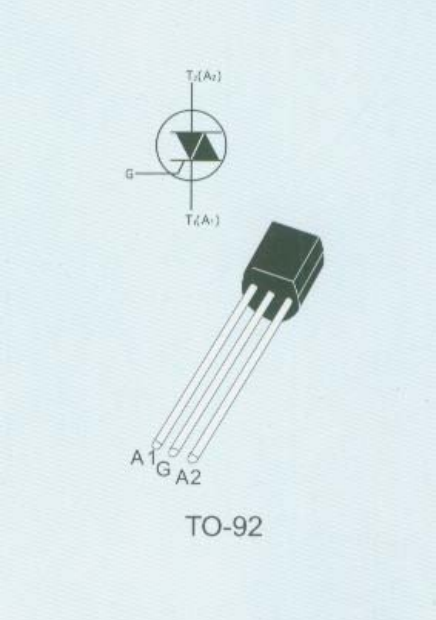
■ MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	1	A
$V_{(DRM)}/V_{RRM}$	400 to 600	V
$I_{GT(Q1)}$	3 to 25	mA



■ GENERAL DESCRIPTION

The MAC97A6 series is suitable for general purpose AC switching applications. They can be found in applications such as home appliances (electro-valve, pump, door lock, small lamp control), fan speed controllers,

Different gate current sensitivities are available, allowing optimized performances when controlled directly from micro-controllers.

■ ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	TO-92	Tc=50℃	1	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, Tj initial=25℃)	F=50Hz	t=20ms	8	A
		F=60Hz	t=16.7ms	8.5	
I^2T	I^2T Value for fusing	tp=10ms		0.35	A^2s
dI/dt	Critical rate of rise of on-state current I_G=2 × I_{GT}, tr≤100ns	F=120Hz	Tj=125℃	20	A/μs
I_{GM}	Peak gate current	tp=20μs	Tj=125℃	1	A
$P_{G(AV)}$	Average gate power dissipation		Tj=125℃	0.1	W
T_{stg}	Storage junction temperature range			-40 to+150	℃
T_j	Operating junction temperature range			-40 to+125	

■ STATIC CHARACTERISTICS

Tj=25℃ unless otherwise stated

Symbol	Test Conditions	Quadrant		Value		Unit
				Typ	Max	
I_{GT}(1)	V_D=12V R_L=30Ω	I-II-III		5	10	mA
		IV		7	10	
V_{GT}		ALL	MAX.	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ Tj=125℃	ALL	MIN.	0.2		V
I_H(2)	I_T=50mA		MAX.	10	25	mA
I_L	I_G=1.2I_{GT}	I-III-IV	MAX.	10	25	mA
		II		20	50	
V_{TM}(2)	I_{TM}=1.4A tp=380μs	Tj=25℃	MAX.	1.6		V
V_{t0}(2)	Threshold voltage	Tj=125℃	MAX.	0.95		V
R_d(2)	Dynamic resistance	Tj=125℃	MAX.	400		mΩ
I_{DRM}	V_{DRM}=V_{RRM}	Tj=25℃	MAX.	50		μA
I_{RRM}		Tj=125℃		0.5		mA

■ DYNAMIC CHARACTERISTICS

Symbol	Test Condition		Typ	Max	Unit
dV/dt(2)	V_D=67% V_{DRM} gate open Tj=110℃	MIN	50	100	V/μs
(dV/dt)c(2)	(dI/dt)c=0.44A/ms Tj=110℃	MIN	2	5	V/μs

Note1: minimum I_{GT} is guaranteed at 5% of I_{GT} max.

Note2: for both polarities of A2 referenced to A1.

■ THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead (AC)	TO-92	60	℃/W
$R_{th(j-a)}$	Junction to ambient	TO-92	150	℃/W

PERFORMANCE CURVES

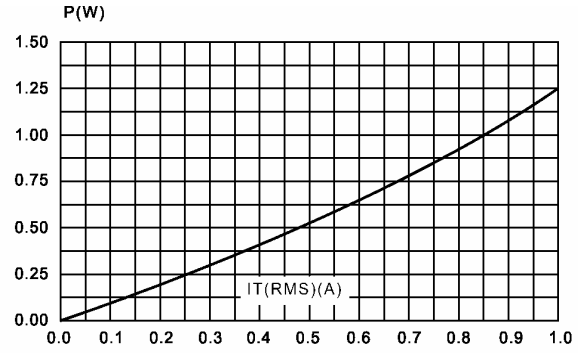


Fig.1. Maximum power dissipation versus RMS on-state current (full cycle)

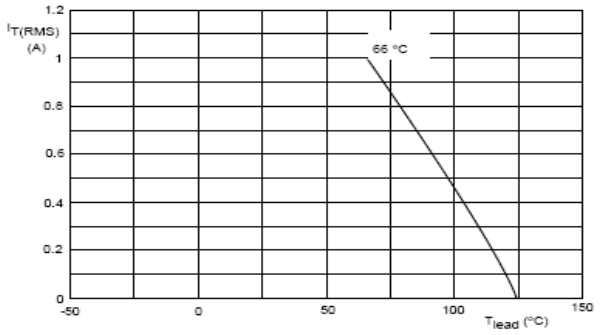


Fig.4. RMS on-state current versus ambient temperature (full cycle)

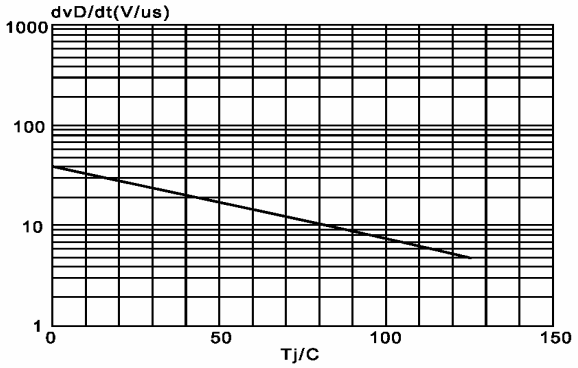


Fig.2. Typical, critical rate of rise off-state voltage, dV_D/dt versus junction temperature Tj

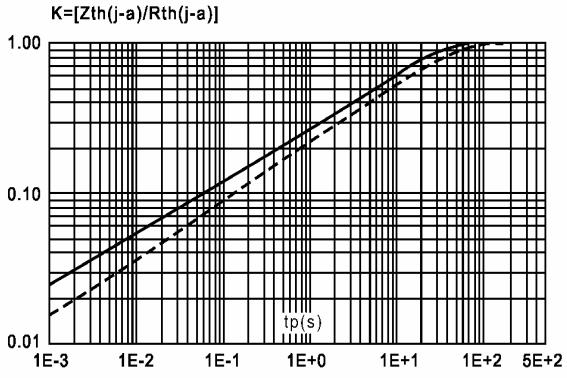


Fig.5. Relative variation of thermal impedance junction to ambient versus pulse duration

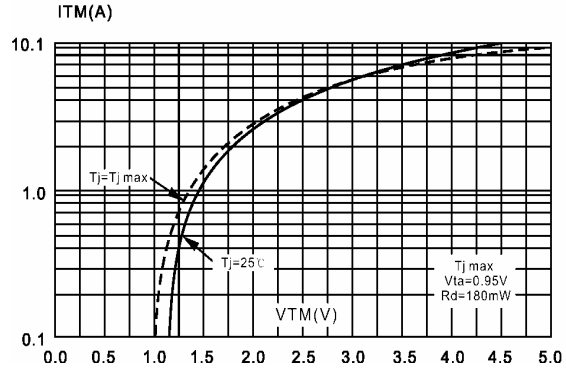


Fig.3. On-state characteristics (maximum values),

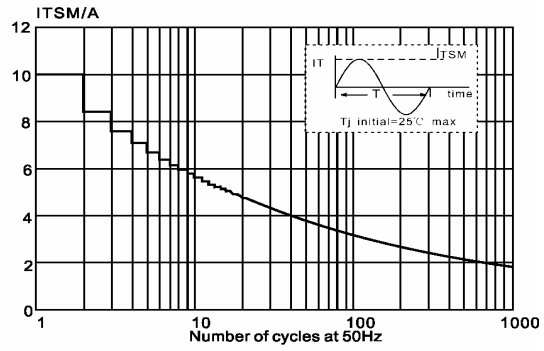


Fig.6. Maximum permissible non-repetitive peak on-state current I_{TSM} versus number of cycles, for sinusoidal currents, f=50Hz

PERFORMANCE CUIRVES

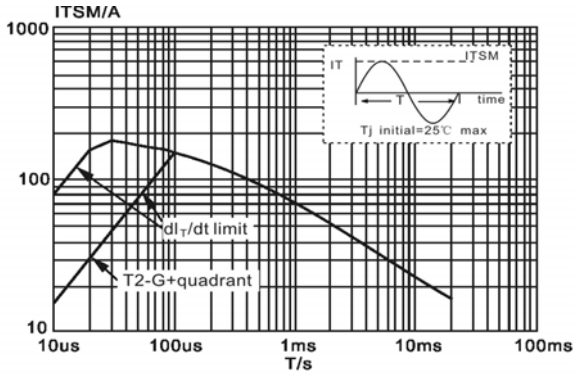


Fig.7. Maximum permissible non-repetitive peak on-state current I_{TSM} versus pulse width t_p, for sinusoidal currents, $t_p \leqslant$ 20ms

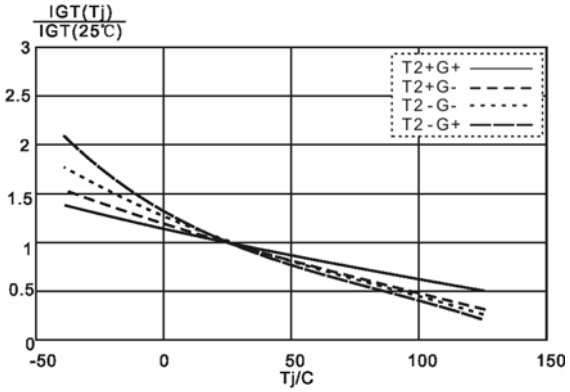


Fig.10. Normalized gate trigger current $I_{GT}(T_j)/I_{GT}(25^oC)$, versus junction temperature T_j

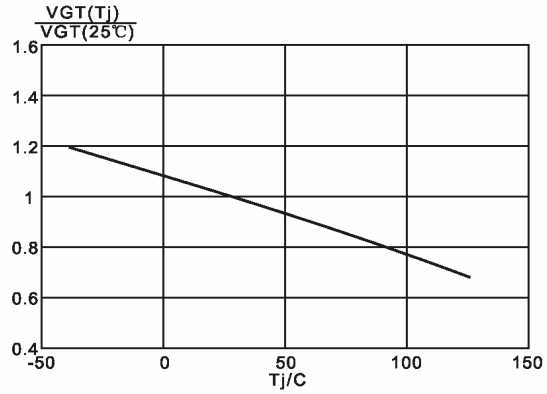


Fig.8. Normalized gate trigger voltage $V_{GT}(T_j)/I_{GT}(25^oC)$, versus junction temperature T_j

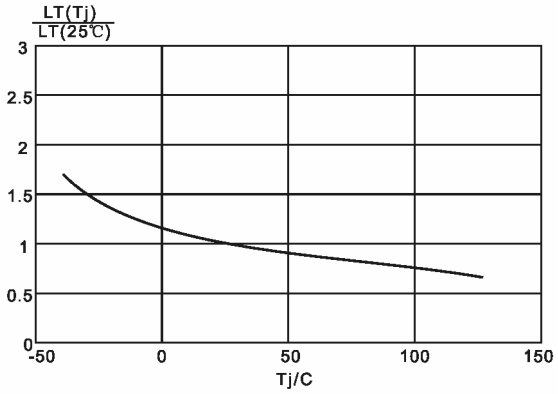


Fig.11. Normalized latching current $I_{GT}(T_j)/I_{GT}(25^oC)$, versus junction temperature T_j

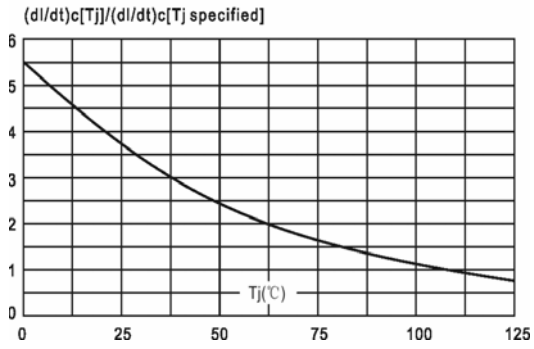


Fig.9. Relative variation of critical rate of decrease of main current versus junction temperature T_j

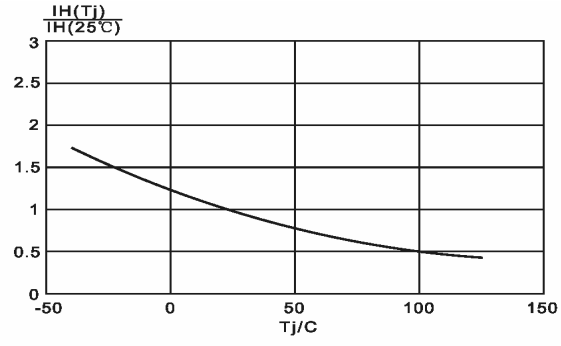
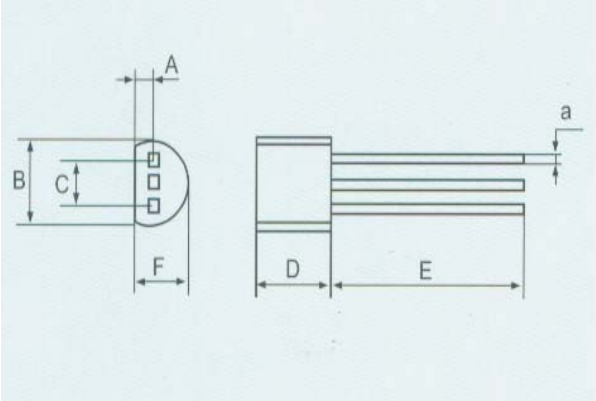


Fig.12. Normalized holding current $I_H(T_j)/I_H(25^oC)$, versus junction temperature T_j

PACKAGE MECHANICAL DATA

TO-92(Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		1.35			0.053	
B			4.70			0.185
C		2.54			0.100	
D	4.40			0.173		
E	12.70			0.500		
F			3.70			0.146
a			0.45			0.017