

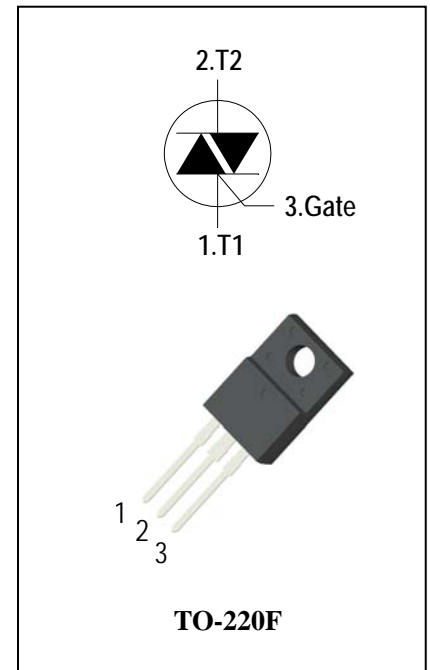
## 3 Quadrants High temperature Triacs

### General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The ADS12CH 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. The heatsink can be reduced, compared to traditional triacs, according to the high performance at given junction temperatures.

### Features

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



### Absolute Maximum Ratings

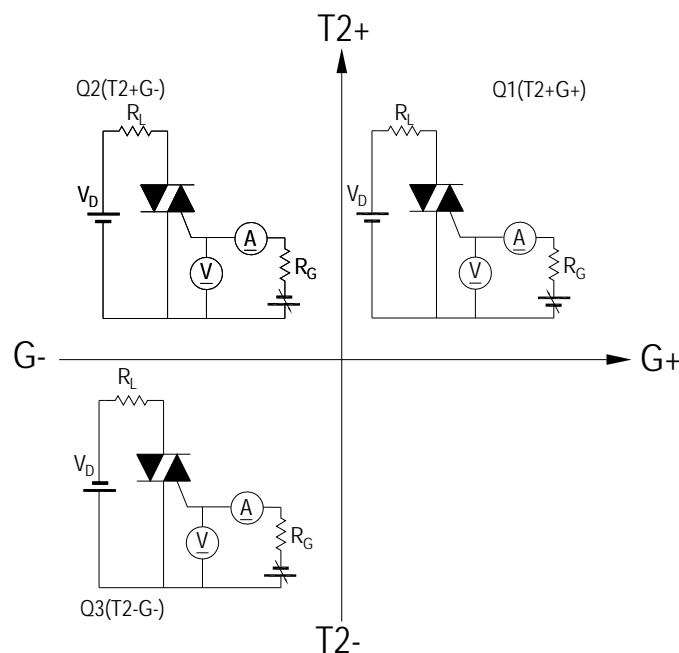
Symbol	Items	Conditions	Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ C$	ADS12CH60F 600 ADS12CH80F 800	V V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 120^\circ C$	12	A
$I_{TSM}$	Surge On-State Current	$t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$	120/126	A
$I^2t$	$I^2t$ for fusing	$t_p=10ms$	78	$A^2s$
$di/dt$	Critical rate of rise of on-state current	$F = 120 Hz$ $T_j = 150^\circ C$ $I_G = 2 \times I_{GT}$ , $t_r \leq 100 ns$	50	$A/\mu s$
$I_{GM}$	Peak Gate Current	$t_p = 20 \mu s$ $T_j = 150^\circ C$	4	A
$P_{G(AV)}$	Average Gate Power Dissipation( $T_j=150^\circ C$ )		1	W
$P_{GM}$	Peak Gate Power Dissipation( $t_p=20\mu s, T_j=150^\circ C$ )		10	W
$T_j$	Operating Junction Temperature		- 40 ~ 150	$^\circ C$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^\circ C$



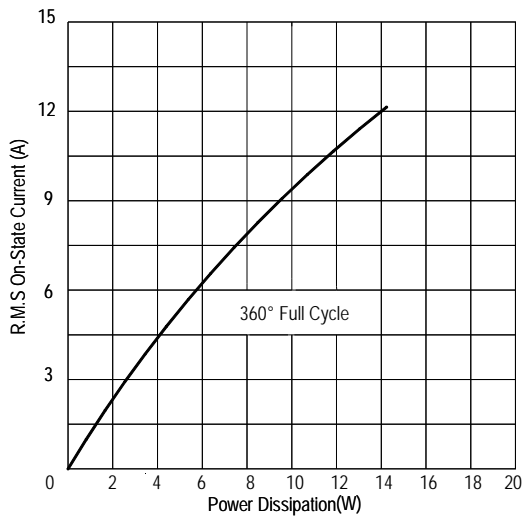
## Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)

Symbol	Items		Conditions		ADS12CH60F/80F			Unit
					S	Blank	B	
I <sub>DRM</sub> I <sub>RRM</sub>	Peak Forward Reverse Blocking Current		V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 25°C V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 150°C	Max.	5 3.8			uA mA
V <sub>TM</sub>	Peak On-State Voltage		I <sub>TM</sub> = 17A, t <sub>p</sub> = 380 μs	Max.	1.5			V
V <sub>GD</sub>	Q1-Q2-Q3	Non-Trigger Gate Voltage	V <sub>D</sub> = V <sub>DRM</sub> R <sub>L</sub> = 3.3 kΩ T <sub>j</sub> = 150°C	Min.	0.2			V
V <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Voltage	V <sub>D</sub> = 12V , R <sub>L</sub> = 33Ω	Max.	1.5			V
I <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Current		Max.	10	35	50	mA
I <sub>H</sub>	Q1-Q2-Q3	Holding Current	I <sub>T</sub> = 0.1A	Max.	20	50	75	mA
I <sub>L</sub>	Q1-Q3	Latching Current	I <sub>G</sub> = 1.2 I <sub>GT</sub>	Max.	20	80	90	mA
	Q2				35	90	110	
dV/dt	Critical Rate of Rise of Off-State Voltage		V <sub>D</sub> = 2/3V <sub>DRM</sub> gate open T <sub>j</sub> = 150°C	Min.	200	1000	1500	V/μs
(dV/dt) <sub>c</sub>	Critical Rate of Change of Commutating Voltage		V <sub>D</sub> =400V T <sub>j</sub> = 150°C (dI/dt) <sub>c</sub> =-5.3A/ms	Min.	1	16	21	V/μs
R <sub>th(j-c)</sub>	Junction to case (AC)			Max.	2.3			°C/W
R <sub>th(j-a)</sub>	Junction to ambient			Max.	60			°C/W

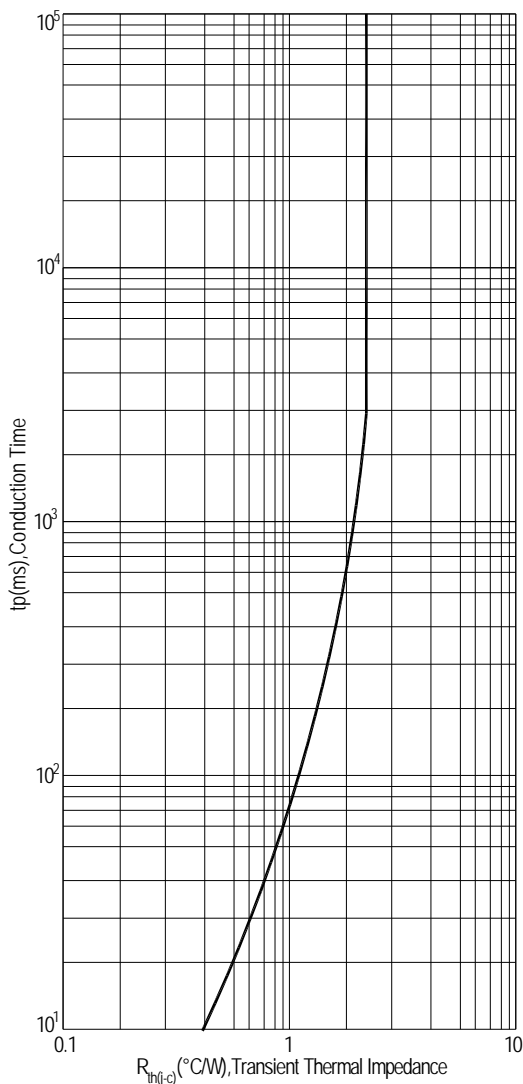
FIG.1: Triac quadrant are defined and the gate trigger test circuit



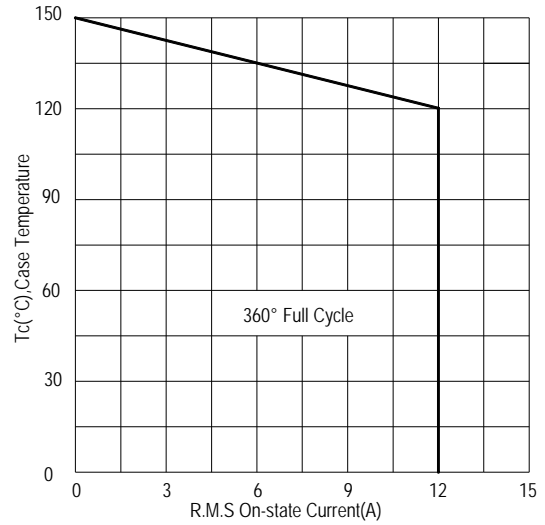
**FIG.2: Maximum on-state power dissipation**



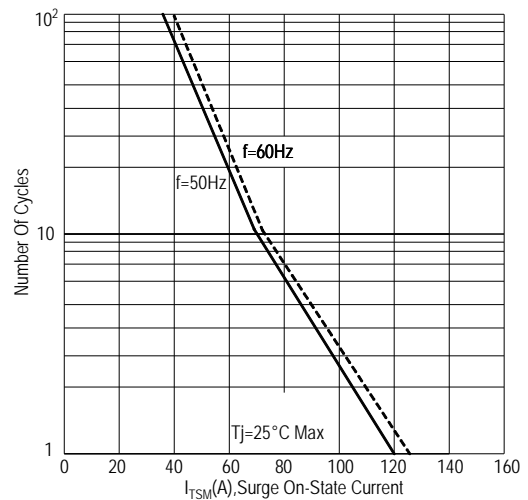
**FIG.4: Maximum transient thermal impedance**



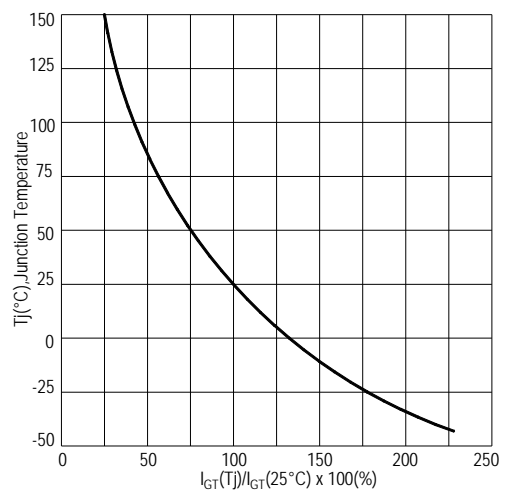
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



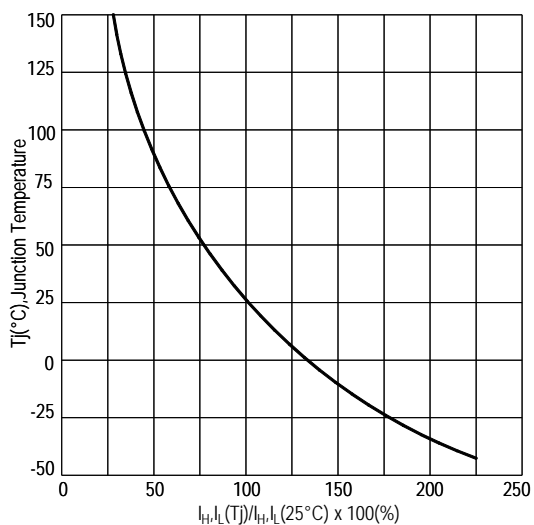
**FIG.5: Rated surge on-state current ( Non-Repetitive)**



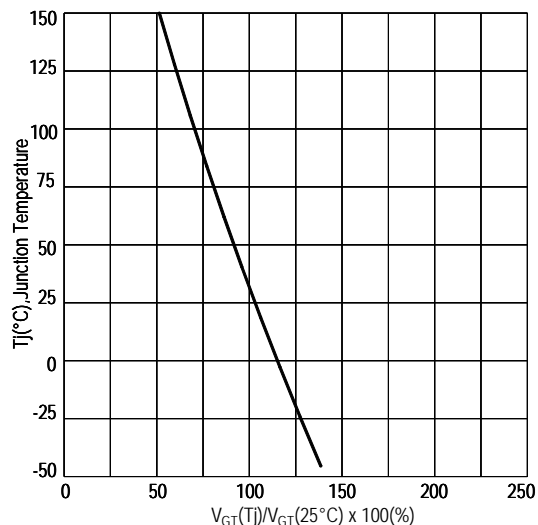
**FIG.6: Gate trigger current VS Junction temperature**



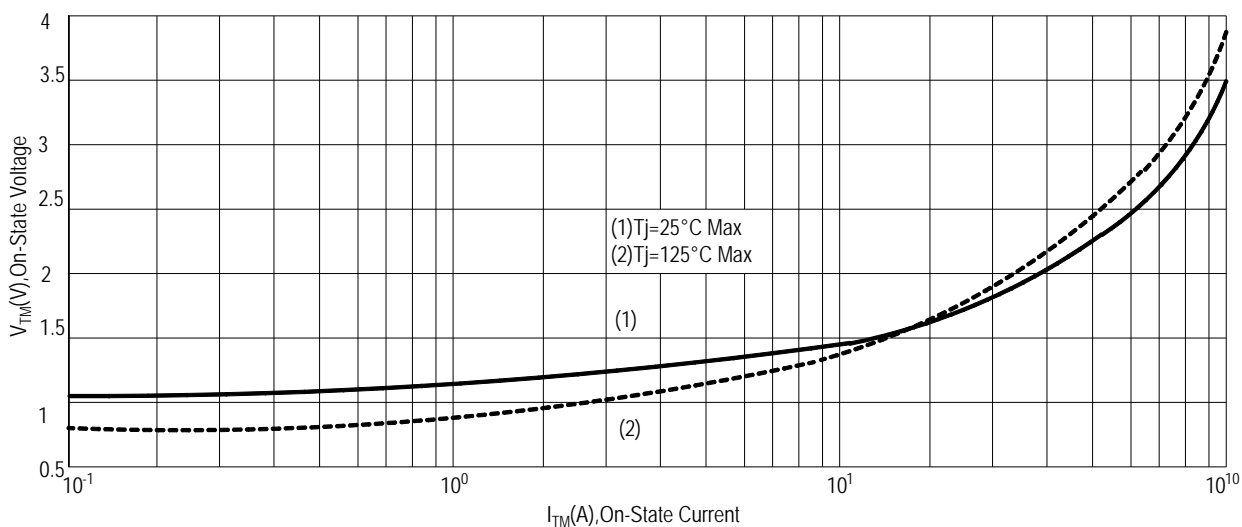
**FIG.7: Holding current and Latching current VS Junction temperature**



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

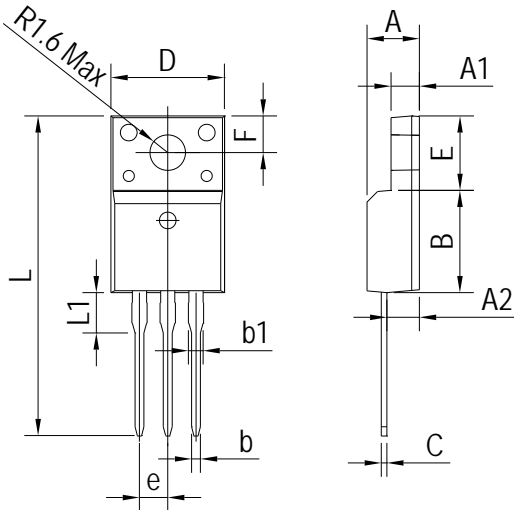


**FIG.9: On-state characteristics(Max)**



## 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  
**ADS12CH60FB**: Part number  
**X**: Internal control code  
**H**: Halogen Free

**AD S 12 C H 60 F S(B)**

<b>ADVANCED</b> Internal control code Current: 12=12A Quadrant: C=3Q High temperature: H=150°C			Sensitivity and type: S=10mA Blank=35mA B=50mA Package explain: F=TO-220F Voltage: 60=600V 80=800V
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### Ordering information

Part number	Package	Marking	Packing	Quantity
ADS12CH60F#	TO-220F	ADS12CH60F#	Tube	50pcs
ADS12CH80F#	TO-220F	ADS12CH80F#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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