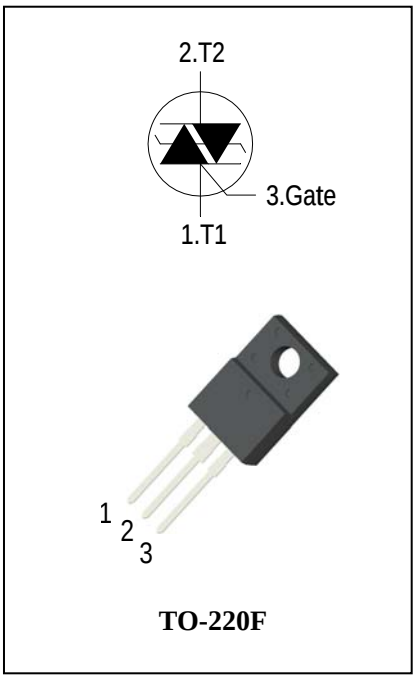
AC Thyristor Triac power switch

General Description

Available either in through-hole or surface-mount packages, the AACT12 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: 800Vand1000V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 12A)
- ◆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	AACT1208F	800	V
V_{RRM}			AACT1210F	1000	V
$I_{T(RMS)}$	R.M.S On-State Current	T_C = 92°C		12	A
I_{TSM}	Surge On-State Current	tp=20ms(50Hz)/tp=16.7ms(60Hz)		120/126	A
I^2t	I^2t for fusing	tp=10ms		78	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		50	A/μs
I_{GM}	Peak Gate Current	tp = 20 μs Tj = 125°C		4	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		AACT1208F/10F		Unit
					S	Blank	
I_{DRM}	Peak Forward Reverse Blocking Current		V_{DRM} = V_{RRM}, Tj = 25°C	Max.	5		uA
I_{RRM}			V_{DRM} = V_{RRM}, Tj = 125°C		1		mA
V_{TM}	Peak On-State Voltage		I_{TM} = 17A, t_p = 380 μs	Max.	1.65		V
V_{GD}	Q1-Q2-Q3	Non−Trigger Gate Voltage	V_D = 2/3V_{DRM} R_L = 3.3 kΩ Tj = 125°C	0.2	0.2		V
V_{GT}	Q1-Q2-Q3	Gate Trigger Voltage	V_D = 12V ， R_L = 33Ω	1.5	1.5		V
I_{GT}	Q1-Q2-Q3	Gate Trigger Current		10	10	35	mA
I_H	Q1-Q2-Q3	Holding Current	I_T = 0.1A	15	15	45	mA
I_L	Q1-Q3	Latching Current	I_G = 1.2 I_{GT}	20	20	50	mA
	Q2			30	30	70	
dV/dt	Critical Rate of Rise of Off-State Voltage		V_D = 2/3V_{DRM} gate open Tj = 125°C	Min.	1000	1500	V/μs
$R_{th(j-c)}$	Junction to case (AC)			Max.	2.3		°C/W
$R_{th(j-a)}$	Junction to ambient			Max.	60		°C/W

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

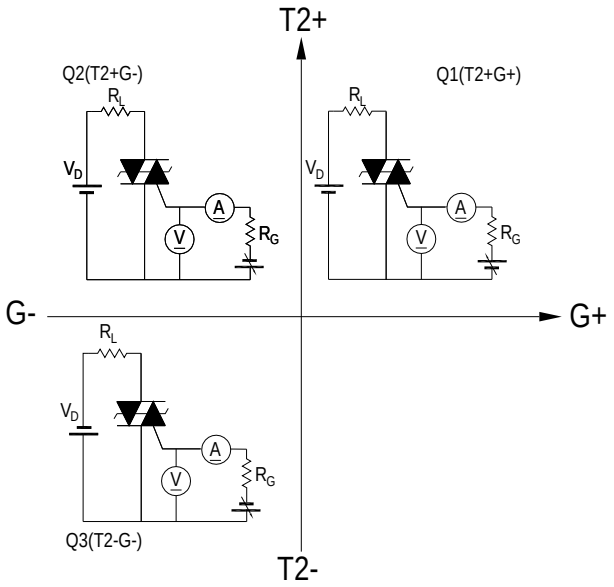


FIG.2: Maximum on-state power dissipation

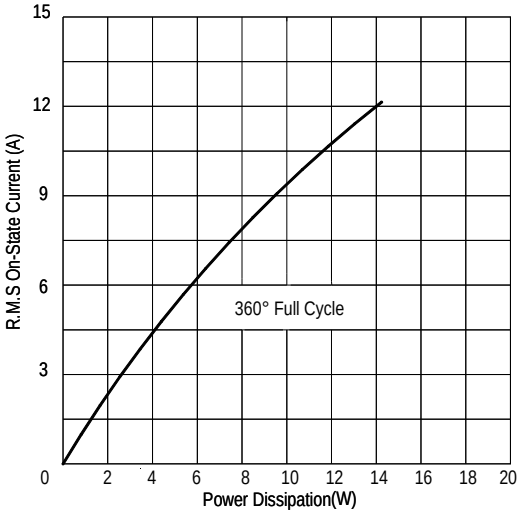


FIG.3: Typical RMS on-state current VS Allowable case Temperature

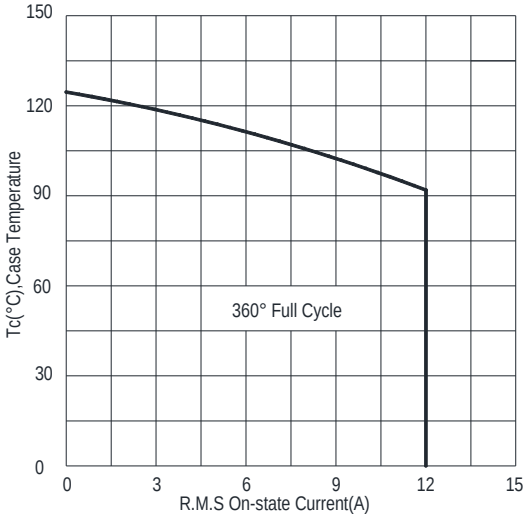


FIG.4: Maximum transient thermal impedance

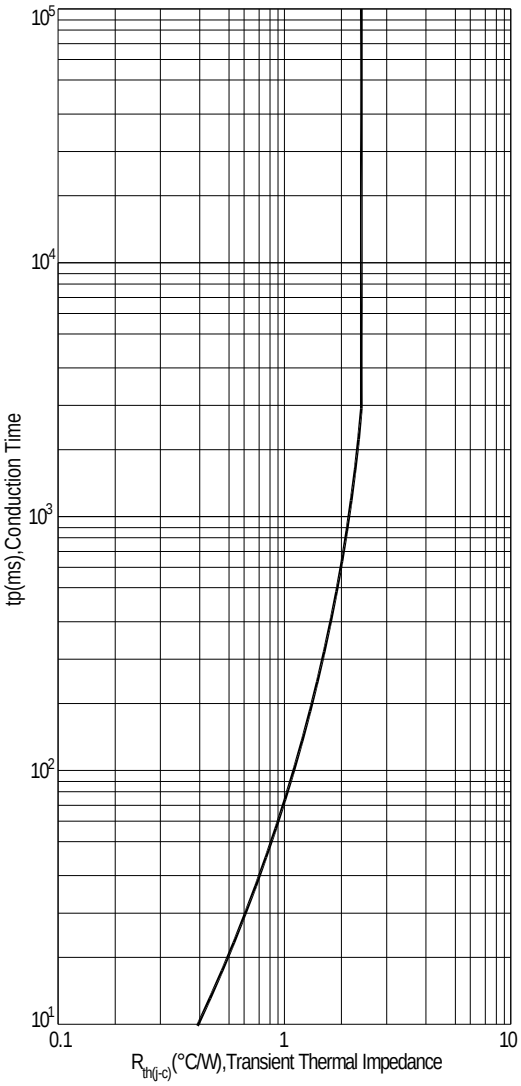


FIG.5: Rated surge on-state current (Non-Repetitive)

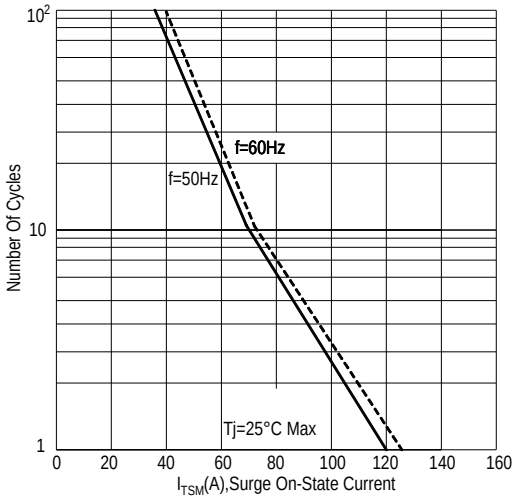


FIG.6: Gate trigger current VS Junction temperature

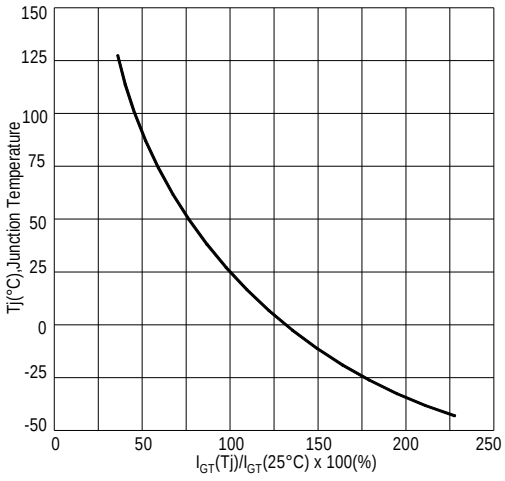


FIG.7:Holding current and Latching current VS Junction temperature

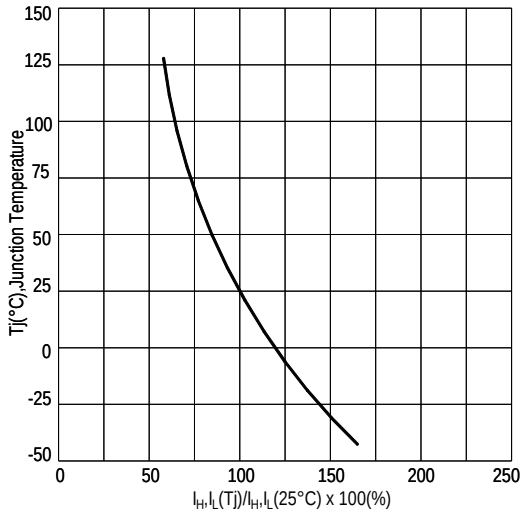


FIG.8: Gate trigger voltage VS Junction temperature

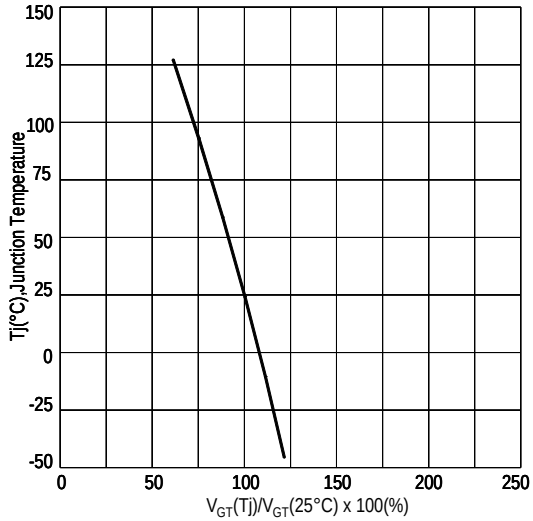
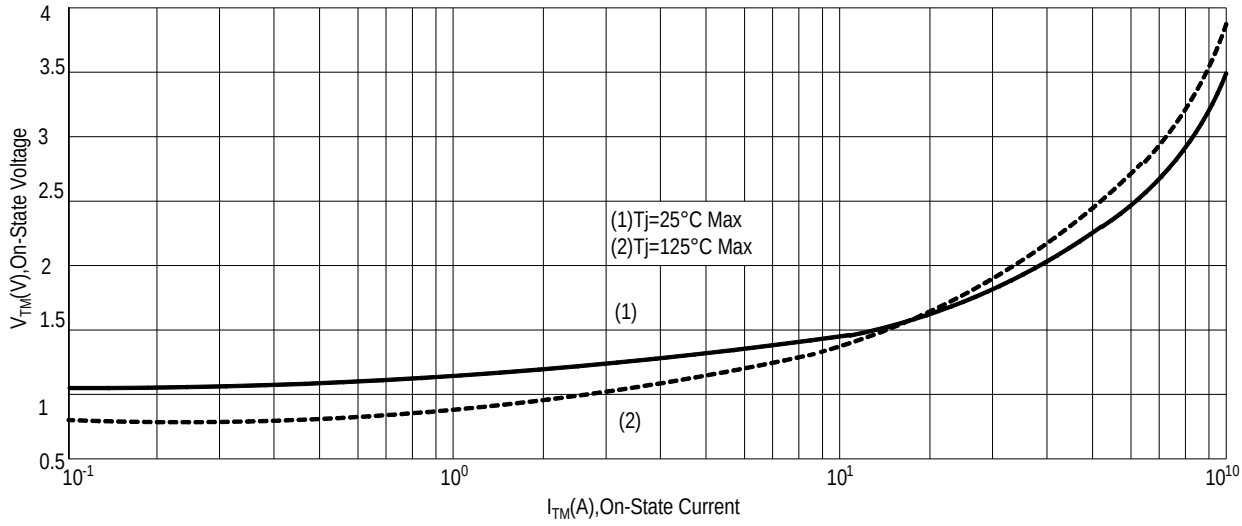
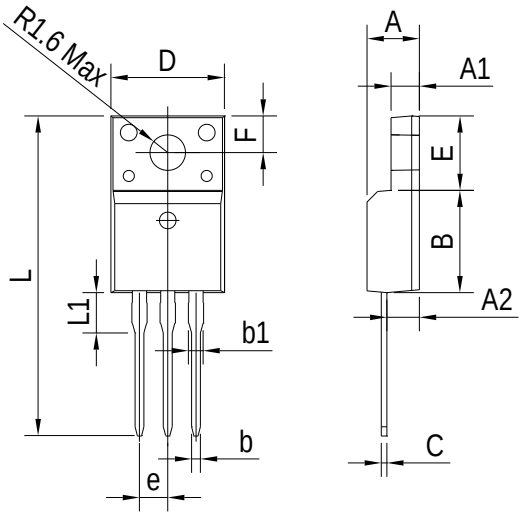


FIG.9: On-state characteristics(Max)



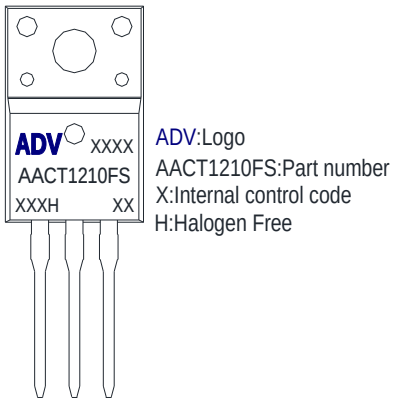
PACKAGE MECHANICAL DATA

TO-220F Package Dimension

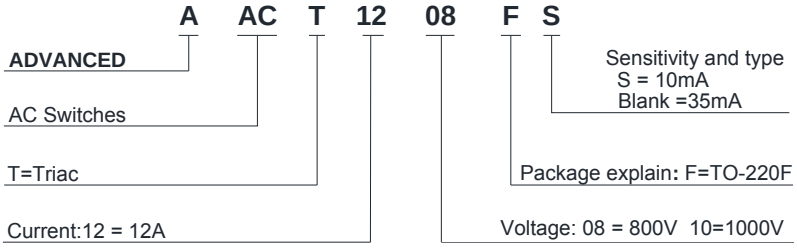


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.800	0.169	0.189
A1	2.400	2.700	0.094	0.106
A2	2.500	3.000	0.098	0.118
B	8.800	9.300	0.346	0.367
b	0.600	0.950	0.023	0.037
b1	1.100	1.700	0.043	0.067
C	0.500	0.750	0.020	0.030
D	9.700	10.360	0.382	0.408
E	6.400	6.800	0.252	0.268
e	2.540 TYP		0.100 TYP	
F	3.300 REF		0.130 REF	
L	28.000	30.000	1.102	1.181
L1	2.900	3.630	0.114	0.143

Making Diagram



ADV:Logo
AACT1210FS:Part number
X:Internal control code
H:Halogen Free



Ordering information

Part number	Package	Marking	Packing	Quantity
AACT1208F#	TO-220F	AACT1208F#	Tube	50pcs
AACT1210F#	TO-220F	AACT1210F#	Tube	50pcs
Note:# = Gate Trigger Current Sensitivity and type				

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