

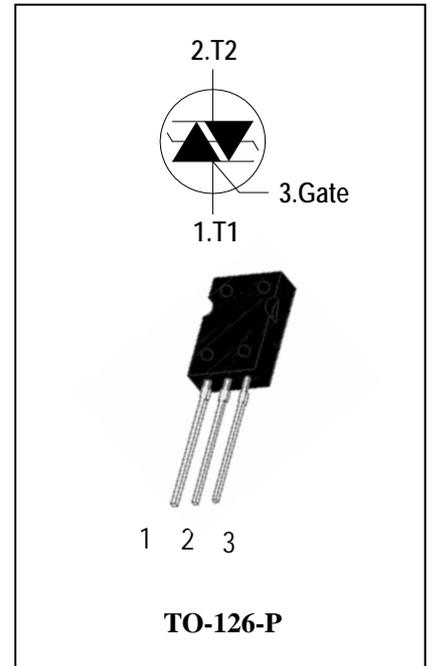
AC Thyristor Triac power switch

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	$T_j = 25^\circ C$	AACT408P	800	V
			AACT410P	1000	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 85^\circ C$		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		AACT408P/10P		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.	1.5		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.	20	40	mA
	Q2				40	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.	3.8		$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	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

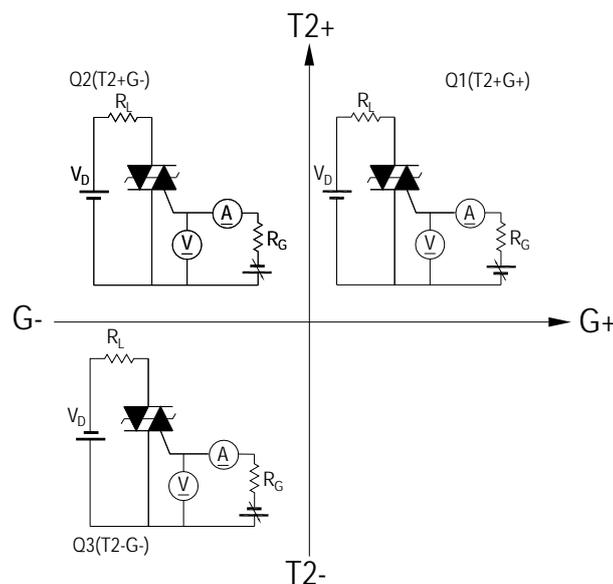


FIG.2: Maximum on-state power dissipation

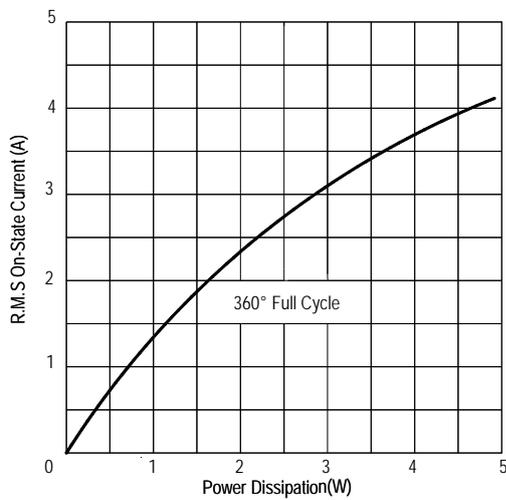


FIG.3: Typical RMS on-state current VS Allowable case Temperature

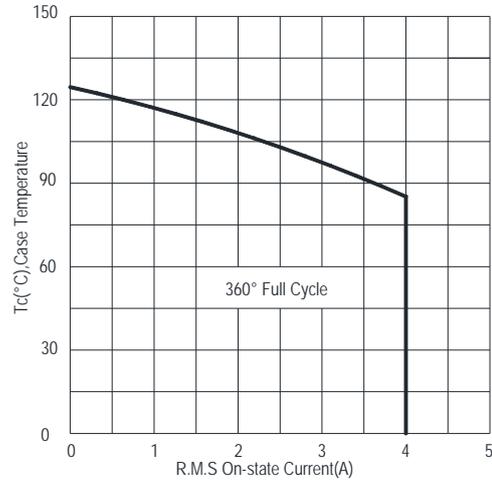


FIG.4: Maximum transient thermal impedance

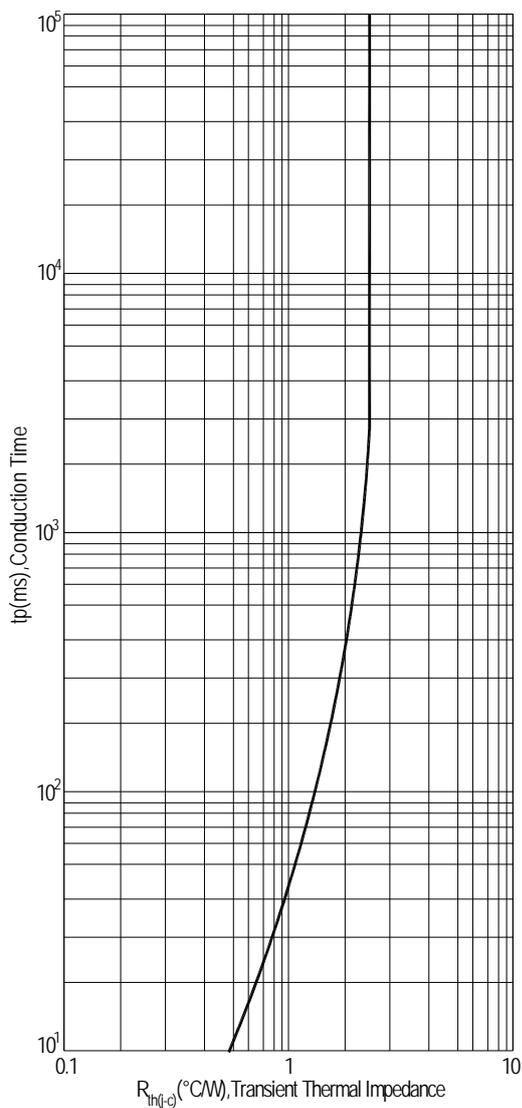


FIG.5: Rated surge on-state current (Non-Repetitive)

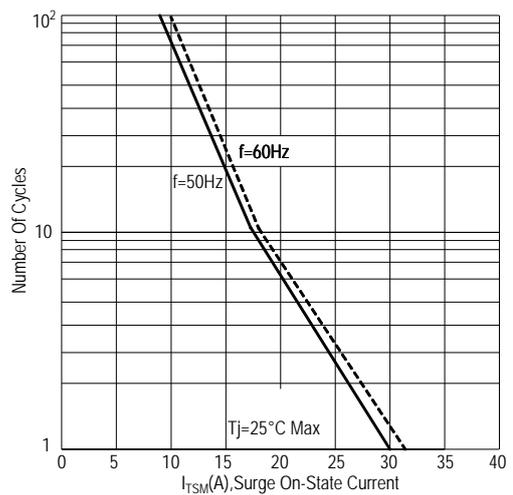


FIG.6: Gate trigger current VS Junction temperature

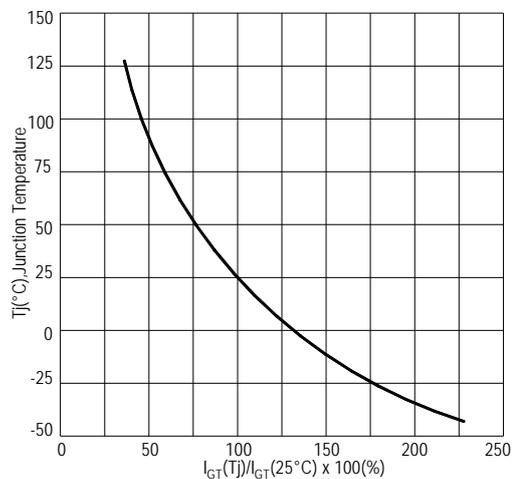


FIG.7: Holding current and Latching current VS Junction temperature

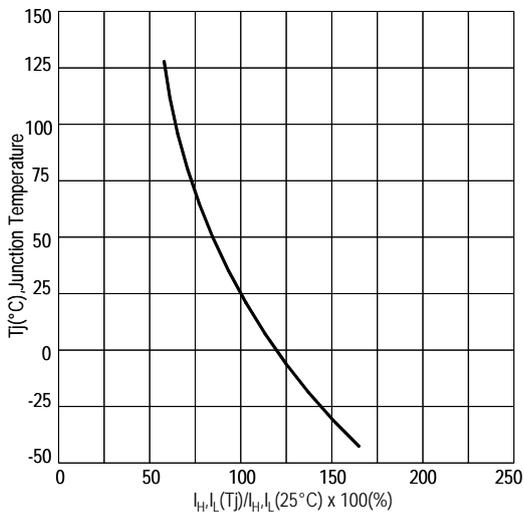


FIG.8: Gate trigger voltage VS Junction temperature

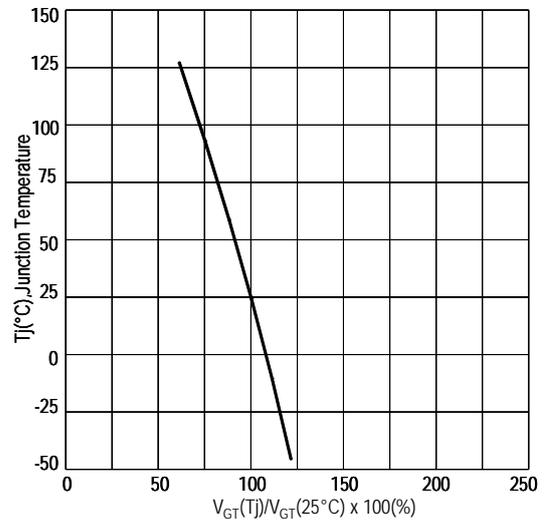
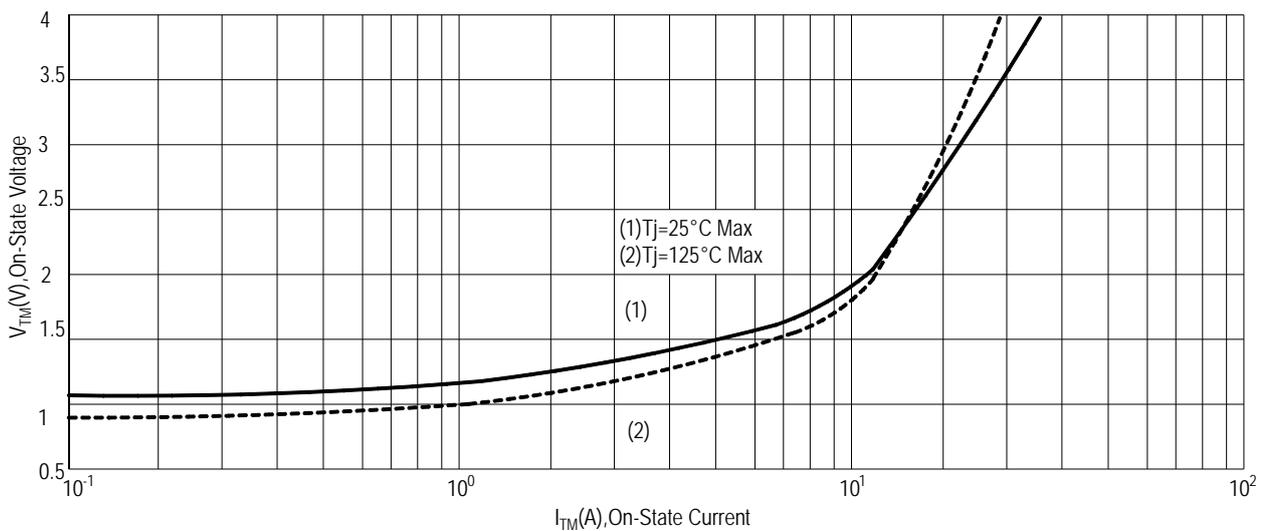
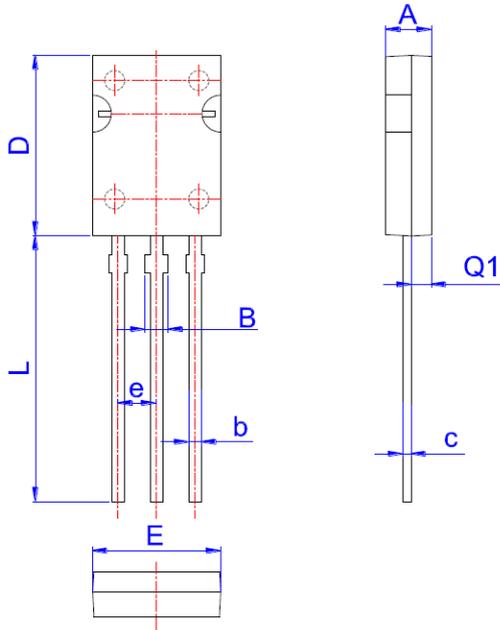


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA TO-126-P Package Dimension



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.45	2.55		0.096	0.100	
b	0.71	0.76	0.81	0.028	0.030	0.032
B	1.27	1.37	1.45	0.050	0.054	0.057
c	0.39	0.40	0.41	0.015	0.016	0.016
D	10.70	10.80	10.90	0.421	0.425	0.429
E	7.30	7.40	7.50	0.287	0.291	0.295
e	2.24	2.29	2.34	0.088	0.090	0.092
L	15.30	15.60	15.90	0.602	0.614	0.626
Q1	1.17	1.27	1.37	0.046	0.050	0.054

Making Diagram

ADV: Logo
 AACT410PS: Part number
 X: Internal control code
 H: Halogen Free

A A C T 4 1 0 P S

ADVANCED → A
AC Switches → AC
T=Triac → T
Current: 4 = 4A → 4
Voltage: 08 = 800V 10=1000V → 10
Package explain: P=TO-126P → P
Sensitivity and type S = 10mA Blank =35mA → S

Ordering information

Part number	Package	Marking	Packing	Quantity
AACT408P#	TO-126-P	AACT408P#	Vinyl sack	500pcs
AACT410P#	TO-126-P	AACT410P#	Vinyl sack	500pcs

Note: # = Gate Trigger Current Sensitivity and type

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