

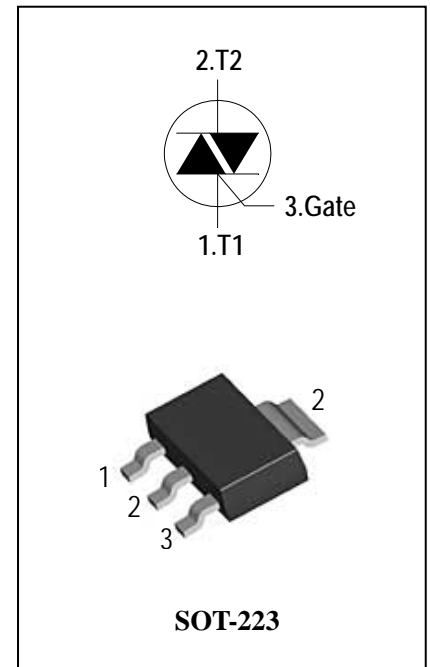
4 Quadrants Triacs

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: 600V and 800V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 1\text{ A}$)
- ◆ 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	$T_j = 25^\circ\text{C}$	ADT1D60W	600	V
			ADT1D80W	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 85^\circ\text{C}$		1	A
I_{TSM}	Surge On-State Current	$t_p = 20\text{ms}(50\text{Hz})/t_p = 16.7\text{ms}(60\text{Hz})$		12/12.8	A
I^2t	I^2t for fusing	$t_p = 10\text{ms}$		0.78	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz}$ $T_j = 125^\circ\text{C}$ $I_G = 2 \times I_{GT}, t_r \leq 100\text{ ns}$	Q1-Q2-Q3	50	$\text{A}/\mu\text{s}$
			Q4	10	
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu\text{s}$ $T_j = 125^\circ\text{C}$		1	A
$P_{G(AV)}$	Average Gate Power Dissipation($t_p = 10\text{ms}, T_j = 80^\circ\text{C}$)			0.5	W
P_{GM}	Peak Gate Power Dissipation($t_p = 10\text{ms}, T_j = 80^\circ\text{C}$)			4	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		ADT1D60W/80W	Unit
I_{DRM}	Peak Forward Reverse Blocking Current		$V_{DRM} = V_{RRM}, T_j = 25^\circ\text{C}$	Max.	5	μA
I_{RRM}			$V_{DRM} = V_{RRM}, T_j = 125^\circ\text{C}$		0.5	mA
V_{TM}	Peak On-State Voltage		$I_{TM} = 2\text{A}, t_p = 380 \mu\text{s}$	Max.	1.5	V
V_{GD}	Q1-Q2-Q3-Q4	Non – Trigger Gate Voltage	$V_D = V_{DRM} R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	Min.	0.2	V
V_{GT}	Q1-Q2-Q3-Q4	Gate Trigger Voltage	$V_D = 12\text{V}, R_L = 100\Omega$	Max.	1.3	V
I_{GT}	Q1-Q2-Q3 Q4	Gate Trigger Current		Max.	5 10	mA
I_H	Q1-Q2-Q3-Q4	Holding Current	$I_T = 0.2\text{A}$	Max.	5	mA
I_L	Q1-Q3-Q4	Latching Current	$I_G = 1.2 I_{GT}$	Max.	10	mA
	Q2				20	
dV/dt	Critical Rate of Rise of Off-State Voltage		$V_D = 2/3V_{DRM}$ gate open $T_j = 125^\circ\text{C}$	Min.	25	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	Critical Rate of Change of Commutating Voltage		$(dI/dt)_c = -0.3\text{A}/\text{ms}$ $T_j = 125^\circ\text{C}$	Min.	1	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	Junction to case (AC)			Max.	25	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab: $S=5\text{cm}^2$)			Max.	60	$^\circ\text{C}/\text{W}$

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

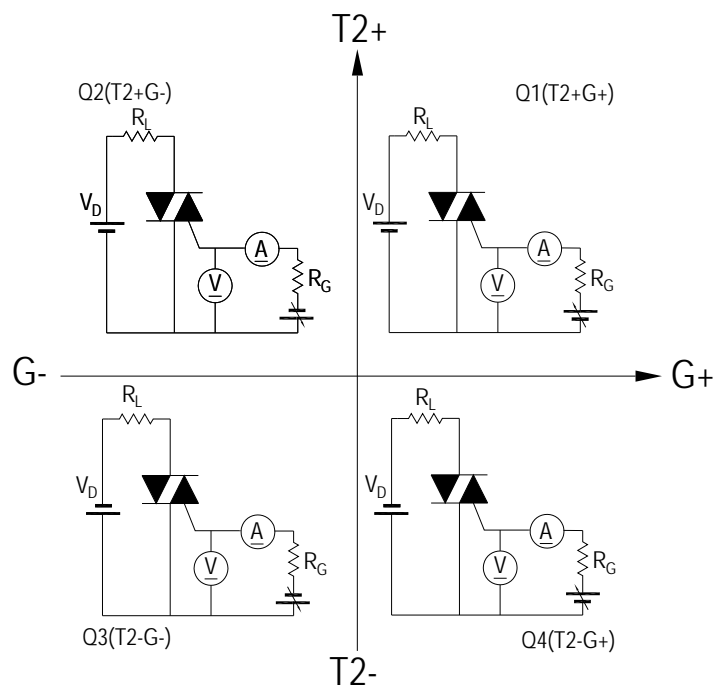


FIG.2: Maximum on-state power dissipation

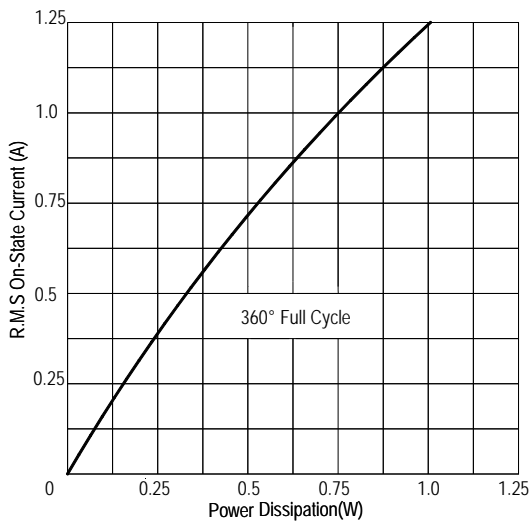


FIG.3: Typical RMS on-state current VS Allowable case Temperature

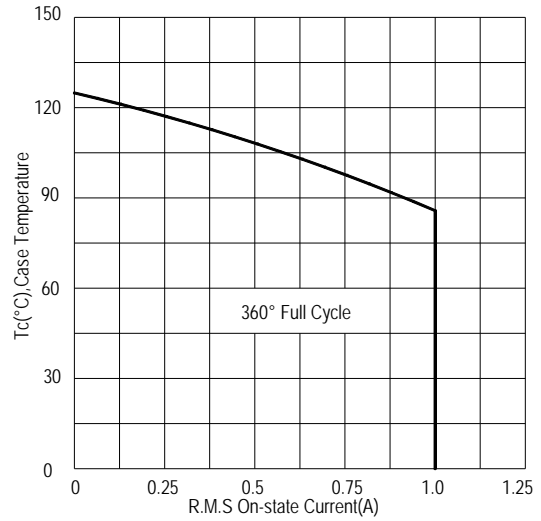


FIG.4: Gate trigger current VS Junction temperature

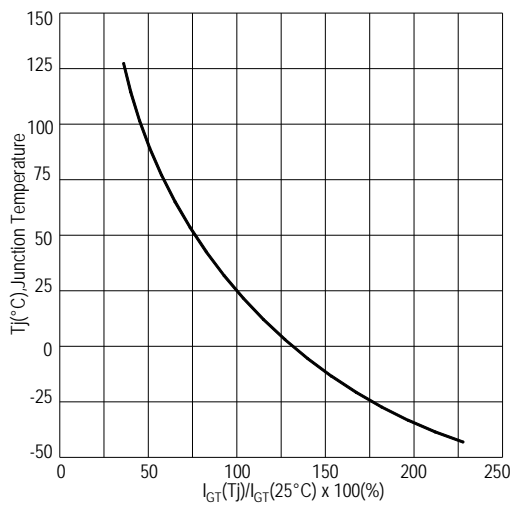


FIG.5: Rated surge on-state current (Non-Repetitive)

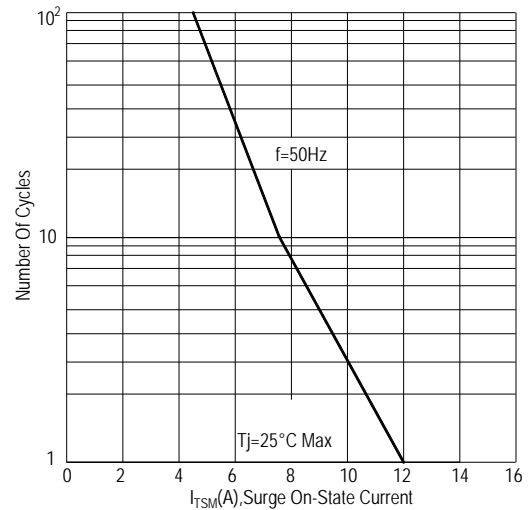


FIG.6: On-state characteristics(Max)

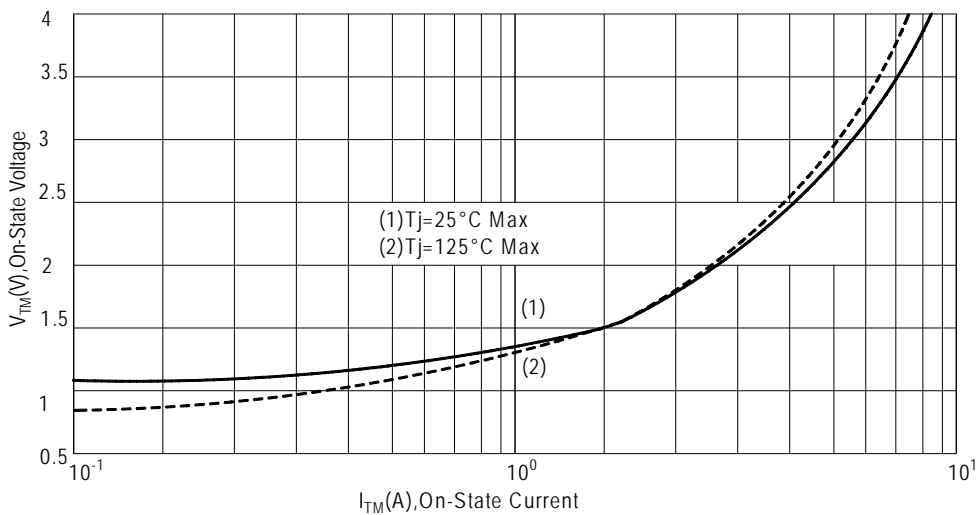


FIG.7: Holding current and Latching current VS Junction temperature

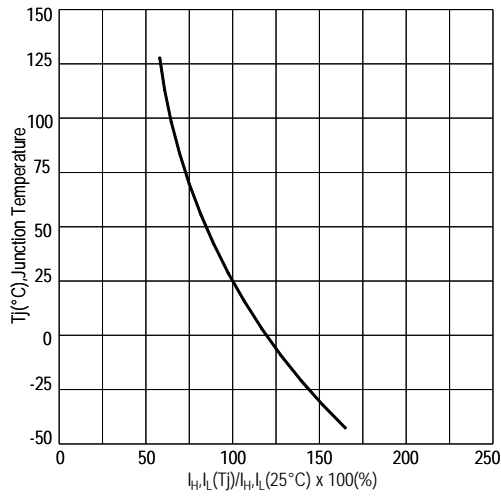
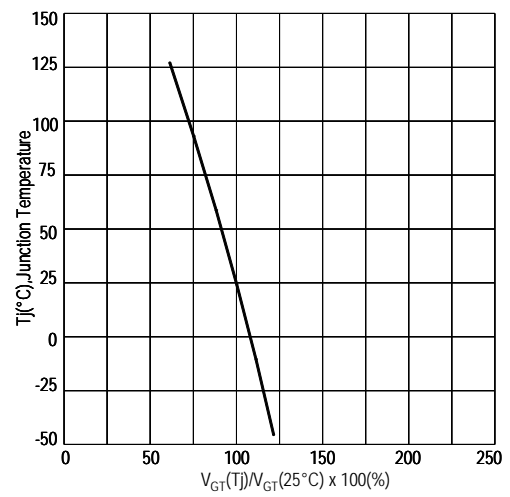
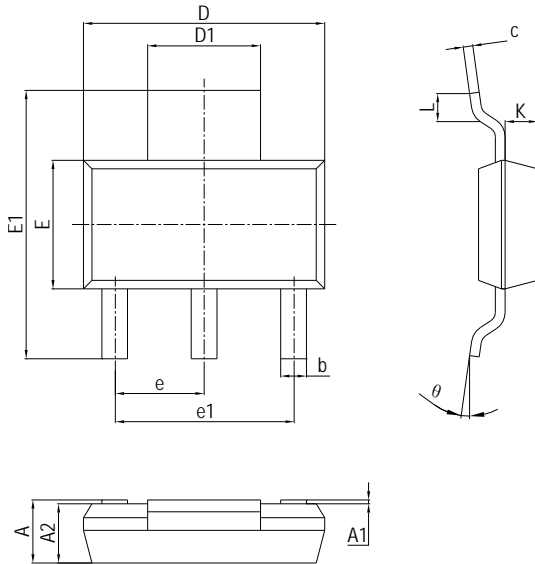


FIG.8: Gate trigger voltage VS Junction temperature



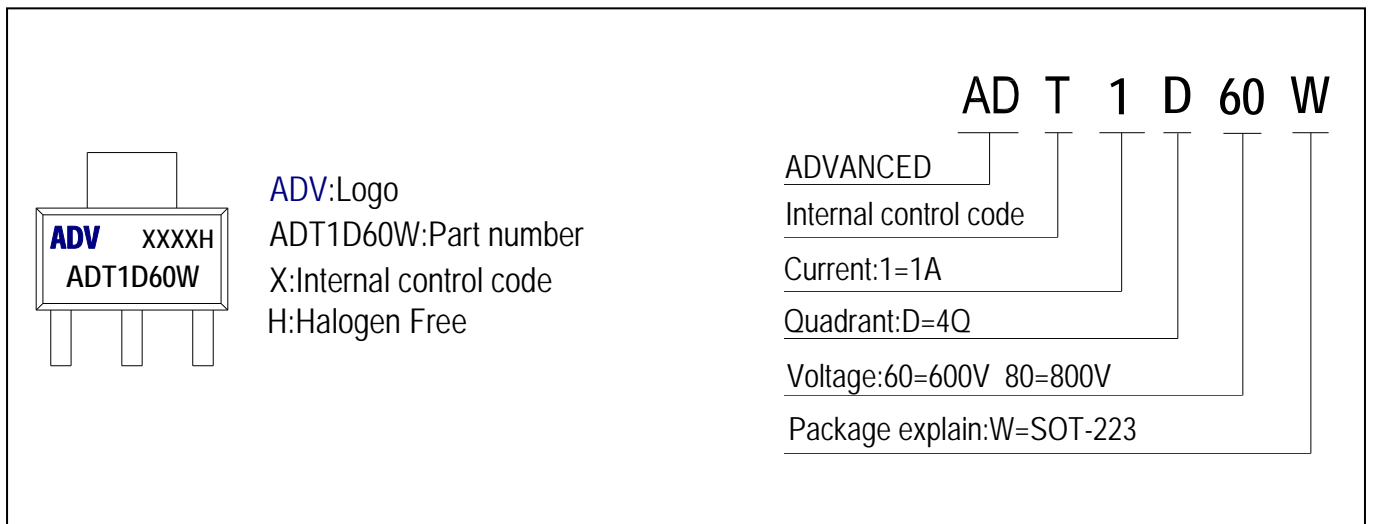
PACKAGE MECHANICAL DATA

SOT-223 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300 TYP		0.091 TYP	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°
b	0.660	0.820	0.026	0.032
K	0.890	0.91	0.035	0.036

Making Diagram



Ordering information

Part number	Package	Marking	Packing	Quantity
ADT1D60W	SOT-223	ADT1D60W	Embossed tape	2000pcs
ADT1D80W	SOT-223	ADT1D80W	Embossed tape	2000pcs

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