



X0405 SCRs

● **Product features**

Silicon unilateral device NPNP four
Layer structure,
The gate sensitive trigger,
P⁺ on the through diffusion isolation,
Single mesa structure (Single Mesa),
Table glass passivation process
The applicable model: X0405

● **The main purposes**

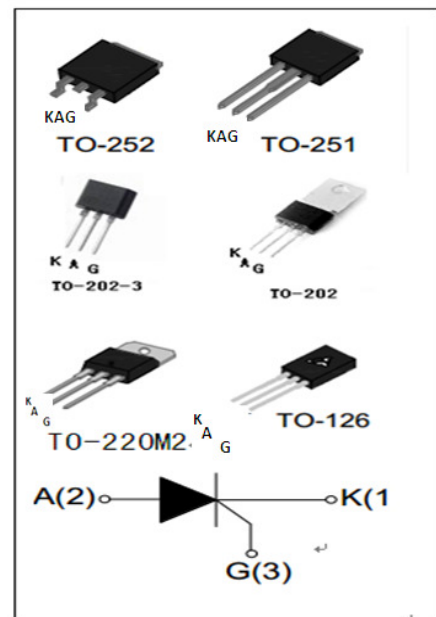
Ignition device of motorcycle
Hair curler
Igniter for gasoline engine
And other The control circuit

● **Package**

TO-251/TO-252/TO-126/TO-220M2/TO-202
TO-202-3

● **Main Feature (T_j=25℃)**

Symbol	Value	Unit
$I_{T(AV)}$	2.5	A
V_{DRM} / V_{RRM}	600	V
I_{GT}	10to200	μA

● **Absolute ratings (Limiting Values)**

Symbol	Parameter	Value	Unit
$I_T(RMS)$	RMS on-state current (180° conduction angle)	4	A
$I_{T(AV)}$	AV on-state current (180° conduction angle)	2.5	A
I_{TSM}	Non repetitive surge peak on-state Current (tp=10ms)	45	A
I_{GM}	Peak gate current(tp=20us)	1.2	A
P_{GM}	Peak gate power	0.5	W
$P_{G(AV)}$	Average gate power	0.2	W
Tstg	Storage temperature	-40--+150	℃
T _j	Operating junction temperature	-40--+110	℃



●Thermai Resistances

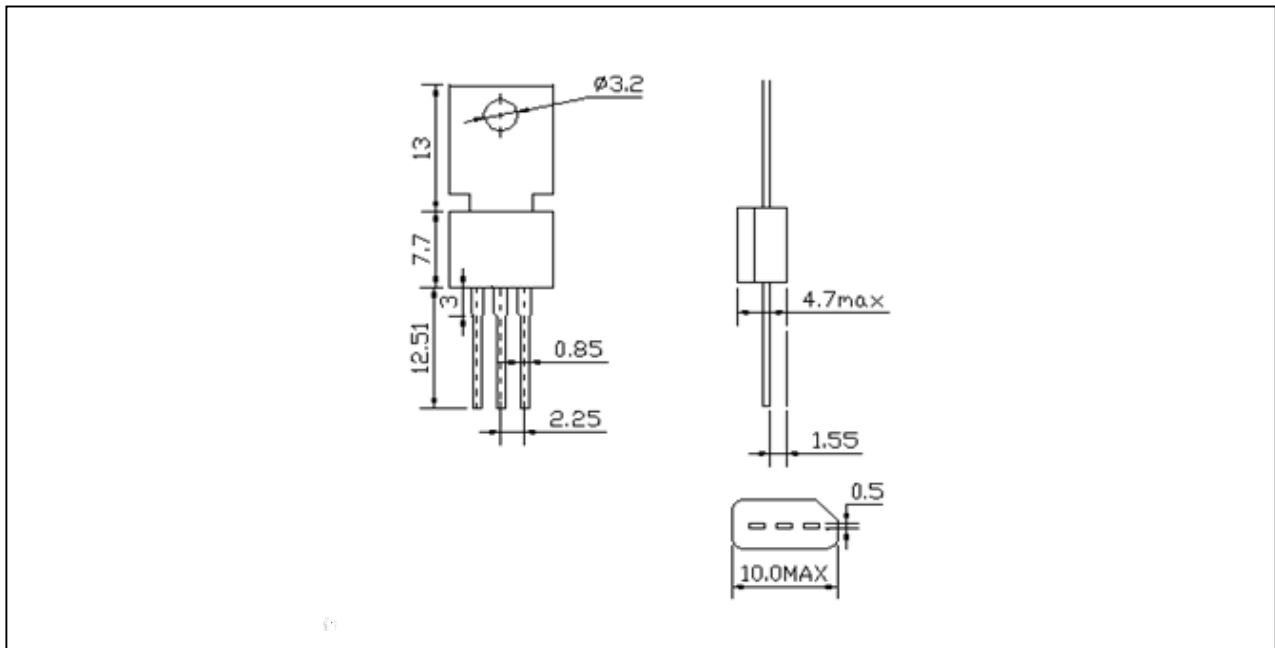
Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	TO-202/TO202-3	5	°C/W
		TO-126	7.2	°C/W
		TO-22M2	3.0	°C/W
		TO-251/TO252	6.5	°C/W

●Electrical characteristics (T_j=25°C unless otherwise stated)

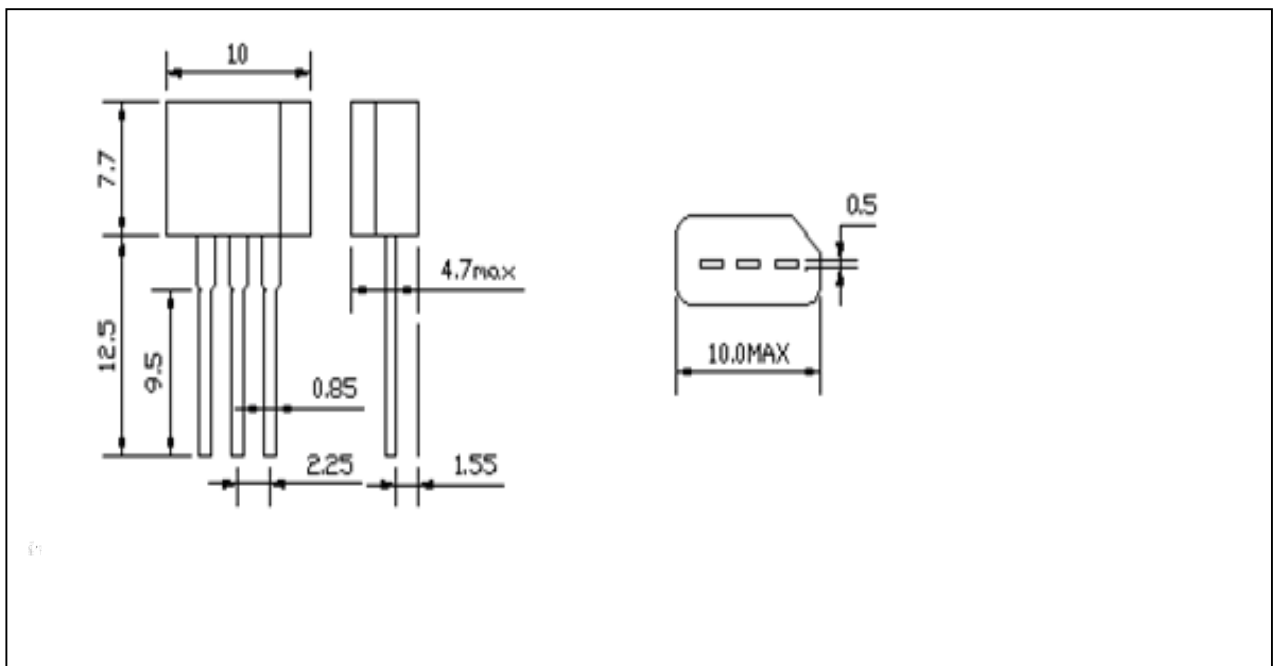
Symbol	Test Conditions		Value			Unit
			Min	Type	Max	
I _{GT}	V _D =6V, R _L =100 Ω, R _{GK} =1K Ω		10	45	150	uA
V _{GT}	V _D =12V, R _L =100 Ω, R _{GK} =1K Ω		-----	0.7	0.8	V
V _{GD}	V _D =V _{DRM} , R _L =3.3K Ω, R _{GK} =1K Ω, T _j =110°C		0.2	-----	-----	V
I _H	V _D =24V, R _{GK} =1K Ω, ITM=4A Gate Open		-----	3	5	mA
I _L	I _G =1.2I _{GT}		-----	-----	6	mA
dV/dt	V _D =67%V _{DRM} , GateOpen, T _j =110°C		10	15	-----	v/ μ s
V _{TM}	I _T =8A, tp=380 μ s		-----	-----	1.8	V
dI/dt	I _G =2I _{GT}		50	-----	-----	A/ μ s
I ² T	Tp=10ms		-----	-----	4.5	A ² S
I _{DRM}	V _D =V _{DRM}	T _j =25°C	-----	-----	10	μA
		T _j =110°C	-----	-----	200	μA
I _{RRM}	V _R =V _{RRM}	T _j =25°C	-----	-----	10	μA
		T _j =110°C	-----	-----	200	μA



● Measure of package
(TO-202)

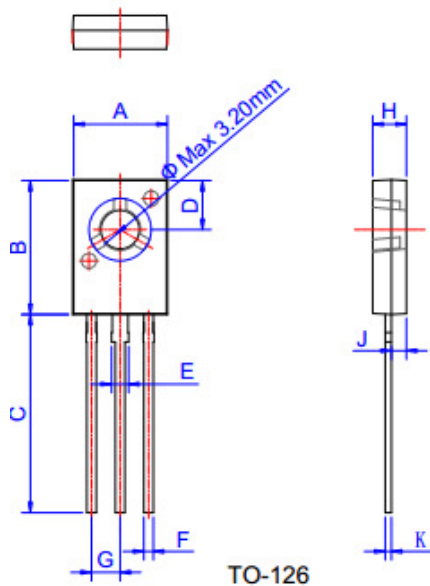


(TO-202-3)



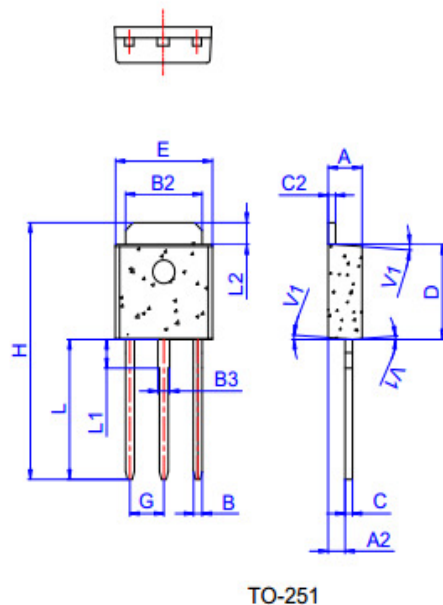


(TO-126)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.40		7.80	0.291		0.307
B	10.6		11.2	0.417		0.441
C	15.3		16.3	0.602		0.642
D	3.90		4.10	0.154		0.161
E	1.17		1.47	0.046		0.058
F	0.66		0.86	0.026		0.034
G		2.29			0.090	
H	2.50		2.90	0.098		0.114
J	1.10		1.50	0.043		0.059
K	0.45		0.60	0.018		0.024

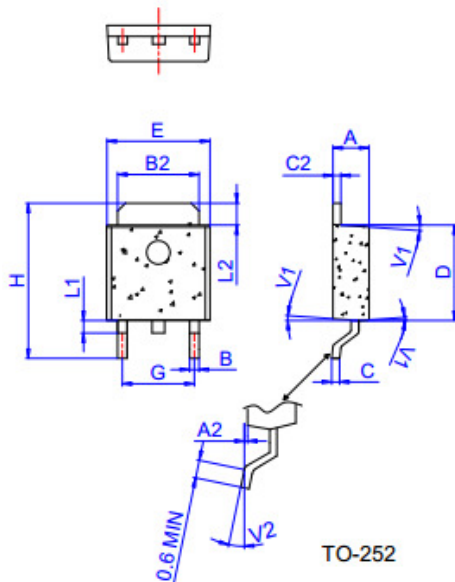
(TO-251)



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	



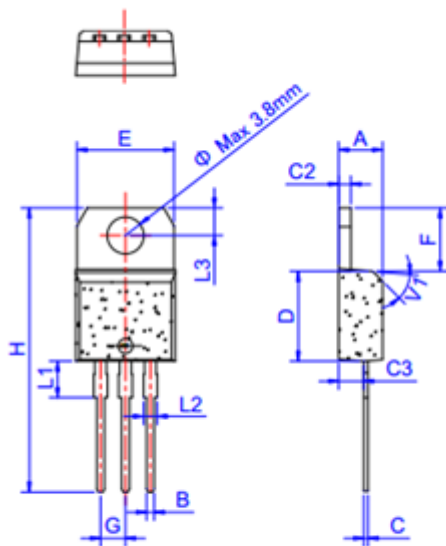
(TO-252)



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°

(TO-220M2)



TO-220M2

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	



FIG.1 Maximum power dissipation versus RMS on-state current

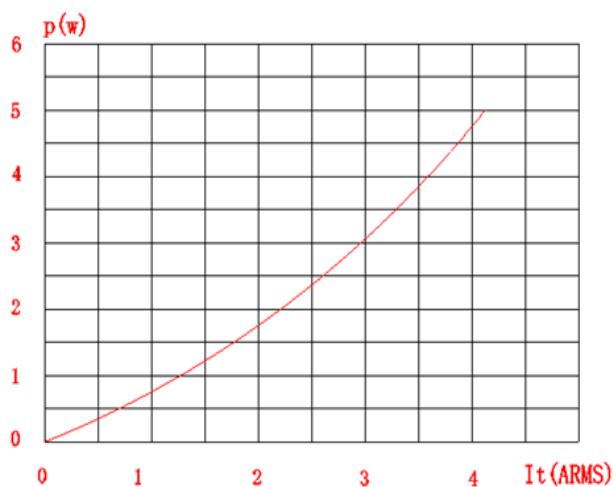


FIG.3: Surge peak on-state current versus number of cycles

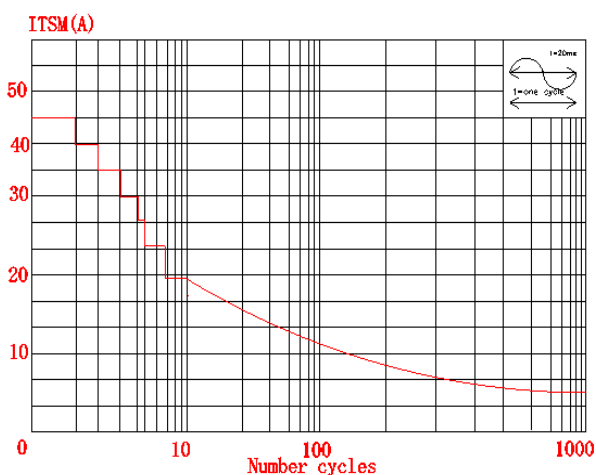
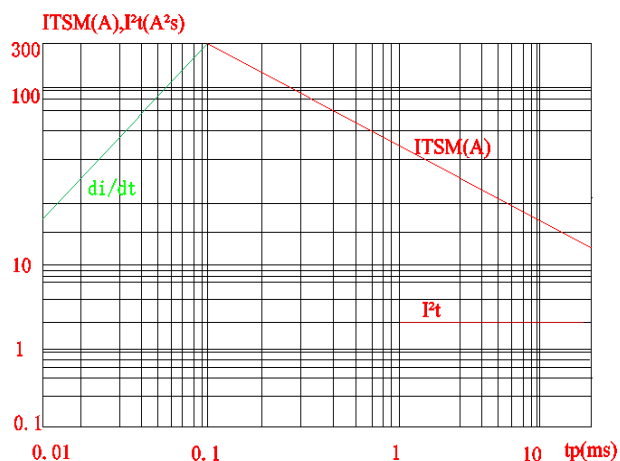
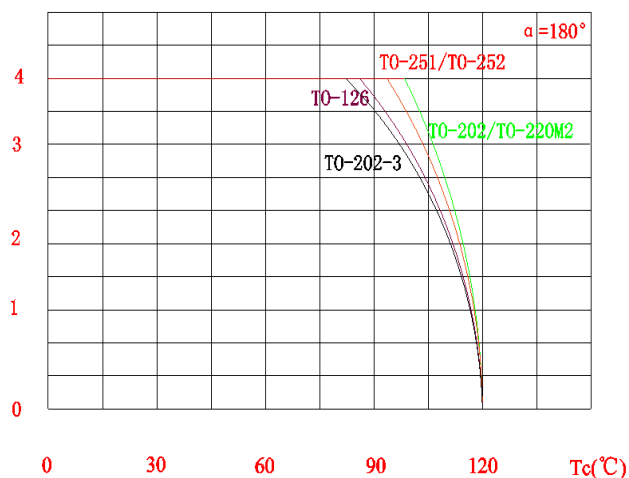
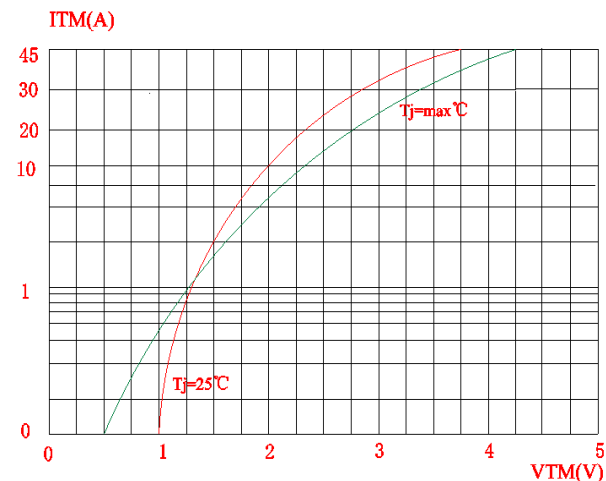
FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $I^2 t$ FIG.2: RMS on-state current versus case temperature
 $I_T(\text{RMS}) \text{ A}$ FIG.4: On-state characteristics (maximum values)
 $I_{TM}(\text{A})$ 

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

