

Phase Control Thyristor

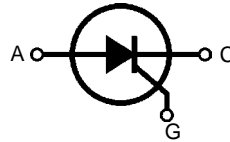
$$V_{RRM} = 1200-1600 \text{ V}$$

$$I_{T(RMS)} = 75 \text{ A}$$

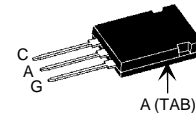
$$I_{T(AV)M} = 48 \text{ A}$$

Preliminary Data Sheet

| V_{RSM} | V_{RRM} | Type |
|-----------|-----------|-------------|
| V_{DSM} | V_{DRM} | |
| V | V | |
| 1300 | 1200 | CS 60-12io1 |
| 1500 | 1400 | CS 60-14io1 |
| 1700 | 1600 | CS 60-16io1 |



PLUS247



C = Cathode, A = Anode, G = Gate

| Symbol | Test Conditions | Maximum Ratings |
|----------------|---|--|
| $I_{T(RMS)}$ | $T_{VJ} = T_{VJM}$ (lead current limit) | 75 A |
| $I_{T(AV)M}$ | $T_C = 105^\circ\text{C}$; 180° sine | 48 A |
| I_{TSM} | $T_{VJ} = 45^\circ\text{C}$; $V_R = 0 \text{ V}$ | t = 10 ms (50 Hz), sine 1500 A |
| | | t = 8.3 ms (60 Hz), sine 1600 A |
| | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine 1350 A |
| | $V_R = 0 \text{ V}$ | t = 8.3 ms (60 Hz), sine 1450 A |
| i^2t | $T_{VJ} = 45^\circ\text{C}$ | t = 10 ms (50 Hz), sine 11,200 A ² s |
| | $V_R = 0 \text{ V}$ | t = 8.3 ms (60 Hz), sine 10,750 A ² s |
| | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine 9100 A ² s |
| | $V_R = 0 \text{ V}$ | t = 8.3 ms (60 Hz), sine 8830 A ² s |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ f = 50 Hz, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3 \text{ A}$ $di_G/dt = 0.3 \text{ A}/\mu\text{s}$ | repetitive, $I_T = 60 \text{ A}$ 150 A/ μs |
| | | non repetitive, $I_T = I_{T(AV)M}$ 500 A/ μs |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; method 1 (linear voltage rise) | $V_{DR} = 2/3 V_{DRM}$ 1000 V/ μs |
| P_{GM} | $T_{VJ} = T_{VJM}$ | $t_p = 30 \mu\text{s}$ 10 W |
| $P_{G(AV)}$ | $I_T = I_{T(AV)M}$ | $t_p = 300 \mu\text{s}$ 5 W |
| | | 0.5 W |
| V_{RGM} | | 10 V |
| T_{VJ} | | -40...+140 °C |
| T_{VJM} | | 140 °C |
| T_{stg} | | -40...+125 °C |
| F_C | Mounting Force | 20...120/4.5...27 N/lbs |
| Weight | | 6 g |

Features

- Thyristor for line frequency
- International standard package JEDEC TO-247
- Planar passivated chip
- Long-term stability of blocking currents and voltages

Applications

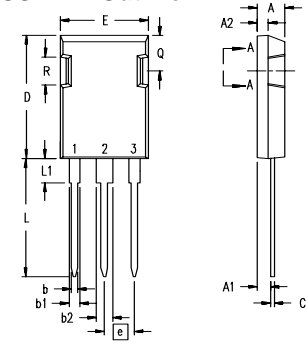
- Motor control
- Power converter
- AC power controller
- Switch-mode and resonant mode power supplies
- Light and temperature control

Advantages

- Easy to mount
- Space and weight savings
- Simple mounting

| Symbol | Test Conditions | Characteristic Values | |
|------------|---|-----------------------|-----------------|
| I_R, I_D | $T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = 25^\circ\text{C}$ | \leq | 10 mA 0.2 mA |
| V_T | $I_T = 100 \text{ A}; T_{VJ} = 25^\circ\text{C}$ | \leq | 1.4 V |
| V_{T0} | For power-loss calculations only ($T_{VJ} = 125^\circ\text{C}$) | | 0.85 V |
| r_T | | | 3.7 m Ω |
| V_{GT} | $V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$ | \leq | 1.5 V |
| | $T_{VJ} = -40^\circ\text{C}$ | \leq | 1.6 V |
| I_{GT} | $V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$ | \leq | 100 mA |
| | $T_{VJ} = -40^\circ\text{C}$ | \leq | 200 mA |
| V_{GD} | $T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$ | \leq | 0.2 V |
| I_{GD} | | \leq | 10 mA |
| I_L | $T_{VJ} = 25^\circ\text{C}; t_p = 10 \mu\text{s}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$ | \leq | 450 mA |
| I_H | $T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$ | \leq | 200 mA |
| t_{gd} | $T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$ | \leq | 2 μs |
| R_{thJC} | DC current | 0.32 | K/W |
| R_{thJK} | DC current | 0.47 | K/W |

PLUS247™ Outline



Terminals: 1 - Cathode
2 - Anode
3 - Gate
Tab - Anode

| Dim. | Millimeter | | Inches | |
|----------------|------------|-------|----------|------|
| | Min. | Max. | Min. | Max. |
| A | 4.83 | 5.21 | .190 | .205 |
| A ₁ | 2.29 | 2.54 | .090 | .100 |
| A ₂ | 1.91 | 2.16 | .075 | .085 |
| b | 1.14 | 1.40 | .045 | .055 |
| b ₁ | 1.91 | 2.13 | .075 | .084 |
| b ₂ | 2.92 | 3.12 | .115 | .123 |
| C | 0.61 | 0.80 | .024 | .031 |
| D | 20.80 | 21.34 | .819 | .840 |
| E | 15.75 | 16.13 | .620 | .635 |
| e | 5.45 BSC | | .215 BSC | |
| L | 19.81 | 20.32 | .780 | .800 |
| L1 | 3.81 | 4.32 | .150 | .170 |
| Q | 5.59 | 6.20 | .220 | .244 |
| R | 4.32 | 4.83 | .170 | .190 |

Leads and tab are solder plated.