

UNISONIC TECHNOLOGIES CO., LTD

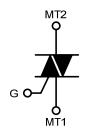
UT137E TRIAC

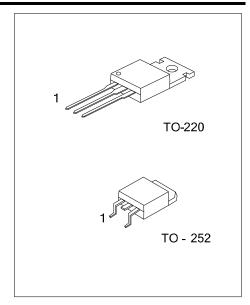
TRIAC

■ DESCRIPTION

Passivated, sensitive gate triacs in a plastic envelope, intended for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.

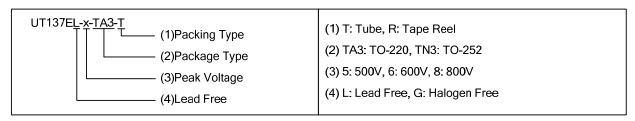
■ SYMBOL



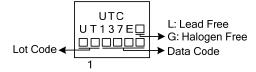


■ ORDERING INFORMATION

Order Number		Dealtage	Pin	Assignn	Da alda a	
Normal	Lead Free Plating	Package	1	2	3	Packing
UT137EL-x-TA3-T	UT137EG-x-TA3-T	TO-220	MT1	MT2	GATE	Tube
UT137EL-x-TN3-R	UT137EG-x-TN3-R	TO-252	MT1	MT2	GATE	Tape Reel



■ MARKING



<u>www.unisonic.com.tw</u> 1 of 6

UT137E TRIAC

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT	
	UT137E-5		500 (Note 2)	V
Repetitive peak off-state voltages	UT137E-6	V_{DRM}	600 (Note 2)	V
	UT137E-8		800	V
RMS on-state current full sine wave; T _{mb} ≤10)2°C	I _{T(RMS)}	8	Α
Non-repetitive peak on-state current	t = 20ms		65	^
(Full sine wave; T _J = 25°C prior to surge)	t = 16.7 ms	I _{TSM}	71	Α
I ² t for fusing	t = 10 ms	l ² t	21	A^2s
December 1997 and the second second second	T2+ G+	dl⊤ /dt	50	A/µs
Repetitive rate of rise of on-state current	T2+ G-		50	A/µs
after triggering	T2- G-		50	A/µs
I _{TM} =12A; I _G =0.2A; d _{IG} /dt=0.2A/μs	T2- G+		10	A/µs
Peak gate voltage		V_{GM}	5	V
Peak gate current		I_{GM}	2	Α
Peak gate power		P_GM	5	W
Average gate power (over any 20 ms period)		$P_{G(AV)}$	0.5	W
Junction Temperature		T_J	125	°C
Storage Temperature		T_{STG}	-40 ~ +150	°C

- Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
 - 2. Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed 6A/µs.

■ THERMAL RESISTANCES

PARA	METER		SYMBOL	MIN	TYP	MAX	UNIT	
Thermal resistance	In Eros Air	TO-220	0		60		°C/M	
Junction to Ambient	In Free Air	TO-252	θја		15		°C/W	
Thermal resistance Junction to mounting base	Full cycle	TO-220	θјс			2.0	°C/W	
		TO-252				2.6	C/VV	
	11.16	TO-220				2.4	°C/M	
	нап сусіе	TO-252				3.0	°C/W	

■ STATIC CHARACTERISTICS (T_J=25°C, unless otherwise stated)

PARAMETER	SYMBOL	TEST CONDITIONS			TYP	MAX	UNIT
Gate trigger current	I _{GT}	V _D = 12 V; I _T = 0.1 A	T2+G+		2.5	10	mA
			T2+G-		4.0	10	mA
			T2-G-		5.0	10	mA
			T2-G+		11	25	mA
Latching current	lι	V _D = 12 V; I _{GT} = 0.1 A	T2+G+		3.0	25	mA
			T2+G-		14	35	mA
			T2-G-		3.0	25	mA
			T2-G+		4.0	35	mA
Holding current	I _H	$V_D = 12 \text{ V}; I_{GT} = 0.1 \text{ A}$			2.5	20	mA
On-state voltage	V_{T}	I _T = 10 A			1.3	1.65	V
Gate trigger voltage	V _C T	$V_D = 12 \text{ V}; I_T = 0.1 \text{ A}$			0.7	1.5	V
		$V_D = 400V$; $I_T = 0.1 A$; $T_J = 125$ °C		0.25	0.4		V
Off-state leakage current	I _D	$V_D = V_{DRM(max)}$; $T_J = 125$ °C	•		0.1	0.5	mA

■ DYNAMIC CHARACTERISTICS (T_J=25°C, unless otherwise stated)

parameter	symbol	conditions	min	typ	max	unit
Critical rate of rise of Off-state voltage	avn /at	V _{DM} = 67% V _{DRMMAX} ; T _J =125°C; Exponential waveform; gate open		50		V/µs

UT137E TRIAC

		circuit		
Gate controlled turn-on time	t _{GT}	$I_{TM} = 12A$; $V_D = V_{DRMMAX}$; $I_G = 0.1A$; $d_{IG}/dt = 5A/us$	2	μs

UT137E

■ TYPICAL CHARACTERISTICS

Figure 1. Maximum On -State Dissipation. P_{tot} vs RMS On-State Current, $I_{T(RMS)}$, Where α =conduction Angle

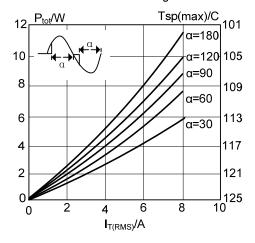


Figure 3 Maximum Permissible Non-Repetitive Peak On-State Current I_{TSM} , vs Number of Cycles, for Sinusoidal Currents, f=50Hz

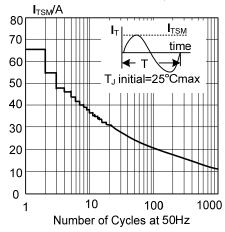


Figure 5. Maximum Permissible Repetitive RMS On-State Current $I_{T(RMS)}$, vs Surge Duration, for Sinusoidal Currents,f =50Hz, T_{mb} \leq 102°C

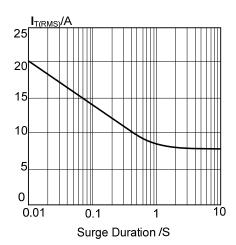


Figure 2. Maximum Permissible Non-Repetitive Peak On-State Current I_{TSM} , vs Pulse Width t_p , for Sinusoidal Currents, $t_p \! \leq \! 20 \text{ms}$

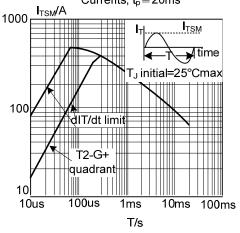


Figure 4. Maximum Permissible RMS Current $I_{T(RMS)}$ vs Mounting Base Temperature T_{mb}

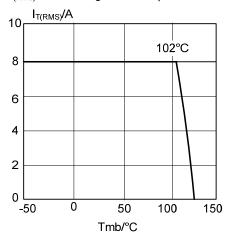
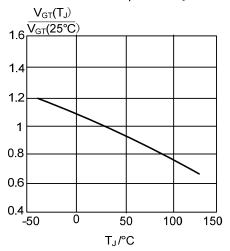


Figure 6. Normalised Gate Trigger Voltage V_{GT}(T_J)/V_{GT}(25°C), vs Junction Temperature T_J



UT137E

■ TYPICAL CHARACTERISTICS(Cont.)

 $\begin{array}{ll} \mbox{Figure 7. Normalised Gate Trigger} \\ \mbox{Current } I_{\mbox{GT}}(T_{\mbox{\scriptsize J}})/I_{\mbox{\scriptsize GT}}(25^{\circ}\mbox{\scriptsize C}), \mbox{ vs Junction} \\ \mbox{I}_{\mbox{\scriptsize GT}}(T_{\mbox{\scriptsize J}}) \end{array}$

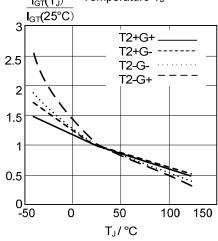


Figure 9. Normalised Holding Current $I_H(T_J)/I_H(25^{\circ}C),$ vs Junction Temperature T_J

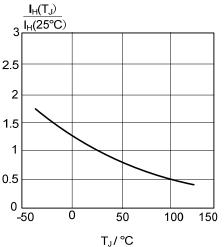


Figure 11. Transient Thermal Impedance Z_{th j-mb}, vs Pulse Width t_p

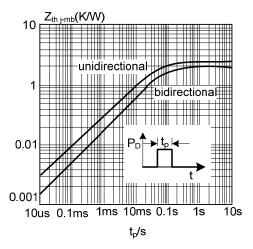


Figure 8. Normalised Latching Current I_L(T_J)/I_L(25°C), vs Junction

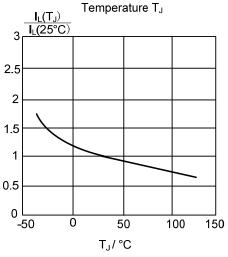


Figure 10. Typical and Maximum On-state Characteristic

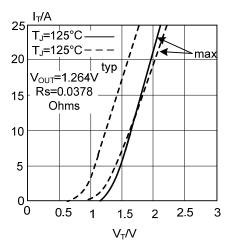
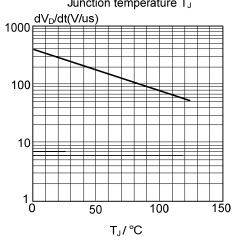


Figure 12. Typical Critical Rate of Rise of Off-State Voltage, dV_D/dt Versus Junction temperature T_J



UT137E TRIAC

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.

