

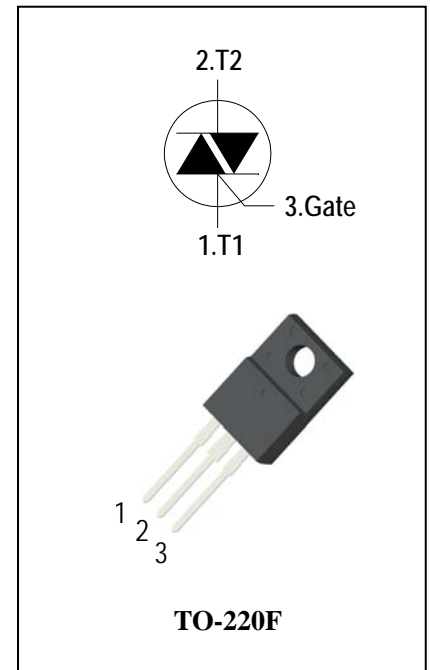
3 Quadrants High temperature Triacs

General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The ADT12CH 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	$T_j = 25^\circ\text{C}$	ADT12CH60F	600	V
			ADT12CH80F	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 120^\circ\text{C}$		12	A
I_{TSM}	Surge On-State Current	$t_p=20\text{ms}(50\text{Hz})/t_p=16.7\text{ms}(60\text{Hz})$		140/146	A
I^2t	I^2t for fusing	$t_p=10\text{ms}$		96	A^2s
dI/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 150^\circ\text{C}$ $I_G = 2 \times I_{GT}, t_r \leq 100\text{ ns}$		50	$\text{A}/\mu\text{s}$
I_{GM}	Peak Gate Current	$t_p = 20\ \mu\text{s } T_j = 150^\circ\text{C}$		4	A
$P_{G(AV)}$	Average Gate Power Dissipation($T_j=150^\circ\text{C}$)			1	W
P_{GM}	Peak Gate Power Dissipation($t_p=20\mu\text{s}, T_j=150^\circ\text{C}$)			10	W
T_j	Operating Junction Temperature			- 40 ~ 150	$^\circ\text{C}$
T_{STG}	Storage Temperature			- 40 ~ 150	$^\circ\text{C}$



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

Symbol	Items		Conditions		ADT12CH60F/80F			Unit
					S	Blank	B	
I _{DRM} I _{RDM}	Peak Forward Reverse Blocking Current		V _{DRM} = V _{RRM} , T _j = 25°C V _{DRM} = V _{RRM} , T _j = 150°C	Max.	5 3.8			uA mA
V _{TM}	Peak On-State Voltage		I _{TM} = 17A, t _p = 380 μs	Max.	1.5			V
V _{GD}	Q1-Q2-Q3	Non-Trigger Gate Voltage	V _D = V _{DRM} R _L = 3.3 kΩ T _j = 150°C	Min.	0.2			V
V _{GT}	Q1-Q2-Q3	Gate Trigger Voltage	V _D = 12V , R _L = 33Ω	Max.	1.5			V
I _{GT}	Q1-Q2-Q3	Gate Trigger Current		Max.	10	35	50	mA
I _H	Q1-Q2-Q3	Holding Current	I _T = 0.1A	Max.	20	50	75	mA
I _L	Q1-Q3	Latching Current	I _G = 1.2 I _{GT}	Max.	20	80	90	mA
	Q2				35	90	110	
dV/dt	Critical Rate of Rise of Off-State Voltage		V _D = 2/3V _{DRM} gate open T _j = 150°C	Min.	200	1000	1500	V/μs
(dV/dt) _c	Critical Rate of Change of Commutating Voltage		V _D =400V T _j = 150°C (dI/dt) _c =-5.3A/ms	Min.	1	16	21	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:Triac quadrant are defined and the gate trigger test circuit

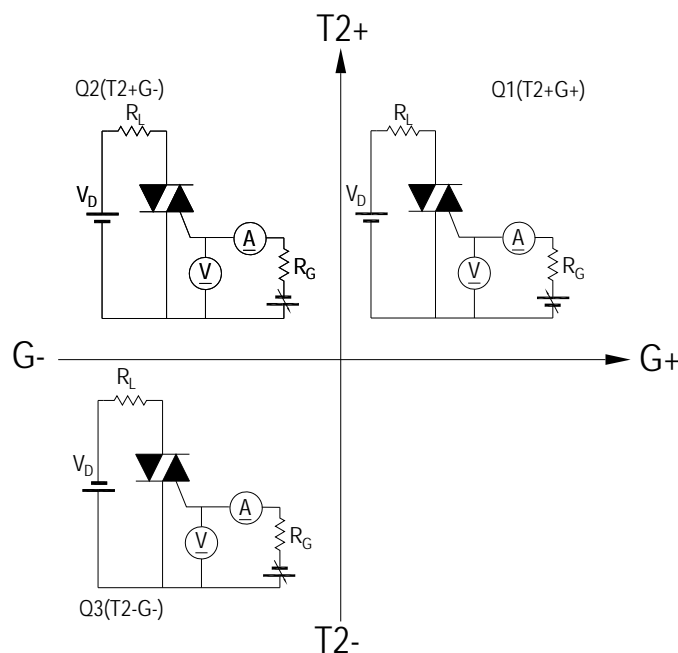


FIG.2: Maximum on-state power dissipation

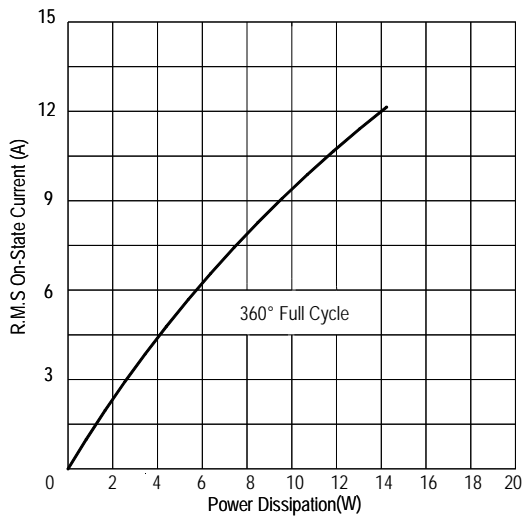


FIG.4: Maximum transient thermal impedance

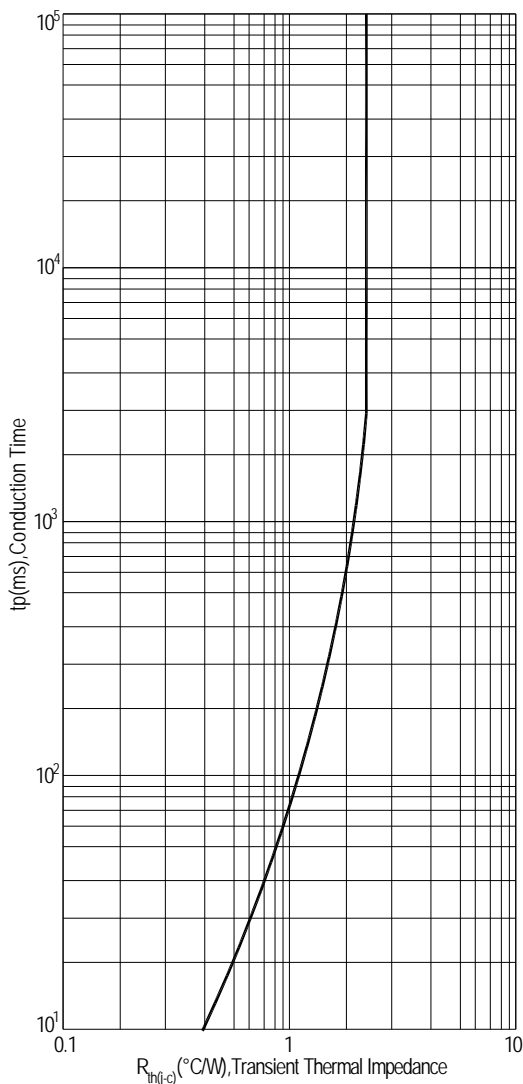


FIG.3: Typical RMS on-state current VS Allowable case Temperature

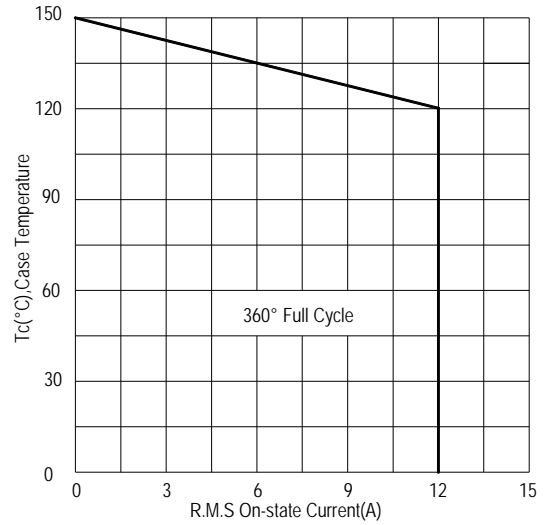


FIG.5: Rated surge on-state current (Non-Repetitive)

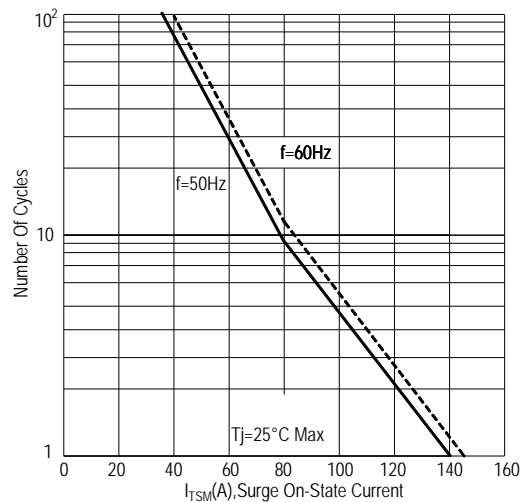


FIG.6: Gate trigger current VS Junction temperature

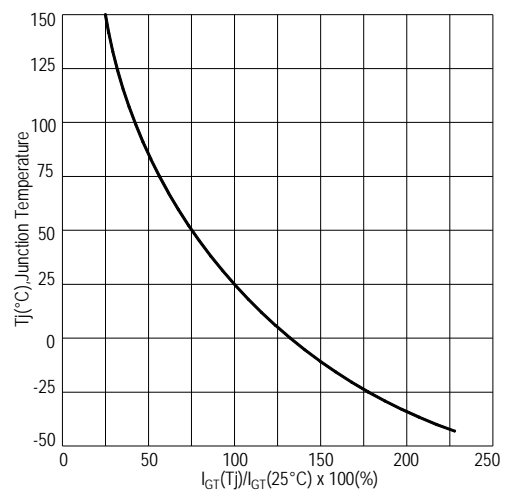


FIG.7: Holding current and Latching current VS Junction temperature

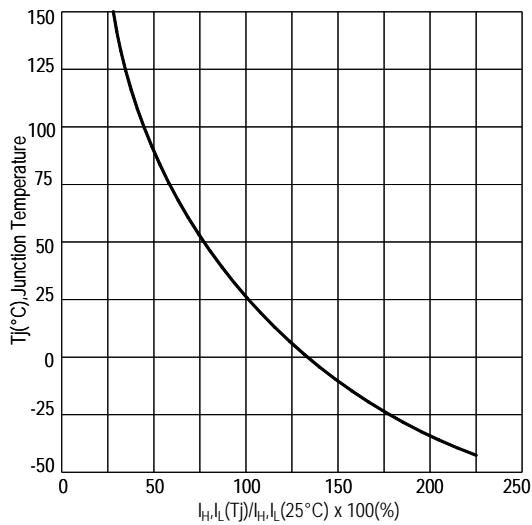


FIG.8: Gate trigger voltage VS Junction temperature

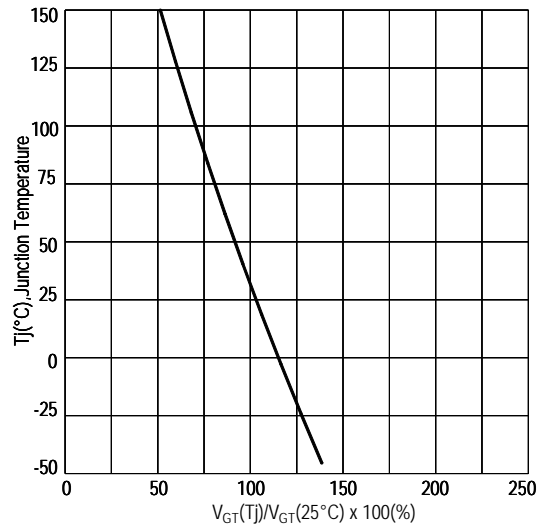
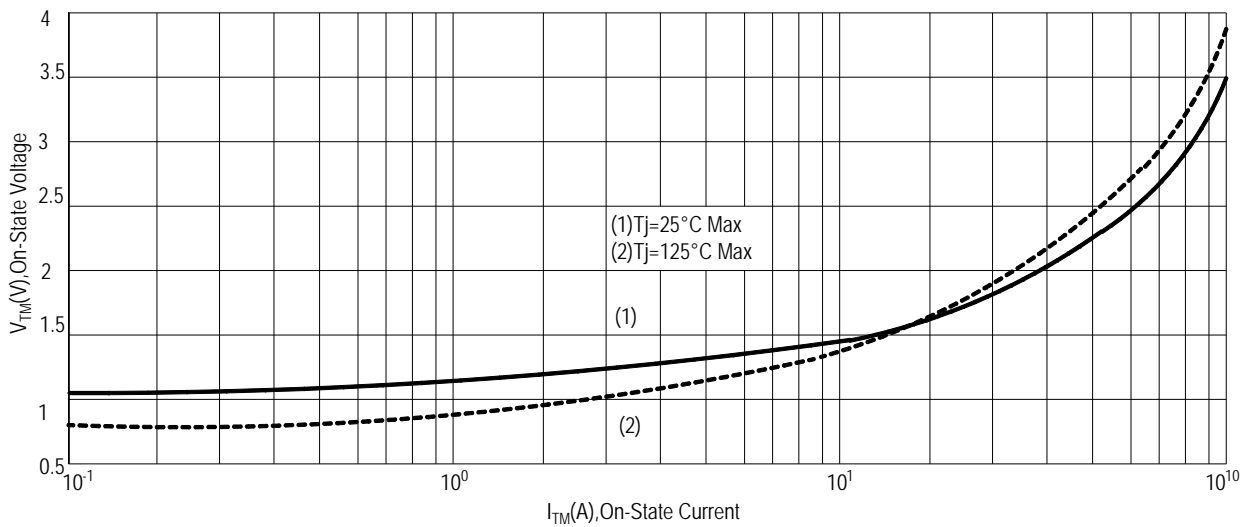
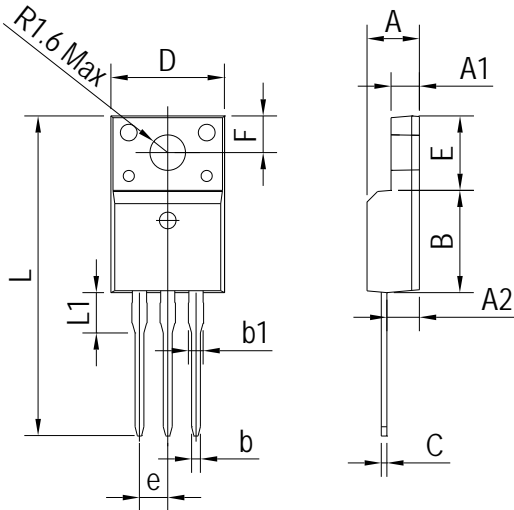


FIG.9: On-state characteristics(Max)



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
ADT12CH60FB: Part number
XXXH: Internal control code
XX: Halogen Free

AD T 12 C H 60 F S(B)

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

Ordering information

Part number	Package	Marking	Packing	Quantity
ADT12CH60F#	TO-220F	ADT12CH60F#	Tube	50pcs
ADT12CH80F#	TO-220F	ADT12CH80F#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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