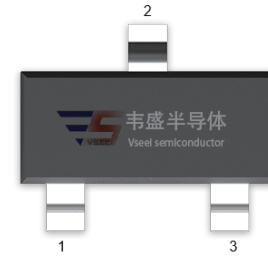


DESCRIPTION:

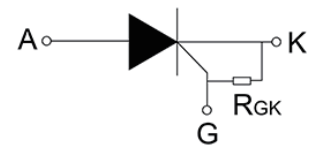
The chip triac is suitable for general purpose AC switching. It is more suitable for the switch functions of washing machines' water valve, positive inversion of motor, heat pump...The chip embeds a TVS structure to absorb the inductive turn-off energy such as those described in the IEC 61000-4-5 standards. By



SOT-23-3

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	0.5	A
V_{DRM}/V_{RRM}	600	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}	600	V
Repetitive peak reverse voltage (T _j =25℃)		V _{RRM}	600	V
RMS on-state current (T _c ≤74℃)		I _{T(RMS)}	0.5	A
Non repetitive surge peak on-state current (full cycle , t _p =20ms , T _j =25℃)		I _{TSM}	6	A
Non repetitive surge peak on-state current (full cycle , t _p =16.6ms , T _j =25℃)			6.6	
I ² t value for fusing (t _p =10ms , T _j =25℃)		I ² t	0.18	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		20	
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}	1.5	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.	10	mA
dV/dt	$V_D=400\text{V}$ Gate Open $T_j=110^{\circ}\text{C}$		MIN.	60	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	$(dI/dt)_c=0.3\text{A/ms}$, $T_j=110^{\circ}\text{C}$		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}	$I_{TM}=0.85\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.5	V
V_{TO}	Threshold voltage	$T_j=125^{\circ}\text{C}$	0.98	V
R_D	Dynamic resistance	$T_j=125^{\circ}\text{C}$	362	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_j=125^{\circ}\text{C}$	0.15	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	75	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (AC, in free air, $S=5\text{cm}^2$)	120	$^{\circ}\text{C}/\text{W}$

FIG : Maximum power dissipation versus RMS on-state current

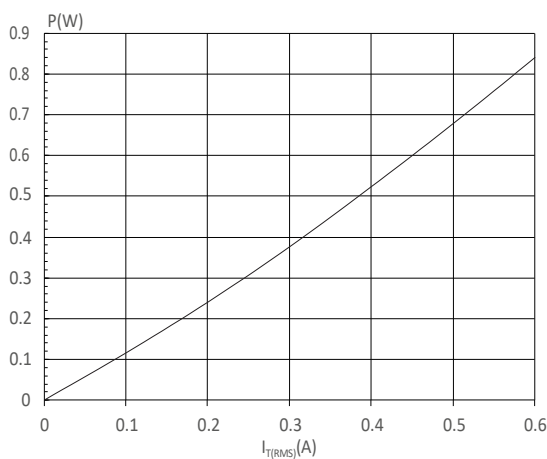


FIG : RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35 μ m) (full cycle)

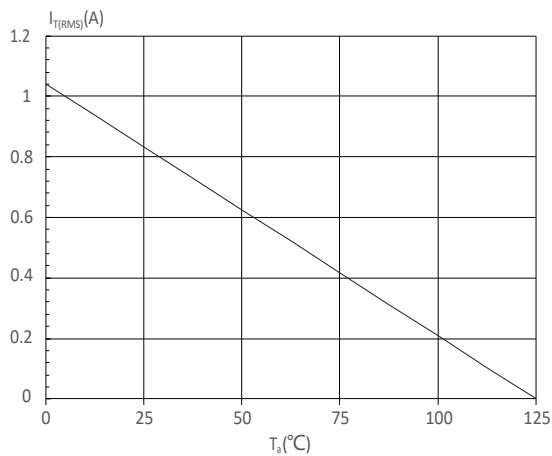


FIG : RMS on-state current versus case temperature

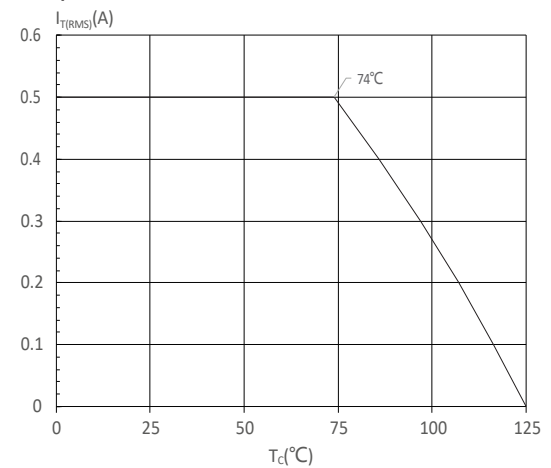


FIG : Surge peak on-state current versus number of cycles

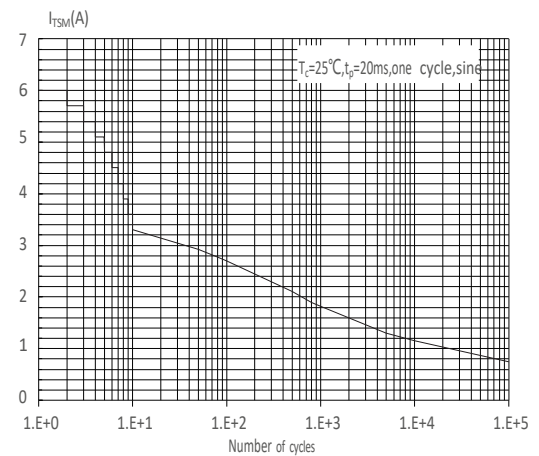


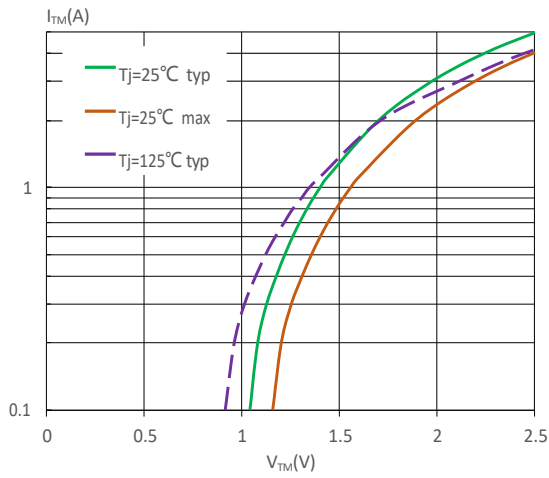
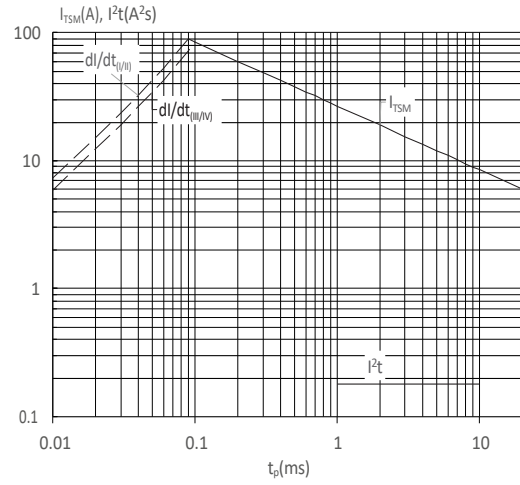
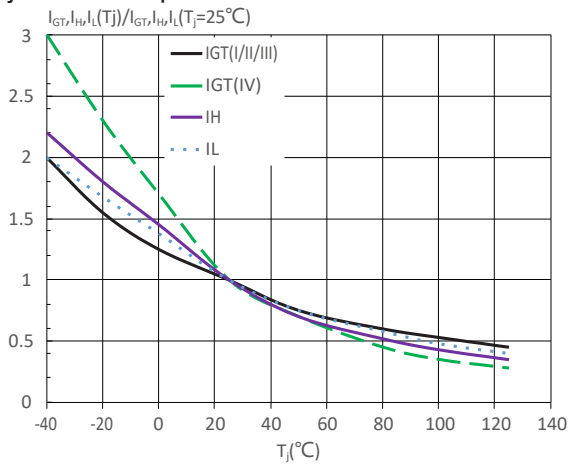
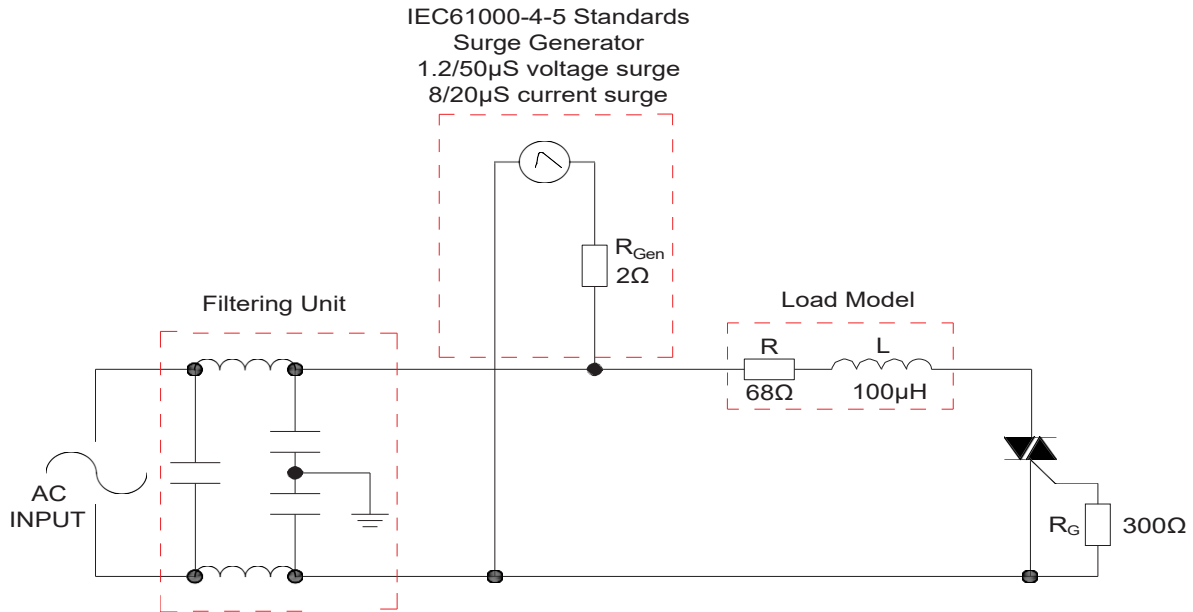
FIG : On-state characteristics

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

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


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°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	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

