

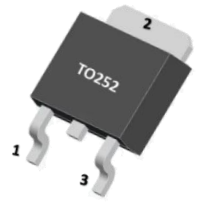
GENERAL DESCRIPTION

❖ SENSITIVE SCRS

❖ The X0405 is suitable for all applications, such as motor control in kitchen aids, capacitive discharge ignitions, and overvoltage crowbar protection in low power supplies, etc

FEATURES

- ❖ $I_{T(RMS)}$: 4A
- ❖ V_{DRM}/V_{RRM} : 600/800V



Pin1:K (Cathode)
Pin2:A (Anode)
Pin3:G (Gate)

MARKING



X0405=DeVice Code
A :IGT<200uA



X 0405 =DeVice Code
B: IGT 20~50uA

ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive Peak Off-State Voltages		V_{DRM}/V_{RRM}	600	V
RMS On-State Current (180° Conduction Angle)		$I_{T(RMS)}$	4	A
Average On-State Current (180° Conduction Angle)		$I_{T(AV)}$	2.5	A
Non Repetitive Surge Peak On-State Current	$t_P=8.3\text{ms}, F=50\text{Hz}$	I_{TSM}	30	A
I^2t Value for Fusing	$t_P=10\text{ms}$	I^2t	4.5	A^2s
Critical Rate of Rise of On-State Current $I_G=2 \times I_{GT}, t_r \leq 100\text{ns}$	$F=60\text{Hz}, T_J=125^{\circ}\text{C}$	di/dt	50	$\text{A}/\mu\text{s}$
Peak Gate Current	$t_P=20\mu\text{s}, T_J=125^{\circ}\text{C}$	I_{GM}	1.2	A
Average Gate Power Dissipation	$T_J=110^{\circ}\text{C}$	$P_{G(AV)}$	0.2	W
Operating Junction Temperature		T_J	-40 ~ +125	$^{\circ}\text{C}$
Storage Junction Temperature		T_{STG}	-40 ~ +150	$^{\circ}\text{C}$

THERMAL RESISTANCES

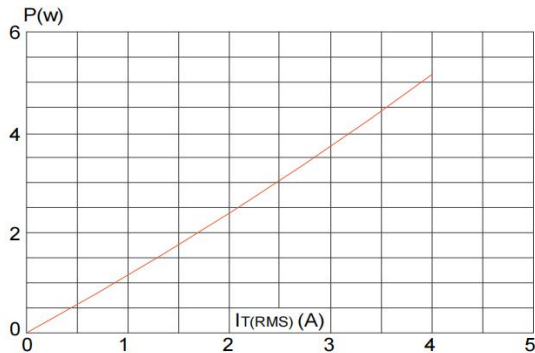
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	R θ JA	62.5	°C/W
	TO220F		65	°C/W
	SOT-89		120	°C/W
Junction to Case	TO-252	R θ JC	5	°C/W
	TO-220F		3	°C/W
	SOT-89		25	°C/W

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

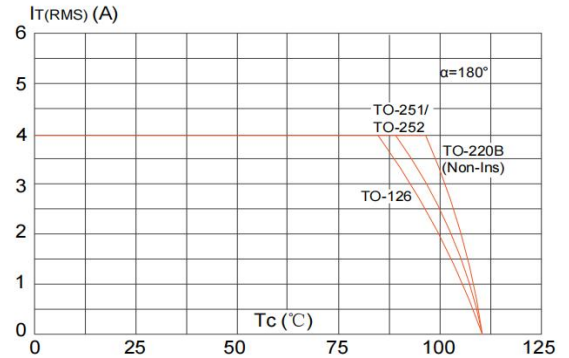
Symbol	Parameter	Test Conditions	Value	Unit
IDRM	Repetitive Peak Off-State Current	T _c =25°C	≤5	uA
		T _c = 110°C	≤100	uA
IRRM	Repetitive Peak Reverse Current	T _c =25°C	≤5	uA
		T _c = 110°C	≤100	uA
VTM	Forward "on" voltage	I _T =8A t _p =380us	≤1.7	V
VGD	Gate nontrigger voltage	V _D =V _{DRM} , T _j =110°C R _{GK} =1K Ω , R _L =3.3K Ω	≥0.2	V
IL	Latching current	I _G =1.2I _{GT}	≤6	mA
IH	Holding current	V _D =12V, I _{GT} =0.1A	≤5	mA
VGT	Gate trigger voltage	V _D =12V	≤0.8	V
IGT	Gate trigger current	V _D =12V, I _T =0.1A	≤120	uA
dv/dt	Critical-rate of rise of commutation voltage	V _D =2/3V _{DRM} , T _j =110°C R _{GK} = 1K Ω	≥10	V/us

TYPICAL CHARACTERISTICS

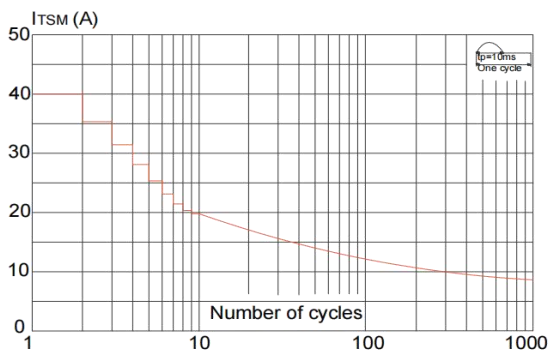
Maximum power dissipation versus RMS on-state current



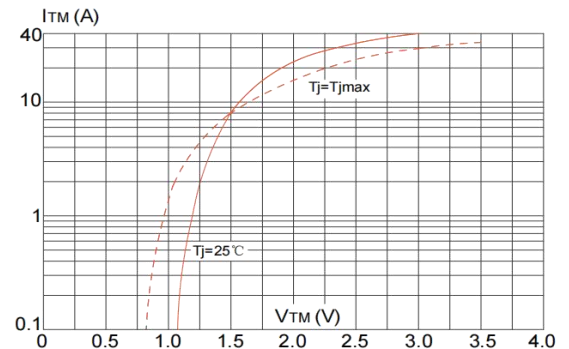
RMS on-state current versus case temperature



Surge peak on-state current versus number of cycles



On-state characteristics (maximum values)



Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I^2t ($di/dt < 100A/\mu s$)

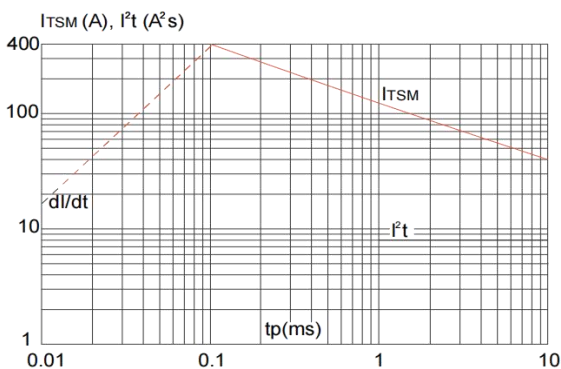
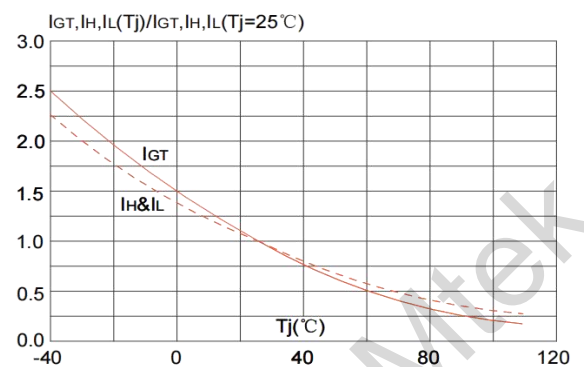


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



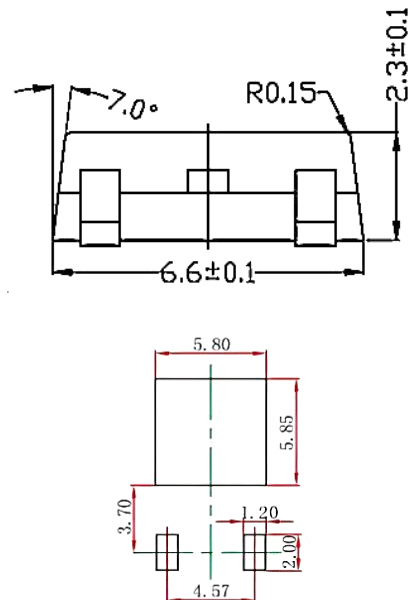
Technical drawing of a mechanical part, showing two views: a front view (left) and a side view (right). The drawing includes various dimensions and tolerances.

Front View (Left):

- Overall height: 10.0 ± 0.2
- Top edge thickness: $1.012^{+0.35}_{-0.1}$
- Top edge radius: $R0.15$
- Top edge angle: 1.0°
- Top edge width: 2.3 ± 0.1
- Top edge thickness: 0.5
- Bottom edge thickness: 2.9 ± 0.15
- Bottom edge radius: $R0.15$
- Bottom edge angle: $0 \sim 8^\circ$
- Bottom edge width: $0.5^{+0.1}_0$
- Bottom edge thickness: 0.1 ± 0.1
- Bottom edge radius: $R1.438$
- Bottom edge angle: $0 \sim 8^\circ$
- Bottom edge width: 1.46

Side View (Right):

- Overall width: 6.10 ± 0.05
- Top edge thickness: $5.33^{+0.2}_0$
- Top edge angle: 20°
- Top edge radius: $R1.438$
- Top edge width: 0.27 ± 0.2
- Top edge thickness: 0.1 ± 0.05
- Top edge radius: $R1.438$
- Top edge angle: $0 \sim 8^\circ$
- Top edge width: 0.1 ± 0.05
- Top edge thickness: 0.8 ± 0.2
- Top edge radius: $R1.438$
- Top edge angle: $0 \sim 8^\circ$
- Top edge width: 0.840 ± 0.1
- Top edge thickness: $0.760^{+0.01}_{-0.02}$
- Top edge radius: $R1.438$
- Top edge angle: $0 \sim 8^\circ$
- Top edge width: 2.286



The diagram illustrates the packaging flow for 2500PC S/reel components. It starts with a single component, a small black square with four silver leads. An arrow points to a reel of these components, showing a continuous strip of the same parts. Another arrow points to a blue protective bag, labeled '2 Reel/BOX', which contains the reels. A final arrow points to a brown cardboard box, labeled '5 Inner Box', which is the outer packaging. The box has standard shipping labels and a warning: 'CAUTION: Electrostatic Sensitive Device Use Proper ESD Handling Procedures' with three ESD symbols.

2500PC
S/reel

2 Reel/BOX

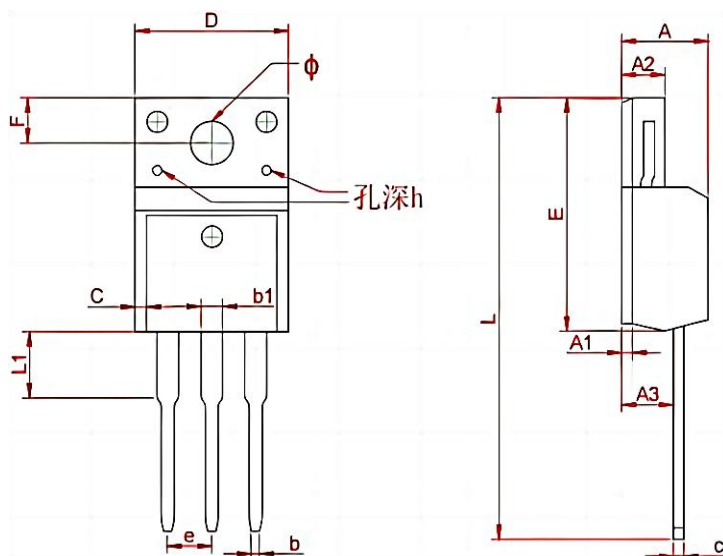
5 Inner
Box

Outer box

Inner box

Package version	Reel dimensions $\Phi \times H$ (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions $L \times W \times H$ (mm)	Outer box (pcs)	Outer box dimensions $L \times W \times H$ (mm)
T0-252	$\Phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280

TO-220F PACKAGE OUTLINE DIMENSIONS

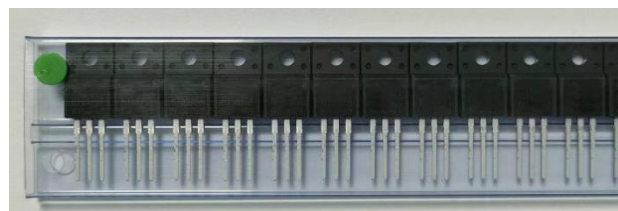


Symbol	Dimensions In Millimeters	
	Min	Max
A	4.300	4.750
A1	0.7 REF	
A2	2.300	2.850
A3	2.500	2.900
b	0.380	0.420
b1	1.220	1.280
C	1.08	1.200
c	0.480	0.520
D	10.15	10.450
E	15.700	15.950
e	2.574 TYP	
F	3.470 REF	
y	3.200 REF	
h	0.000	0.800
L	28.780	28.900
L1	2.990	3.100

TO - 220F PACKING INFORMATION



50PCS



20 Tube



5 Inner
Box

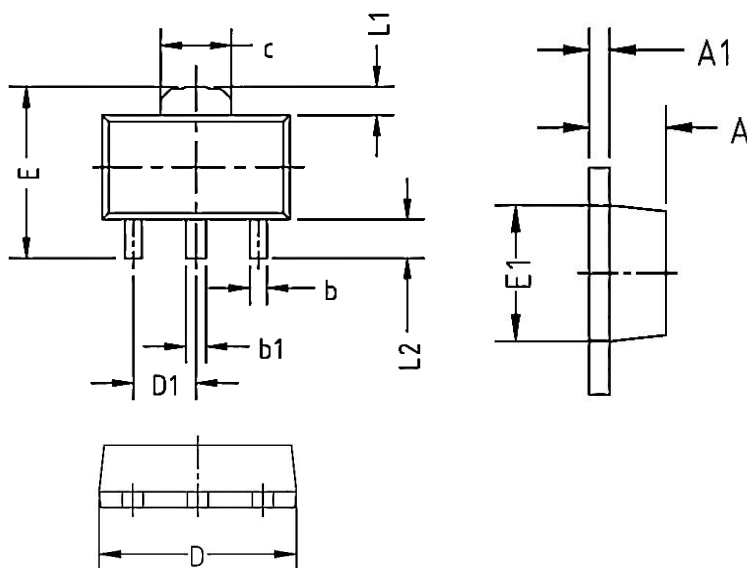


Outer Box

Inner Box

Package version	Tube dimensions LxW×H (mm)	Per Tube (pcs)	Tube per box	Inner box dimensions LxW×H (mm)	PCS/ Inner box	Outer box dimensions L×W×H(mm)	PCS/ Outer box
TO-220F	530*32*7	50	20	580*155*50	1000	602*277*188	5000

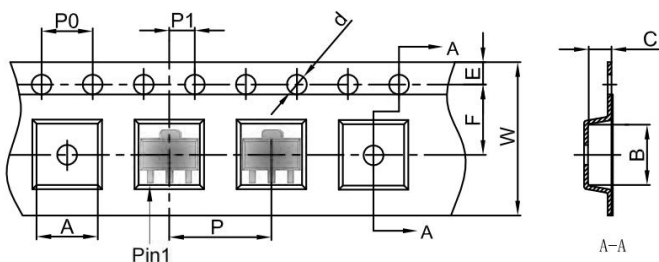
SOT-89 PACKAGE OUTLINE DIMENSIONS



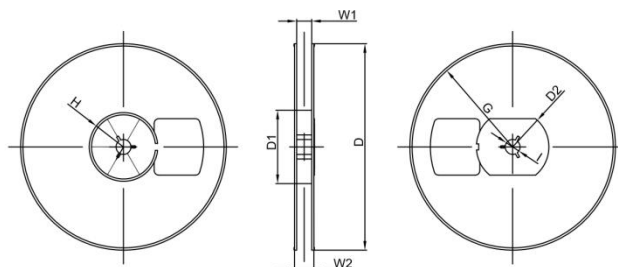
COMMON DIMENSION(MM)			
PKG	SOT-89		
Symbol	MIN	MON	MAX
A	1.450	1.500	1.550
A1	0.350	0.400	0.450
b	0.350	0.400	0.48
b1	0.430	0.480	0.550
C	1.500	1.550	1.650
D	4.450	4.550	4.700
D1	1.470	1.500	1.550
E	4.100	4.200	4.300
E1	2.500	2.550	2.650
L1	0.650	0.700	0.750
L2	0.900	0.950	1.000

SOT-89 PACKAGING INFORMATION

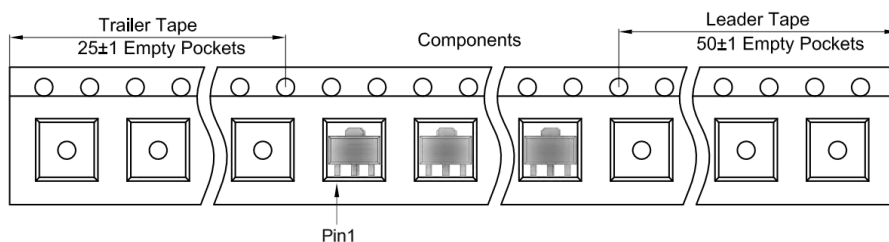
SOT-89 Embossed Carrier Tape



SOT-89 Reel



SOT-89 Tape Leader and Trailer



REEL	Reel Size
1000 pcs	7 inch

Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-89-3L	4.85	4.45	1.85	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø180.00	60.00	R32.00	R86.50	R30.00	Ø13.00	13.20	16.50

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