

MAC97A8 1A TRIAC

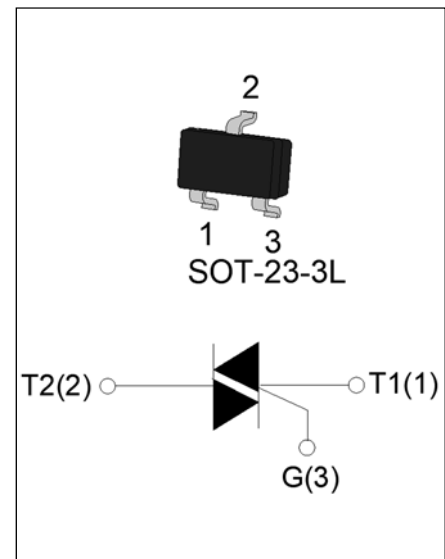
Rev.A.2.0

DESCRIPTION

The MAC97A8 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. Package SOT-23-3L is RoHS compliant.

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 ≤58℃)		I _{T(RMS)}	1	A
Non repetitive surge peak on-state current (t _p =20ms, T _j =25℃)		I _{TSM}	16.5	A
Non repetitive surge peak on-state current (t _p =16.6ms, T _j =25℃)			18	A
I ² t value for fusing (t _p =10ms, T _j =25℃)		I ² t	1.36	A ² s
Critical rate of rise of on-state current (I _G =2×I _{GT} , f=100Hz, T _j =125℃)	I - II -III	di/dt	50	A/μs
	IV		30	
Peak gate current (t _p =20μs, T _j =125℃)		I _{GM}	2	A
Average gate power dissipation (T _j =125℃)		P _{G(AV)}	0.5	W
Peak gate power		P _{GM}	5	W
Peak pulse voltage (T _j =25℃, non-repetitive, off-state)		V _{PP}	3.5	kV

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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.	5	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.	100	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	$(dI/dt)_c=0.44\text{A/ms}$, $T_J=110^{\circ}\text{C}$		MIN.	3	$\text{V}/\mu\text{s}$
t_{on}	$I_G=20\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$ $T_J=25^{\circ}\text{C}$		TYP.	2.5	μs
t_{off}				25	

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=1.4\text{A}$ $t_p=380\mu\text{s}$	$T_J=25^{\circ}\text{C}$	1.45	V
V_{TO}	Threshold voltage	$T_J=125^{\circ}\text{C}$	0.96	V
R_D	Dynamic resistance	$T_J=125^{\circ}\text{C}$	225	$\text{m}\Omega$
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 (DC)	50	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (DC)	100	$^{\circ}\text{C}/\text{W}$

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

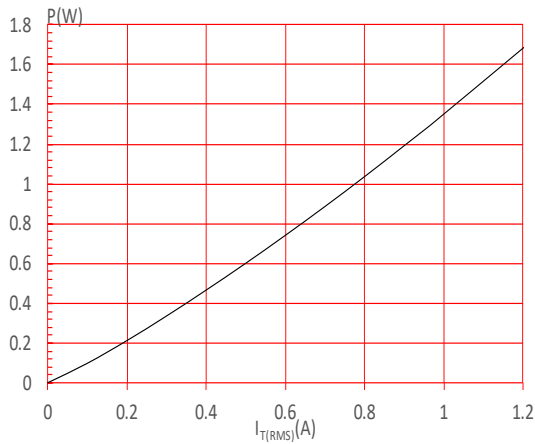


FIG.3: Surge peak on-state current versus number of cycles

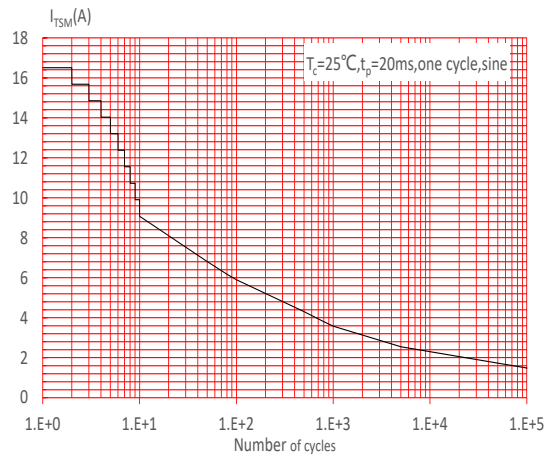


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I_{2t} (I - II - III : $dl/dt < 50A/\mu s$; IV : $dl/dt < 30A/\mu s$)

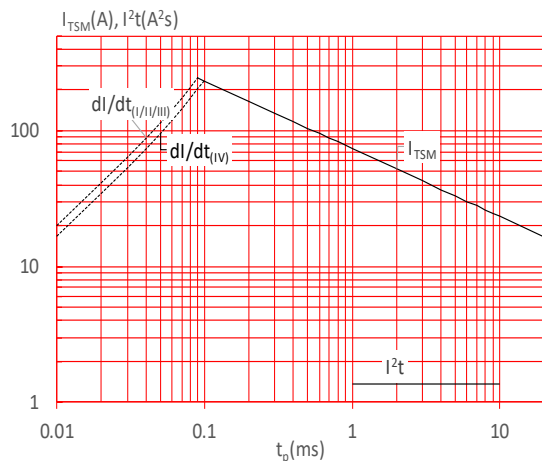


FIG.2: RMS on-state current versus case temperature

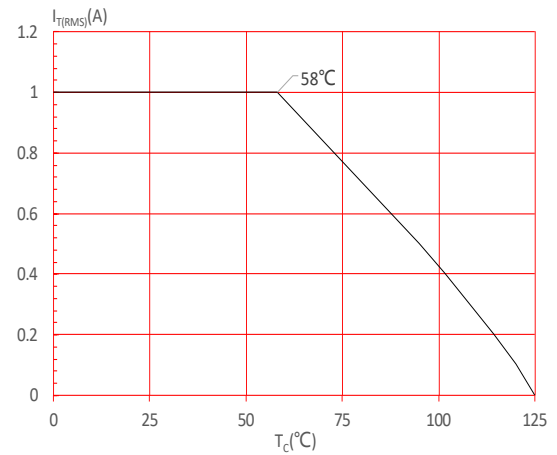


FIG.4: On-state characteristics

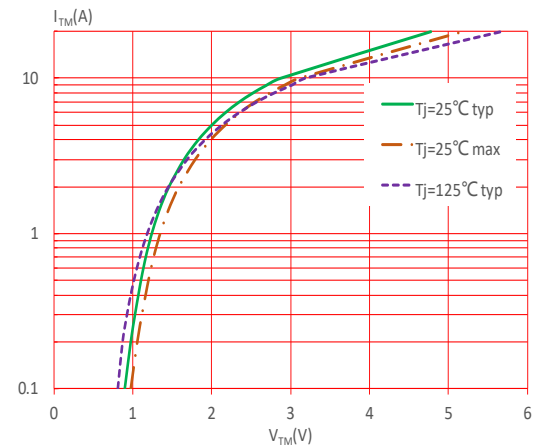
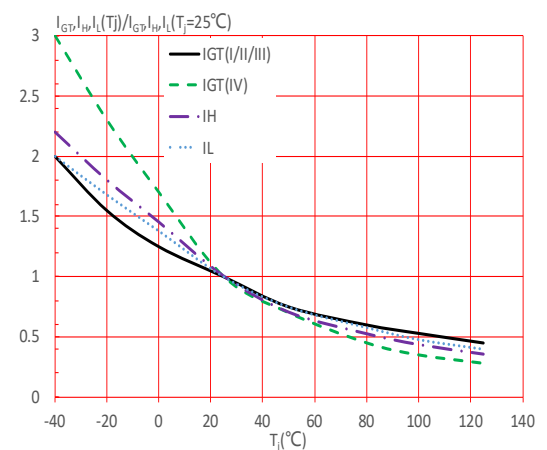


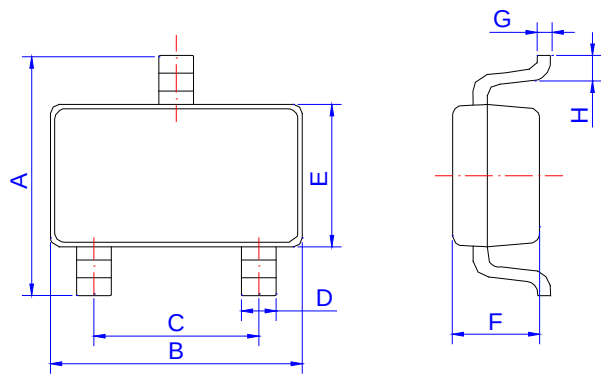
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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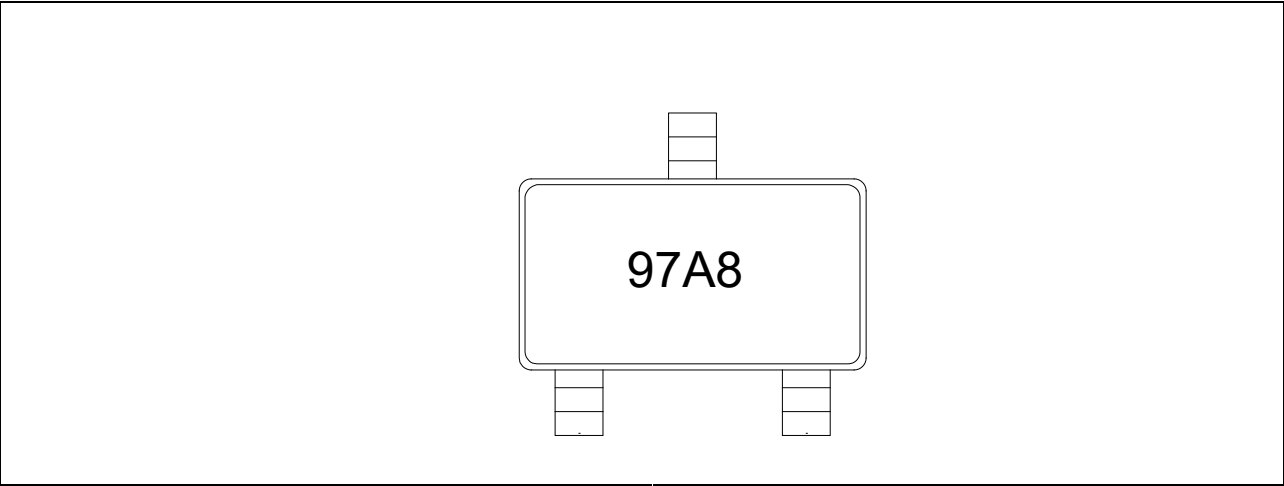
PACKAGE MECHANICAL DATA



SOT-23-3L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.65	2.80	2.95	0.104	0.110	0.116
B	2.82	2.92	3.02	0.111	0.115	0.119
C	1.80	1.90	2.00	0.071	0.075	0.079
D	0.30	0.35	0.50	0.012	0.014	0.020
E	1.50	1.60	1.70	0.059	0.063	0.067
F	1.07	1.17	1.27	0.042	0.046	0.050
G	0.05	0.15	0.25	0.002	0.006	0.010
H	0.25	0.40	0.55	0.010	0.016	0.022

MARKING





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PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
SOT-23-3L	TAPING	3,000	120,000	7 inch