

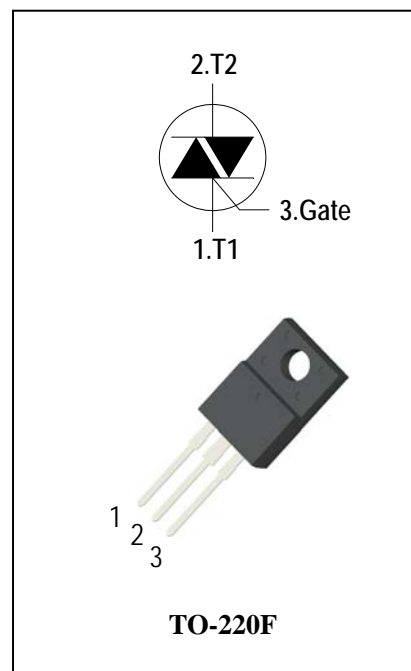
## 3 Quadrants Triacs

### General Description

High current density due to mesa technology .the ADS12C triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, High power motor controls e.g. washing machines and vacuum cleaners, Rectifier-fed DC inductive loads e.g. DC motors and solenoids , motor speed controllers.

### Features

- ◆ Repetitive Peak Off-State Voltage: 600V and 800V
- ◆ R.M.S On-State Current (  $I_{T(RMS)}=12A$  )
- ◆ High Commutation dv/dt
- ◆ These Devices are Pb-Free and are RoHS Compliant
- ◆ Isolation Voltage ( $V_{ISO}=1500V$  AC)



### Absolute Maximum Ratings

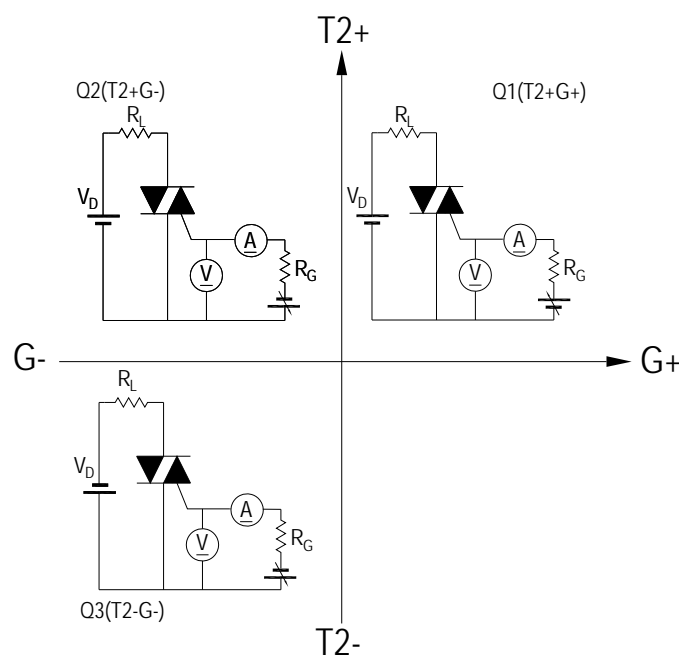
Symbol	Items	Conditions		Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ C$	ADS12C60F	600	V
			ADS12C80F	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 90^\circ C$		12	A
$I_{TSM}$	Surge On-State Current	$t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$		120/126	A
$I^2t$	$I^2t$ for fusing	$t_p=10ms$		78	$A^2s$
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	$t_p = 20 \mu s T_j = 125^\circ C$		4	A
$P_{G(AV)}$	Average Gate Power Dissipation( $T_j=125^\circ C$ )			1	W
$P_{GM}$	Peak Gate Power Dissipation( $t_p=20\mu s, T_j=125^\circ C$ )			10	W
$T_j$	Operating Junction Temperature			- 40 ~ 125	$^\circ C$
$T_{STG}$	Storage Temperature			- 40 ~ 150	$^\circ C$



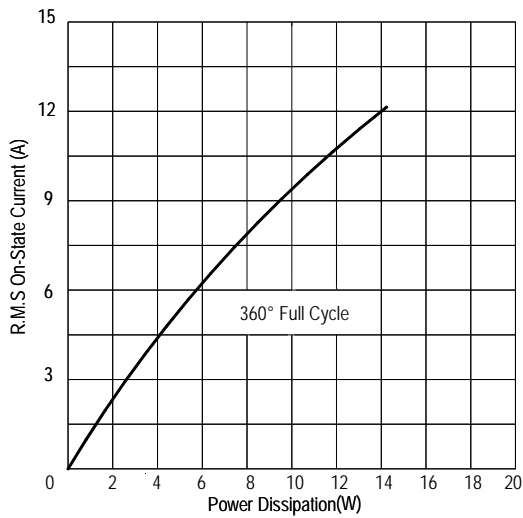
## Electrical Characteristics ( $T_j = 25^\circ\text{C}$ unless otherwise specified )

Symbol	Items		Conditions		ADS12C60F/80F				Unit
					T	S	Blank	B	
$I_{DRM}$ $I_{RRM}$	Peak Forward Reverse Blocking Current		$V_{DRM} = V_{RRM}, T_j = 25^\circ\text{C}$	Max.	5				$\mu\text{A}$
			$V_{DRM} = V_{RRM}, T_j = 125^\circ\text{C}$		1				$\text{mA}$
$V_{TM}$	Peak On-State Voltage		$I_{TM} = 17\text{A}, t_p = 380 \mu\text{s}$	Max.	1.55				$\text{V}$
$V_{GD}$	Q1-Q2-Q3	Non-Trigger Gate Voltage	$V_D = V_{DRM} \quad R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	Min.	0.2				$\text{V}$
$V_{GT}$	Q1-Q2-Q3	Gate Trigger Voltage	$V_D = 12\text{V}, R_L = 33\Omega$	Max.	1.3				$\text{V}$
$I_{GT}$	Q1-Q2-Q3	Gate Trigger Current		Max.	5	10	35	50	$\text{mA}$
$I_H$	Q1-Q2-Q3	Holding Current	$I_T = 0.1\text{A}$	Max.	10	15	35	50	$\text{mA}$
$I_L$	Q1-Q3	Latching Current	$I_G = 1.2 I_{GT}$	Max.	10	25	50	70	$\text{mA}$
	Q2				15	30	70	80	
$dV/dt$	Critical Rate of Rise of Off-State Voltage		$V_D = 2/3V_{DRM}$ gate open $T_j = 125^\circ\text{C}$	Min.	20	40	300	1000	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	Rate of Change of Commutating Current,		$(dI/dt)_c = -5.3\text{A}/\text{ms}$ $T_j = 125^\circ\text{C}$	Min.	0.5	1	10	25	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	Junction to case (AC)			Max.	2.3				$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient			Max.	60				$^\circ\text{C}/\text{W}$

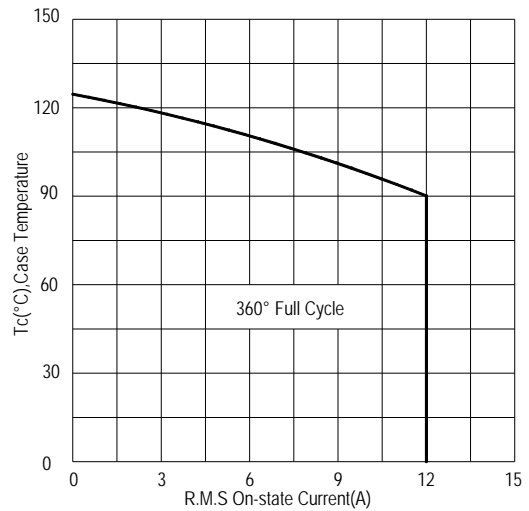
**FIG.1: Triac quadrant are defined and the gate trigger test circuit**



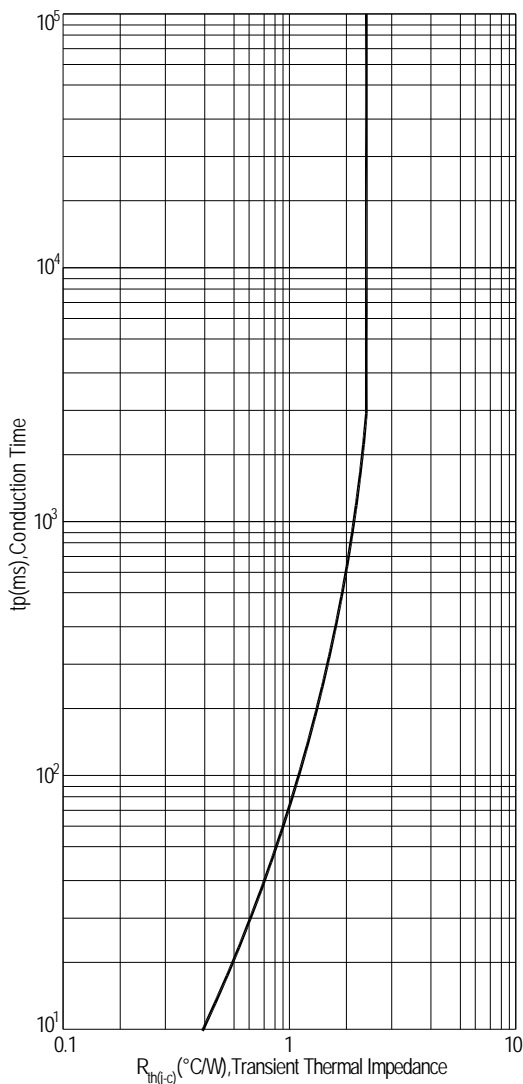
**FIG.2: Maximum on-state power dissipation**



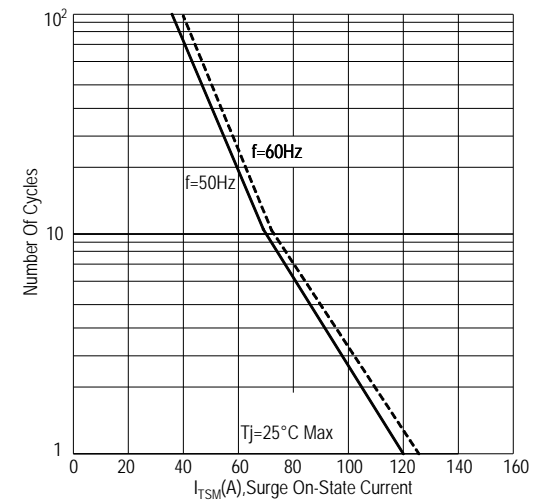
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



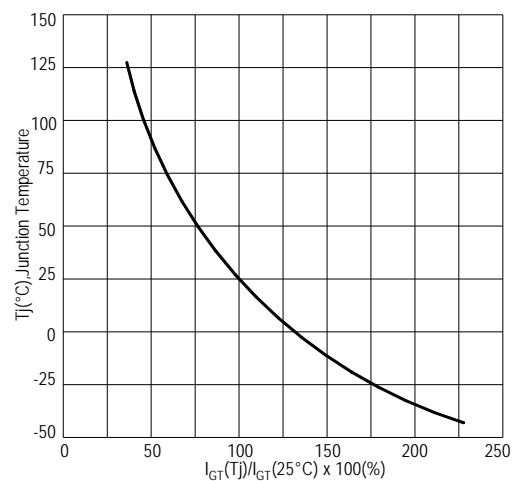
**FIG.4: Maximum transient thermal impedance**



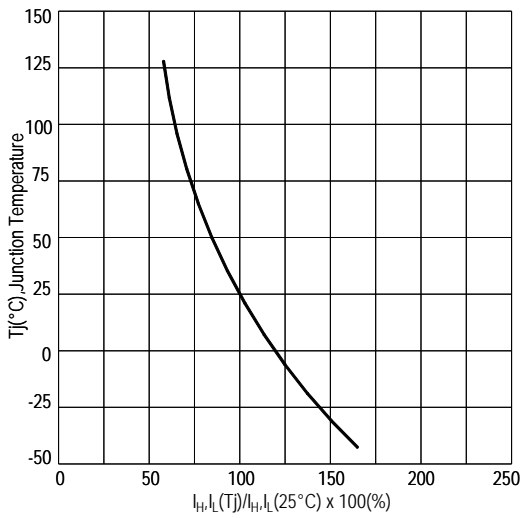
**FIG.5: Rated surge on-state current (Non-Repetitive)**



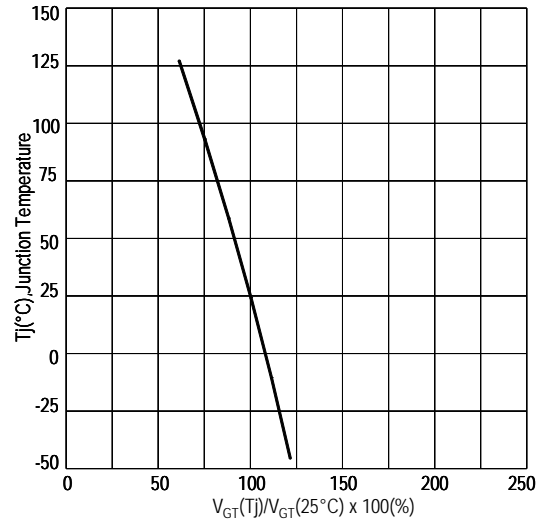
**FIG.6: Gate trigger current VS Junction temperature**



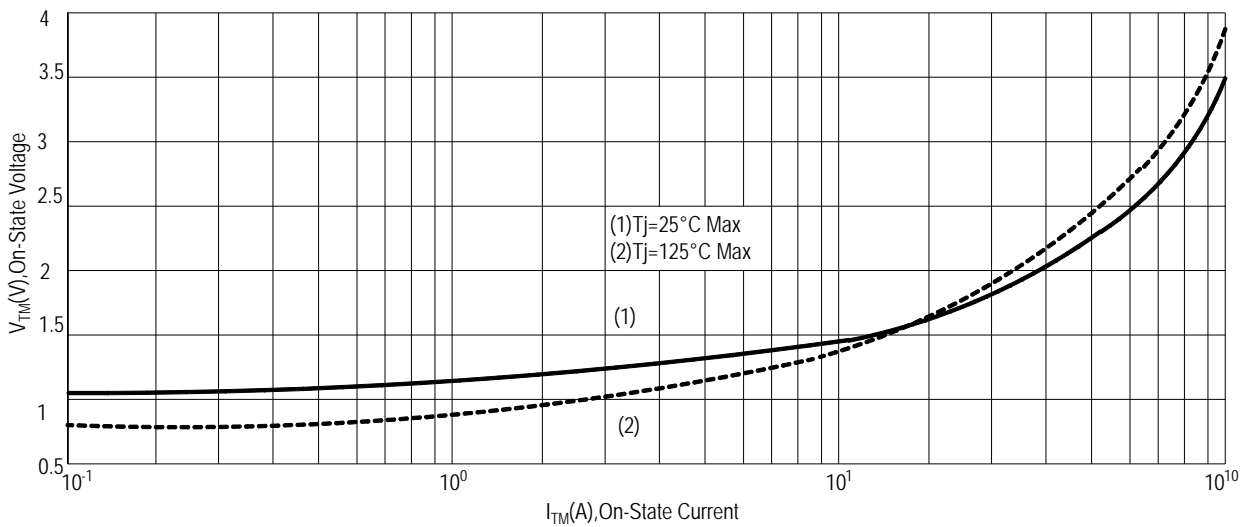
**FIG.7: Holding current and Latching current VS Junction temperature**



**FIG.8: Gate trigger voltage VS Junction temperature**

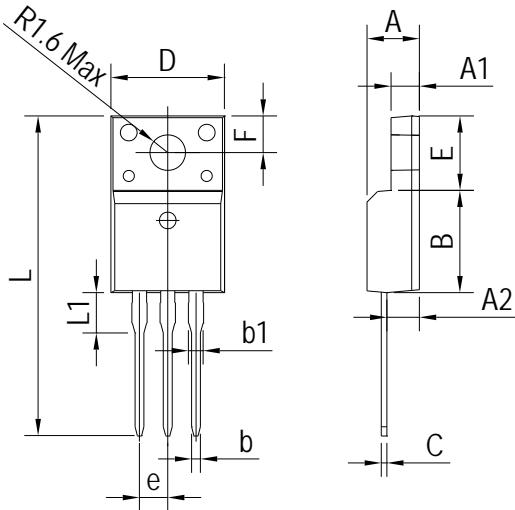


**FIG.9: On-state characteristics(Max)**



## 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  
**XXXX**: ADS12C60FB: Part number  
**X**: Internal control code  
**H**: Halogen Free

### AD S 12 C 60 F T(S)(B)

ADVANCED	S	12	C	60	F	T(S)(B)
Internal control code	Current: 12=12A		Quadrant: C=3Q		Voltage: 60=600V 80=800V	
Sensitivity and type: T=5mA S=10mA Blank=35mA B=50mA						Package explain: F=TO-220F

## Ordering information

Part number	Package	Marking	Packing	Quantity
ADS12C60F#	TO-220F	ADS12C60F#	Tube	50pcs
ADS12C80F#	TO-220F	ADS12C80F#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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