

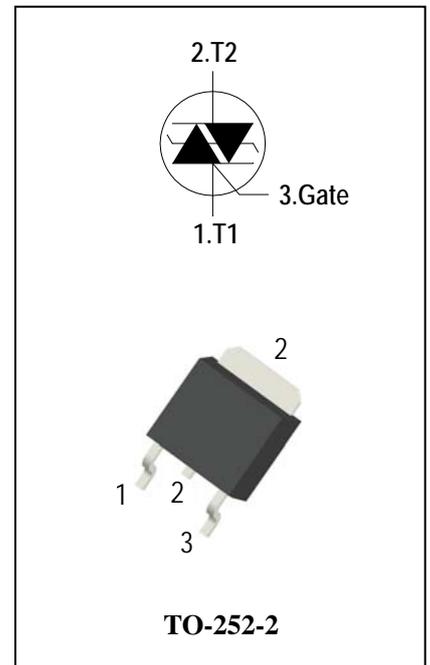
AC Thyristor Triac power switch

General Description

Available either in through-hole or surface-mount packages, the AACT4 suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers,...

Features

- ◆ Repetitive Peak Off-State Voltage: 800V and 1000V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 4A$)
- ◆ 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	$T_j = 25^\circ C$	AACT408E	800	V
			AACT410E	1000	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 110^\circ C$		4	A
I_{TSM}	Surge On-State Current	$t_p = 20ms(50Hz) / t_p = 16.7ms(60Hz)$		30/33	A
I^2t	I^2t for fusing	$t_p = 10ms$		4.5	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120 Hz$ $T_j = 125^\circ C$ $I_G = 2 \times I_{GT}$, $t_r \leq 100 ns$		100	$A/\mu s$
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($t_p = 20\mu s, T_j = 125^\circ C$)			5	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		AACT408E/10E		Unit
					S	Blank	
I_{DRM} I_{RRM}	Peak Forward Reverse Blocking Current		$V_{DRM} = V_{RRM}, T_j = 25^\circ\text{C}$	Max.	10		μA
			$V_{DRM} = V_{RRM}, T_j = 125^\circ\text{C}$		1		mA
V_{TM}	Peak On-State Voltage		$I_{TM} = 5.6\text{A}, t_p = 380 \mu\text{s}$	Max.	1.55		V
V_{GD}	Q1-Q2-Q3	Non-Trigger Gate Voltage	$V_D = 2/3V_{DRM}, R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	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	35	mA
I_H	Q1-Q2-Q3	Holding Current	$I_T = 0.1\text{A}$	Max.	25	40	mA
I_L	Q1-Q3	Latching Current	$I_G = 1.2 I_{GT}$	Max.	15	40	mA
	Q2				20	60	
dV/dt	Critical Rate of Rise of Off-State Voltage		$V_D = 2/3V_{DRM}$ gate open $T_j = 125^\circ\text{C}$	Min.	500	1000	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	Junction to case (AC)			Max.	2.6		$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab: $S=0.5\text{cm}^2$)			Max.	70		$^\circ\text{C}/\text{W}$

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

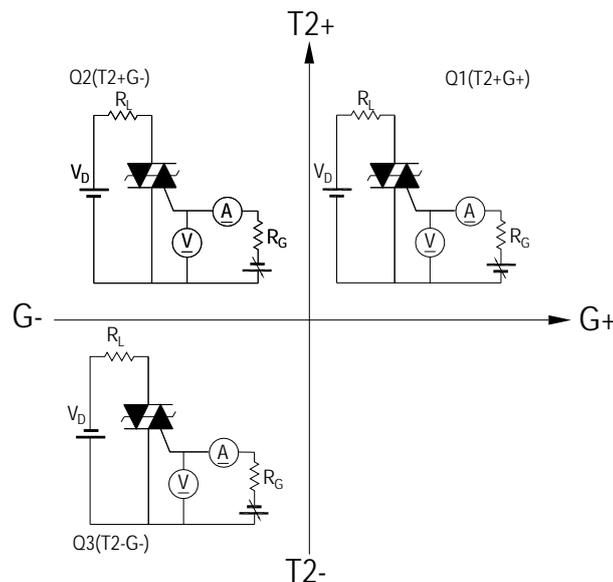


FIG.2: Maximum on-state power dissipation

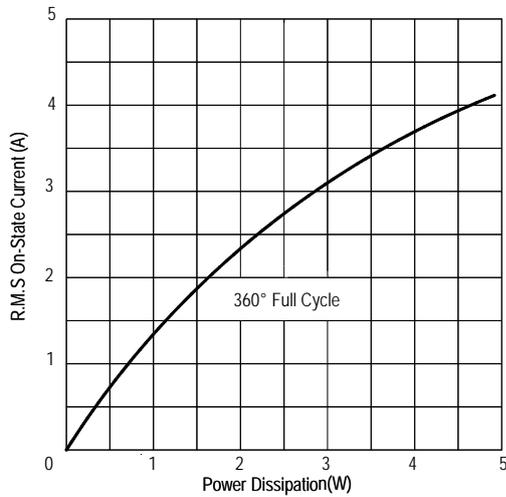


FIG.3: Typical RMS on-state current VS Allowable case Temperature

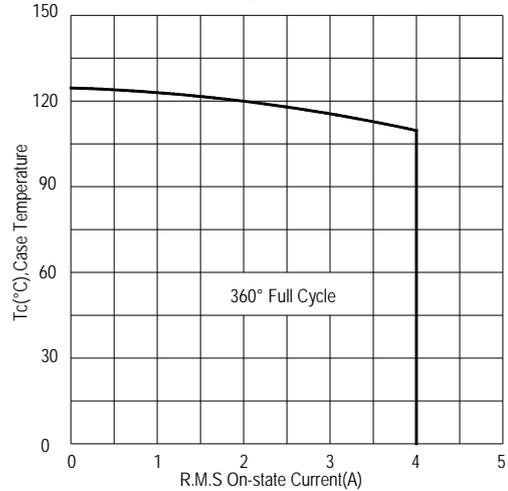


FIG.4: Maximum transient thermal impedance

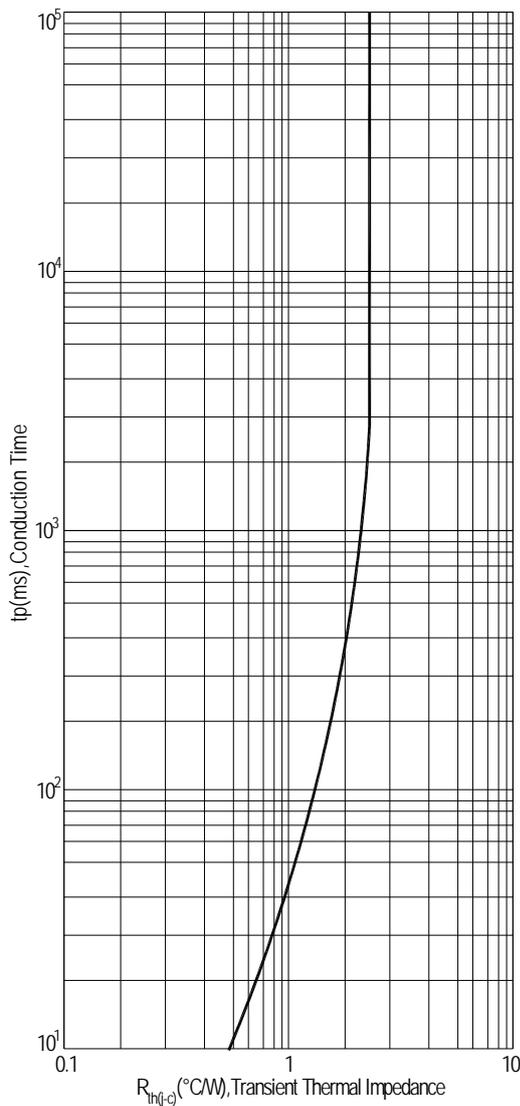


FIG.5: Rated surge on-state current (Non-Repetitive)

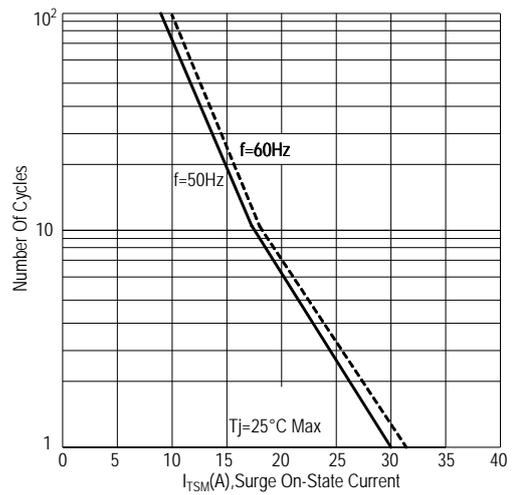


FIG.6: Gate trigger current VS Junction temperature

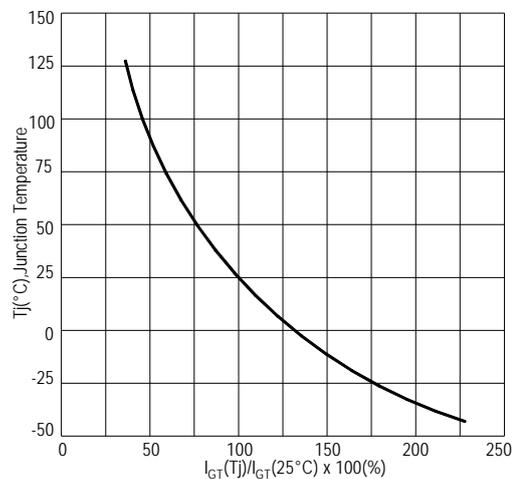


FIG.7: Holding current and Latching current VS Junction temperature

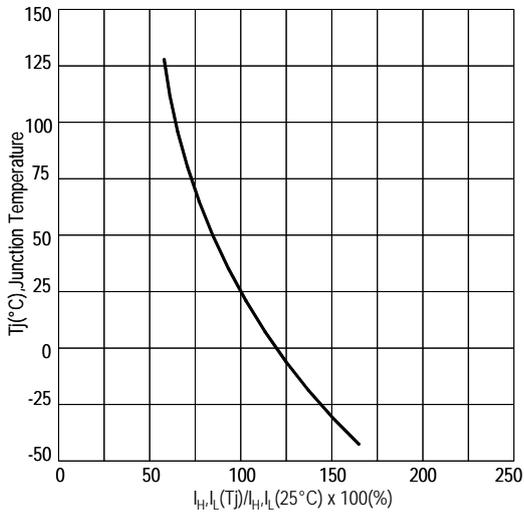


FIG.8: Gate trigger voltage VS Junction temperature

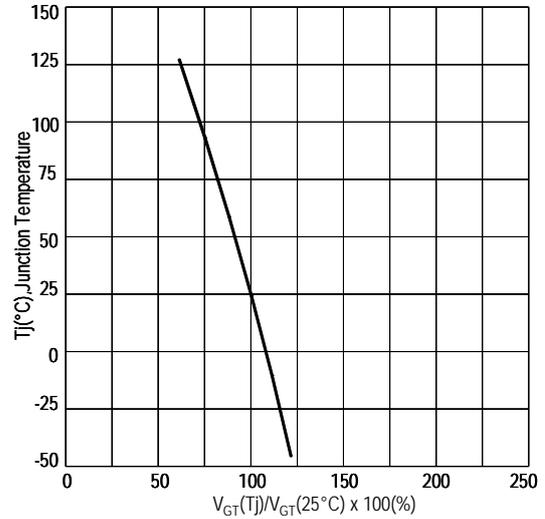
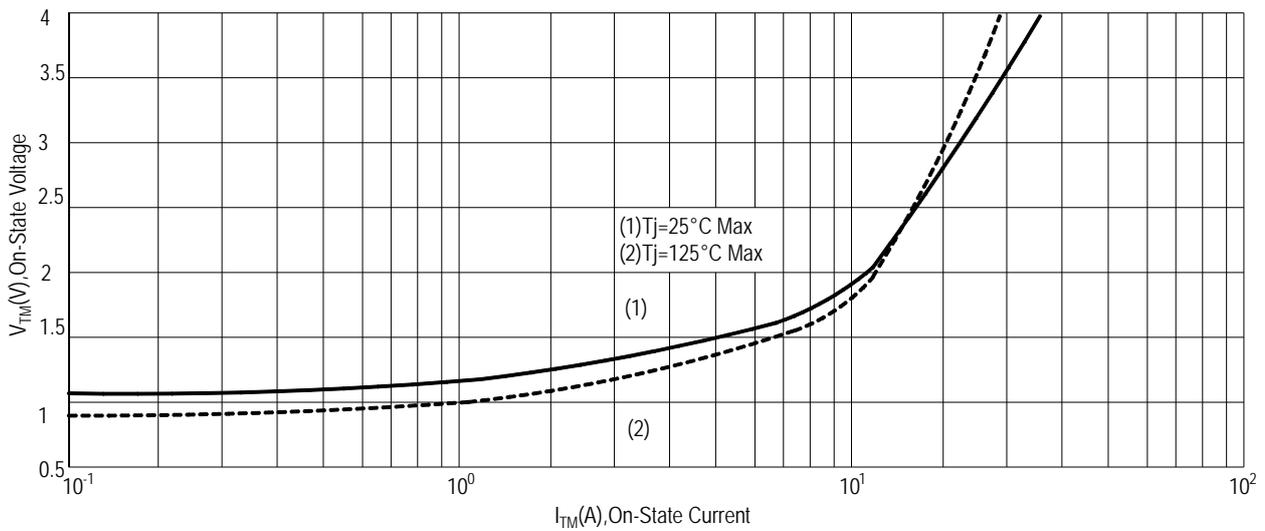
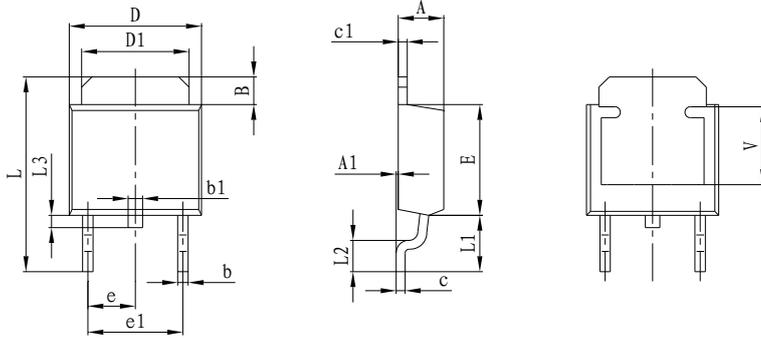


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA

TO-252-2 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.450	0.620	0.017	0.024
c1	0.450	0.620	0.017	0.024
D	6.350	6.650	0.250	0.262
D1	5.100	5.400	0.200	0.213
E	5.900	6.200	0.232	0.244
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	9.500	10.60	0.374	0.396
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	4.100 REF.		0.161 REF.	

Making Diagram

ADV: Logo
AACT408ES: Part number
X: Internal control code
H: Halogen Free

A A C T 4 0 8 E S

ADVANCED (under A)
AC Switches (under AC)
T=Triac (under T)
Current: 4 = 4A (under 4)

Voltage: 08 = 800V 10=1000V (under 08)
Sensitivity and type
 S = 10mA
 Blank = 35mA (under S)

Package explain: E=TO-252 (under E)

Ordering information

Part number	Package	Marking	Packing	Quantity
AACT408E#	TO-252-2	AACT408E#	Tube	80pcs
			Embossed tape	2500pcs
AACT410E#	TO-252-2	AACT410E#	Tube	80pcs
			Embossed tape	2500pcs

Note: # = Gate Trigger Current Sensitivity and type

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