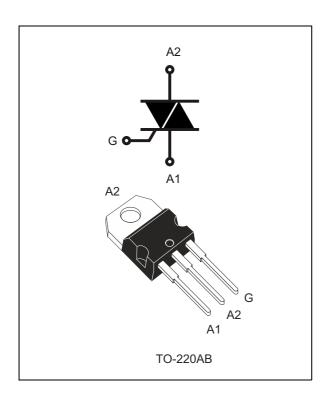


8 A logic level Triac

Datasheet - production data



Description

Available in through-hole package, the T810T-8T Triac can be used for the on/off or phase angle control function in general purpose AC switching. This device can be directly driven by a microcontroller due to its 10 mA gate current requirement.

Table 1. Device summary

Symbol	Value	Unit
I _{T(rms)}	8	Α
V_{DRM}, V_{RRM}	800	V
V _{DSM} , V _{RSM}	900	V
I _{GT}	10	mA

Features

- Medium current Triac
- Three quadrants
- ECOPACK®2 compliant component

Applications

- · General purpose AC line load switching
- Motor control circuits
- Small home appliances
- Lighting
- Inrush current limiting circuits
- Overvoltage crowbar protection

Characteristics T810T-8T

1 Characteristics

Table 2. Absolute ratings (limiting values, $T_j = 25$ °C unless otherwise stated)

Symbol	Paramete	Value	Unit		
I _{T(rms)}	On-state rms current (full sine wave)	T _C = 131 °C	8	Α
l	Non repetitive surge peak on-state	f = 50 Hz	t = 20 ms	60	Α
I _{TSM}	current (full cycle, T _j initial = 25 °C)	f = 60 Hz	t = 16.7 ms	63	^
l ² t	I ² t value for fusing, T _j initial = 25 °C		$t_p = 10 \text{ ms}$	24	A ² s
V _{DRM} ,	Repetitive surge peak off-state volta	990	T _j = 150 °C	600	V
V_{RRM}	Repetitive surge peak oil-state voita	T _j = 125 °C	800	V	
V _{DSM} , V _{RSM}	Non repetitive surge peak off-state v	t _p = 10 ms	900	V	
dl/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \le 100 \text{ ns}$	F = 100 Hz	100	A/µs	
I _{GM}	Peak gate current $t_p = 20 \mu s$		T _j = 150 °C	4	Α
P _{G(AV)}	Average gate power dissipation	T _j = 150 °C	1	W	
T _{stg}	Storage junction temperature range			- 40 to + 150	°C
Tj	Operating junction temperature range			- 40 to + 150	<u> </u>
T_L	Maximum lead temperature for sold	ering during	10 s	260	°C

Table 3. Electrical characteristics ($T_i = 25$ °C, unless otherwise specified)

Symbol	Test conditions	Quadrant		Value	Unit
	$V_D = 12 \text{ V}, R_1 = 30 \Omega$	1 - 11 - 111	Min.	0.5	mA
I _{GT}	VD = 12 V, INL = 30 S2	1 - 11 - 111	Max.	10	IIIA
V _{GT}	$V_D = 12 \text{ V}, R_L = 30 \Omega$	1 - 11 - 111	Max.	1.3	V
V _{GD}	$V_D = V_{DRM}, R_L = 3.3 \text{ k}\Omega, T_j = 150 \text{ °C}$	1 - 11 - 111	Min.	0.2	V
I _H ⁽¹⁾	I _T = 500 mA		Max.	15	mA
	I _G = 1.2 I _{GT}	1 - 111	Max.	20	- mA
I _L		II		25	
dV/dt ⁽¹⁾	$V_D = V_R = 536 \text{ V, gate open}$	T _j = 125 °C	= 125 °C Min.		V/µs
u v/ui、	$V_D = V_R = 402 \text{ V, gate open}$			170	V/µs
(dl/dt)c ⁽¹⁾	(dV/dt)c = 0.1 V/µs	T _j = 125 °C	Min.	6.0	A/ms
(ui/ut)C ^{(*/}		T _j = 150 °C	IVIIII.	4.2	
(dl/dt)c ⁽¹⁾	(dV/dt)c = 10 V/μs	T _j = 125 °C	Min.	3.2	- A/ms
(ui/ui)c· /		T _j = 150 °C	IVIIII.	1.4	

^{1.} For both polarities of A2 referenced to A1

T810T-8T Characteristics

Table	4	Static	charac	teristics

Symbol	Test conditions			Value	Unit
V _T ⁽¹⁾	$I_{TM} = 11.3 \text{ A}, t_p = 380 \mu\text{s}$	T _j = 25 °C	Max.	1.55	V
V _{t0} (1)	Threshold voltage	T _j = 150 °C	Max.	0.85	V
R _d ⁽¹⁾	Dynamic resistance	T _j = 150 °C	Max.	57	mΩ
	V _{DRM} = V _{RRM} = 800 V	T _j = 25 °C	Max.	5	μΑ
I _{DRM} I _{RRM}	V _{DRM} = V _{RRM} = 000 V	T _j = 125 °C	iviax.	0.8	mA
'KKIVI	V _{DRM} = V _{RRM} = 600 V	T _j = 150 °C	Max.	2.4	IIIA

^{1.} For both polarities of A2 referenced to A1

Table 5. Thermal resistance

Symbol	Parameter	Value	Unit
R _{th(j-c)}	Junction to case (AC)	1.9	°C/W
R _{th(j-a)}	Junction to ambient (DC)	60	°C/W

Figure 1. Maximum power dissipation versus on-state rms current

Figure 2. On-state rms current versus case temperature

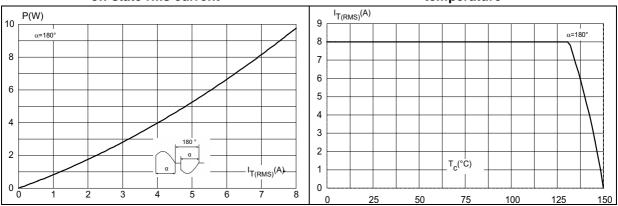
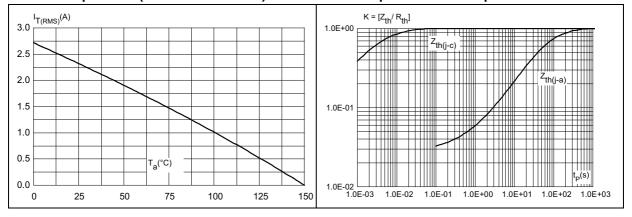


Figure 3. On-state rms current versus ambient temperature (free air convection)

Figure 4. Relative variation of thermal impedance versus pulse duration



Characteristics T810T-8T

Figure 5. On-state characteristics (maximum values)

100 T_M(A)

100 T_j max:

V_i = 0.85 V
R_d = 57 mΩ

V_{TM}(V)

10.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Figure 6. Surge peak on-state current versus number of cycles

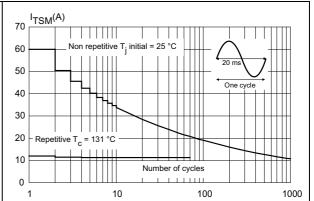
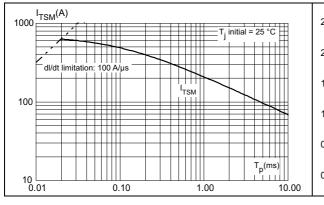


Figure 7. Non repetitive surge peak on-state current

Figure 8. Relative variation of gate trigger current and gate voltage versus junction temperature (typical values)



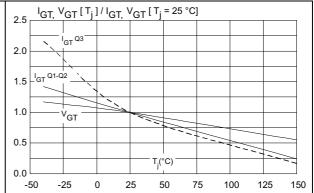
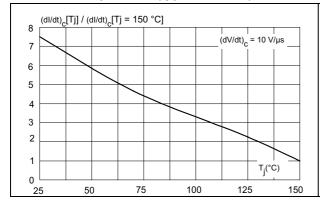
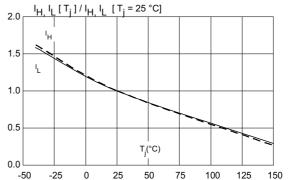


Figure 9. Relative variation of critical rate of decrease of main current versus junction temperature (typical values)

Figure 10. Relative variation of holding current and latching current versus junction temperature (typical values)

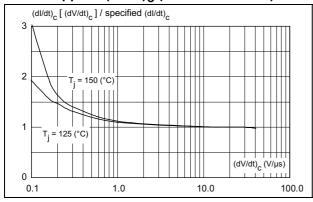




T810T-8T Characteristics

Figure 11. Relative variation of critical rate of decrease of main current (dl/dt)_C versus reapplied (dV/dt)_C (maximum values)

Figure 12. Relative variation of static dV/dt immunity versus junction temperature (typical values)



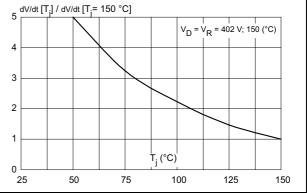
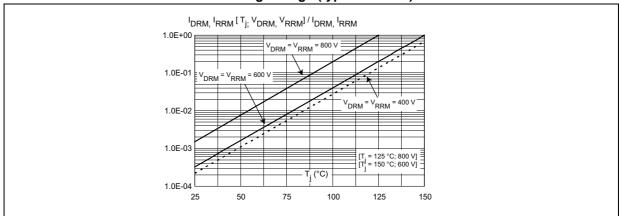


Figure 13. Relative variation of leakage current versus junction temperature for different values of blocking voltage (typical values)



Package information T810T-8T

2 Package information

- Epoxy meets UL94, V0
- Lead-free package
- Recommended torque: 0.4 to 0.6 N·m

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.

Ε $\emptyset P$ Resin gate 0.5 mm max. protrusion⁽¹⁾ Q H1 D **D1** L30 **L20** J1 L1 b1 b Resin gate C 0.5 mm max. protrusion⁽¹⁾ (1) Resin gate position accepted in each of the two position shown as well as the symmetrical opposites

Figure 14. TO-220AB dimension definitions

T810T-8T Package information

Table 6. TO-220AB dimension values

		nsions		
Ref.	Millim	neters		hes
	Min.	Max.	Min.	Max.
А	4.40	4.60	0.17	0.18
b	0.61	0.88	0.024	0.035
b1	1.14	1.70	0.045	0.067
С	0.48	0.70	0.019	0.027
D	15.25	15.75	0.60	0.62
D1	1.27 typ.		0.05	typ.
E	10	10.40	0.39	0.41
е	2.40	2.70	0.094	0.106
e1	4.95	5.15	0.19	0.20
F	1.23	1.32	0.048	0.052
H1	6.20	6.60	0.24	0.26
J1	2.40	2.72	0.094	0.107
L	13	14	0.51	0.55
L1	3.50	3.93	0.137	0.154
L20	16.40 typ.		0.64	typ.
L30	28.90 typ.		1.13	typ.
ØP	3.75	3.85	0.147	0.151
Q	2.65	2.95	0.104	0.116

Ordering information T810T-8T

3 Ordering information

Figure 15. Ordering information scheme

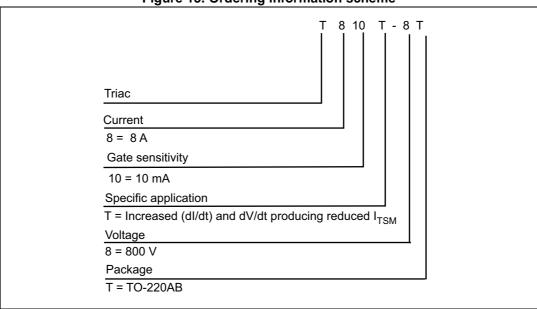


Table 7. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
T810T-8T	T810T-8T	TO-220AB	2.0 g	50	Tube

4 Revision history

Table 8. Document revision history

Date	Revision	Changes
07-Nov-2014	1	Initial release.

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