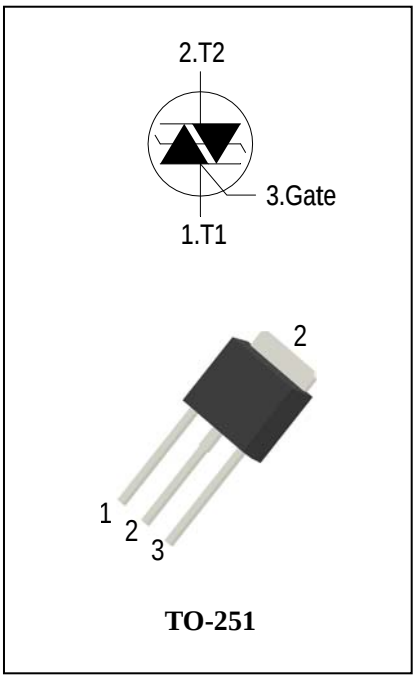
AC Thyristor Triac power switch

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,...



TO-251

Features

- ◆ Repetitive Peak Off-State Voltage: 800Vand1000V
- ◆ 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}	Repetitive Peak Off-State Voltage	Tj = 25°C	AACT408D	800	V
V_{RRM}			AACT410D	1000	V
$I_{T(RMS)}$	R.M.S On-State Current	T_C = 110 °C		4	A
I_{TSM}	Surge On-State Current	tp=20ms(50Hz)/tp=16.7ms(60Hz)		30/33	A
I^2t	I^2t for fusing	tp=10ms		4.5	A^2s
dI/dt	Critical rate of rise of on-state current	F = 120 Hz Tj = 125°C I_G = 2 x I_{GT} , tr ≤ 100 ns		100	A/μs
I_{GM}	Peak Gate Current	tp = 20 μs Tj = 125°C		1	A
$P_{G(AV)}$	Average Gate Power Dissipation(Tj=125°C)			0.1	W
P_{GM}	Peak Gate Power Dissipation(tp=20us,Tj=125°C)			5	W
T_j	Operating Junction Temperature			- 40 ~ 125	°C
T_{STG}	Storage Temperature			- 40 ~ 150	°C

ADV

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Electrical Characteristics (T_j = 25°C unless otherwise specified)

Symbol	Items		Conditions		AACT408D/10D		Unit
					S	Blank	
I_{DRM}	Peak Forward Reverse Blocking Current		V_{DRM} = V_{RRM}, Tj = 25°C	Max.	10		uA
I_{RRM}			V_{DRM} = V_{RRM}, Tj = 125°C		1		mA
V_{TM}	Peak On-State Voltage		I_{TM} = 5.6A, t_p = 380 μs	Max.	1.55		V
V_{GD}	Q1-Q2-Q3	Non−Trigger Gate Voltage	V_D = 2/3V_{DRM} R_L = 3.3 kΩ Tj = 125°C	Min.	0.2		V
V_{GT}	Q1-Q2-Q3	Gate Trigger Voltage	V_D = 12V ， R_L = 33Ω	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 = 0.1A	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 Tj = 125°C	Min.	500	1000	V/μs
$R_{th(j-c)}$	Junction to case (AC)			Max.	2.6		°C/W
$R_{th(j-a)}$	Junction to ambient			Max.	100		°C/W

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

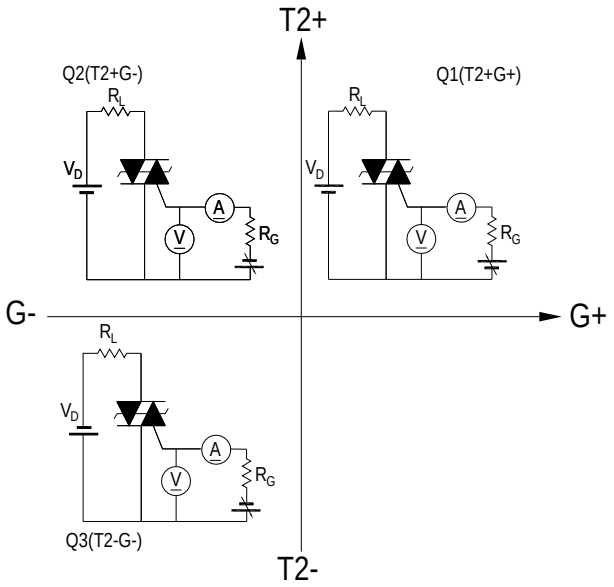


FIG.2: Maximum on-state power dissipation

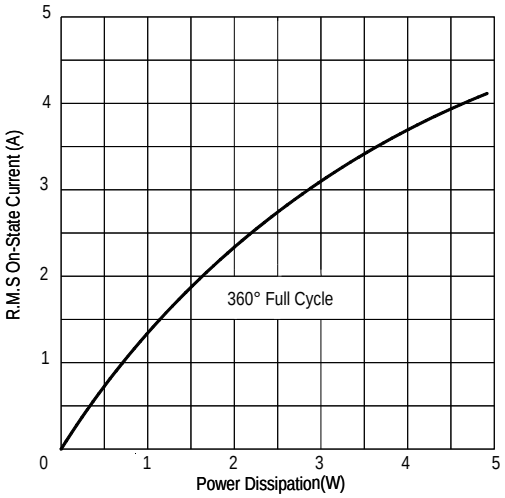


FIG.3: Typical RMS on-state current VS Allowable case Temperature

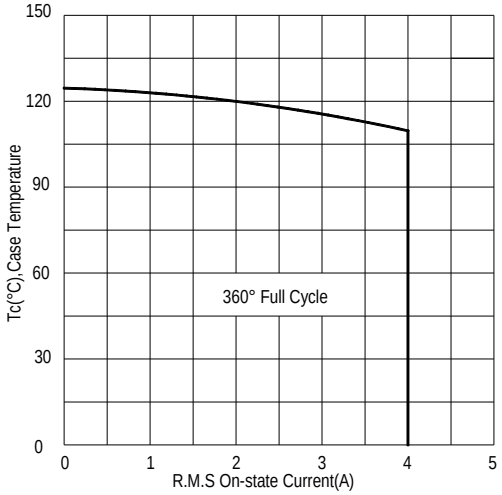


FIG.4: Maximum transient thermal impedance

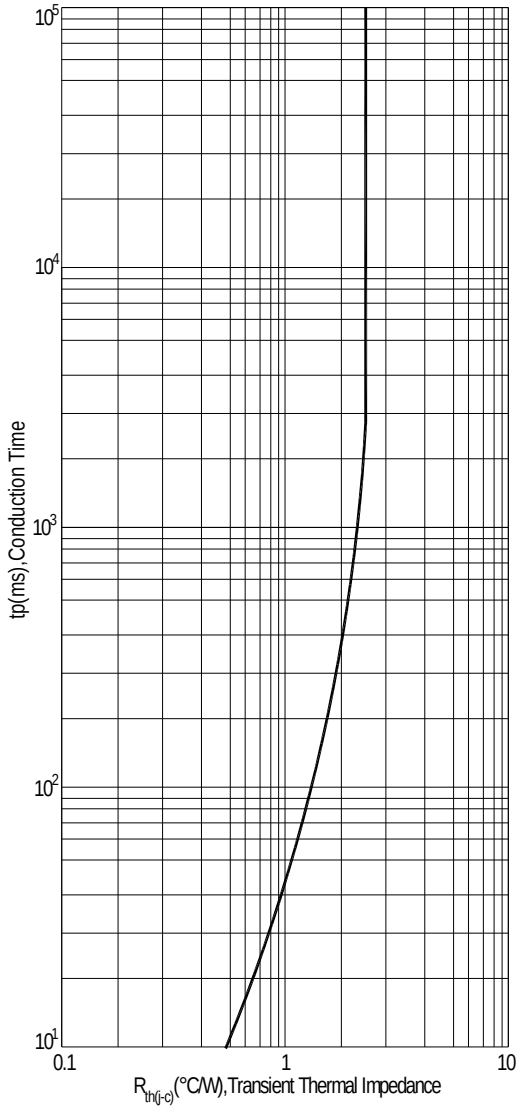


FIG.5: Rated surge on-state current (Non-Repetitive)

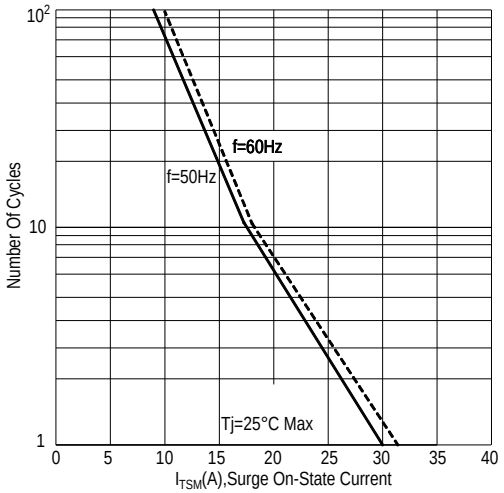


FIG.6: Gate trigger current VS Junction temperature

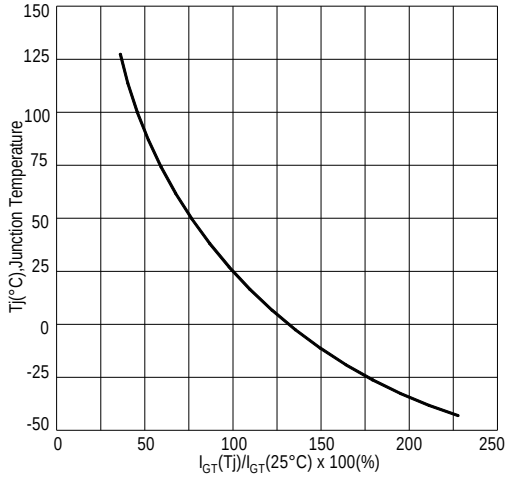


FIG.7:Holding current and Latching current VS Junction temperature

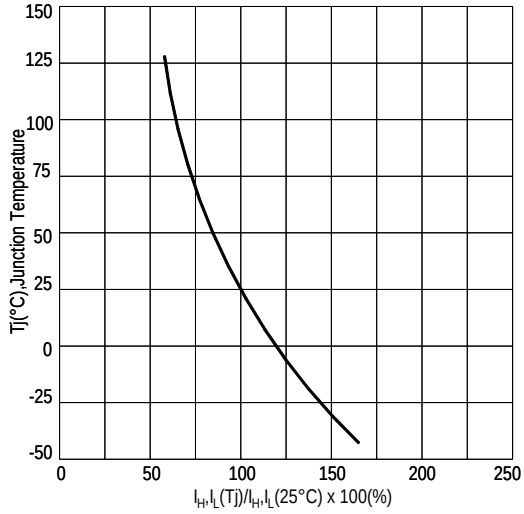


FIG.8: Gate trigger voltage VS Junction temperature

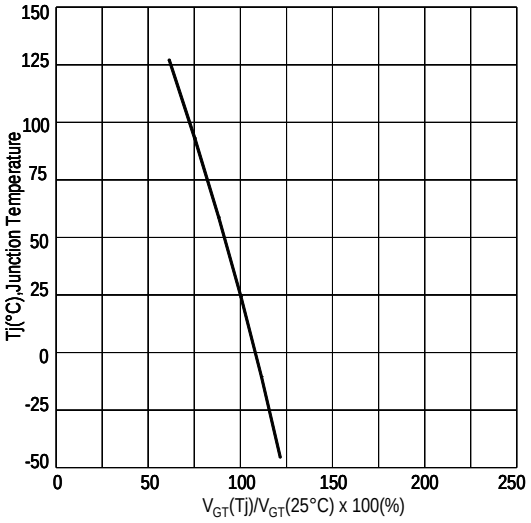
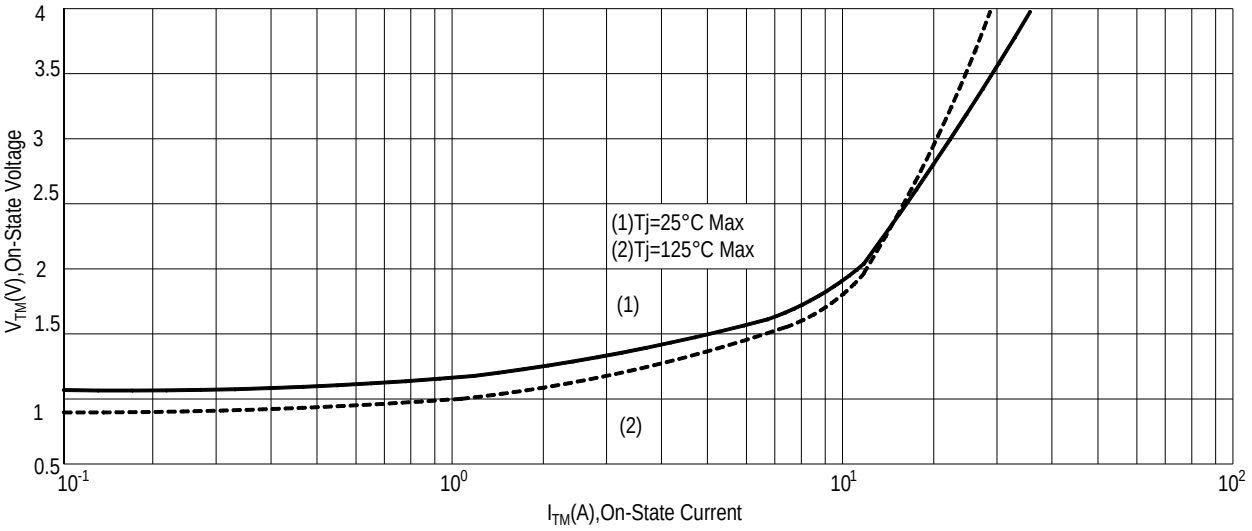
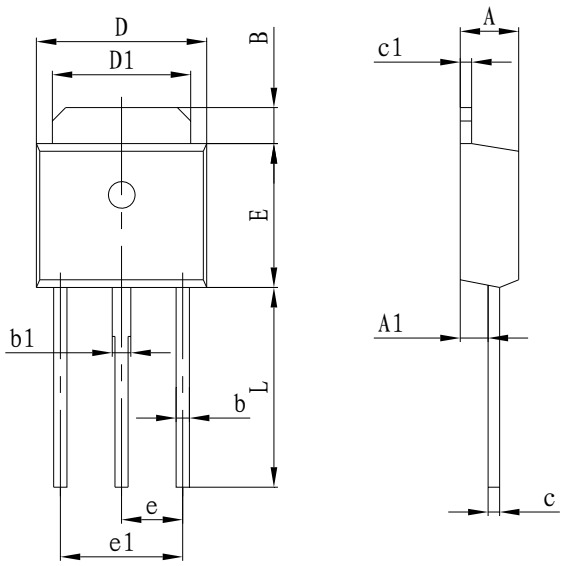


FIG.9: On-state characteristics(Max)



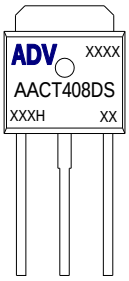
PACKAGE MECHANICAL DATA

TO-251 Package Dimension

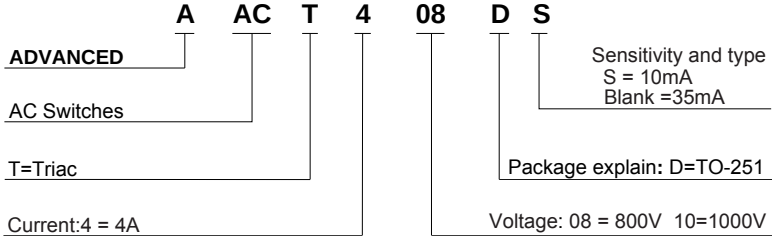


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.900	1.100	0.035	0.043
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.620	0.017	0.024
c1	0.480	0.620	0.019	0.024
D	6.350	6.700	0.252	0.264
D1	5.100	5.400	0.200	0.213
E	6.000	6.200	0.236	0.244
e	2.300TYP		0.091TYP	
e1	4.500	4.700	0.177	0.185
L	8.900	9.400	0.350	0.370

Making Diagram



ADV:Logo
AACT408DS:Part number
X:Internal control code
H:Halogen Free



Ordering information

Part number	Package	Marking	Packing	Quantity
AACT408D#	TO-251	AACT408D#	Tube	80pcs
AACT410D#	TO-251	AACT410D#	Tube	80pcs
Note:# = Gate Trigger Current Sensitivity and type				

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