

DESCRIPTION:

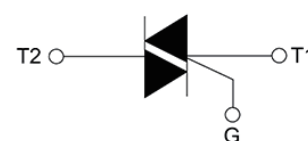
The chip triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers.



SOT-89-2

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	1	A
V_{DRM}/V_{RRM}	800	V
$I_{GT\ I/II/III/IV}$	5/5/5/10	mA



ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T _{stg}	-40-150	℃
Operating junction temperature range		T _j	-40-125	℃
Repetitive peak off-state voltage (T _j =25℃)		V _{DRM}	800	V
Repetitive peak reverse voltage (T _j =25℃)		V _{RRM}	800	V
RMS on-state current (T _c ≤43℃)		I _{T(RMS)}	1	A
Non repetitive surge peak on-state current (full cycle , t _p =20ms , T _j =25℃)		I _{TSM}	9	A
Non repetitive surge peak on-state current (full cycle , t _p =16.6ms , T _j =25℃)			10	
I ² t value for fusing (t _p =10ms , T _j =25℃)		I ² t	0.41	A ² s
Critical rate of rise of on-state current (I _G =2×I _{GT} , f=100Hz , T _j =125℃)	I - II	di/dt	50	A/μs
	III-IV		30	
Peak gate current (t _p =20μs , T _j =125℃)		I _{GM}	1	A
Average gate power dissipation (T _j =125℃)		P _{G(AV)}	0.1	W
Peak gate power		P _{GM}	5	W
Peak pulse voltage (T _j =25℃; non-repetitive,off-state;FIG)		V _{pp}	2.5	kV

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

Symbol	Test Condition	Quadrant	Value		Unit
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	I - II - III	MAX.	5	mA
		IV		10	
V_{GT}		ALL	MAX.	1.3	V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$	ALL	MIN.	0.2	V
I_L	$I_G=1.2I_{GT}$	I - III - IV	MAX.	10	mA
		II		20	
I_H	$I_T=50\text{mA}$		MAX.	7	mA
dV/dt	$V_D=540\text{V}$ Gate Open $T_j=110^{\circ}\text{C}$		MIN.	50	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	$(dI/dt)_c=0.3\text{A/ms}$, $T_j=110^{\circ}\text{C}$		MIN.	5	$\text{V}/\mu\text{s}$
t_{on}	$I_G=20\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$		TYP.	2.5	μs
t_{off}	$T_j=25^{\circ}\text{C}$			25	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=1\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	1.01	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	316	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	0.25	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	55	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (AC, in free air, $S=5\text{cm}^2$)	100	$^{\circ}\text{C}/\text{W}$

FIG : Maximum power dissipation versus RMS on-state current

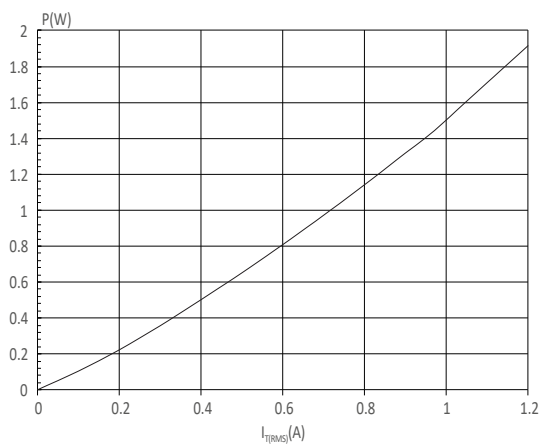


FIG : RMS on-state current versus case temperature

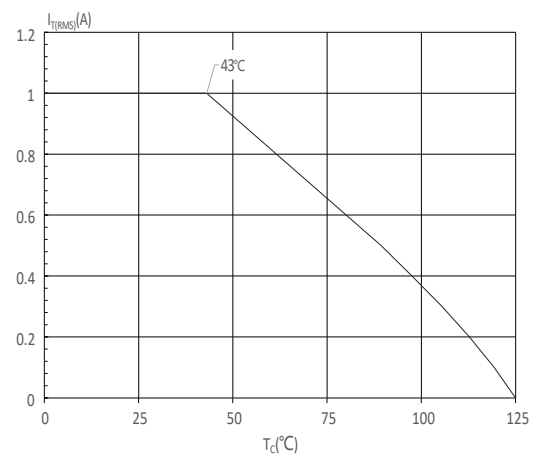


FIG : RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35 μ m) (full cycle)

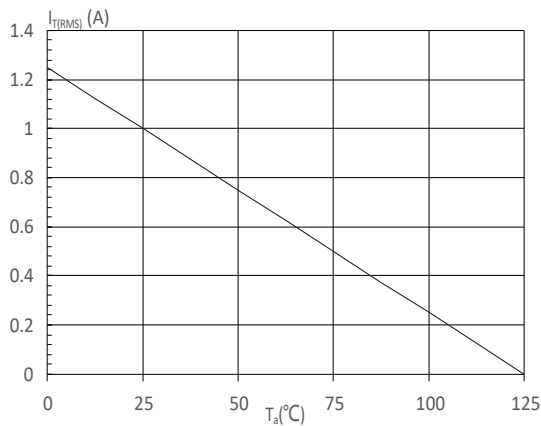


FIG : On-state characteristics

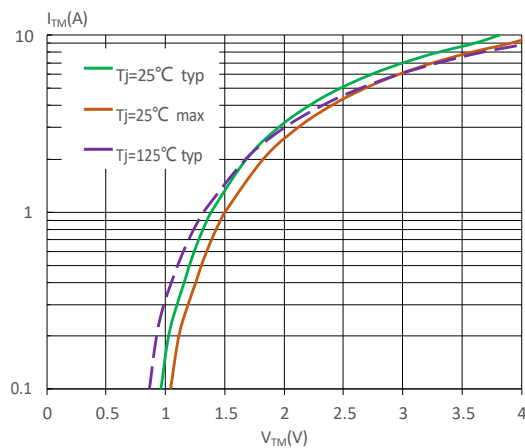


FIG : Relative variations of gate trigger current, holding current and latching current versus junction temperature

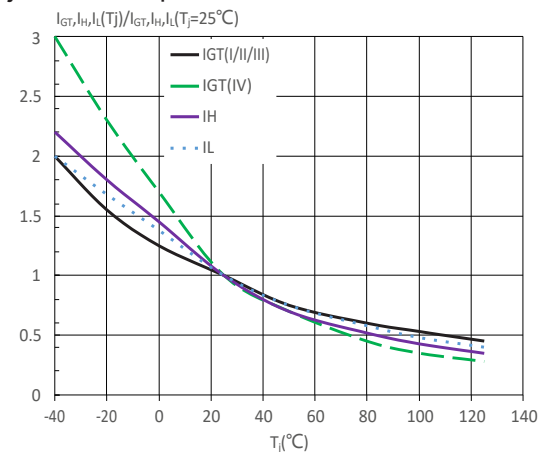


FIG : Surge peak on-state current versus number of cycles

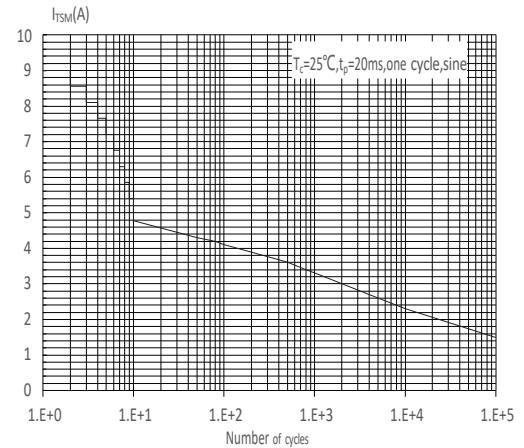


FIG : Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t (I - II : $di/dt < 50\text{A}/\mu\text{s}$; III-IV : $di/dt < 30\text{A}/\mu\text{s}$)

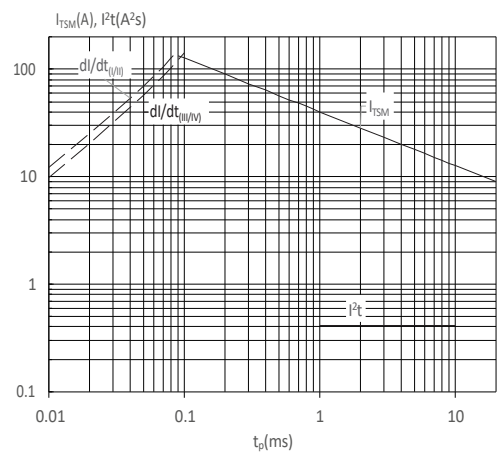
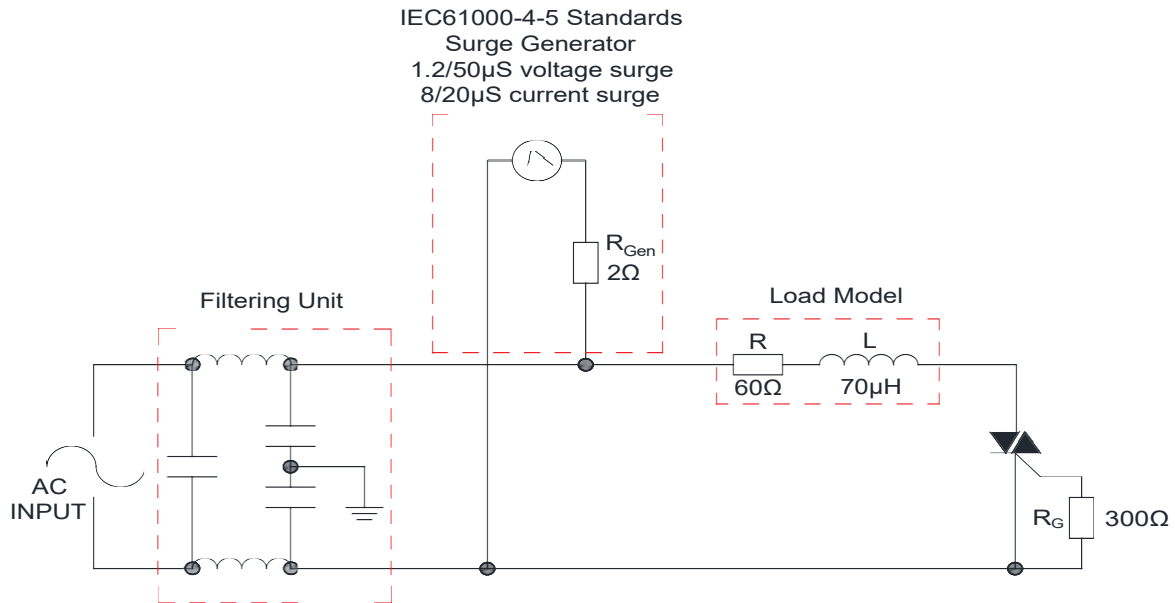


FIG : Test circuit for inductive and resistive loads to IEC-61000-4-5 standards


SOLDERING PARAMETERS

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

