

4 Quadrants Triacs

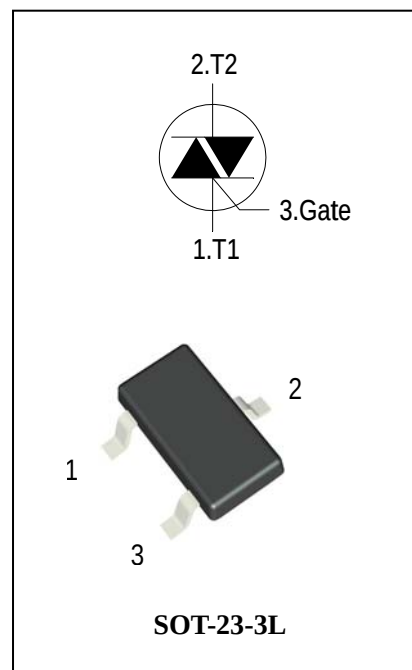
General Description

This device is suitable for low power AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay also designed for use in MPU interface, TTL logic.

Features

- ◆ Repetitive Peak Off-State Voltage: 600V and 700V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 0.8\text{ A}$)
- ◆ These Devices are Pb-Free and are RoHS Compliant

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Absolute Maximum Ratings ($T_j = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Items	Conditions		Ratings	Unit
V_{DRM} V_{RRM}	Repetitive Peak Off-State Voltage	$T_j = 25^{\circ}\text{C}$	MAC97A6N	600	V
			MAC97A8N	700	V
$I_{\text{T(RMS)}}$	R.M.S On-State Current	$T_{\text{C}} = 60^{\circ}\text{C}$		0.8	A
I_{TSM}	Surge On-State Current	$t_p = 20\text{ms}(50\text{Hz})/t_p = 16.7\text{ms}(60\text{Hz})$		9/10	A
I^2t	I^2t for fusing	$t_p = 10\text{ms}$		0.4	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 125^{\circ}\text{C}$ $I_G = 2 \times I_{\text{GT}} , t_r \leq 100\text{ ns}$		20	$\text{A}/\mu\text{s}$
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu\text{s } T_j = 125^{\circ}\text{C}$		1	A
$P_{\text{G(AV)}}$	Average Gate Power Dissipation($t_p = 10\text{ms}, T_j = 80^{\circ}\text{C}$)			0.1	W
P_{GM}	Peak Gate Power Dissipation($t_p = 10\text{ms}, T_j = 80^{\circ}\text{C}$)			1	W
T_j	Operating Junction Temperature			- 40 ~ 125	$^{\circ}\text{C}$
T_{STG}	Storage Temperature			- 40 ~ 150	$^{\circ}\text{C}$



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

Symbol	Items		Conditions		MAC97A6N/8N	Unit
I _{DRM}	Peak Forward Reverse Blocking Current		V _{DRM} = V _{RRM} , T _j = 25°C	Max.	5	uA
I _{RRM}			V _{DRM} = V _{RRM} , T _j = 125°C		0.1	mA
V _{TM}	Peak On-State Voltage		I _{TM} = 1.1A, t _p = 380 μs	Max.	1.5	V
V _{GD}	Q1-Q2-Q3-Q4	Non – Trigger Gate Voltage	V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C	Min.	0.2	V
V _{GT}	Q1-Q2-Q3-Q4	GateTrigger Voltage	V _D = 12V , R _L = 33Ω	Max.	1.3	V
I _{GT}	Q1-Q2-Q3	GateTrigger Current		Max.	5	mA
	Q4			10		
I _H	Q1-Q2-Q3-Q4	Holding Current	I _T = 0.2A	Max.	7	mA
I _L	Q1-Q3-Q4	Latching Current	I _G = 1.2 I _{GT}	Max.	10	mA
	Q2				20	
dV/dt	Critical Rate of Rise of Off-State Voltage		V _D = 2/3V _{DRM} gate open T _j = 125°C	Min.	30	V/μs
(dV/dt) _c	Critical Rate of Change of Commutating Voltage		(dI/dt) _c =-0.3A/ms T _j = 125°C	Min.	3	V/μs
R _{th(j-c)}	Junction to case (AC)			Max.	50	°C/W
R _{th(j-a)}	Junction to ambient			Max.	400	°C/W

FIG.1: Triac quadrant are defined and the gate trigger test circuit

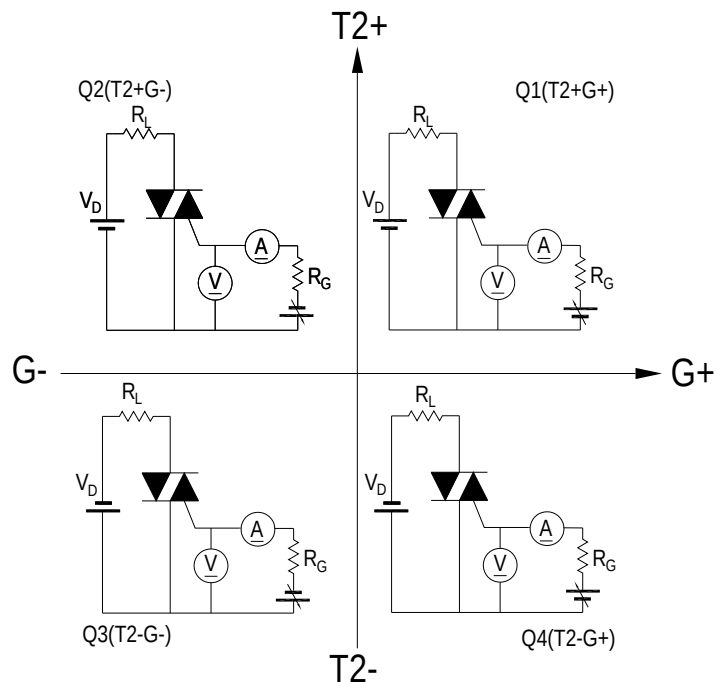


FIG.2: Maximum on-state power dissipation

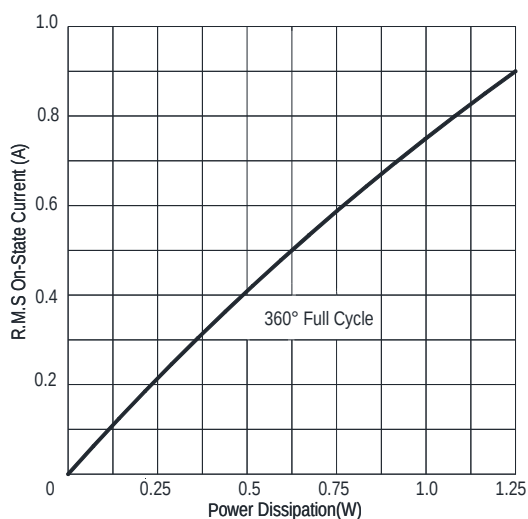


FIG.3: Typical RMS on-state current VS Allowable case Temperature

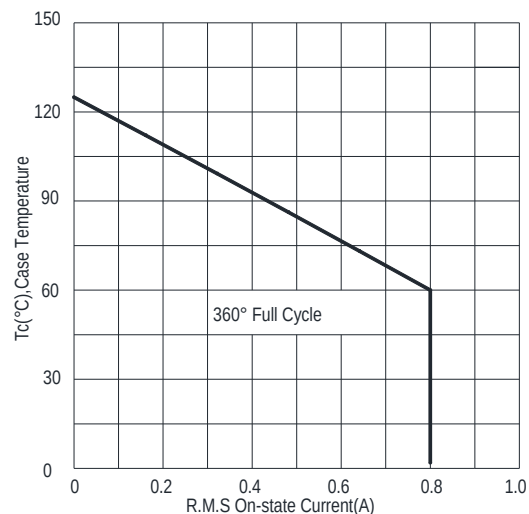


FIG.4: Gate trigger current VS Junction temperature

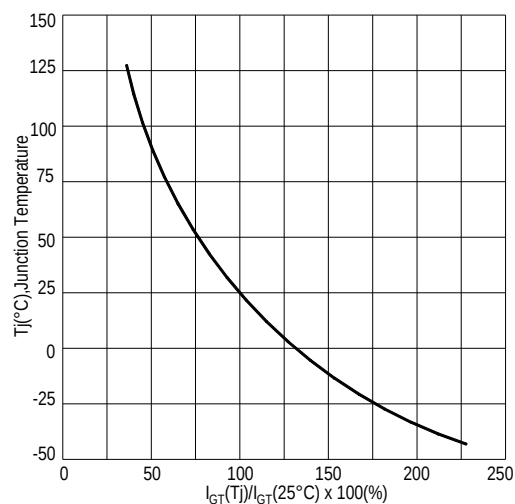


FIG.5: Rated surge on-state current (Non-Repetitive)

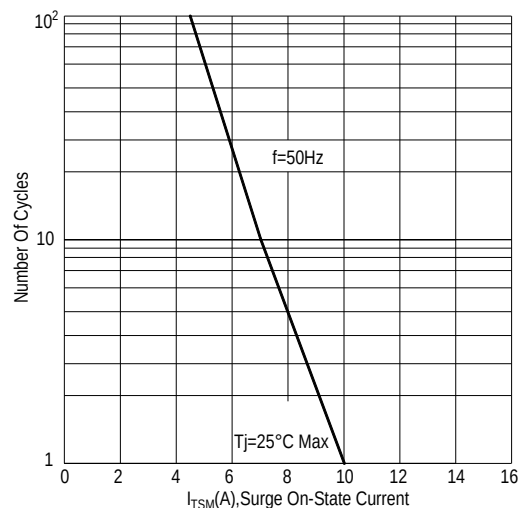


FIG.6: On-state characteristics(Max)

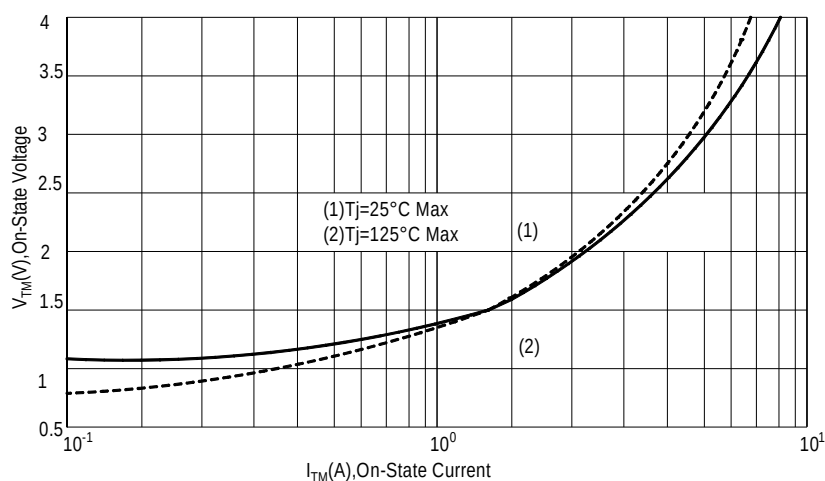


FIG.7:Holding current and Latching current VS Junction temperature

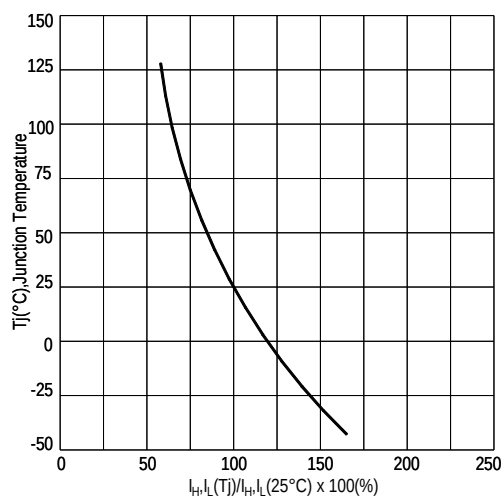
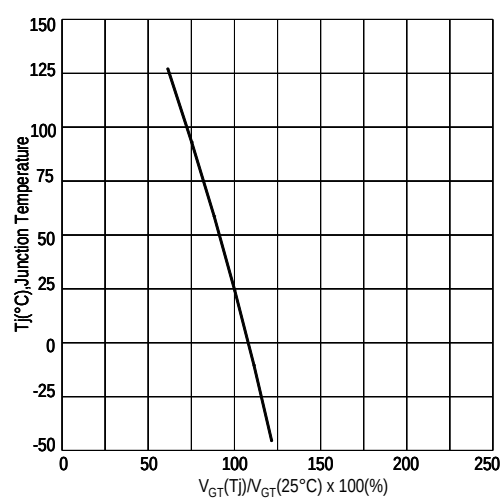
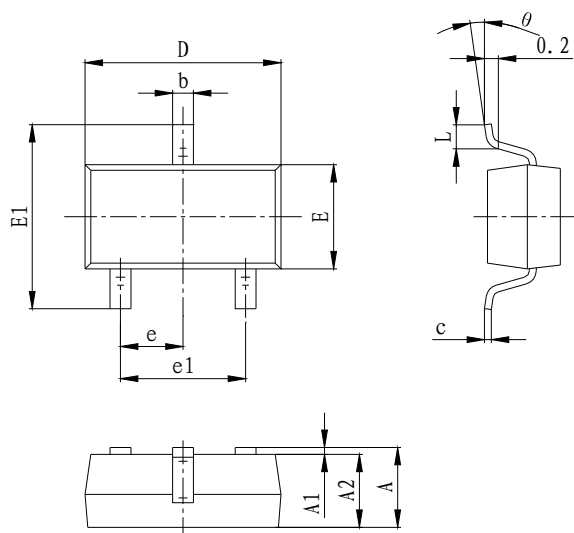


FIG.8: Gate trigger voltage VS Junction temperature



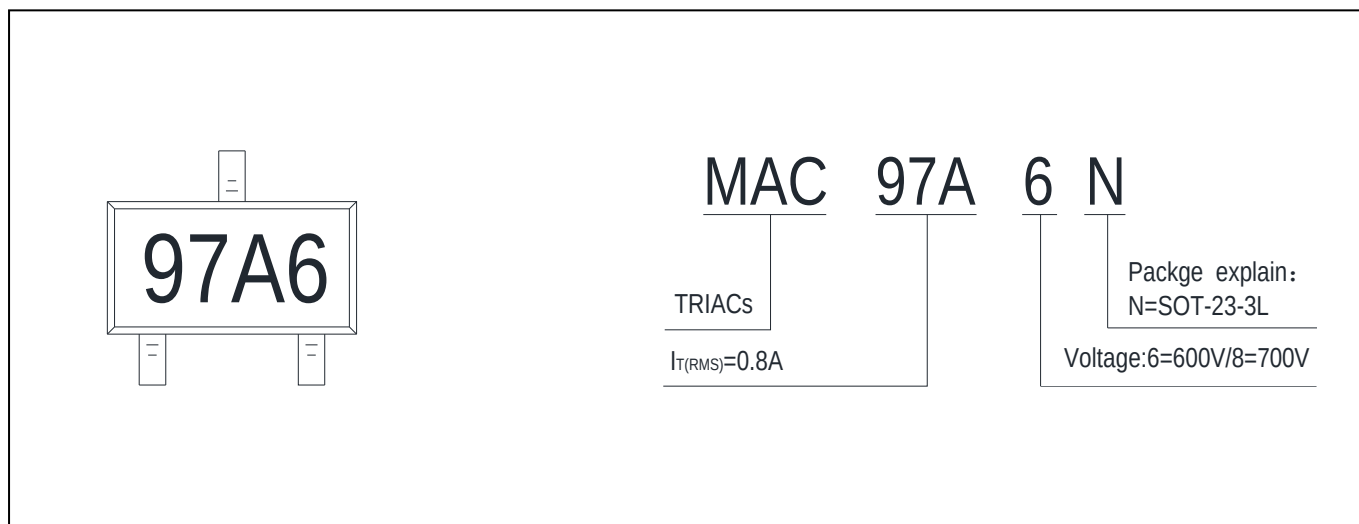
PACKAGE MECHANICAL DATA

SOT-23-3L Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.120	1.220	0.044	0.048
A1	0.000	0.070	0.000	0.003
A2	1.050	1.170	0.041	0.046
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.550	1.650	0.061	0.065
E1	2.650	2.950	0.104	0.116
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
θ	0°	8°	0°	8°

Making Diagram



Ordering information

Part number	Package	Marking	Packing	Quantity
MAC97A6N	SOT-23-3L	97A6	Tape&reel	3000pcs
MAC97A8N	SOT-23-3L	97A8	Tape&reel	3000pcs

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