

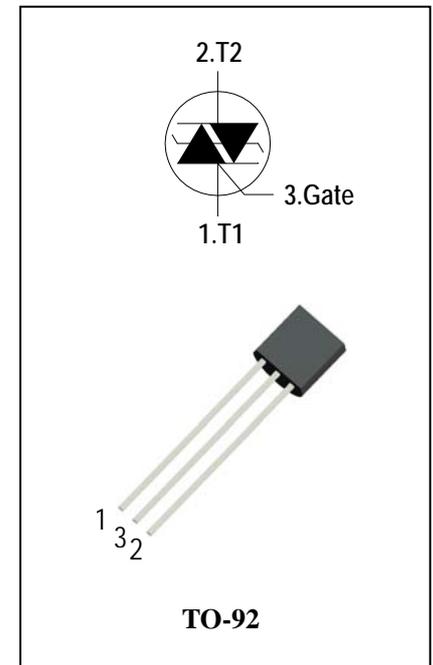
AC Thyristor Triac power switch

General Description

Sensitive gate triac in the TO-92 plastic package, intended for use in AC static switching and industrial control systems, driving low power highly inductive loads like solenoid, pump, fan, and micro-motor.

Features

- ◆ Repetitive Peak Off-State Voltage: 800V and 1000V
- ◆ R.M.S On-State Current ($I_{T(RMS)}=1A$)
- ◆ Very high immunity to false turn-on by dV/dt
- ◆ Triggering in three quadrants only
- ◆ Pin compatible with standard triacs
- ◆ Safe clamping capability for low energy over-voltage transients
- ◆ 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	$T_j = 25^\circ C$	AACT108 800 AACT110 1000	V V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 57^\circ C$	1	A
I_{TSM}	Surge On-State Current	$t_p = 20ms(50Hz) / t_p = 16.7ms(60Hz)$	12/12.8	A
I^2t	I^2t for fusing	$t_p = 10ms$	1.12	A^2s
dI/dt	Critical rate of rise of on-state current	$F = 120 Hz$ $T_j = 125^\circ C$ $I_G = 2 \times I_{GT}$, $t_r \leq 100 ns$	50	$A/\mu s$
I_{GM}	Peak Gate Current	$t_p = 20 \mu s$ $T_j = 125^\circ C$	1	A
$P_{G(AV)}$	Average Gate Power Dissipation($T_j = 125^\circ C$)		0.1	W
P_{GM}	Peak Gate Power Dissipation($t_p = 20\mu s, T_j = 125^\circ C$)		1	W
T_j	Operating Junction Temperature		- 40 ~ 125	$^\circ C$
T_{STG}	Storage Temperature		- 40 ~ 150	$^\circ C$



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

Symbol	Items	Conditions		AACT108/10	Unit
I_{DRM}	Peak Forward Reverse Blocking Current	$V_{\text{DRM}} = V_{\text{RRM}}, T_j = 25^\circ\text{C}$	Max.	10	μA
I_{RRM}		$V_{\text{DRM}} = V_{\text{RRM}}, T_j = 125^\circ\text{C}$		0.5	mA
V_{TM}	Peak On-State Voltage	$I_{\text{TM}} = 1.4\text{A}, t_p = 380 \mu\text{s}$	Max.	1.5	V
V_{GD}	Q1-Q2-Q3 Non-Trigger Gate Voltage	$V_D = 2/3V_{\text{DRM}}, R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	Min.	0.2	V
V_{GT}	Q1-Q2-Q3 Gate Trigger Voltage	$V_D = 12\text{V}, R_L = 33\Omega$	Max.	1.3	V
I_{GT}	Q1-Q2-Q3 Gate Trigger Current		Max.	10	mA
I_{H}	Q1-Q2-Q3 Holding Current	$I_T = 0.1\text{A}$	Max.	10	mA
I_{L}	Q1-Q3 Latching Current	$I_G = 1.2 I_{\text{GT}}$	Max.	25	mA
	Q2			35	
dV/dt	Critical Rate of Rise of Off-State Voltage	$V_D = 2/3V_{\text{DRM}}$ gate open $T_j = 125^\circ\text{C}$	Min.	600	$\text{V}/\mu\text{s}$
$R_{\text{th(j-c)}}$	Junction to case (AC)		Max.	60	$^\circ\text{C}/\text{W}$
$R_{\text{th(j-a)}}$	Junction to ambient(Copper surface under tab:S=5cm ²)		Max.	150	$^\circ\text{C}/\text{W}$

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

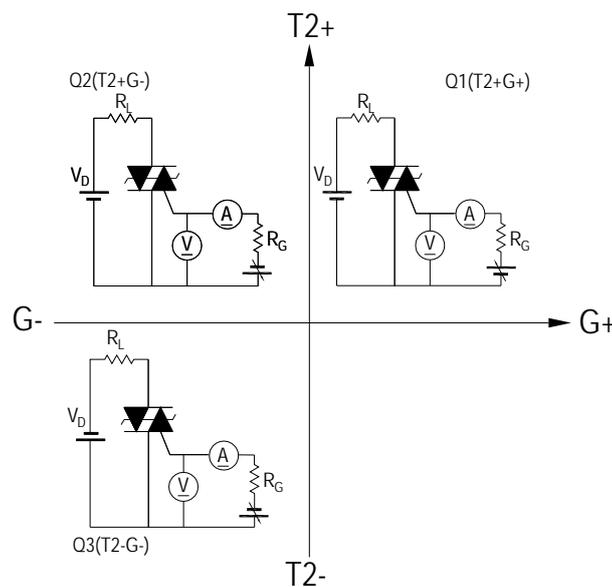


FIG.2: Maximum on-state power dissipation

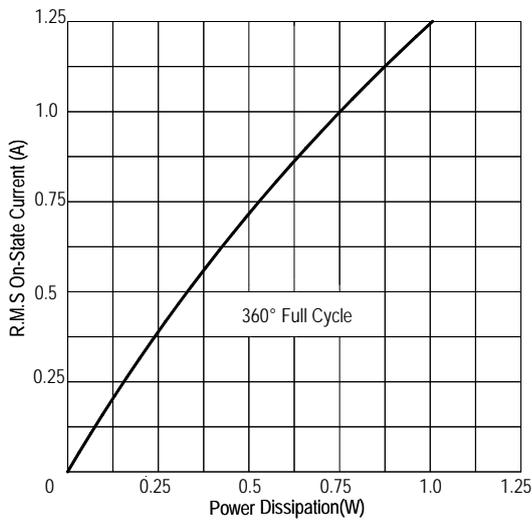


FIG.3: Typical RMS on-state current VS Allowable case Temperature

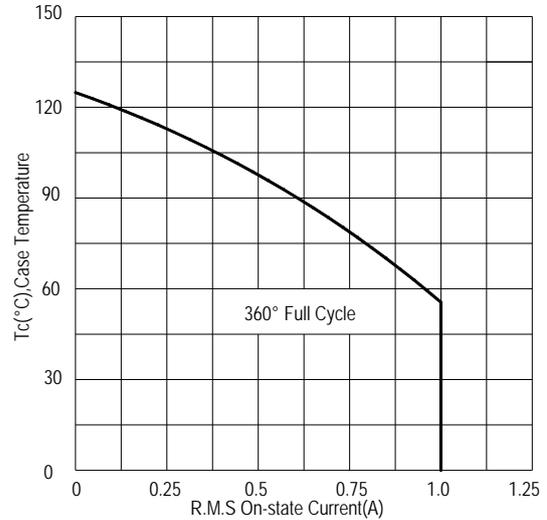


FIG.4: Gate trigger current VS Junction temperature

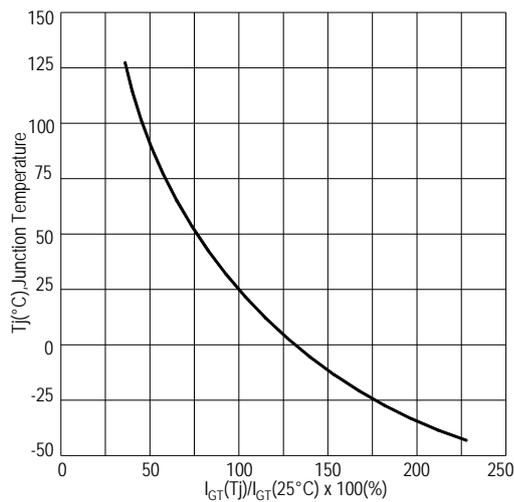


FIG.5: Rated surge on-state current (Non-Repetitive)

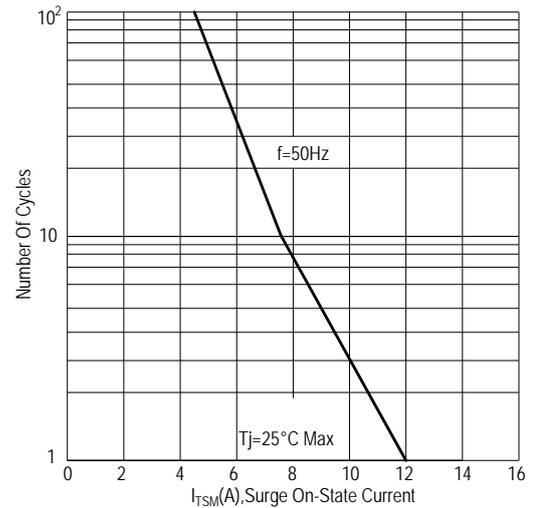


FIG.6: On-state characteristics(Max)

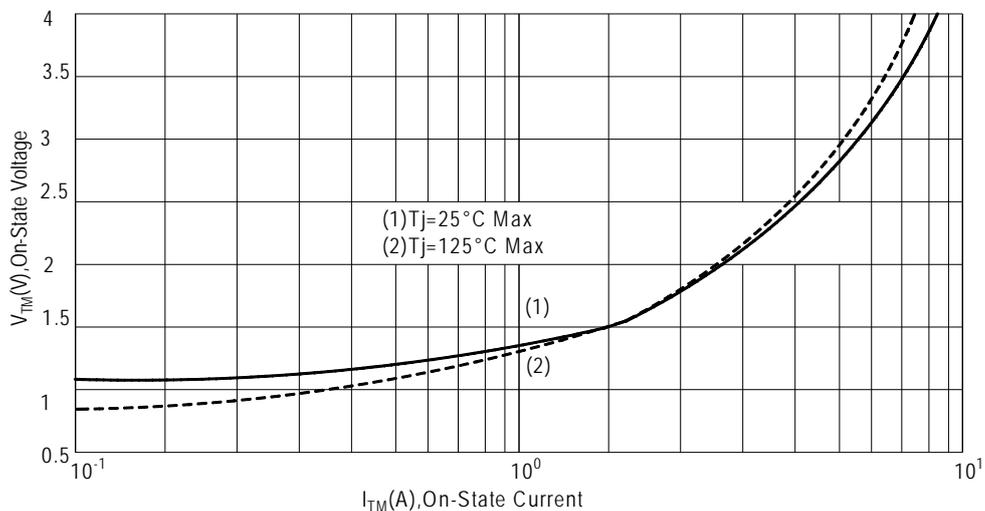


FIG.7: Holding current and Latching current VS Junction temperature

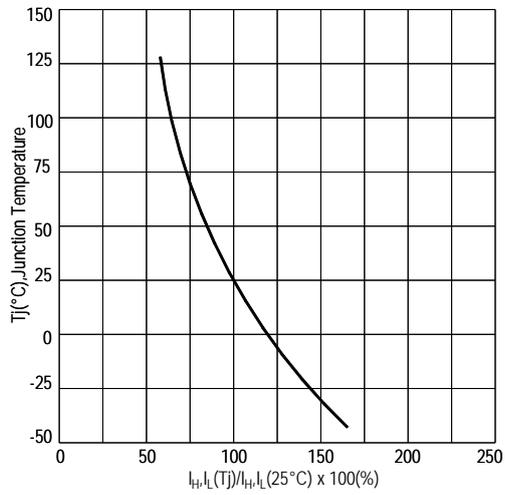
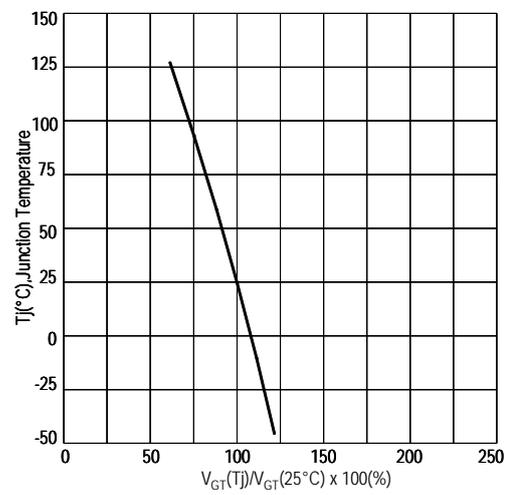
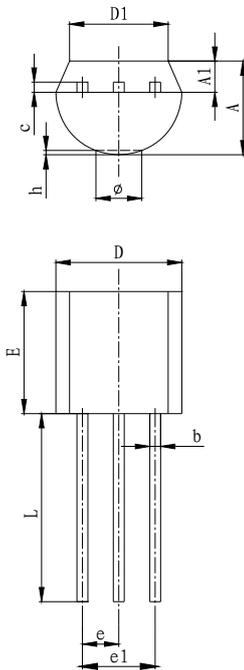


FIG.8: Gate trigger voltage VS Junction temperature



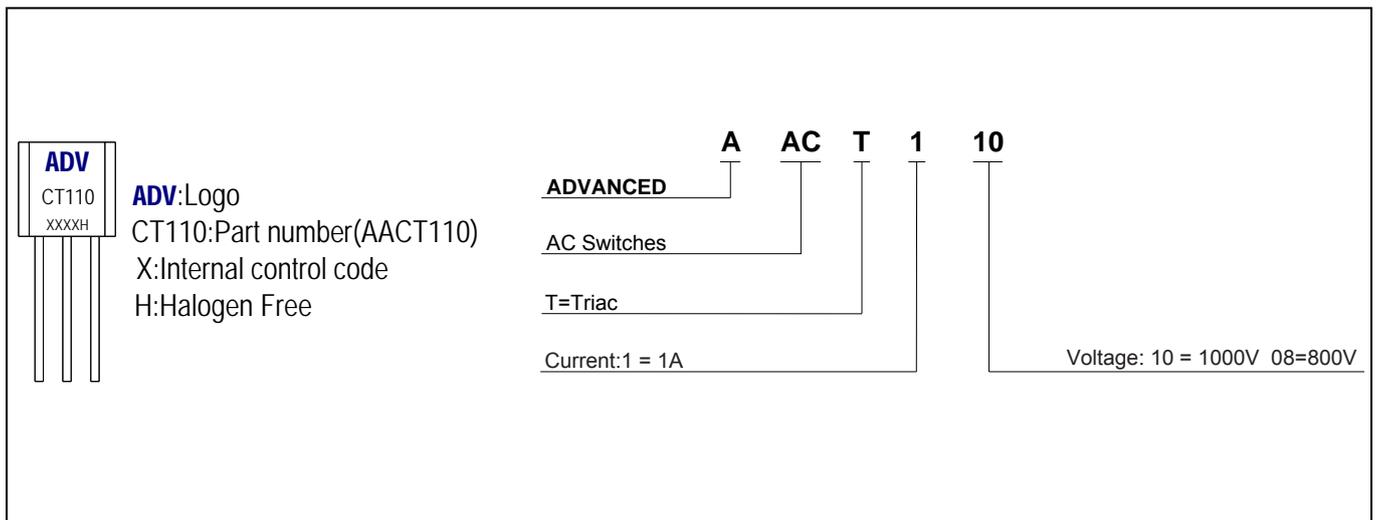
PACKAGE MECHANICAL DATA

TO-92 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.180	4.190	0.125	0.165
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	5.200	0.173	0.205
D1	3.430		0.135	
E	4.300	5.330	0.169	0.210
e	1.270 TYP		0.050 TYP	
e1	2.420	2.660	0.095	0.105
L	12.70	-	0.500	-
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

Making Diagram



Ordering information

Part number	Package	Marking	Packing	Quantity
AACT108	TO-92	T108	Vinyl sack	1000pcs
AACT110	TO-92	T110	Vinyl sack	1000pcs

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