

DESCRIPTION:

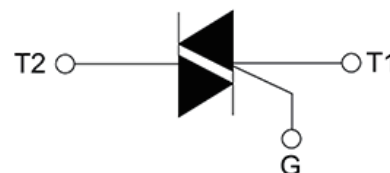
The chip triac is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers. The chip embeds a TVS structure to absorb the inductive turn-off energy such as those described in the IEC 61000-4-5 standards. At the same time, the triac shields the positive signal trigger to reduce the probability of product misoperation. It is triggered with a negative gate current flowing out of the gate pin.



TO-3P

MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	40	A
V_{DRM}/V_{RRM}	600	V
$I_{GT\ I/II/III}$	50/50/50	mA



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	°C
Operating junction temperature range	T_j	-40-150	°C
Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)	V_{RRM}	600	V
RMS on-state current ($T_c \leq 114^\circ\text{C}$)	$I_{T(RMS)}$	40	A
Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$, $T_j=25^\circ\text{C}$)	I_{TSM}	420	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$, $T_j=25^\circ\text{C}$)		462	
I^2t value for fusing ($t_p=10\text{ms}$, $T_j=25^\circ\text{C}$)	I^2t	1000	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$, $f=100\text{Hz}$, $T_j=150^\circ\text{C}$)	di/dt	100	$\text{A}/\mu\text{s}$
Peak gate current ($t_p=20\mu\text{s}$, $T_j=150^\circ\text{C}$)	I_{GM}	10	A

Average gate power dissipation ($T_j=150^{\circ}\text{C}$)	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	40	W
Peak pulse voltage ($T_j=25^{\circ}\text{C}$; non-repetitive, off-state; FIG)	V_{pp}	2	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.	50	mA
V_{GT}		I - II -III	MAX.	1.3	V
V_{GD}	$V_D=V_{DRM} T_j=150^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$	I - II -III	MIN.	0.2	V
I_L	$I_G=1.2I_{GT}$	I -III	MAX.	80	mA
		II		150	
I_H	$I_T=1\text{A}$		MAX.	80	mA
dV/dt	$V_D=400\text{V}$ Gate Open $T_j=150^{\circ}\text{C}$		MIN.	1800	V/ μs
$(dI/dt)_c$	$(dV/dt)_c=20\text{V}/\mu\text{s}$, $T_j=150^{\circ}\text{C}$		MIN.	30	A/ms
t_{on}	$I_G=80\text{mA } I_A=400\text{mA } I_R=40\text{mA}$ $T_j=25^{\circ}\text{C}$		TYP.	5	μs
t_{off}				50	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=60\text{A } t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	1.4	V
V_{TO}	Threshold voltage	$T_j=150^{\circ}\text{C}$	0.72	V
R_D	Dynamic resistance	$T_j=150^{\circ}\text{C}$	10	m Ω
I_{DRM}	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^{\circ}\text{C}$	10	μA
I_{RRM}		$T_j=150^{\circ}\text{C}$	12	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	0.7	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (AC)	50	$^{\circ}\text{C}/\text{W}$

FIG : Maximum power dissipation versus RMS on-state current

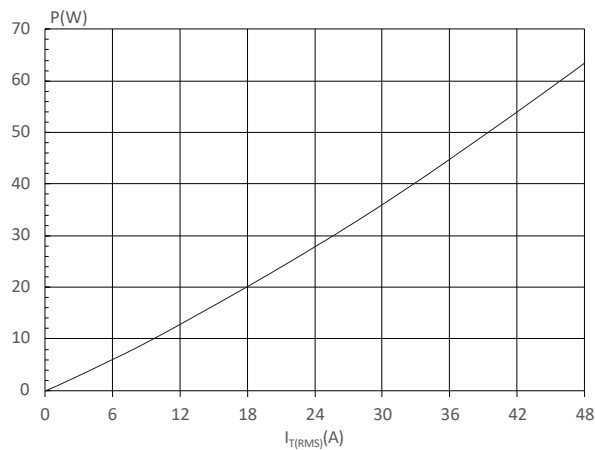


FIG : Surge peak on-state current versus number of cycles

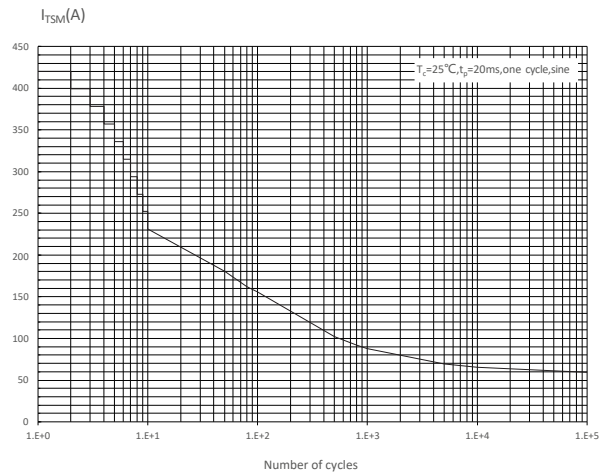


FIG : Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I^2t ($di/dt < 100A/\mu s$)

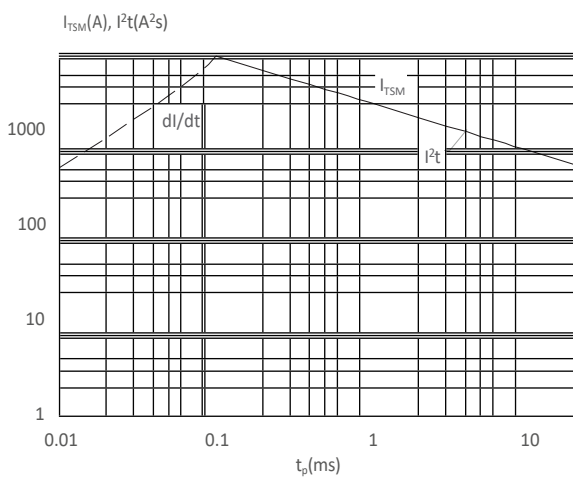


FIG : RMS on-state current versus case temperature

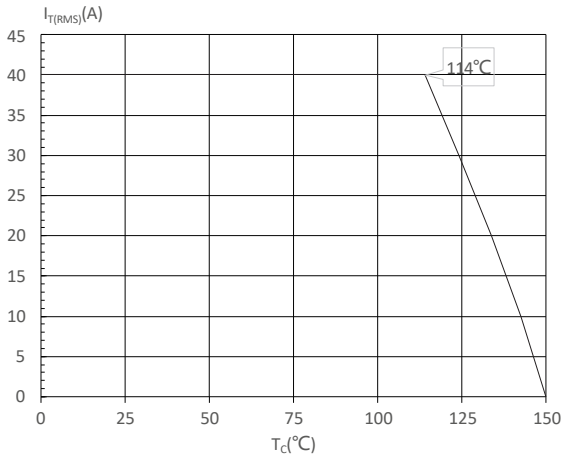


FIG : On-state characteristics

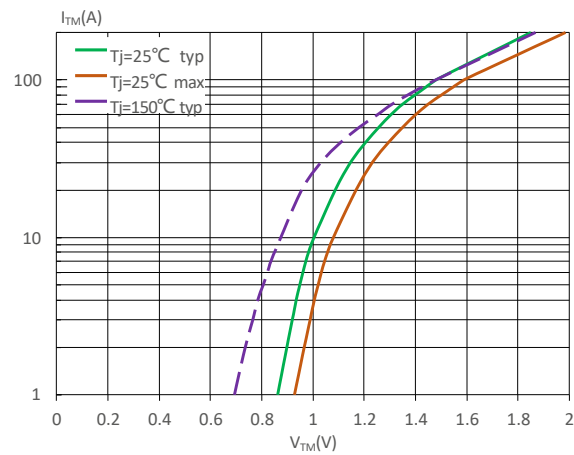


FIG : Relative variations of gate trigger current, holding current and latching current versus junction temperature

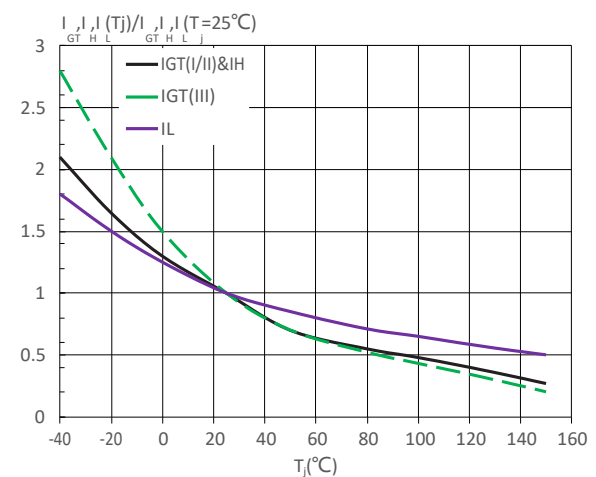
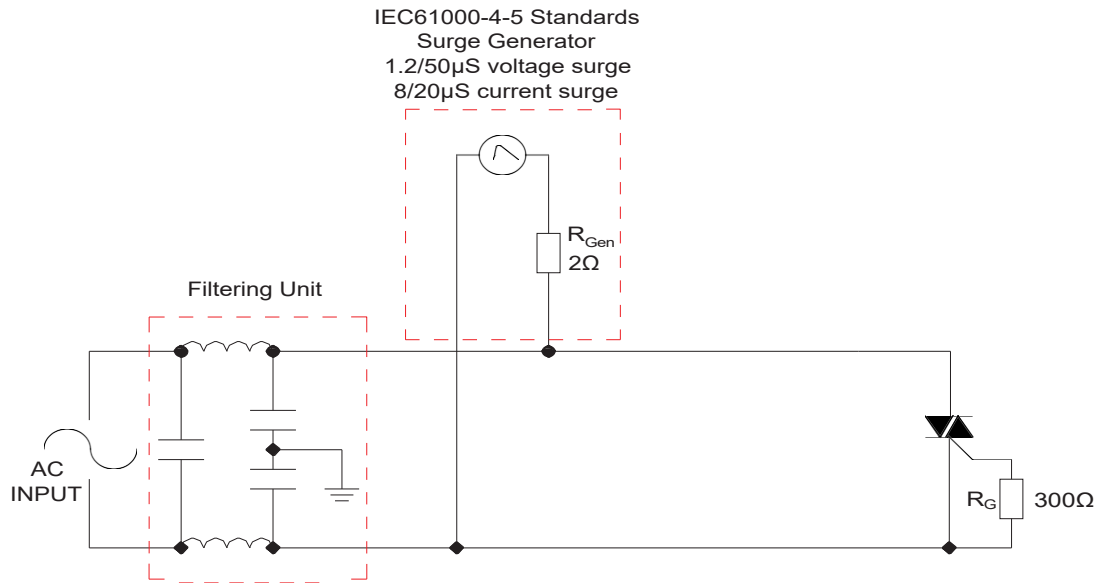


FIG : Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package” released by JieJie Microelectronics