# IXYS

# Phase Control Thyristor

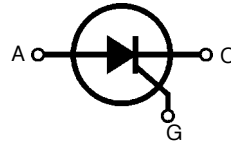## ISOPLUS220™

### Electrically Isolated Back Surface

$V_{RRM}$ = 800 - 1200 V
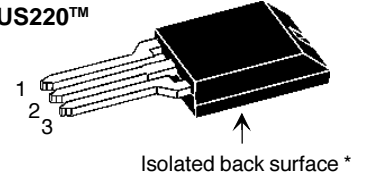$I_{T(RMS)}$ = 35 A
$I_{T(AV)M}$ = 23 A

| $V_{RSM}$ $V_{DSM}$ V | $V_{RRM}$ $V_{DRM}$ V | Type |
|---|---|---|
| 800 | 800 | CS 29-08io1C |
| 1200 | 1200 | CS 29-12io1C |

**ISOPLUS220™**

1
2
3

Isolated back surface *

* Patent pending

| Symbol | Test Conditions | | Maximum Ratings | |
|---|---|---|---|---|
| $I_{T(RMS)}$ | $T_{VJ} = T_{VJM}$ | | 35 | A |
| $I_{T(AV)M}$ | $T_C = 95°C$; 180° sine ($I_{T(RMS)}$ current limit) | | 23 | A |
| $I_{TSM}$ | $T_{VJ} = 45°C$; | t = 10 ms (50 Hz), sine | 200 | A |
| | $V_R = 0$ V | t = 8.3 ms (60 Hz), sine | 215 | A |
| | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine | 175 | A |
| | $V_R = 0$ V | t = 8.3 ms (60 Hz), sine | 185 | A |
| $I^2t$ | $T_{VJ} = 45°C$ | t = 10 ms (50 Hz), sine | 200 | $A^2s$ |
| | $V_R = 0$ V | t = 8.3 ms (60 Hz), sine | 195 | $A^2s$ |
| | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine | 155 | $A^2s$ |
| | $V_R = 0$ V | t = 8.3 ms (60 Hz), sine | 145 | $A^2s$ |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ f = 50 Hz, $t_P$ =200 μs $V_D = 2/3\ V_{DRM}$ | repetitive, $I_T = 40$ A | 150 | A/μs |
| | $I_G = 0.2$ A $di_G/dt = 0.2$ A/μs | non repetitive, $I_T = I_{T(AV)M}$ | 500 | A/μs |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$;      $V_{DR} = 2/3\ V_{DRM}$ $R_{GK} = ∞$; method 1 (linear voltage rise) | | 1000 | V/μs |
| $P_{GM}$ | $T_{VJ} = T_{VJM}$ $I_T = I_{T(AV)M}$ | $t_P = 30$ μs $t_P = 300$ μs | 5 2.5 | W W |
| $P_{GAV}$ | | | 0.5 | W |
| $V_{RGM}$ | | | 10 | V |
| $T_{VJ}$ | | | -40...+150 | °C |
| $T_{VJM}$ | | | 150 | °C |
| $T_{stg}$ | | | -40...+150 | °C |
| $V_{ISOL}$ | 50/60 Hz RMS; $I_{ISOL} ≤ 1$ mA | | 2500 | V~ |
| $T_L$ | 1.6mm from case; 10s | | 260 | °C |
| $F_C$ | Mounting force | | 11...65 / 2.4...11 | N / lb |
| **Weight** | | | 2 | g |

See CS 29..io1 data sheet for electrical characteristic curves.

IXYS reserves the right to change limits, conditions and dimensions.

## Features

## Features

- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500V electrical isolation
- Low cathode-to-tab capacitance (15pF typical)
- Planar passivated chips
- Epoxy meets UL 94V-0
- High performance glass passivated chip
- Long-term stability of leakage current and blocking voltage

## Applications

- Motor control
- Power converter
- AC power controller
- Light and temperature control
- SCR for inrush current limiting in power supplies or AC drive

## Advantages

- Space and weight savings
- Simple mounting

| Symbol | Test Conditions | | Characteristic Values | | |
|---|---|---|---|---|---|
| $I_R$, $I_D$ | $T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$ | | $\leq$ | 2 | mA |
| $V_T$ | $I_T$ = 45 A; $T_{VJ}$ = 25°C | | $\leq$ | 1.5 | V |
| $V_{T0}$ | For power-loss calculations only ($T_{VJ}$ = 125°C) | | | 0.82 | V |
| $r_T$ | | | | 16.5 | mΩ |
| $V_{GT}$ | $V_D$ = 6 V; | $T_{VJ}$ = 25°C | $\leq$ | 1.0 | V |
| | | $T_{VJ}$ = -40°C | $\leq$ | 1.2 | V |
| $I_{GT}$ | $V_D$ = 6 V; | $T_{VJ}$ = 25°C | $\leq$ | 65 | mA |
| | | $T_{VJ}$ = -40°C | $\leq$ | 80 | mA |
| $V_{GD}$ | $T_{VJ} = T_{VJM}$; | $V_D$ = 2/3 $V_{DRM}$ | $\leq$ | 0.2 | V |
| $I_{GD}$ | | | $\leq$ | 5 | mA |
| $I_L$ | $T_{VJ}$ = 25°C; $t_P$ = 10 μs | | $\leq$ | 150 | mA |
| | $I_G$ = 0.2; $di_G$/dt = 0.2 A/μs | | | | |
| $I_H$ | $T_{VJ}$ = 25°C; $V_D$ = 6 V; $R_{GK}$ = ∞ | | $\leq$ | 50 | mA |
| $t_{gd}$ | $T_{VJ}$ = 25°C; $V_D$ = 1/2 $V_{DRM}$ | | $\leq$ | 2 | μs |
| | $I_G$ = 0.2 A; $di_G$/dt =0.2 A/μs | | | | |
| $R_{thJC}$ | DC current | | | 1.2 | K/W |
| $R_{thCK}$ | DC current | typical | | 0.6 | K/W |
| a | Max. acceleration, 50 Hz | | | 50 | m/s$^2$ |

**ISOPLUS220  OUTLINE**



| SYM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | .157 | .197 | 4.00 | 5.00 |
| A2 | .098 | .118 | 2.50 | 3.00 |
| b | .035 | .051 | 0.90 | 1.30 |
| b2 | .049 | .065 | 1.25 | 1.65 |
| b4 | .093 | .100 | 2.35 | 2.55 |
| c | .028 | .039 | 0.70 | 1.00 |
| D | .591 | .630 | 15.00 | 16.00 |
| D1 | .472 | .512 | 12.00 | 13.00 |
| E | .394 | .433 | 10.00 | 11.00 |
| E1 | .295 | .335 | 7.50 | 8.50 |
| e | .100 BASIC | | 2.55 BASIC | |
| L | .512 | .571 | 13.00 | 14.50 |
| L1 | .118 | .138 | 3.00 | 3.50 |
| L4 | .039 | .059 | 1.00 | 1.50 |
| T° | | | 42.5° | 47.5° |

Note: All terminals are solder plated.
1 - Cathode
2 - Anode
3 - Gate