



## MAC97A6 0.8A TRIAC

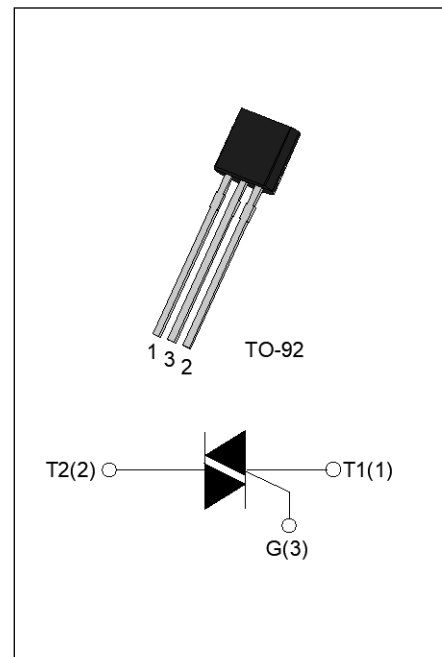
Rev.A.1.0

### DESCRIPTION:

The MAC97A6 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. Complying with UL standards (File ref: E252906). Package TO-92 is RoHS compliant.

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	0.8	A
$V_{DRM}/V_{RRM}$	600	V
$I_{GT\ I/II/III/IV}$	5/5/5/7	mA



### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		$T_{stg}$	-40-150	°C
Operating junction temperature range		$T_j$	-40-125	°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 ( $T_c \leq 51^\circ\text{C}$ )		$I_{T(RMS)}$	0.8	A
Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ )		$I_{TSM}$	10	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$ , $T_j=25^\circ\text{C}$ )			11	
$I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )		$I^2t$	0.5	$\text{A}^2\text{s}$
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100\text{Hz}$ , $T_j=125^\circ\text{C}$ )	I - II	$di/dt$	50	$\text{A}/\mu\text{s}$
	III-IV		30	
Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )		$I_{GM}$	1	A
Average gate power dissipation ( $T_j=125^\circ\text{C}$ )		$P_{G(AV)}$	0.1	W
Peak gate power		$P_{GM}$	5	W

Peak pulse voltage ( $T_j=25^\circ\text{C}$ ; non-repetitive, off-state; FIG.7)	$V_{pp}$	2.5	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		7	
$V_{GT}$		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
$dV/dt$	$V_D=400\text{V}$ Gate Open $T_j=110^\circ\text{C}$		MIN.	80	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	$(dI/dt)_c=0.3\text{A}/\text{ms}$ , $T_j=110^\circ\text{C}$		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	$\mu\text{s}$
$t_{off}$	$T_j=25^\circ\text{C}$			25	

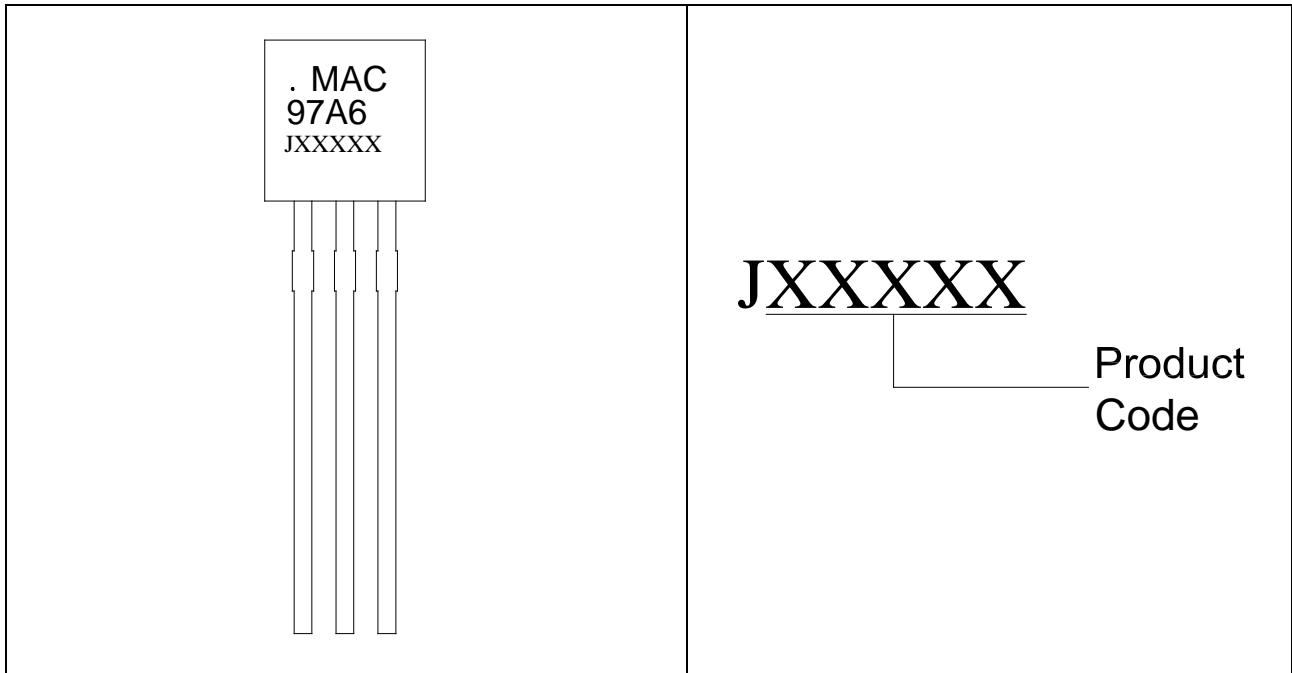
**STATIC CHARACTERISTICS**

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	$\mu\text{A}$
$I_{RRM}$		$T_j=125^\circ\text{C}$	0.2	mA

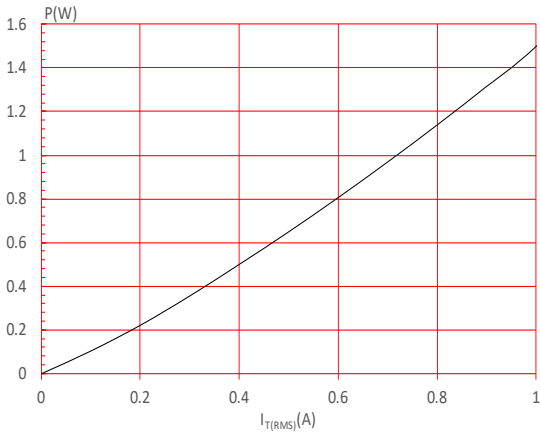
**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	65	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (AC)	150	$^\circ\text{C}/\text{W}$

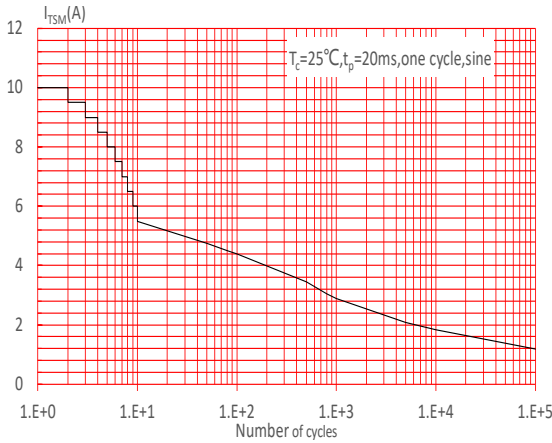
MARKING



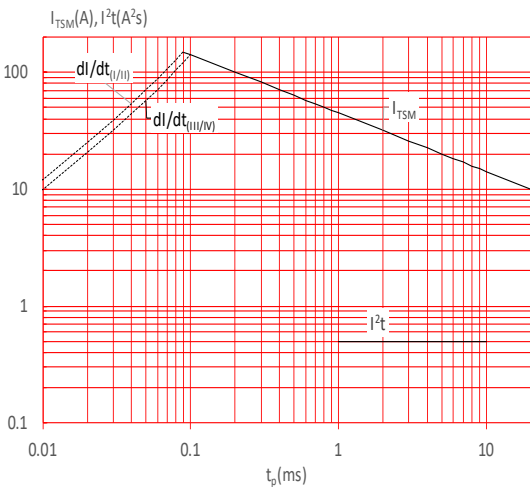
**FIG.1** Maximum power dissipation versus RMS on-state current



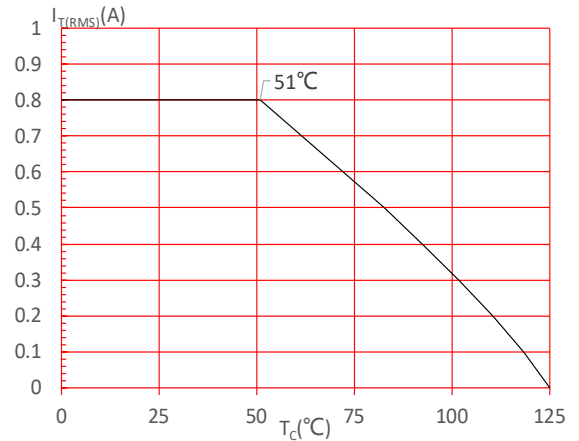
**FIG.3:** Surge peak on-state current versus number of cycles



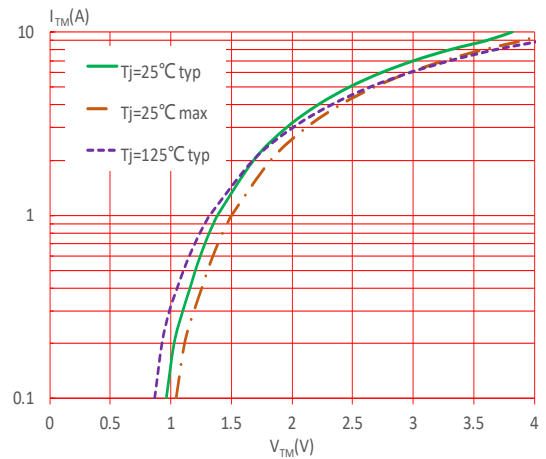
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( I - II :  $di/dt < 50\text{A}/\mu\text{s}$ ; III-IV :  $di/dt < 30\text{A}/\mu\text{s}$ )



**FIG.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

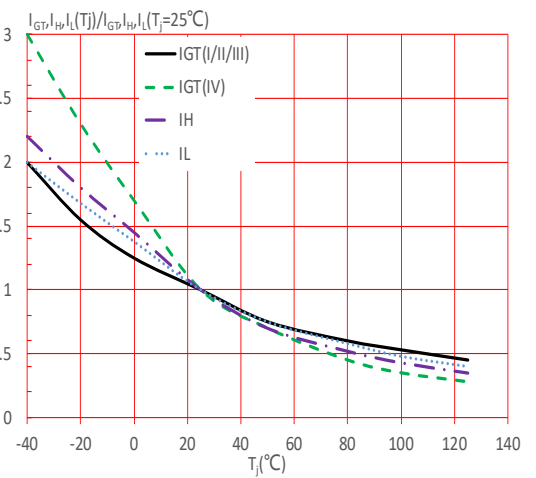
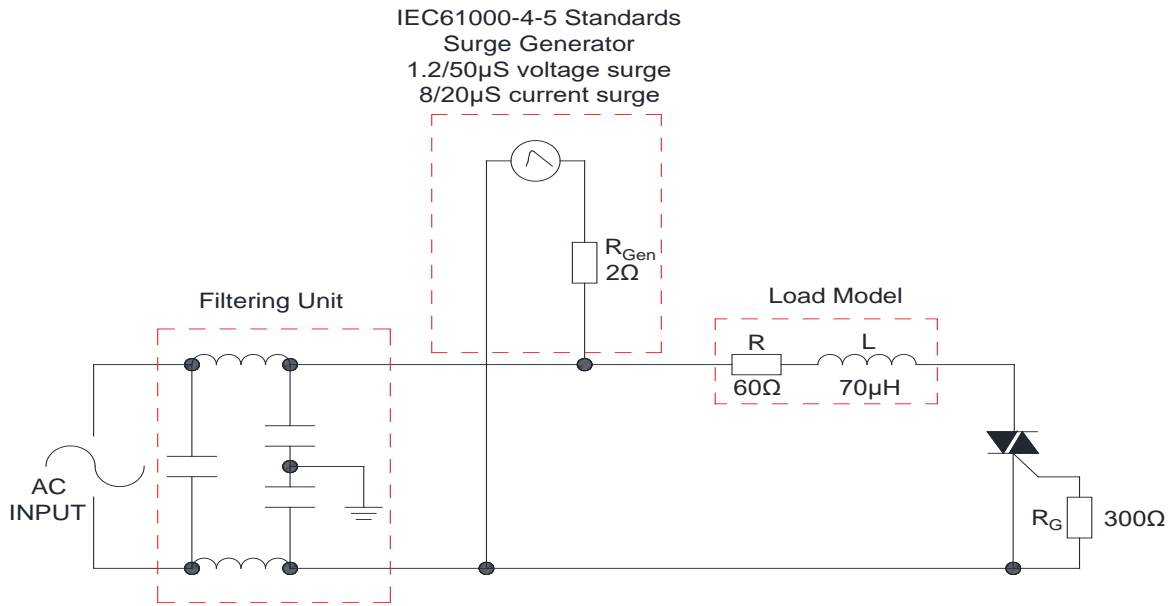


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



## SHAPING AND SOLDERING PARAMETERS

Refer to 《Instructions for installation of plastic-sealed in-line power devices》 released by JieJie

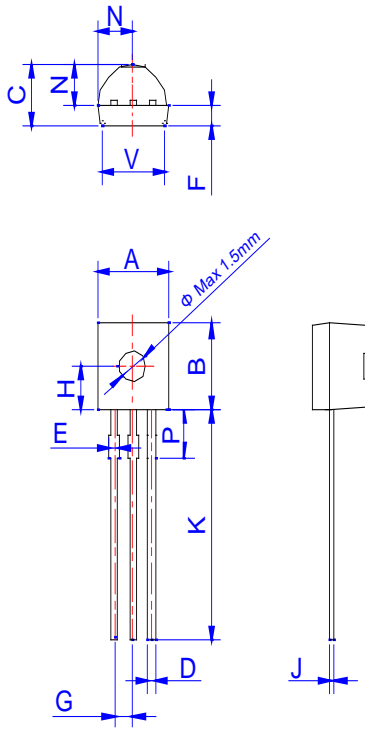
## ORDERING INFORMATION

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)		Package	Base qty. (pcs)	Delivery mode
		I - II - III	IV			
MAC97A6	600	5	7	TO-92	1,000	Bulk Pack
MAC97A6-TR					2,000	Tape & Reel

## Document Revision History

Date	Revision	Changes
Apr.14, 2023	A.1.0	Last updated

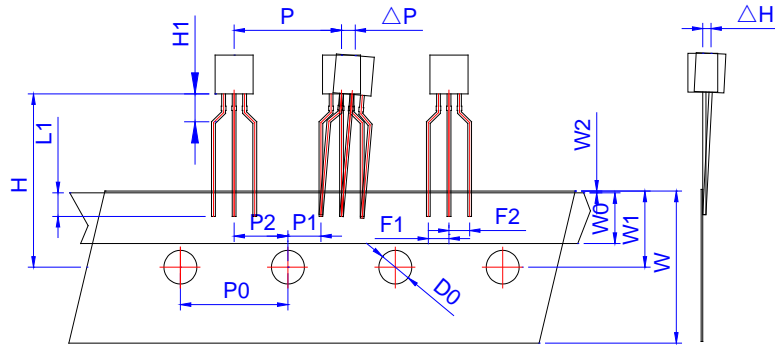
PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.45		5.20	0.175		0.205
B	4.32		5.33	0.170		0.210
C	3.18		4.19	0.125		0.165
D	0.407		0.533	0.016		0.021
E	0.50		0.70	0.020		0.028
F	1.10		1.30			0.051
G	1.10		1.40	0.043		0.055
H	2.20		2.40	0.087		0.094
J	0.36		0.50	0.014		0.020
K	12.70		15.0	0.500		0.591
N	2.04		2.66	0.080		0.105
P	1.80		2.30	0.071		0.091
V	4.10		4.50	0.161		0.177

**DELIVERY MODE**

PACKAGE	OUTLINE	BAG (PCS)	INNER BOX (PCS)	CARTON BOX (PCS)
TO-92	Bulk Pack	1,000	10,000	50,000



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
P	12.40	12.70	13.00	0.488	0.500	0.512
P0	12.40	12.70	13.00	0.488	0.500	0.512
P1	3.55	3.85	4.15	0.140	0.152	0.163
P2	5.95	6.35	6.75	0.233	0.250	0.265
ΔP	-1.0	0	1.0	-0.039	0	0.039
F1、F2	2.30	2.50	2.70	0.090	0.098	0.106
F1-F2	-0.1	0	0.1	-0.004	0	0.004
W	17.50	18.00	19.00	0.689	0.709	0.748
W0	5.50	6.00	6.50	0.217	0.236	0.256
W1	8.50	9.00	9.50	0.335	0.354	0.374
W2			1.0			0.039
D0	3.80	4.0	4.20	0.150	0.157	0.165
ΔH	-1.0	0	1.0	-0.039	0	0.039
L1	2.5			0.098		
H	18.0	19.0	20.0	0.709	0.748	0.787
H1			2.70			0.106

PACKAGE	OUTLINE	REEL (PCS)	INNER BOX (PCS)	CARTON BOX (PCS)
TO-92	Tape & Reel	/	2,000	20,000



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