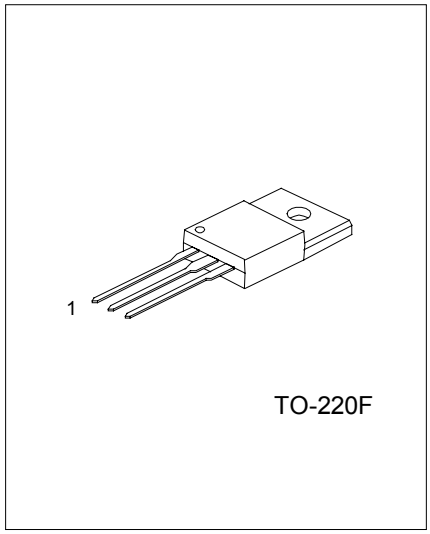
TRIACS

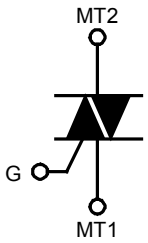


1:MT1 2:MT2 3:GATE

DESCRIPTION

Passivated triacs in a full pack plastic envelope, intended for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

SYMBOL



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Repetitive Peak Off State Voltage UT137FF/FG-5 UT137FF/FG-6 UT137FF/FG-8	V_{DRM}	 500* 600* 800	V
RMS On-state Current (Full sine wave, $T_{hs}\leqslant 73°C$)	$I_{T(RMS)}$	8	A
Non-Repetitive Peak. On-State Current (Full sine wave, T_j=125°C prior to surge,with reapplied V_{DRM}(max) t=20ms t=16.7ms	I_{TSM}	 55 60	A
I^2t For Fusing (t=10ms)	I^2t	21	A^2s
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	Tj	125	°C
Storage Temperature	Tstg	-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.

ISOLATION LINITING VALUE & CHARACTERISTIC(T_{hs}=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	Rth j-hs			4.5 6.5	K/W
Thermal Resistance Junction to Ambient (In free air)	Rth j-a		55		K/W

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

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX		UNIT
					UT137FF	UT137FG	
Gate trigger current	I_{GT}	V_D=12V, I_T=0.1A					
		T2+ G+		5	25	50	mA
		T2+ G-		8	25	50	
		T2- G-		11	25	50	
		T2- G+		30	70	100	
Latching current	I_L	V_D=12V, I_{GT}=0.1A					
		T2+ G+		7	30	45	mA
		T2+ G-		16	45	60	
		T2- G-		5	30	45	
		T2- G+		7	45	60	
Holding current	I_H	V_D = 12 V, I_{GT} = 0.1 A		5	20	40	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, Tj=125°C	0.25	0.4			V
Off-state leakage current	I_D	V_D=$V_{DRM(max)}$, Tj=125°C		0.1	0.5		mA

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

PARAMETER	SYMBOL	CONDITIONS	MIN		TYP	MAX	UNIT
			UT137FF	UT137FG			
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	200	250		V/μs
Critical rate of change of Commutating voltage	dV_{com}/dt	V_{DM}=400V;T_j=95°C;$I_{T(RMS)}$=8A; dI_{com}/dt =3.6A/ms; gate open circuit		10	20		V/μs
Gate controlled turn-on time	t_{gt}	I_{TM} = 12 A; V_D= $V_{DRM(max)}$; I_G=0.1A; dI_G/dt=5A/μs			2		μs

TYPICAL CHARACTERISTICS

Figure 1.Maximum on -state Dissipation.Ptot vs RMS On-state Current,$I_{T(RMS)}$,Where α =Conduction Angle.

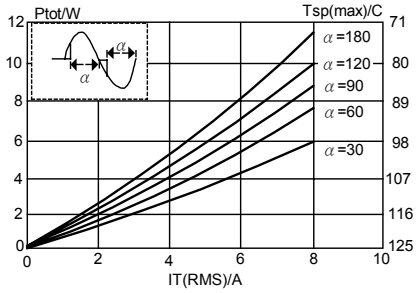


Figure 2. Maximum Permissible Non-repetitive Peak On-state Current I_{TSM},vs Pulse Width t_p,for Sinusoidal Currents,$t_p \leqq 20ms$

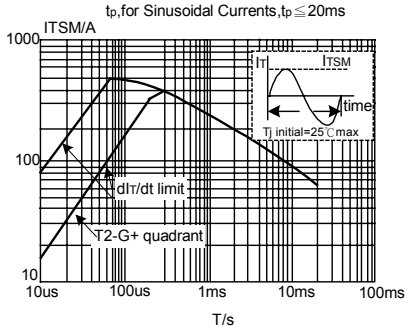


Figure 3 .Maximum Permissible Non-Repetitive peak on-state Current I_{TSM},vs Number of Cycles, for Sinusoidal Currents,f=50Hz

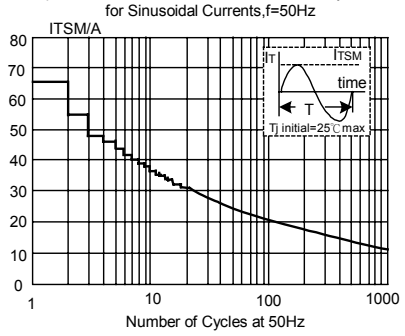


Figure 4.Maximum Permissible RMS Current $I_{T(RMS)}$ vs Heatsink Temperature T_{hs}

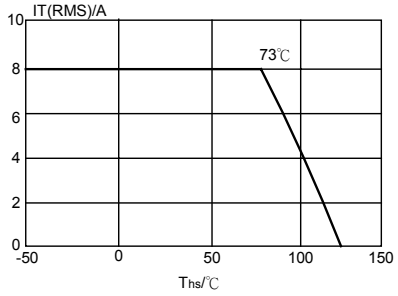


Figure 5.Maximum Permissible Repetitive RMS on-state Current $IT_{(RMS)}$,vs Surge Duration,for Sinusoidal Currents,f=50Hz;$T_{hs} \leqq 73℃$

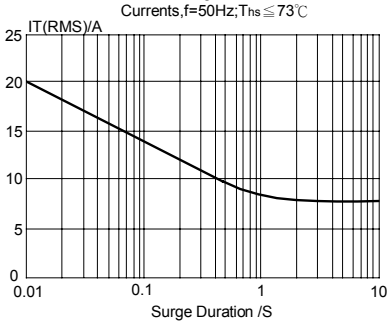


Figure 6.Normalised Gate Trigger Voltage $V_{GT}(Tj)$/ $V_{GT}(25℃)$,vs Junction Temperature Tj

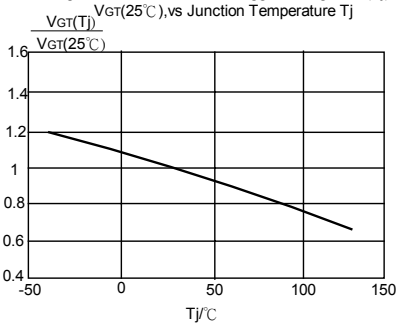


Figure 7.Normalised Gate Trigger Current
$I_{GT}(Tj)/I_{GT}(25℃)$,vs Junction Temperature Tj

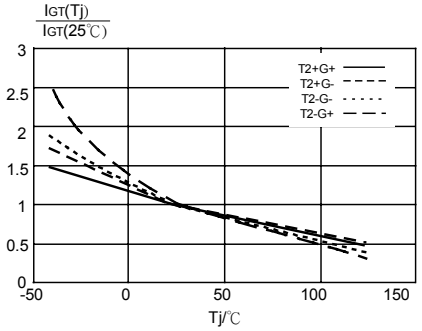


Figure 8.Normalised Latching Current
$I_L(Tj)/I_L(25℃)$,vs Junction Temperature Tj

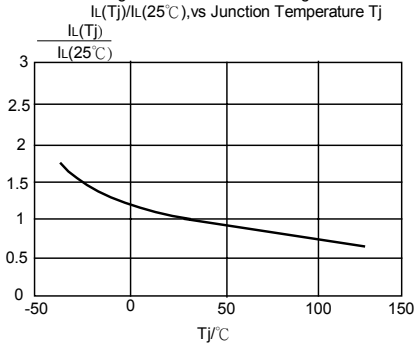


Figure 9.Normalised Holding Current
$I_H(Tj)/I_H(25℃)$,vs Junction Temperature Tj

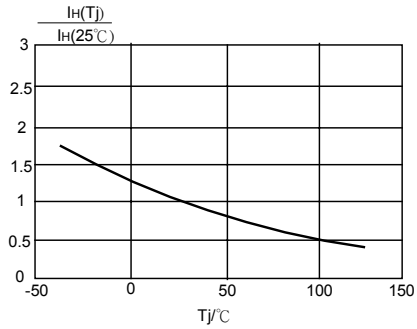


Figure 10.Typical and Maximum
On-state Characteristic

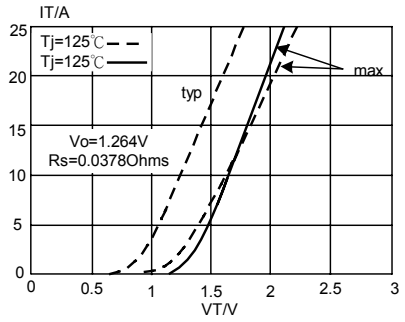


Figure 11.Transient Thermal Impedance
Zth j-hs,vs Pulse Width tp

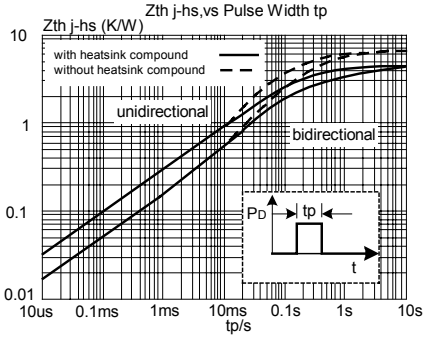


Figure 12.Typical commutation dV/dt vs junction temperature,parameter commutation dI_T/dt.The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt