

UTC UT137E

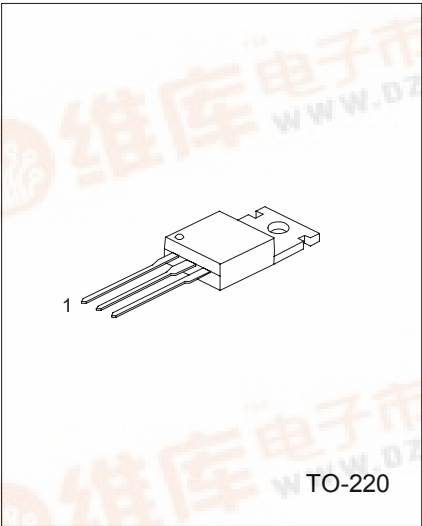
TRIAC

TRIACS

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



1:MT1 2:MT2 3:GATE

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Repetitive Peak Off-State Voltage UT137E-5 UT137E-6 UT137E-8	V _{DRM}	500* 600* 800	V
RMS On-state Current Full sine wave; T _{mb} ≤102°C	I _{T(RMS)}	8	A
Non-Repetitive Peak. On-State Current Full sine wave; T _j =25°C prior to surge t=20ms t=16.7ms	I _{TSM}	65 71	A
I ² t For Fusing (t=10ms)	I ² t	21	A ² s
Repetitive Rate of Rise of On-state Current after Triggering I _{TM} =12A; I _G =0.2A, dI _G /dt=0.2A/μs T2+ G+ T2+ G- T2- G- T2- G+	dI _T /dt	50 50 50 10	A/μs
Peak Gate Voltage	V _{GM}	5	V
Peak Gate Current	I _{GM}	2	A
Peak Gate Power	P _{GM}	5	W
Average Gate Power (Over any 20ms period)	P _{G(AV)}	0.5	W
Operating Junction Temperature	T _J	125	°C
Storage Temperature	T _{stg}	-40~150	°C

*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.

UTC

UNISONIC TECHNOLOGIES CO., LTD.



THERMAL RESISTANCES

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Thermal Resistance Junction to Mounting Base	Rth j-mb			2.0	K/W
Full cycle				2.4	
Half cycle					
Thermal Resistance Junction to Ambient	Rth j-a		60		K/W
In free air					

STATIC CHARACTERISTICS (T_j=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	IGT	V _D =12V, I _T =0.1A				mA
		T2+ G+		2.5	10	
		T2+ G-		4.0	10	
		T2- G-		5.0	10	
		T2- G+		11	25	
Latching Current	IL	V _D =12V, I _{GT} =0.1A				mA
		T2+ G+		3.0	25	
		T2+ G-		14	35	
		T2- G-		3.0	25	
		T2- G+		4.0	35	
Holding Current	I _H	V _D =12V, I _{GT} =0.1A		2.5	20	mA
On-State Voltage	V _T	I _T =10A		1.3	1.65	V
Gate Trigger Voltage	V _{GT}	V _D =12V, I _T =0.1A		0.7	1.5	V
		V _D =400V, I _T =0.1A, 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 specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Critical Rate of Rise of off-state Voltage	dV _D /dt	V _{DM} =67% V _{DRM(max)} , T _j =125°C Exponential waveform, Gate open circuit		50		V/μs
Gate Controlled Turn-on Time	tgt	I _{TM} =12A, V _D =V _{DRM(max)} , I _G =0.1A dI _G /dt=5A/μs		2		μs

TYPICAL CHARACTERISTICS

Figure 1. Maximum on-state Dissipation P_{tot} vs RMS On-state Current $I_T(RMS)$, Where α = conduction Angle.

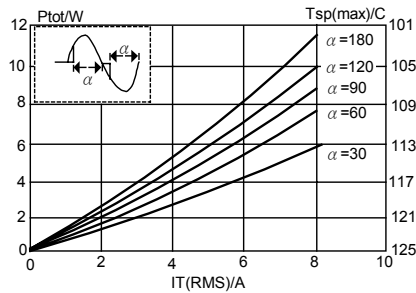


Figure 4. Maximum Permissible RMS Current $I_T(RMS)$ vs mounting base Temperature T_{mb}

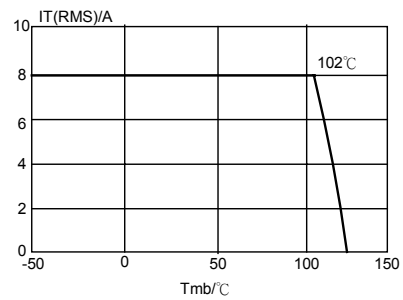


Figure 2. Maximum Permissible Non-repetitive Peak On-state Current I_{TSM} vs Pulse Width t_p , for Sinusoidal Currents, $t_p \leq 20ms$

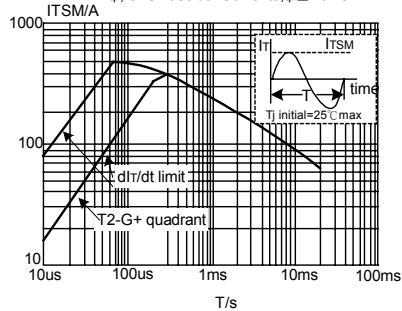


Figure 5. Maximum Permissible Repetitive RMS on-state Current $I_T(RMS)$ vs Surge Duration, for Sinusoidal Currents, $f=50Hz$; $T_{mb} \leq 102^\circ C$

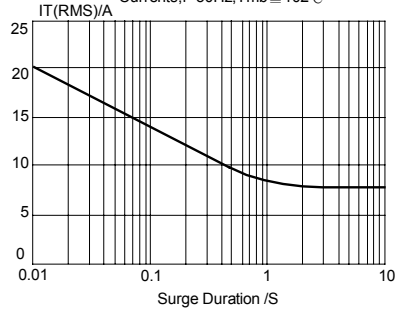


Figure 3. Maximum Permissible Non-Repetitive peak on-state Current I_{TSM} vs Number of Cycles, for Sinusoidal Currents, $f=50Hz$

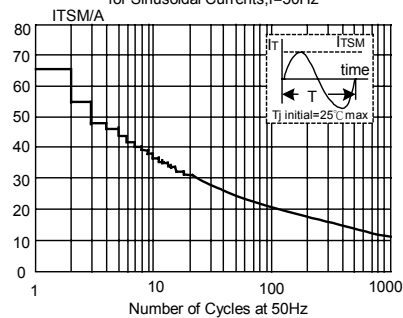


Figure 6. Normalised Gate Trigger Voltage $V_{GT}(T_J)/V_{GT}(25^\circ C)$ vs Junction Temperature T_J

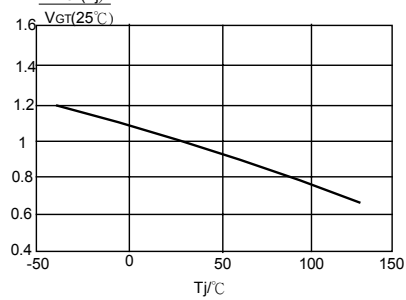


Figure 7. Normalised Gate Trigger Current
 $I_{GT}(T_j)/I_{GT}(25^\circ\text{C})$, vs Junction Temperature T_j

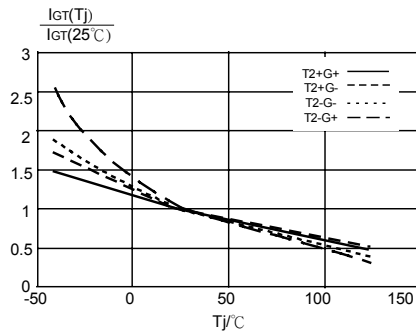


Figure 8. Normalised Latching Current
 $I_L(T_j)/I_L(25^\circ\text{C})$, vs Junction Temperature T_j

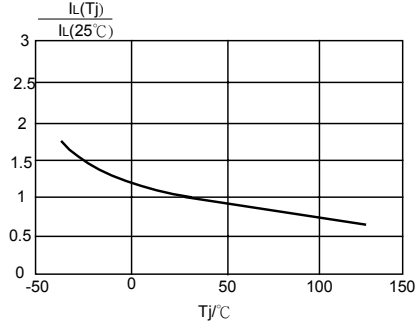


Figure 9. Normalised Holding Current
 $I_H(T_j)/I_H(25^\circ\text{C})$, vs Junction Temperature T_j

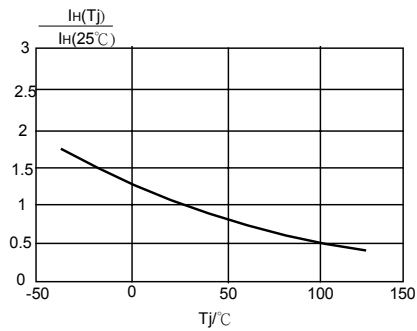


Figure 10. Typical and Maximum
 On-state Characteristic

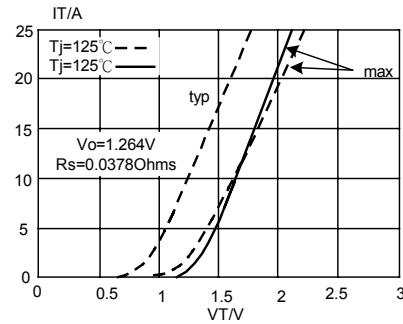


Figure 11. Transient Thermal Impedance
 $Z_{th j-mb}$, vs Pulse Width t_p

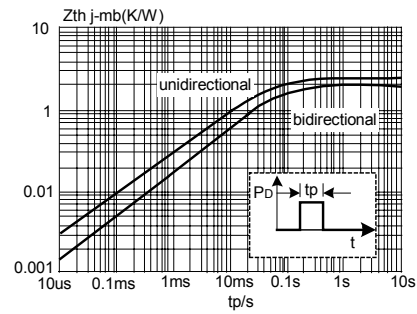
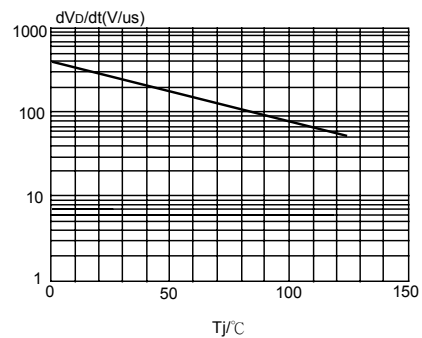


Figure 12. Typical, critical rate of rise of off-state
 voltage, dV_D/dt versus junction temperature T_j



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