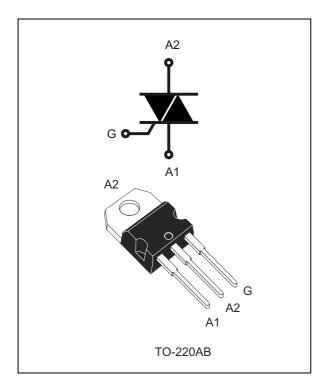
T1210T-8T

life.augmented

12 A logic level Triac

Datasheet – production data



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

Description

Available in through-hole package, the T1210T-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)}	12	A		
V _{DRM} , V _{RRM}	800	V		
V_{DSM}, V_{RSM}	900	V		
I _{GT}	10	mA		

Table 1. Device summary

November 2014

This is information on a product in full production.

1 Characteristics

Symbol	Paramete	Value	Unit		
I _{T(rms)}	On-state rms current (full sine wave)	T _c = 131 °C	12	А
	Non repetitive surge peak on-state	f = 50 Hz	t = 20 ms	90	А
TSM	current (full cycle, T _j initial = 25 °C)		t = 16.7 ms	95	~
l ² t	$I^{2}t$ value for fusing, T_{j} initial = 25 °C		t _p = 10 ms	54	A²s
V _{DRM} ,	Ropotitivo surgo pook off stato volta	20	T _j = 150 °C	600	V
V _{RRM}				800	v
V _{DSM} , V _{RSM}	Non repetitive surge peak off-state	t _p = 10 ms	900	V	
dl/dt	Critical rate of rise of on-state curren $I_G = 2 \times I_{GT}, t_r \le 100 \text{ ns}$	F = 100 Hz	100	A/µs	
I _{GM}	Peak gate current	t _p = 20 μs	T _j = 150 °C	4	А
P _{G(AV)}	Average gate power dissipation $T_j = 150 \text{ °C}$			1	W
T _{stg}	Storage junction temperature range Operating junction temperature range			- 40 to + 150	°C
Тj				- 40 to + 150	Ŭ
ΤL	Maximum lead temperature for sold	ering during	10 s	260	°C

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

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

Symbol	Test conditions	Quadrant		Value	Unit
1	$V_D = 12 V, R_L = 30 \Omega$		Min.	0.5	
I _{GT}		1 - 11 - 111	Max.	10	mA
V _{GT}	V_D = 12 V, R _L = 30 Ω	- -	Max.	1.3	V
V _{GD}	$V_{D} = V_{DRM}, R_{L} = 3.3 \text{ k}\Omega, T_{j} = 125 \text{ °C}$	- -	Min.	0.2	V
I _H ⁽¹⁾	I _T = 500 mA		Max.	15	mA
I	I _G = 1.2 I _{GT}	-	Max.	20	mA
ΙL		II		25	
dV/dt ⁽¹⁾	$V_D = V_R = 536 V$, gate open	T _j = 125 °C	Min.	250	V/µs
uv/ut()	$V_D = V_R = 402 V$, gate open	T _j = 150 °C		170	V/µs
(dl/dt)c ⁽¹⁾	(dV/dt)c = 0.1 V/µs	T _j = 125 °C	Min.	11.7	A /
(ui/ut)c		T _j = 150 °C		8.2	A/ms
(dl/dt)c ⁽¹⁾	(dV/dt)c = 10 V/µs	T _j = 125 °C		6	
		T _j = 150 °C	Min.	2.7	A/ms

1. For both polarities of A2 referenced to A1



Symbol	Test conditions			Value	Unit
V _T ⁽¹⁾	I _{TM} = 17 A, t _p = 380 μs	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.	37	mΩ
	V _{DRM} = V _{RRM} = 800 V	T _j = 25 °C	Max.	7.5	μA
I _{DRM} I _{RRM}	$v_{\text{DRM}} = v_{\text{RRM}} = 800 \text{ v}$	T _j = 125 °C	ividX.	1	mA
'KRM	$V_{DRM} = V_{RRM} = 600 V$	T _j = 150 °C	Max.	2.7	ШA

Table 4. Static characteristics

1. For both polarities of A2 referenced to A1

Table 5.	Thermal	resistance
14010 01		

Symbol	Parameter	Value	Unit
R _{th(j-c)}	Junction to case (AC)	1.3	°C/W
R _{th(j-a)}	Junction to ambient (DC)	60	°C/W

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

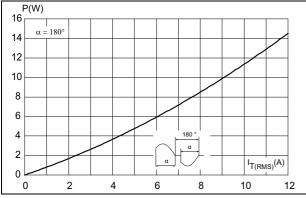


Figure 3. On-state rms current versus ambient temperature (free air convection)

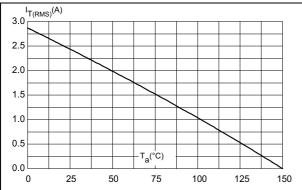


Figure 2. On-state rms current versus case temperature

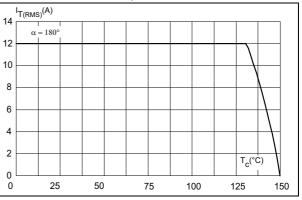


Figure 4. Relative variation of thermal impedance versus pulse duration

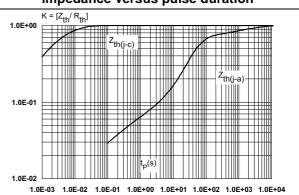




Figure 5. On-state characteristics (maximum values)

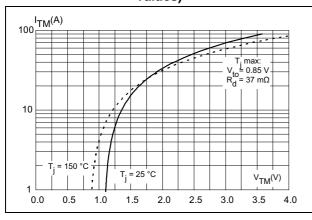


Figure 7. Non repetitive surge peak on-state current

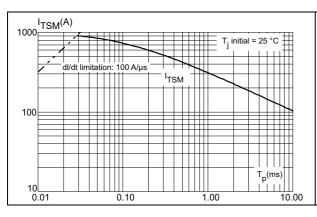
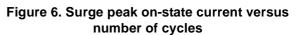


Figure 9. Relative variation of critical rate of decrease of main current versus junction temperature (typical values)



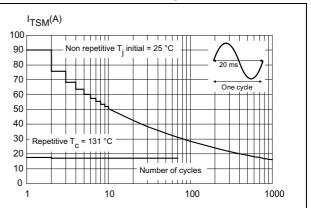


Figure 8. Relative variation of gate trigger current and gate voltage versus junction temperature (typical values)

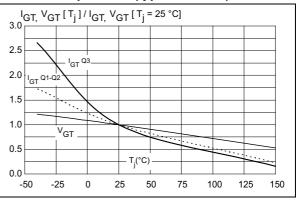
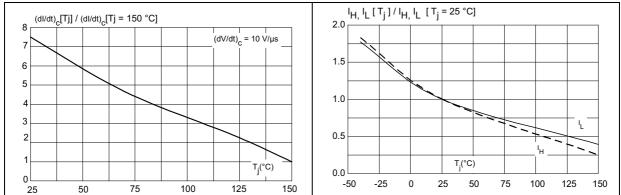


Figure 10. Relative variation of holding current and latching current versus junction temperature (typical values)





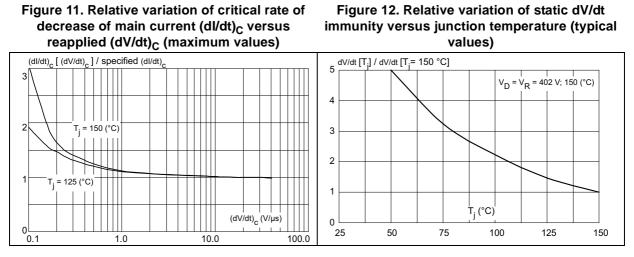
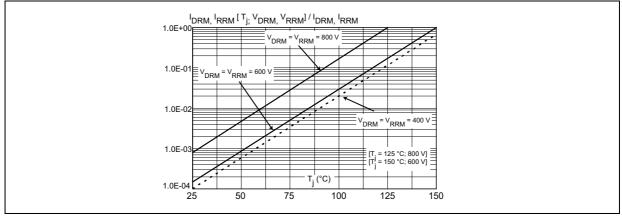


Figure 13. Relative variation of leakage current versus junction temperature for different values of blocking voltage (typical values)

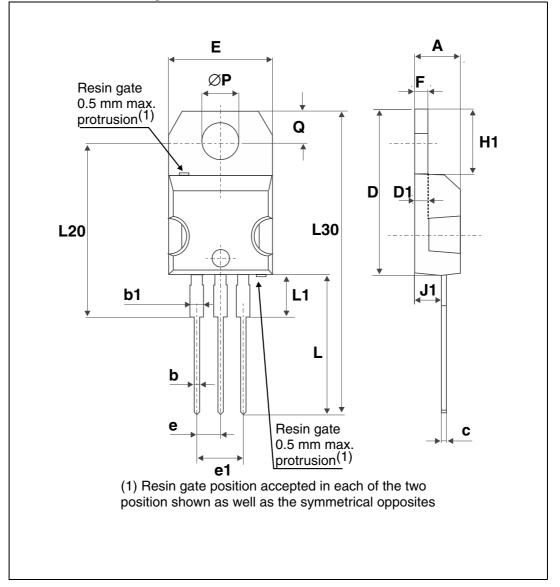


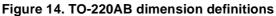


2 Package information

- 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.







	Dimensions					
Ref.	Millimeters		Inc	hes		
	Min.	Max.	Min.	Max.		
A	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		

Table 6. TO-220AB dimension values



3 Ordering information

Triac	T 12 10 T - 8 T
Current	
12 = 12 A	
Gate sensitivity	
10 = 10 mA	
Specific application	
T = Increased (dl/dt) _C and dV/dt	producing reduced I _{TSM}
Voltage	
8 = 800 V	
Package	
T = TO-220AB	

Figure 15. Ordering information scheme

Table 7.	Orderina	information
	oracing	mormation

Order code	Marking	Package	Weight	Base qty	Delivery mode
T1210T-8T	T1210T-8T	TO-220AB	2.0 g	50	Tube

4 Revision history

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



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