

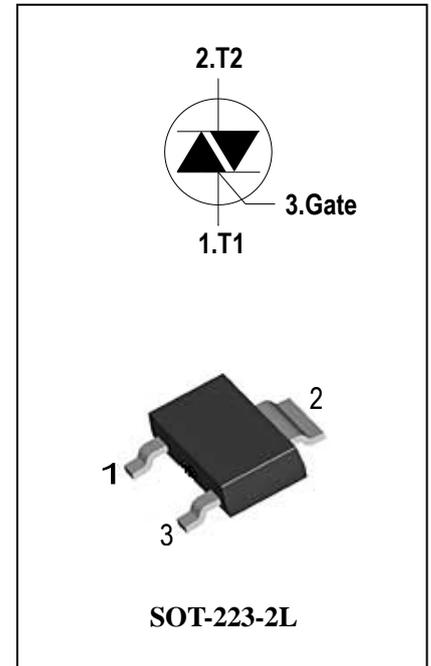
## 3Quadrants Triacs

### General Description

This device is suitable for low power AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay also designed for use in MPU interface, TTL logic.

### Features

- ◆ Repetitive Peak Off-State Voltage: 1000V
- ◆ R.M.S On-State Current ( $I_{T(RMS)} = 2\text{ A}$ )
- ◆ High Commutation  $dv/dt \geq 1000V/\mu S$
- ◆ These Devices are Pb-Free and are RoHS Compliant



### Absolute Maximum Ratings

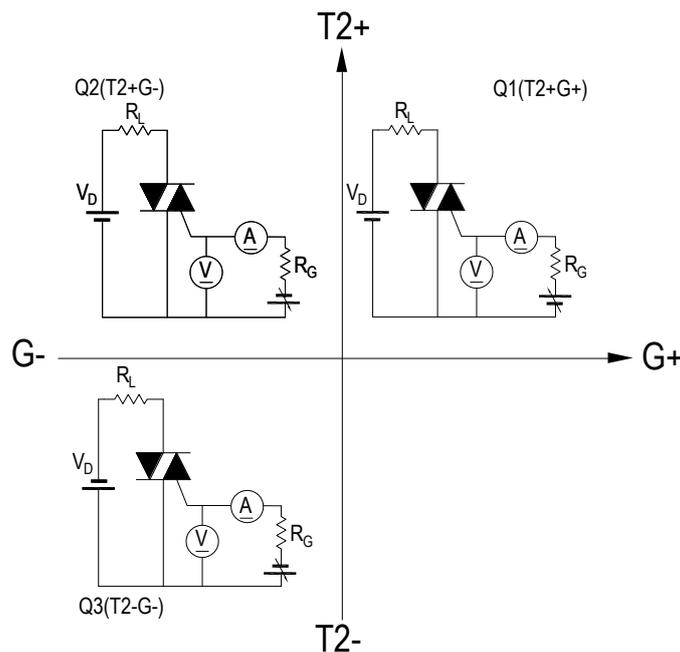
Symbol	Items	Conditions		Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ\text{C}$	T210C-10WL	1000	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 95^\circ\text{C}$		2	A
$I_{TSM}$	Surge On-State Current	$t_p = 20\text{ms}(50\text{Hz})/t_p = 16.7\text{ms}(60\text{Hz})$		20/21	A
$I^2t$	$I^2t$ for fusing	$t_p = 10\text{ms}$		2	$\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 125^\circ\text{C}$ $I_G = 2 \times I_{GT}, t_r \leq 100\text{ ns}$		50	$\text{A}/\mu\text{s}$
$I_{GM}$	Peak Gate Current	$t_p = 20\text{ }\mu\text{s } T_j = 125^\circ\text{C}$		2	A
$P_{G(AV)}$	Average Gate Power Dissipation( $T_j = 125^\circ\text{C}$ )			0.5	W
$P_{GM}$	Peak Gate Power Dissipation( $t_p = 20\mu\text{s}, T_j = 125^\circ\text{C}$ )			5	W
$T_j$	Operating Junction Temperature			- 40 ~ 125	$^\circ\text{C}$
$T_{STG}$	Storage Temperature			- 40 ~ 150	$^\circ\text{C}$



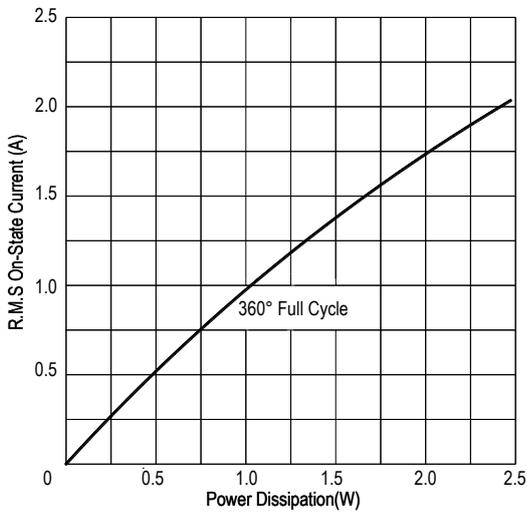
## Electrical Characteristics ( $T_j = 25^\circ\text{C}$ unless otherwise specified )

Symbol	Items		Conditions		T210C-10WL	Unit
$I_{DRM}$	Peak Forward Reverse Blocking		$V_{DRM} = V_{RRM}, T_j = 25^\circ\text{C}$	Max.	5	$\mu\text{A}$
$I_{RRM}$	Current		$V_{DRM} = V_{RRM}, T_j = 125^\circ\text{C}$		0.5	$\text{mA}$
$V_{TM}$	Peak On-State Voltage		$I_{TM} = 3.5\text{A}, t_p = 380 \mu\text{s}$	Max.	1.5	$\text{V}$
$V_{GD}$	Q1-Q2-Q3	Non-Trigger Gate Voltage	$V_D = V_{DRM} \quad R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	Min.	0.2	$\text{V}$
$V_{GT}$	Q1-Q2-Q3	Gate Trigger Voltage	$V_D = 12\text{V} \quad R_L = 33\Omega$	Max.	1.3	$\text{V}$
$I_{GT}$	Q1-Q2-Q3	Gate Trigger Current		Max.	10	$\text{mA}$
$I_H$	Q1-Q2-Q3	Holding Current	$I_T = 0.1\text{A}$	Max.	15	$\text{mA}$
$I_L$	Q1-Q3	Latching Current	$I_G = 1.2 I_{GT}$	Max.	25	$\text{mA}$
	Q2				40	
$dV/dt$	Critical Rate of Rise of Off-State Voltage		$V_D = 2/3V_{DRM} \quad \text{gate open}$ $T_j = 125^\circ\text{C}$	Min.	1000	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	Rate of Change of Commutating Current,		$(dI/dt)_c = -0.5\text{A/ms}$ $T_j = 125^\circ\text{C}$	Min.	10	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	Junction to case (AC)			Max.	18	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab:S=5cm <sup>2</sup> )			Max.	42	$^\circ\text{C}/\text{W}$

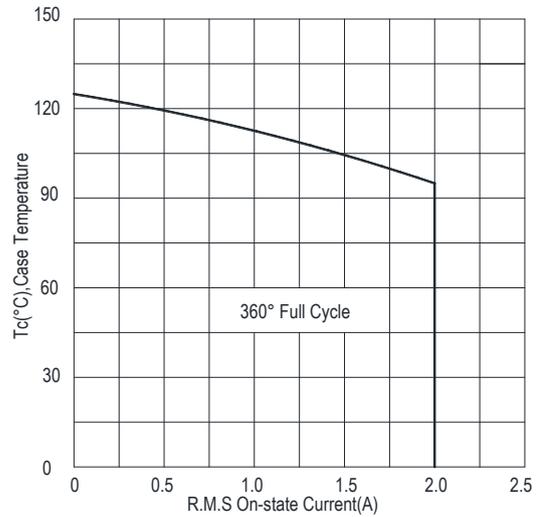
FIG.1:Triac quadrant are defined and the gate trigger test circuit



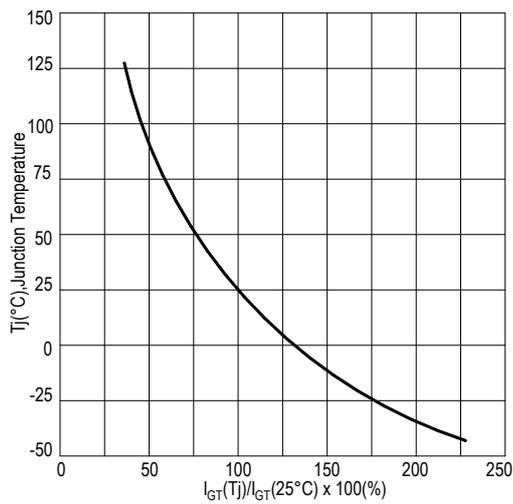
**FIG.2: Maximum on-state power dissipation**



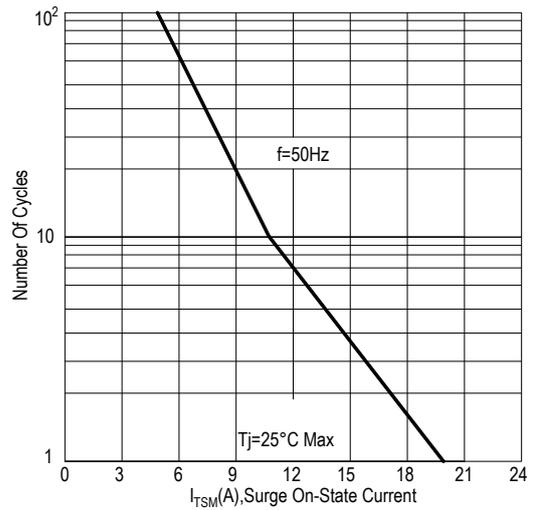
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



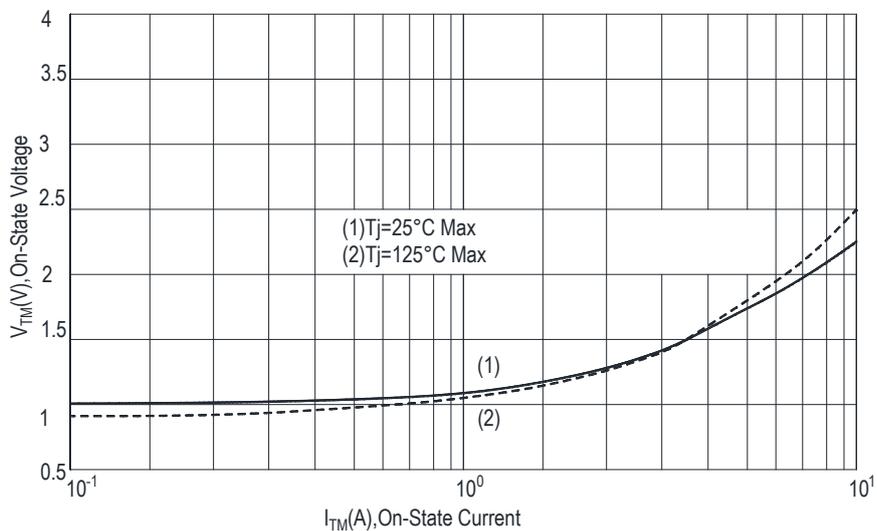
**FIG.4: Gate trigger current VS Junction temperature**



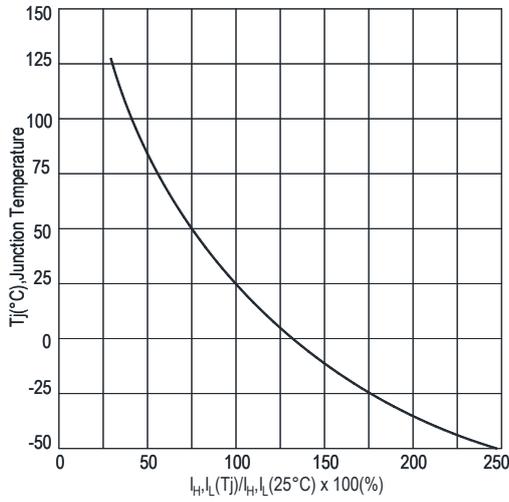
**FIG.5: Rated surge on-state current (Non-Repetitive)**



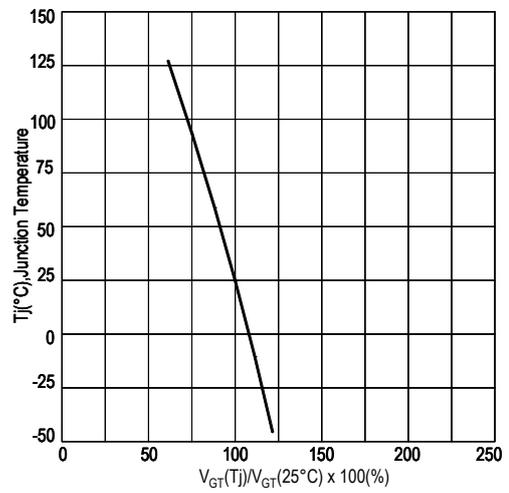
**FIG.6: On-state characteristics(Max)**



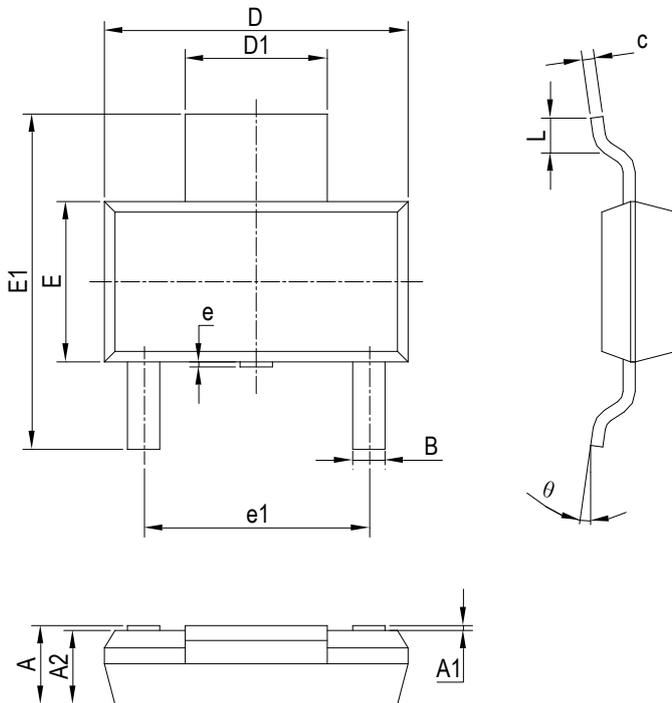
**FIG.7: Holding current and Latching current VS Junction temperature**



**FIG.8: Gate trigger voltage VS Junction temperature**

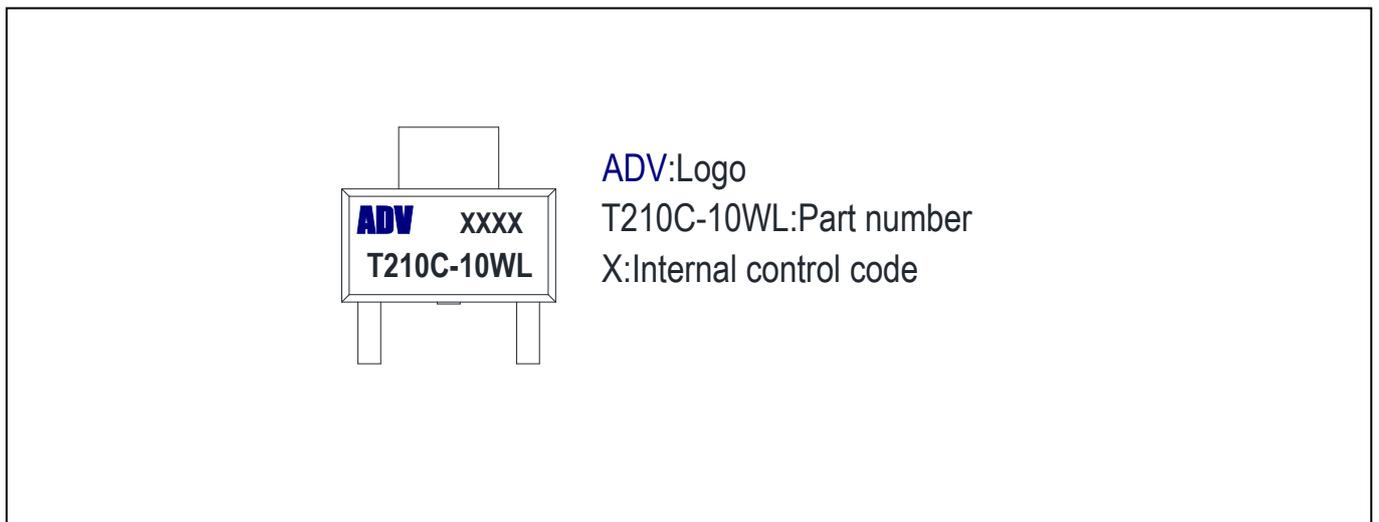


**PACKAGE MECHANICAL DATA**  
**SOT-223-2L Package Dimension**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.500	1.800	0.059	0.071
A1	0.010	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
c	0.220	0.350	0.009	0.014
D	6.200	6.700	0.244	0.264
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.700	7.300	0.264	0.287
e	0	0.200	0	0.008
e1	4.500	4.700	0.177	0.185
L	0.700	1.150	0.028	0.045
theta	0°	10°	0°	10°
B	0.600	0.800	0.024	0.031

**Making Diagram**



**Ordering information**

Part number	Package	Marking	Packing	Quantity
T210C-10WL	SOT-223-2L	T210C-10WL	Embossed tape	4000pcs

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