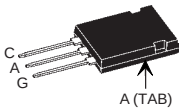
# Phase Control Thyristor

$V_{RRM}$ = 1200-1600 V
$I_{T(RMS)}$ = 75 A
$I_{T(AV)M}$ = 48 A

| $V_{RSM}$ $V_{DSM}$ V | $V_{RRM}$ $V_{DRM}$ V | Part Number |
|---|---|---|
| 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°C; 180° sine | | 48 | A |
| $I_{TSM}$ | $T_{VJ}$ = 45°C; | t = 10 ms (50 Hz), sine | 1400 | A |
| | $V_R$ = 0 V | t = 8.3 ms (60 Hz), sine | 1500 | A |
| | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine | 1250 | A |
| | $V_R$ = 0 V | t = 8.3 ms (60 Hz), sine | 1340 | A |
| $i^2t$ | $T_{VJ}$ = 45°C | t = 10 ms (50 Hz), sine | 9800 | $A^2s$ |
| | $V_R$ = 0 V | t = 8.3 ms (60 Hz), sine | 9500 | $A^2s$ |
| | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine | 7800 | $A^2s$ |
| | $V_R$ = 0 V | t = 8.3 ms (60 Hz), sine | 7500 | $A^2s$ |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ f = 50 Hz, $t_P$ =200 µs $V_D$ = 2/3 $V_{DRM}$ $I_G$ = 0.3 A $di_G/dt$ = 0.3 A/µs | repetitive, $I_T$ = 60 A | 150 | A/µs |
| | | non repetitive, $I_T = I_{T(AV)M}$ | 500 | A/µs |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$; $R_{GK}$ = ∞; method 1 (linear voltage rise) | $V_{DR}$ = 2/3 $V_{DRM}$ | 1000 | V/µs |
| $P_{GM}$ | $T_{VJ} = T_{VJM}$ | $t_P$ = 30 µs | 10 | W |
| | $I_T = I_{T(AV)M}$ | $t_P$ = 300 µs | 5 | W |
| $P_{G(AV)}$ | | | 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 applications
- Junction coated, planar passivated die
- Long-term stability of blocking currents and voltages
- RoHS compliant
- Epoxy meets UL 94V-0
- International standard package

### Applications

- Motor control
- Power converter
- AC power controller
- Light and temperature controls

### Advantages

- Easy to mount
- Tab tin plated for surface mount
- Space and weight savings
- Simple mounting

Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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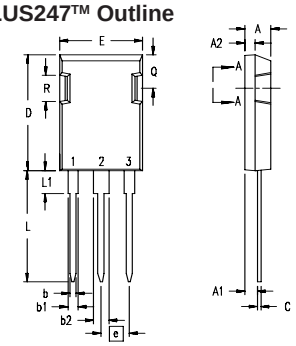
| Symbol | Test Conditions | | Characteristic Values | | |
|---|---|---|---|---|---|
| $I_R$, $I_D$ | $T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$ | | ≤ | 10 | mA |
| | $T_{VJ}$ = 25°C | | ≤ | 0.2 | mA |
| $V_T$ | $I_T$ = 100 A; $T_{VJ}$ = 25°C | | ≤ | 1.4 | V |
| $V_{T0}$ | For power-loss calculations only ($T_{VJ}$ = 125°C) | | | 0.85 | V |
| $r_T$ | | | | 3.7 | mΩ |
| $V_{GT}$ | $V_D$ = 6 V; | $T_{VJ}$ = 25°C | ≤ | 1.5 | V |
| | | $T_{VJ}$ = -40°C | ≤ | 1.6 | V |
| $I_{GT}$ | $V_D$ = 6 V; | $T_{VJ}$ = 25°C | ≤ | 100 | mA |
| | | $T_{VJ}$ = -40°C | ≤ | 200 | mA |
| $V_{GD}$ | $T_{VJ} = T_{VJM}$; | $V_D$ = 2/3 $V_{DRM}$ | ≤ | 0.2 | V |
| $I_{GD}$ | | | ≤ | 10 | mA |
| $I_L$ | $T_{VJ}$ = 25°C; $t_P$ = 10 µs<br>$I_G$ = 0.45 A; $di_G/dt$ = 0.45 A/µs | | ≤ | 450 | mA |
| $I_H$ | $T_{VJ}$ = 25°C; $V_D$ = 6 V; $R_{GK}$ = ∞ | | ≤ | 200 | mA |
| $t_{gd}$ | $T_{VJ}$ = 25°C; $V_D$ = 1/2 $V_{DRM}$<br>$I_G$ = 0.45 A; $di_G/dt$ = 0.45 A/µs | | ≤ | 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

All leads and backside tab are tin plated.

| Dim. | Millimeter Min. | Max. | Inches 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 | 0.244 |
| R | 4.32 | 4.83 | .170 | .190 |

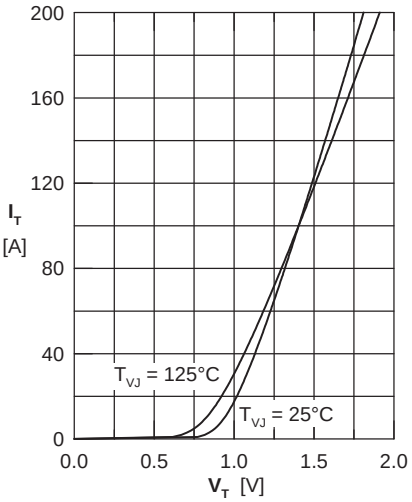



Fig. 1 Forward characteristics

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