Phase Control Thyristor

ISOPLUS220™

Electrically Isolated Back Surface
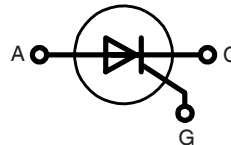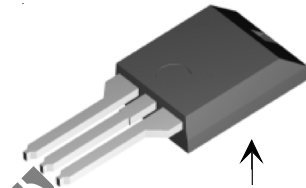
Preliminary Data Sheet

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

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

ISOPLUS 220™

Isolated back surface*

Symbol	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; $V_D = {}^2/_3 V_{DRM}$; $I_G = 0.2$ A; $di_G/dt = 0.2$ A/μs	repetitive, $I_T = 40$ A	150	A/μs
		non repetitive, $I_T = I_{T(AV)M}$	500	A/μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $V_{DR} = {}^2/_3 V_{DRM}$; $R_{GK} = \infty$; method 1 (linear voltage rise)		1000	V/μs
P_{GM}	$T_{VJ} = T_{VJM}$;	$t_P = 30$ μs	5	W
	$I_T = I_{T(AV)M}$;	$t_P = 300$ μs	2.5	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; $I_{ISOL} \leq 1$ mA	2500		V~
T_L	1.6 mm from case; 10 s		260	°C
F_C	Mounting force		11...65 / 2.4...11	N/lb
Weight			2	g

Features

- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 2500 V electrical isolation
- Low cathode-to-tab capacitance (15 pF 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
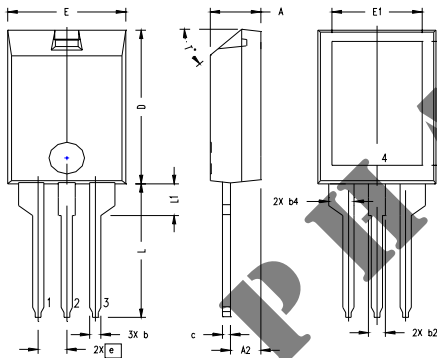- SCR for inrush current limiting in power supplies or AC drive

Advantages

- Space and weight savings
- Simple mounting

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

98839A (04/28)

IXYS

Symbol	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; $\qquad T_{VJ} = 25°C$	$\leq$	1.0	V
	$\qquad\qquad\quad T_{VJ} = -40°C$	$\leq$	1.2	V
I_{GT}	$V_D = 6$ V; $\qquad T_{VJ} = 25°C$	$\leq$	65	mA
	$\qquad\qquad\quad T_{VJ} = -40°C$	$\leq$	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; $I_G = 0.2$; $di_G/dt = 0.2$ A/µs	$\leq$	150	mA
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$	$\leq$	50	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = ½\ V_{DRM}$; $I_G = 0.2$ A; $di_G/dt = 0.2$ A/µs	$\leq$	2	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/s²

See CS 30..io1 data sheet for electrical characteristic curves.

Fig. 1 Gate trigger range

1: I_{GT}, $T_{VJ} = 125°C$
2: I_{GT}, $T_{VJ} = 25°C$
3: I_{GT}, $T_{VJ} = -40°C$
4: $P_{GAV} = 0.5$ W
5: $P_{GM} = 5$ W
6: $P_{GM} = 10$ W

Fig. 2 Gate controlled delay time t_{gd}

ISOPLUS220 Outline

SYM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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
T°			42.5°	47.5°

NOTE:
1. Bottom heatsink (Pin 4) is electrically isolated from Pin 1, 2, or 3.
2. This drawing will meet dimensional requirement of JEDEC SS Product Outline TO-273 except D and D1 dimension.
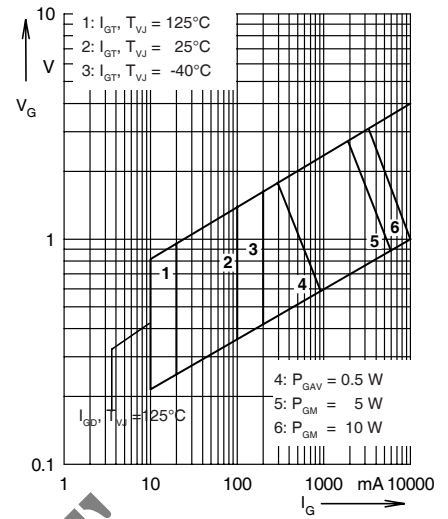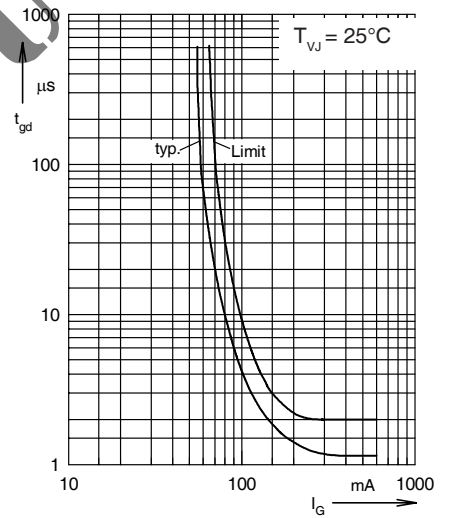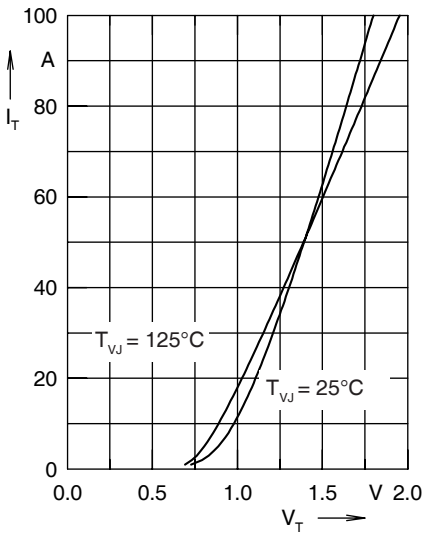
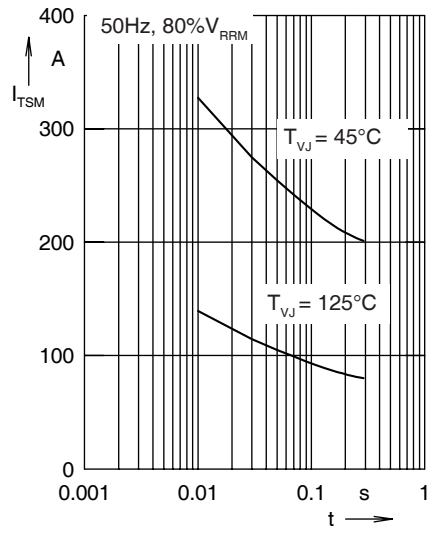Fig. 3   Forward characteristics

Fig. 4 Surge overload current
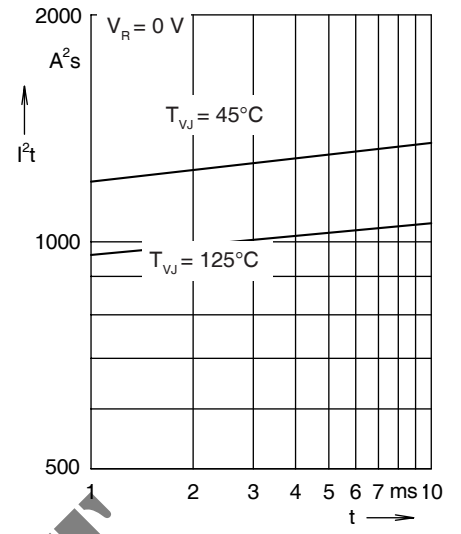I_{TSM}: crest value, t: duration
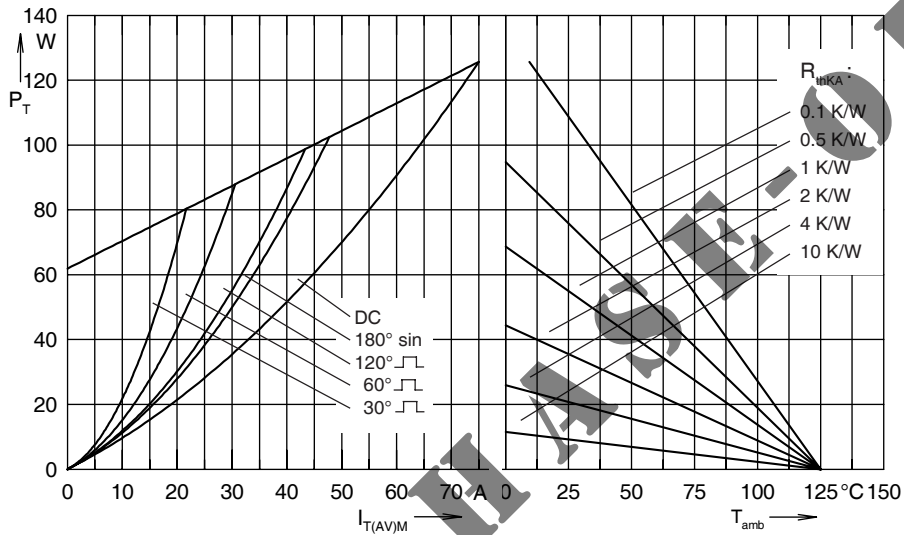

Fig. 5 I^2t versus time (1-10 ms)

Fig. 6   Power dissipation versus forward current and ambient temperature