

DESCRIPTION:

The 2P4M SCR series with the parallel resistor between Gate and Cathode are especially recommended for use on straight hair, igniter, anion generator, etc.



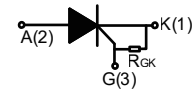
TO-252



SOT-89



SOT-223



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	2	A
I_{GT}	≤ 200	μA
V_{TM}	≤ 1.5	V

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40-150	$^{\circ}C$
Operating junction temperature range		T_j	-40-125 ^①	$^{\circ}C$
Repetitive peak off-state voltage		V_{DRM}	600	V
Repetitive peak reverse voltage		V_{RRM}	600	V
RMS on-state current	TO-252 ($T_C=72^{\circ}C$)	$I_{T(RMS)}$	2	A
	SOT-223/ SOT-89-2L($T_C=65^{\circ}C$)			
Non repetitive surge peak on-state current (tp=10ms)		I_{TSM}	20	A
I^2t value for fusing (tp=10ms)		I^2t	2	A^2s
Critical rate of rise of on-state current		di/dt	50	$A/\mu s$
Peak gate current (tp=20 μs , $T_j=125^{\circ}C$)		I_{GM}	0.2	A
Peak gate power (tp=20 μs , $T_j=125^{\circ}C$)		P_{GM}	0.5	W
Average gate power dissipation($T_j=125^{\circ}C$)		$P_{G(AV)}$	0.1	W

NOTE 1: When we parallel connect a $\leq 1K\Omega$ resistor between Gate and Cathode, the T_j can reach $125^{\circ}C$; if without this resistor, the T_j only can reach $110^{\circ}C$.

ELECTRICAL CHARACTERISTICS ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	$V_D=12\text{V } R_L=33\Omega$	-	40	200	μA
V_{GT}		-	0.5	0.8	V
V_{GD}	$V_D=V_{DRM} T_j=125^{\circ}\text{C}$	0.2	-	-	V
I_L	$I_G=1.2 I_{GT}$	-	-	3	mA
I_H	$I_T=0.05\text{A}$	-	-	2	mA
dV/dt	$V_D=60\%V_{DRM} T_j=125^{\circ}\text{C } R_{GK}=1\text{K}\Omega$	10	-	-	V/ μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=4\text{A } t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
I_{DRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	100	μA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case	TO-252 6.5		$^{\circ}\text{C/W}$
		SOT-223	20	
		SOT-89-2L	25	
$R_{th(j-a)}$	junction to ambient	TO-252 70		
		SOT-223	60	
		SOT-89-2L	90	

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

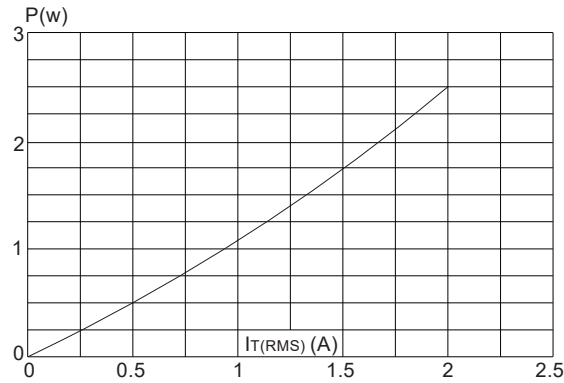


FIG.3: Surge peak on-state current versus number of cycles

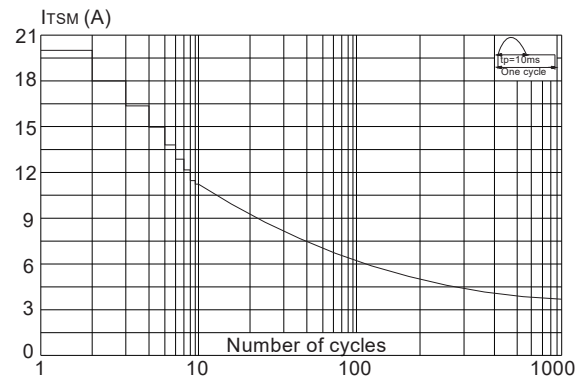


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

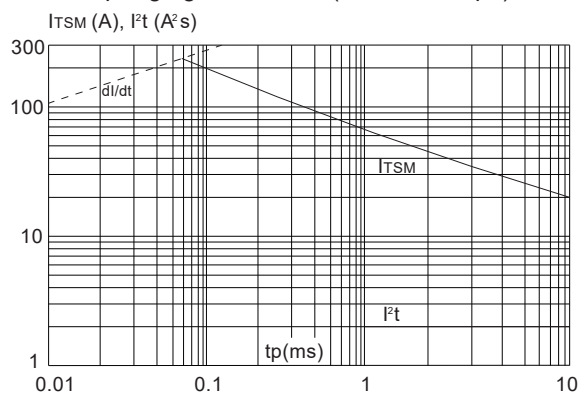


FIG.2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: $35\mu\text{m}$) (full cycle)

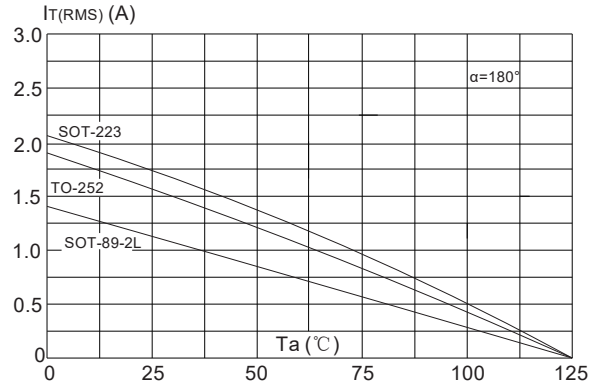


FIG.4: On-state characteristics (maximum values)

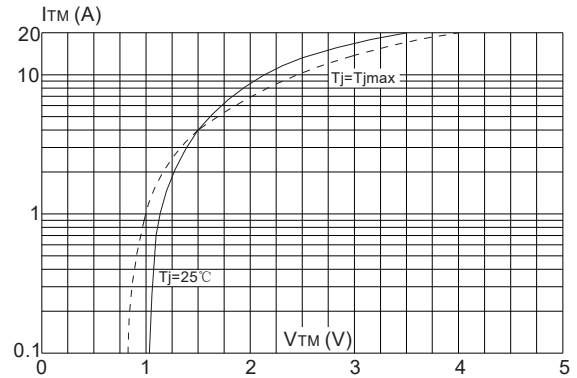
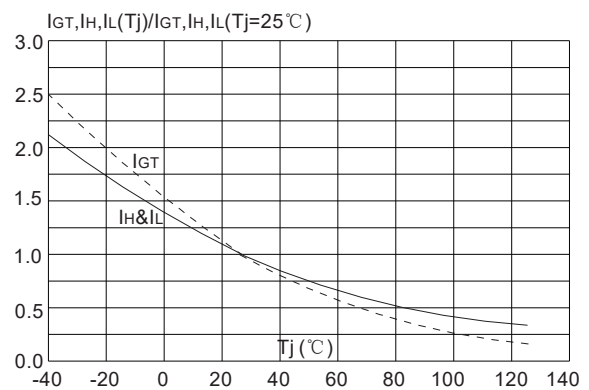


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquidus)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

