

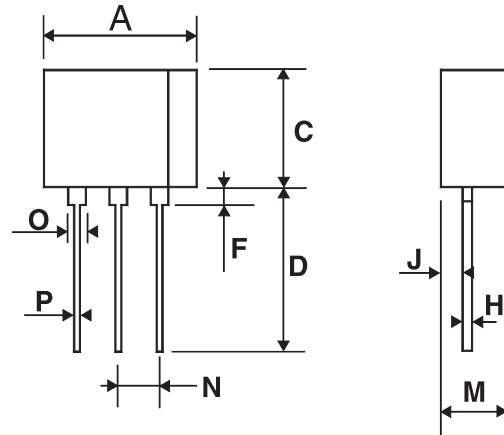
MAIN FEATURES:

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
V_{DRM}/V_{RRM}	600	V
I_{GT}	10 to 200	μA

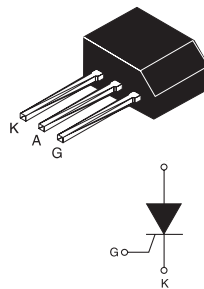
DESCRIPTION

X0405 SCR is suitable for all applications where the available gate current is limited, such as capacitive discharge ignitions, motor control in kitchen aids, overvoltage crowbar protection in low power supplies...

TO-202



REF.	DIMENSIONS		
	mm		
	Min.	Typ.	Max.
A		10.1	
C		7.7	
D		10.5	13.0
F		2.5	3.0
H		0.5	
J		1.55	
M		4.5	4.8
N		2.25	
O			1.4
P		0.7	0.9



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		$T_I=60^\circ C$	4	A
			$T_a=25^\circ C$	1.35	
$I_{T(AV)}$	RMS on-state current (180° conduction angle)		$T_I=60^\circ C$	2.5	A
			$T_a=25^\circ C$	0.9	
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	$T_j = 25^\circ C$	33	A
		$t_p = 10 \text{ ms}$		30	
I^2t	I^2t Value for fusing	$t_p = 10 \text{ ms}$	$T_j = 25^\circ C$	4.5	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100ns$	$F = 60 \text{ Hz}$	$T_j = 125^\circ C$	50	$A/\mu s$
I_{GM}	Peak gate current	$t_p = 20 \mu s$	$T_j = 125^\circ C$	1.2	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125^\circ C$	0.2	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	$^\circ C$

ELECTRICAL CHARACTERISTICS (Tj = 25°C, unless otherwise specified)

Symbol	Test Conditions	X0405			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D = 6\text{ V}$ $R_L = 100\ \Omega$ $R_{GK} = 1\text{ K}\Omega$	10	45	200	μA
V_{GT}	$V_D = 1.2\text{ V}$ $R_L = 100\ \Omega$ $R_{GK} = 1\text{ K}\Omega$			0.8	V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$ $R_{GK} = 1\text{ k}\Omega$ $T_j = 125^\circ\text{C}$	0.1			V
V_{RG}	$I_{RG} = 10\ \mu\text{A}$	8			V
I_H	$I_T = 50\text{ mA}$ $R_{GK} = 1\text{ k}\Omega$			5	mA
I_L	$I_G = 1\text{ mA}$ $R_{GK} = 1\text{ k}\Omega$	6			mA
dV/dt	$V_D = 67\% V_{DRM}$ $R_{GK} = 1\text{ k}\Omega$ $T_j = 110^\circ\text{C}$	15			V/ μs
V_{TM}	$I_{TM} = 8\text{ A}$ $t_p = 380\ \mu\text{s}$			1.8	V
V_{t0}	Threshold voltage $T_j = 25^\circ\text{C}$			0.95	V
R_d	Dynamic resistance $T_j = 125^\circ\text{C}$			100	$\text{m}\Omega$
I_{DRM}	$V_{DRM} = V_{RRM}$ $R_{GK} = 1\text{ k}\Omega$			5	μA
I_{RRM}				1	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to leads (DC)	15	$^\circ\text{C/W}$
$R_{th(j-a)}$	Junction to ambient (DC)	100	

Fig. 1: Maximum average power dissipation versus average on-state current.

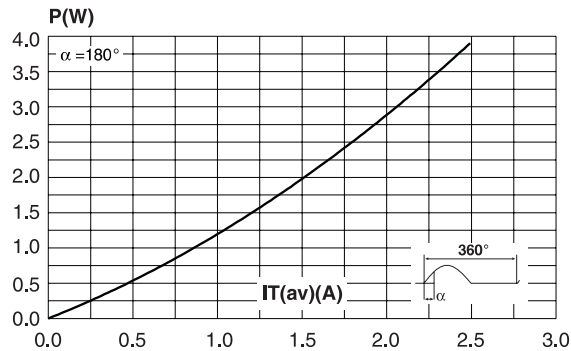


Fig. 2-1: Average and D.C. on-state current versus lead temperature.

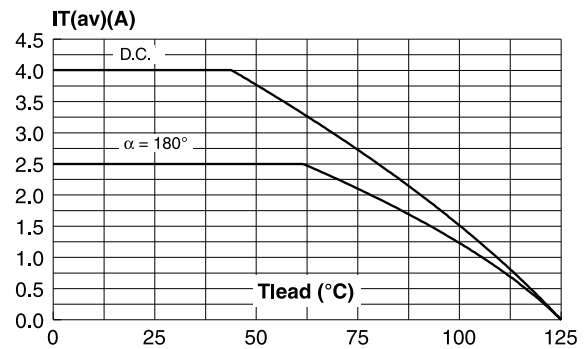


Fig. 2-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout).

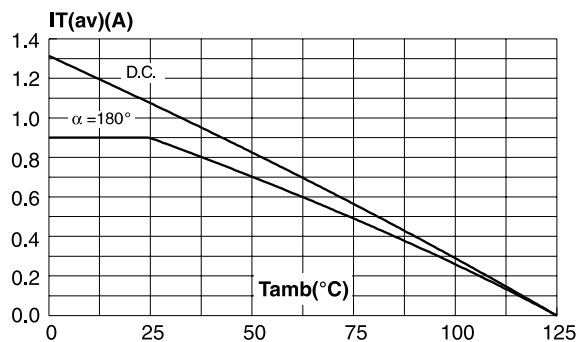


Fig. 3: Relative variation of thermal impedance junction to ambient versus pulse duration.

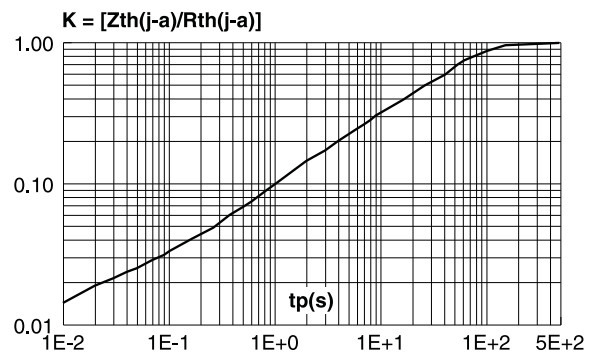


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

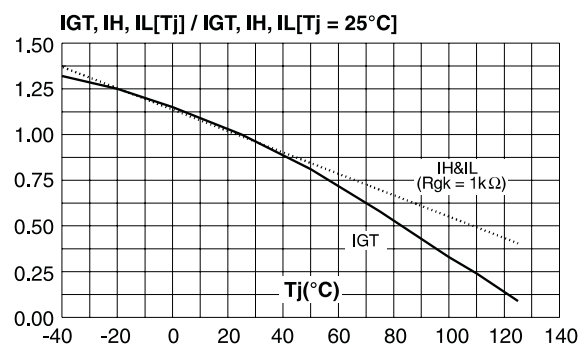


Fig. 5: Relative variation of holding current versus gate-cathode resistance (typical values).

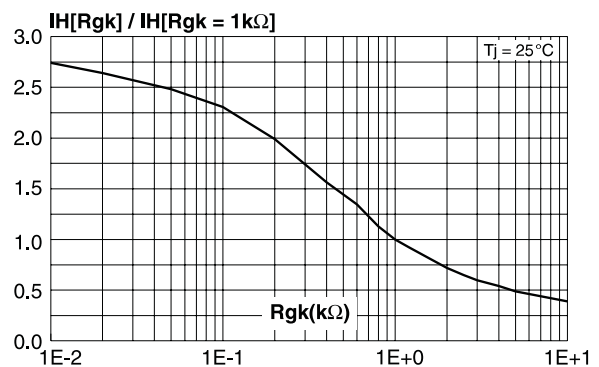


Fig. 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).

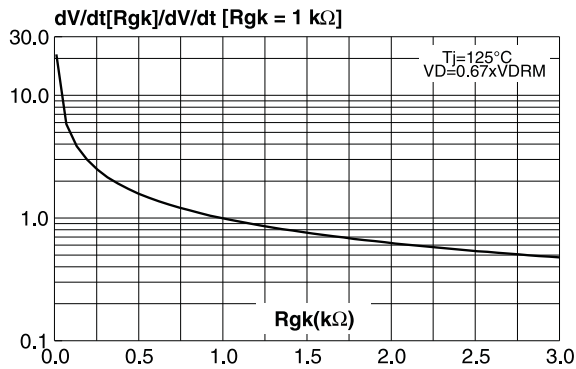


Fig. 7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values).

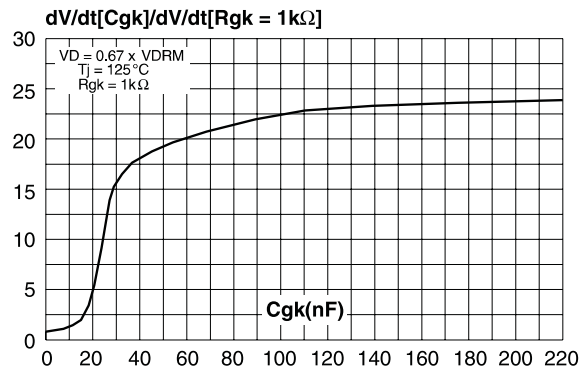


Fig. 8: Surge peak on-state current versus number of cycles.

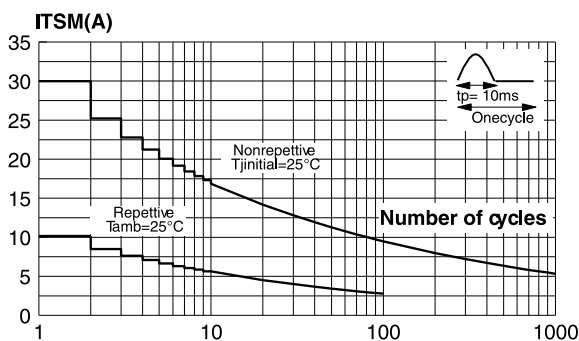


Fig. 9: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ ms}$, and corresponding value of I^2t .

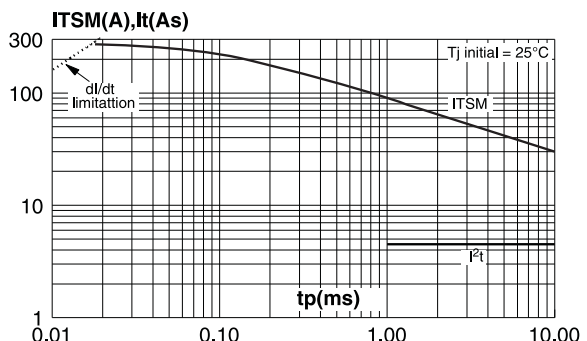


Fig. 10: On-state characteristics (maximum values).

