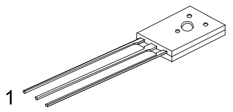
TRIACS

DESCRIPTION

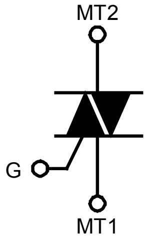
Glass passivated triacs in a plastic envelope, intended for use in applications requiring highbidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.



TO-126

1:MT1 2:MT2 3:GATE

SYMBOL



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Repetitive peak off-state voltages	V_{DRM}		V
UT134F/G-4		400	
UT134F/G-6		600*	
UT134F/G-8		800	
RMS on-state current full sine wave; T_{mb} ⩽107 °C	$I_{T(RMS)}$	4	A
Non-repetitive peak on-state current (Full sine wave; T_j = 25 °C prior to surge)	I_{TSM}		
t = 20ms		25	A
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/μs	dI_T /dt		
T2+ G+		50	
T2+ G-		50	A/μs
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.

THERMAL RESISTANCES

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Thermal resistance Junction to mounting base	$R_{th\ j\text{-}mb}$				
Full cycle				3.0	K/W
Half cycle				3.7	K/W
Thermal resistance Junction to ambient (In free air)	$R_{th\ j\text{-}a}$		100		K/W

ELECTRICAL CHARACTERISTICS (T_j=25°C, unless otherwise stated)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX		UNIT
					UT134F	UT134G	
STATIC CHARACTERISTICS							
Gate trigger current	I_{GT}	V_D = 12 V; I_T = 0.1 A					mA
		T2+ G+		5	25	50	
		T2+ G-		8	25	50	
		T2- G-		11	25	50	
		T2- G+		30	70	100	
Latching current	I_L	V_D = 12 V; I_{GT} = 0.1 A					mA
		T2+ G+		7	20	30	
		T2+ G-		16	30	45	
		T2- G-		5	20	30	
		T2- G+		7	30	45	
Holding current	I_H	V_D = 12 V; I_{GT} = 0.1 A		5	15	30	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

PARAMETER	SYMBOL	CONDITIONS	MIN		TYP	MAX	UNIT
			UT134F	UT134G			
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;$I_{T(RMS)}$=4A; dI_{com}/dt =1.8A/ms; gate open circuit		10	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

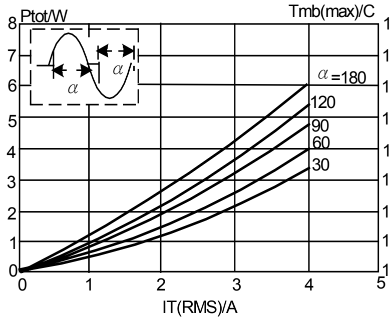


Fig.1. Maximum on-state dissipation,P_{tot},versus rms on-state current,$I_{T(RMS)}$where α =conduction angle.

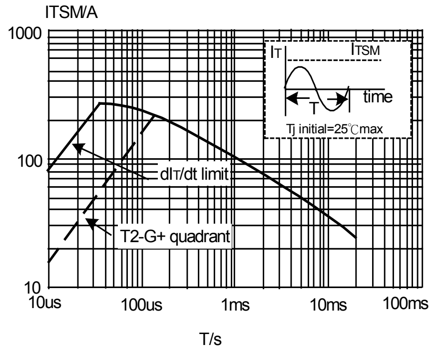


Fig.2.Maximum Permissible non-repetitive peak on-state Current I_{TSM},versus pulse width t_p, for sinusoidal currents,t_p≦20ms

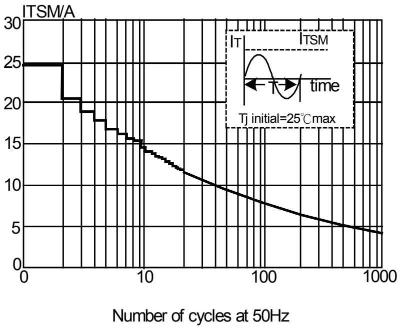


Fig3.Maximum Permissible non-repetitive peak on-state current I_{TSM},versus number of cycles,for sinusoidal currents,f=50HZ.

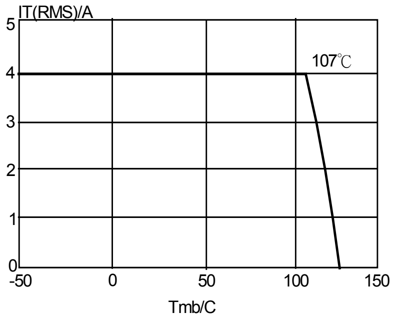


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb}

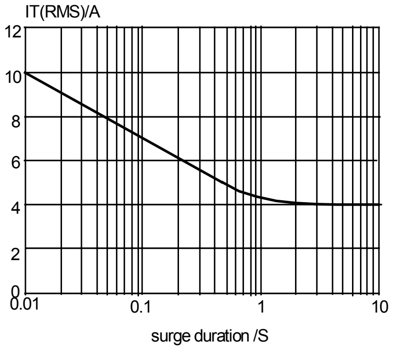


Fig. 5.Maximum permissible repetitive rms on-state current $I_{T(RMS)}$,versus surge duration,for sinusoidal currents,f=50HZ;T_{mb}≦107℃

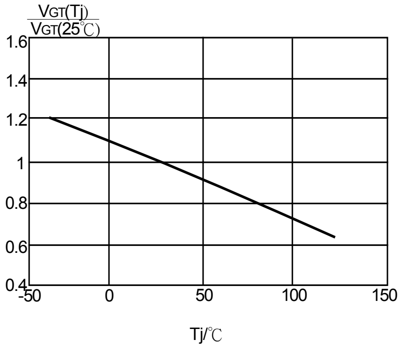


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25℃)$,versus junction temperature T_j.

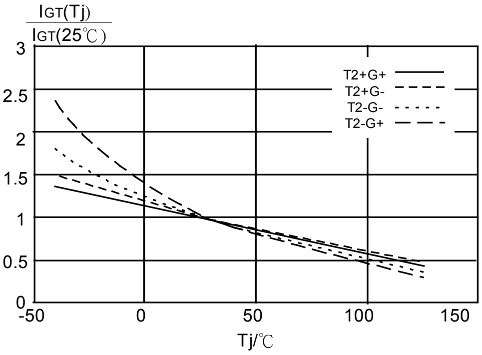


Fig. 7.Normalised gate trigger Current $I_{GT}(T_j)/I_{GT}(25℃)$,versus junction temperature T_j.

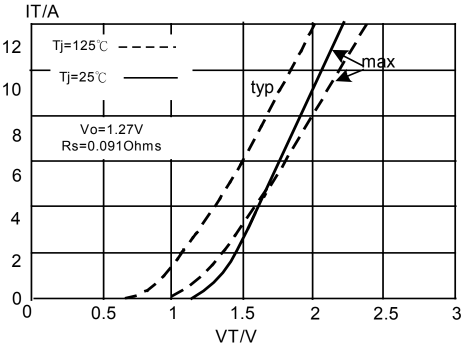


Fig.10.Typical and maximum on-state characteristic.

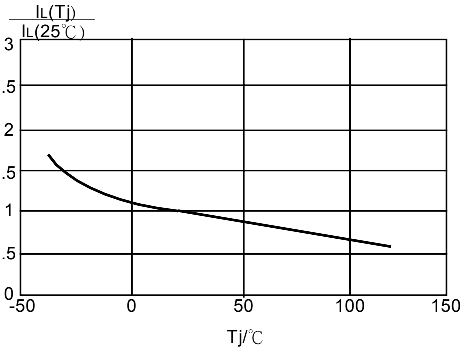


Fig.8.Normalised latching Current $I_L(T_j)/I_L(25℃)$, versus junction temperature Tj

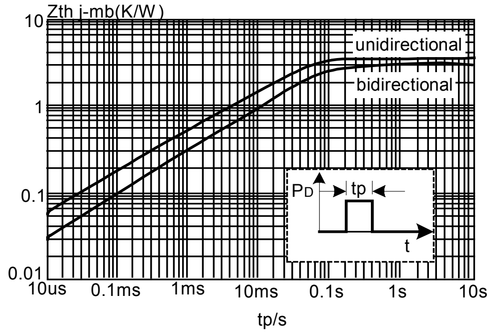


Fig.11.Transient thermal impedance Zthj-mb,versus pulse width tp.

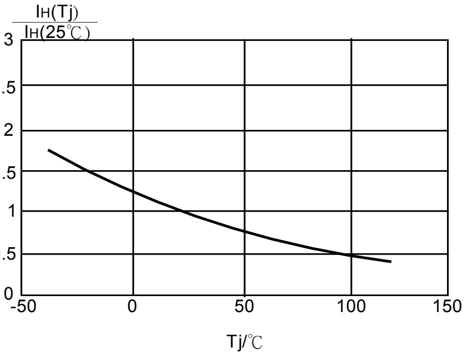


Fig. 9.Normalised holding current $I_H(T_j)/I_H(25℃)$, versus junction temperature T_j.

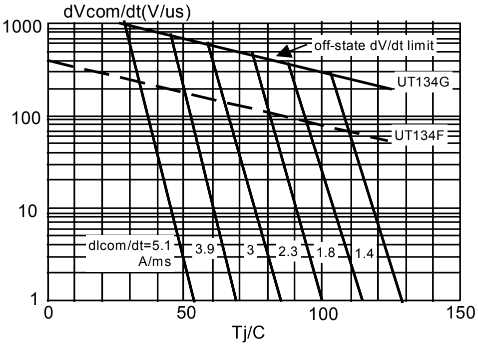


Fig.12.Typical commutation dV/dt versus junction temperature,parameter commutation dI_T/dt.The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt