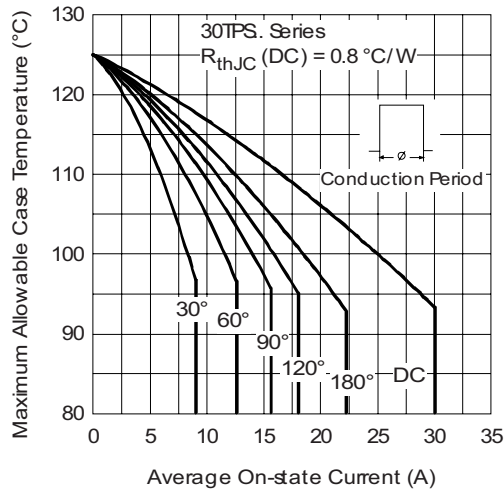


Fig. 2 - Current Rating Characteristics

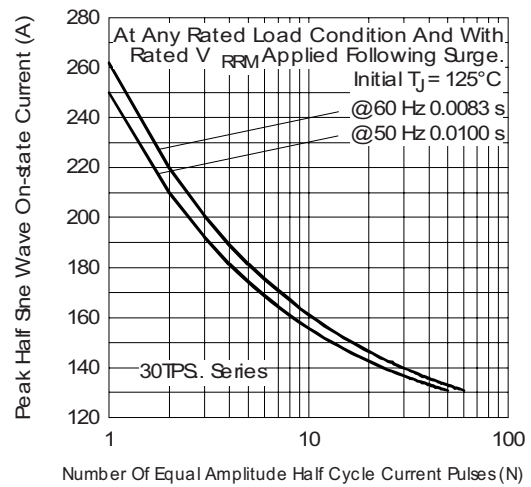


Fig. 5 - Maximum Non-Repetitive Surge Current

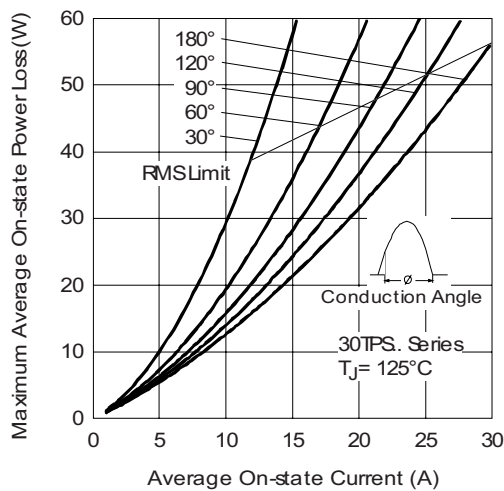


Fig. 3 - On-State Power Loss Characteristics

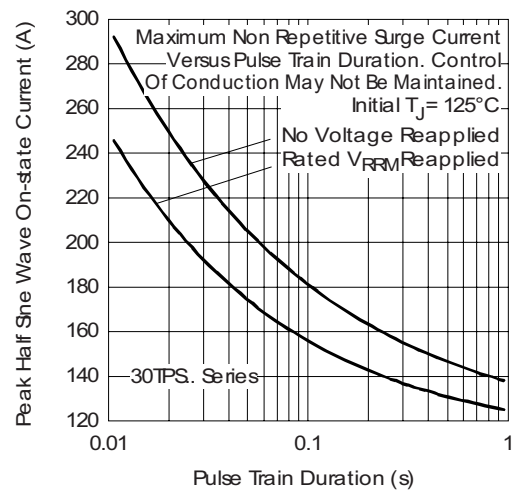


Fig. 6 - Maximum Non-Repetitive Surge Current



30TPS... High Voltage Series

Phase Control SCR, 20 A Vishay High Power Products

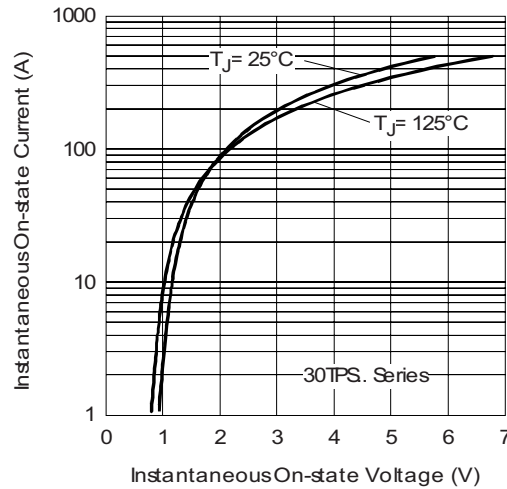


Fig. 7 - On-State Voltage Drop Characteristics

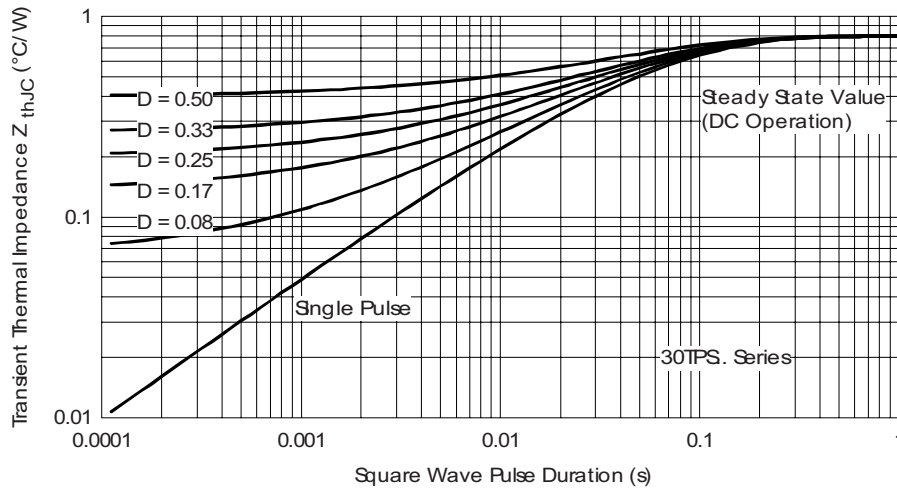


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

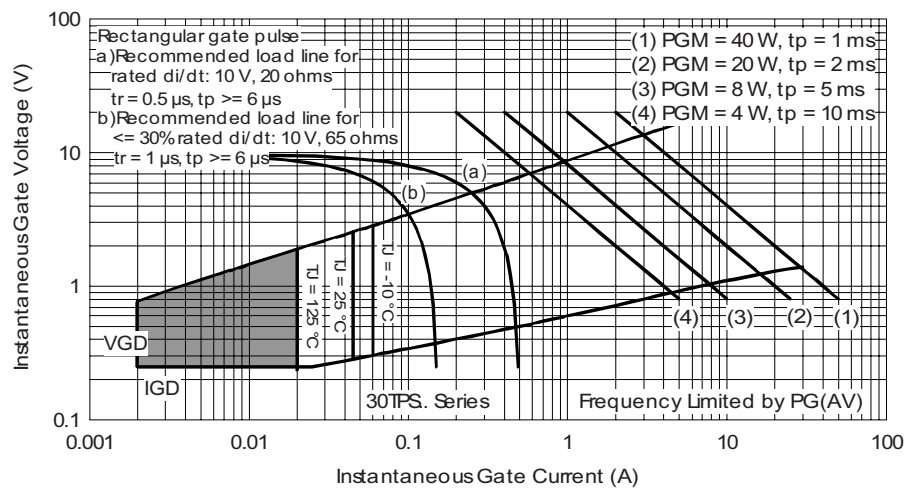


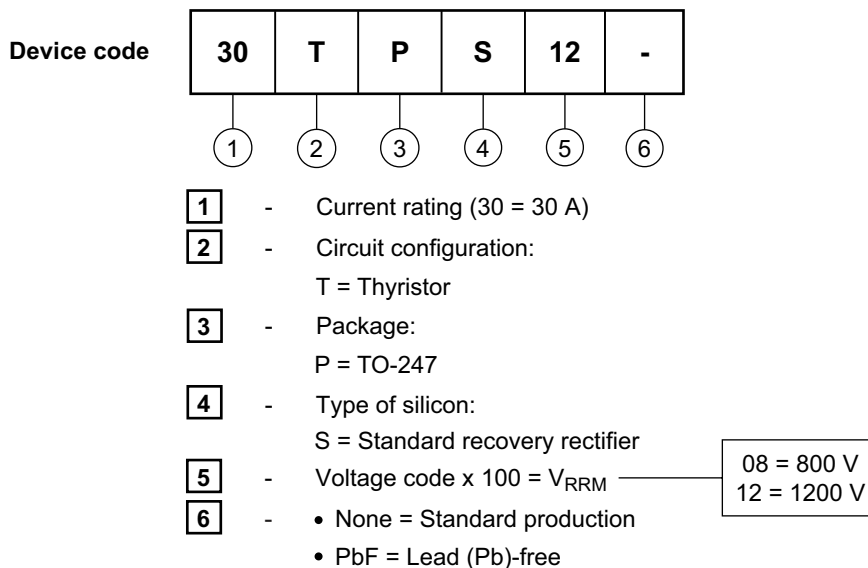
Fig. 9 - Gate Characteristics

30TPS... High Voltage Series

Vishay High Power Products Phase Control SCR, 20 A



ORDERING INFORMATION TABLE



| LINKS TO RELATED DOCUMENTS | |
|----------------------------|---|
| Dimensions | http://www.vishay.com/doc?95223 |
| Part marking information | http://www.vishay.com/doc?95226 |



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