UTC UT136FE   TRIAC
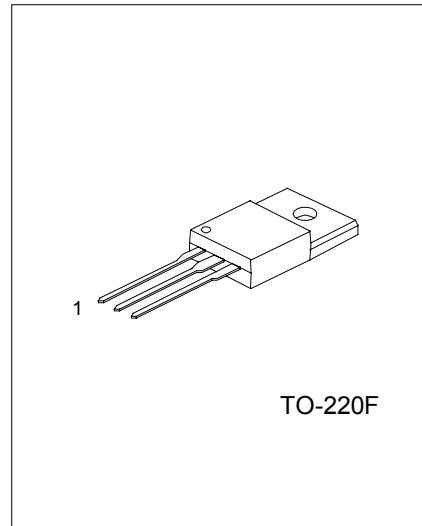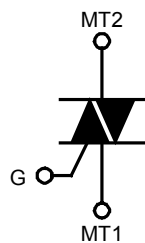
TRIACS

DESCRIPTION
Glass passivated sensitive gate triacs in a full pack,plastic envelop, intended for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.

SYMBOL

TO-220F

1:MT1   2:MT2   3:GATE

ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive peak off-state voltages	UT136FE-5	V_{DRM}	500*	V
	UT136FE-6		600*	
	UT136FE-8		800	
RMS on-state current full sine wave; $T_{hs} \leqslant$ 92 °C		$I_{T(RMS)}$	4	A
Non-repetitive peak on-state current Full sine wave; T_j = 125 °C prior to surge; with reapplied V_{DRM}(max)		I_{TSM}		A
	t = 20ms		25	
	t = 16.7 ms		27	
I^2t for fusing (t = 10 ms)		I^2t	3.1	A^2s
Repetitive rate of rise of on-state current after triggering I_{TM} = 6 A; I_G = 0.2A;dI_G /dt = 0.2A/μ s		dI_T /dt		A/μ s
	T2+ G+		50	
	T2+ G-		50	
	T2- G-		50	
	T2- G+		10	
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 20 ms period)		$P_{G(AV)}$	0.5	W
Storage temperature		T_{stg}	-40 ~ 150	℃
Operating junction temperature		T_j	125	℃

*Although not recommended, off-state voltages up to 800V may be applied without damage, but the traic may switch to the on-state. The rate of rise of current should not exceed 3A/μs.

UTC   UNISONIC TECHNOLOGIES   CO., LTD.   1

UTC UT136FE   TRIAC

ISOLATION LINITING VALUE & CHARACTERISTIC(Ths=25°C,unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Repetitive paek voltage form all three terminals to external heatsink (R.H.≦65%,clean and dustfree)	Visol			1500	V
Capacitance from MT2 to external heatsink (f=1MHz)	Cisol		12		pF

THERMAL RESISTANCES

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Thermal resistance Junction to heatsink (Full or half cycle) with heatsink compound without heatsink compound	$R_{th\ j-hs}$			5.5 7.2	K/W
Thermal resistance Junction to ambient (In free air)	$R_{th\ j-a}$		55		K/W

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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Gate trigger current	I_{GT}	V_D = 12 V; I_T = 0.1 A T2+ G+ T2+ G- T2- G- T2- G+		2.5 4.0 5.0 11	10 10 10 25	mA
Latching current	I_L	V_D = 12 V; I_{GT} = 0.1 A T2+ G+ T2+ G- T2- G- T2- G+		3.0 10 2.5 4.0	15 20 15 20	mA
Holding current	I_H	V_D = 12 V; I_{GT} = 0.1 A		2.2	15	mA
On-state voltage	V_T	I_T = 5 A		1.4	1.7	V
Gate trigger voltage	V_{GT}	V_D = 12 V; I_T = 0.1 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(Tj=25°C,unless otherwise specified)

PARAMETER	SYMBOL	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	t_{gt}	I_{TM} = 6 A; V_D= $V_{DRM(max)}$; I_G=0.1A; dI_G/dt=5A/µs		2		µs

TYPICAL CHARACTERISTICS

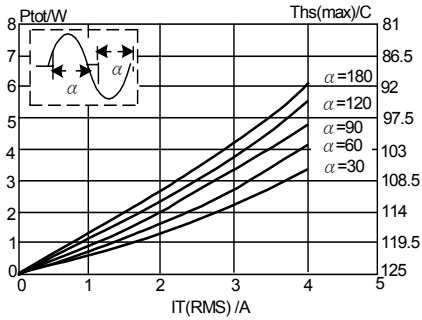
Fig.1. Maximum on-state dissipation Ptot,versus rms
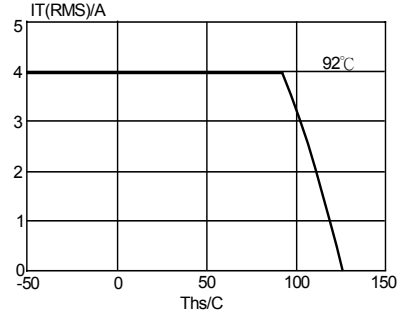on-state current , IT(RMS), where α =conduction angle.
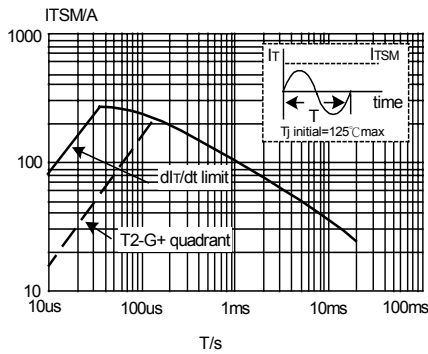

Fig.2. Maximum Permissible non-repetitive peak
on-state Current ITSM ,versus pulse width tp,
for sinusoidal currents,tp ≦ 20ms.

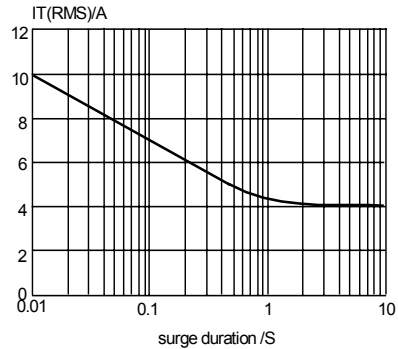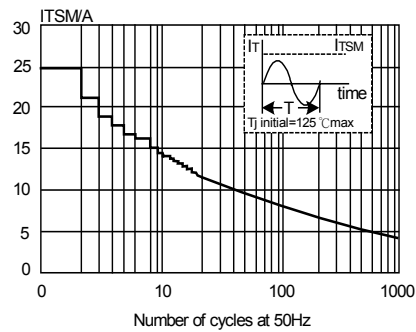Fig3.Maximum Permissible non-repetitive peak
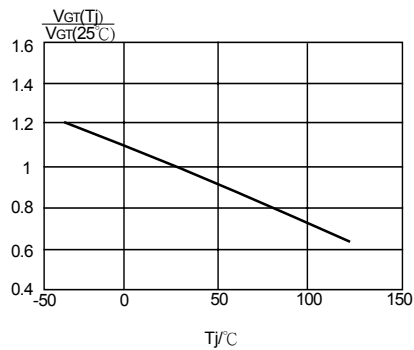on-state current I TSM,versus number of cycles,for
sinusoidal currents,f=50HZ.

Fig.4. Maximum permissible rms current
IT(RMS) , versus heatsink temperature Ths.

Fig. 5.Maximum permissible repetitive rms on-state
current I T(RMS),versus surge duration ,for sinusoidal
current,f=50HZ;Ths ≦ 92℃

Fig.6. Normalised gate trigger voltage
$V_{GT}(T_j)/V_{GT}(25℃)$,versus junction temperature Tj.

UTC UNISONIC TECHNOLOGIES   CO., LTD.   3

Fig. 7.Normalised gate trigger Current
$I_{GT}(Tj)/I_{GT}(25℃)$,versus junction temperature Tj .
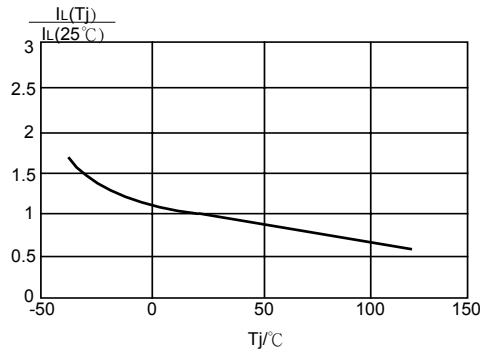

Fig.10.Typical and maximum on-state characteristic.

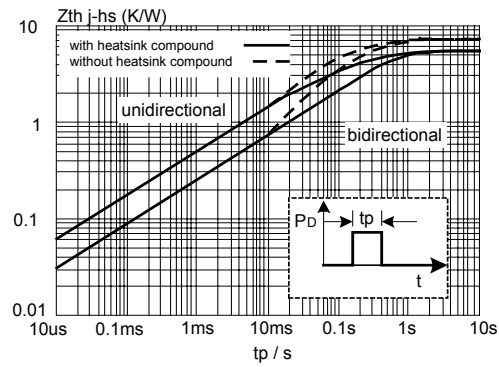Fig.8.Normalised latching Current I L(Tj)/I L(25℃),
versus junction temperature Tj.
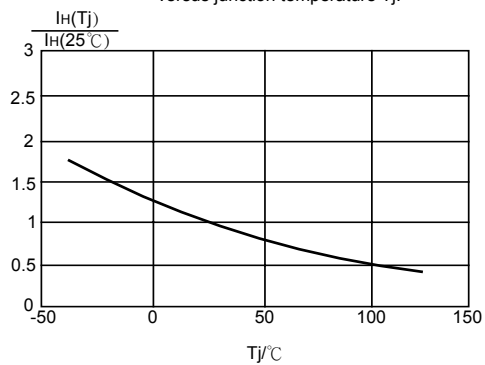

Fig.11.Transient thermal impedance Zthj-mb,versus
pulse width tp.

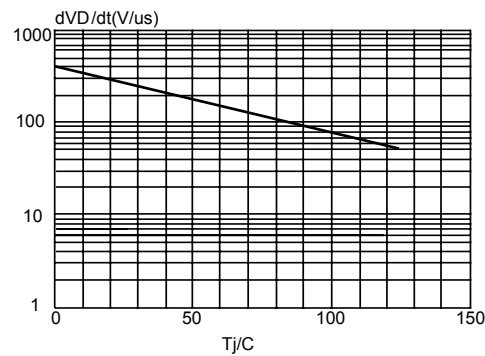Fig. 9.Normalised holding current I H(Tj)/I H(25℃),
versus junction temperature Tj .

Fig.12.Typical,critical rate of rise of off-satate
voltage,dVD/dt versus junction
temperature Tj.

UTC   UNISONIC TECHNOLOGIES CO., LTD.   4

UTC UNISONIC TECHNOLOGIES   CO., LTD.   5