

Snubberless™, logic level and standard 8 A Triacs

Features

- Medium current Triac
- High static and dynamic commutation
- Low thermal resistance with clip bonding
- Packages is RoHS (2002/95/EC) compliant
- 600 V V_{RM}
- UL certified (ref. file E81734)

Applications

- Value sensitive application
- General purpose ac line load switching
- Motor control circuits in power tools
- Small home appliances, lighting
- Inrush current limiting circuits
- Overvoltage crowbar protection

Description

Available in through-hole, the T8T series of Triacs can be used as on/off or phase angle control function in general purpose ac switching where high commutation capability is required.

This series can be designed-in in many value sensitive appliances thanks to the parameters guidance provided in the following pages.

Provides insulation rated at 2500 V rms (TO-220AB insulated package).

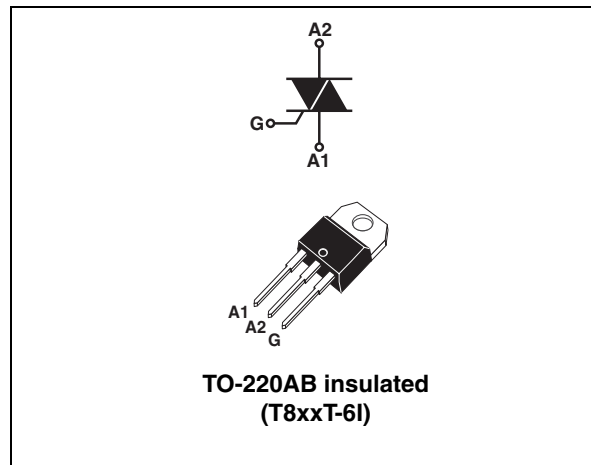


Table 1. Device summary

Order code	Symbol	Value
T810T-6I	I_{GT} 3Q logic level	10 mA
T820T-6I T835T-6I	I_{GT} 3Q Snubberless	20 / 35 mA
T825T-6I	I_{GT} 4Q standard	25 mA

TM: Snubberless is a trademark of STMicroelectronics

1 Characteristics

Table 2. Absolute ratings (limiting values; $T_j = 25\text{ °C}$, unless otherwise specified)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	On-state rms current (full sine wave)		$T_c = 97\text{ °C}$	8	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25 °C)	F = 50 Hz	$t_p = 20\text{ ms}$	60	A
		F = 60 Hz	$t_p = 16.7\text{ ms}$	63	
I^2t	I^2t Value for fusing		$t_p = 10\text{ ms}$	26	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$ $t_r \leq 100\text{ ns}$	F = 60 Hz	$T_j = 125\text{ °C}$	50	A/ μs
V_{DSM} / V_{RSM}	Non repetitive surge peak off-state voltage	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	$V_{DRM} / V_{RRM} + 100$	V
I_{GM}	Peak gate current	$t_p = 20\text{ }\mu s$	$T_j = 125\text{ °C}$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125\text{ °C}$	1	W
T_{stg}	Storage junction temperature range			- 40 to + 150	$^{\circ}C$
T_j	Operating junction temperature range			- 40 to + 125	$^{\circ}C$

Table 3. Electrical characteristics ($T_j = 25\text{ °C}$, unless otherwise specified)

Symbol	Test conditions	Quadrant		T8xxT				Unit
				T810T	T820T	T825T	T835T	
$I_{GT}^{(1)}$	$V_D = 12\text{ V}$, $R_L = 30\ \Omega$	I - II - III	MAX.	10	20	25	35	mA
		IV				40		
V_{GT}	$V_D = V_{DRM}$, $R_L = 30\ \Omega$, $T_j = 25\text{ °C}$	ALL	MAX.	1.3				V
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3\ \text{k}\Omega$, $T_j = 125\text{ °C}$	ALL	MIN.	0.2				V
$I_H^{(2)}$	$I_T = 500\text{ mA}$		MAX.	15	25	30	40	mA
I_L	$I_G = 1.2\ I_{GT}$	I - III	MAX.	20	35	40	50	mA
		IV				40		
		II		25	40	70	70	
$dV/dt^{(2)}$	$V_D = 67\% V_{DRM}$, gate open	$T_j = 125\text{ °C}$	MIN.	100	750	500	2000	V/ μs
		$T_j = 150\text{ °C}^{(3)}$		50	500	300	1000	
$(di/dt)^c^{(2)}$	$(dV/dt)^c = 0.1\ \text{V}/\mu\text{s}$	$T_j = 125\text{ °C}$	MIN.	5.4				A/ms
	$(dV/dt)^c = 10\ \text{V}/\mu\text{s}$			2		4.5		
	Without snubber				3.4		8	
	$(dV/dt)^c = 0.1\ \text{V}/\mu\text{s}$	$T_j = 150\text{ °C}^{(3)}$		2.5				
	$(dV/dt)^c = 10\ \text{V}/\mu\text{s}$			1		2		
	Without snubber				2		6.5	

1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.
2. For both polarities of A2 referenced to A1.
3. Derating information for excess temperature above T_j max.

Table 4. Static characteristics

Symbol	Test conditions		Value	Unit	
$V_T^{(1)}$	$I_{TM} = 11.3\ \text{A}$, $t_p = 380\ \mu\text{s}$	$T_j = 25\text{ °C}$	MAX.	1.60	V
$V_{TO}^{(1)}$	Threshold voltage	$T_j = 125\text{ °C}$	MAX.	0.87	V
$R_D^{(1)}$	Dynamic resistance	$T_j = 125\text{ °C}$	MAX.	60	$\text{m}\Omega$
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25\text{ °C}$	MAX.	5	μA
		$T_j = 125\text{ °C}$		1	mA
	$V_D = 0.9 \times V_{DRM}$	$T_j = 150\text{ °C}^{(2)}$	TYP.	1.9	

1. For both polarities of A2 referenced to A1.
2. Derating information for excess temperature above T_j max.