

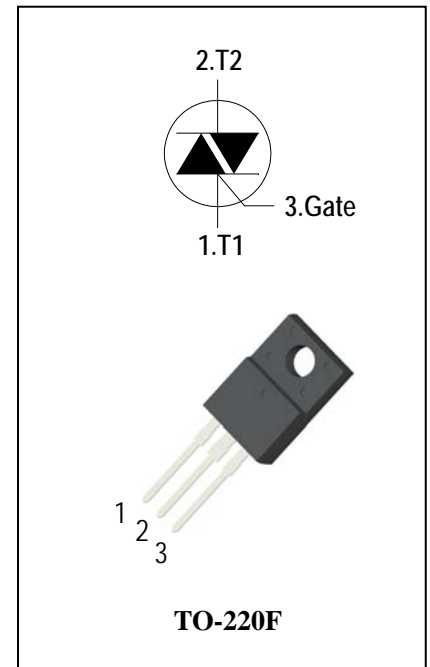
4 Quadrants Triacs

General Description

High current density due to mesa technology .the ADT12D 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 ($I_{T(RMS)}=12A$)
- ◆ 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	$T_j = 25^\circ C$	ADT12D60F ADT12D80F	600 800 V V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 90^\circ C$		12 A
I_{TSM}	Surge On-State Current	$t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$		140/146 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		ADT12D60F/80F				Unit
				T	S	Blank	B	
I_{DRM}	Peak Forward Reverse Blocking Current	$V_{DRM} = V_{RRM}, T_j = 25^\circ\text{C}$	Max.	5				μA
I_{RRM}		$V_{DRM} = V_{RRM}, T_j = 125^\circ\text{C}$		1				mA
V_{TM}	Peak On-State Voltage	$I_{TM} = 17\text{A}, t_p = 380 \mu\text{s}$	Max.	1.55				V
V_{GD}	Q1-Q2-Q3-Q4 Non – Trigger Gate Voltage	$V_D = V_{DRM} R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	Min.	0.2				V
V_{GT}	Q1-Q2-Q3-Q4 Gate Trigger Voltage	$V_D = 12\text{V}, R_L = 33\Omega$	Max.	1.3				V
I_{GT}	Q1-Q2-Q3 Q4 Gate Trigger Current		Max.	5	10	35	50	mA
I_H	Q1-Q2-Q3-Q4 Holding Current	$I_T = 0.1\text{A}$	Max.	10	15	35	50	mA
I_L	Q1-Q3-Q4 Q2 Latching Current	$I_G = 1.2 I_{GT}$	Max.	10	25	50	70	mA
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	200	400	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	Rate of Change of Commutating Current,	$(dI/dt)_c = -5.3\text{A/ms}$ $T_j = 125^\circ\text{C}$	Min.	0.5	1	5	10	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	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

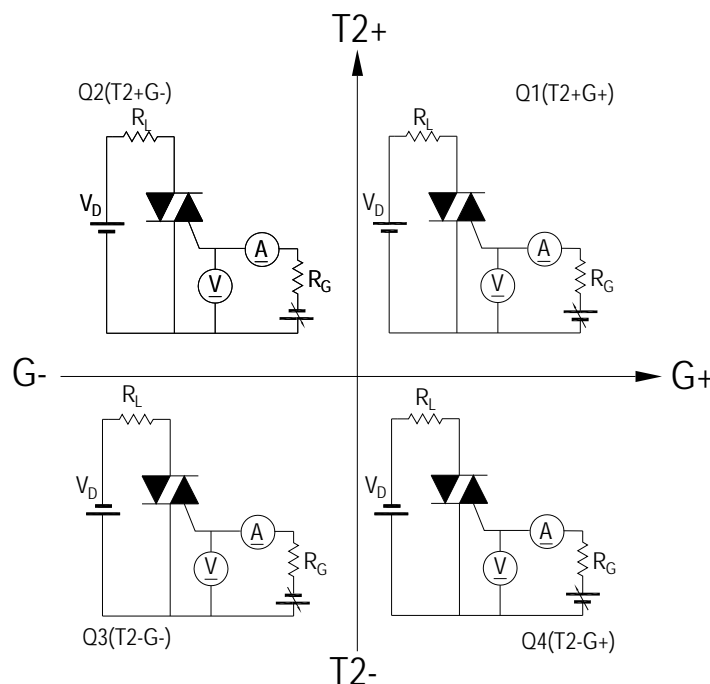


FIG.2: Maximum on-state power dissipation

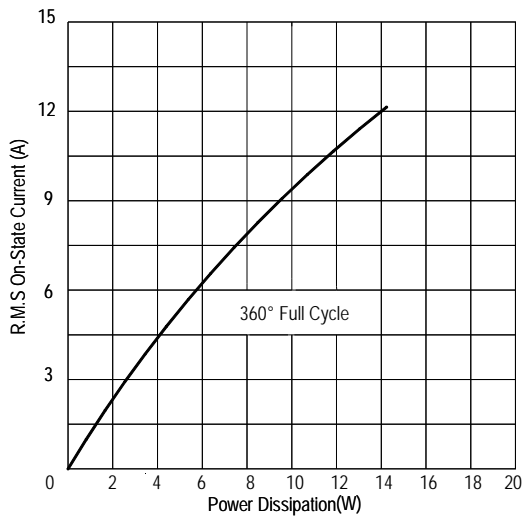


FIG.3: Typical RMS on-state current VS Allowable case Temperature

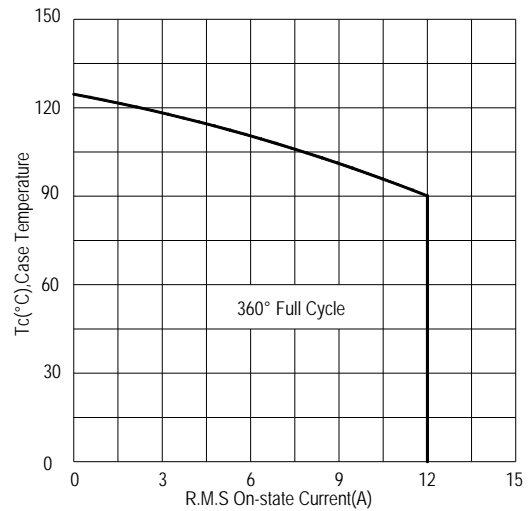


FIG.4: Maximum transient thermal impedance

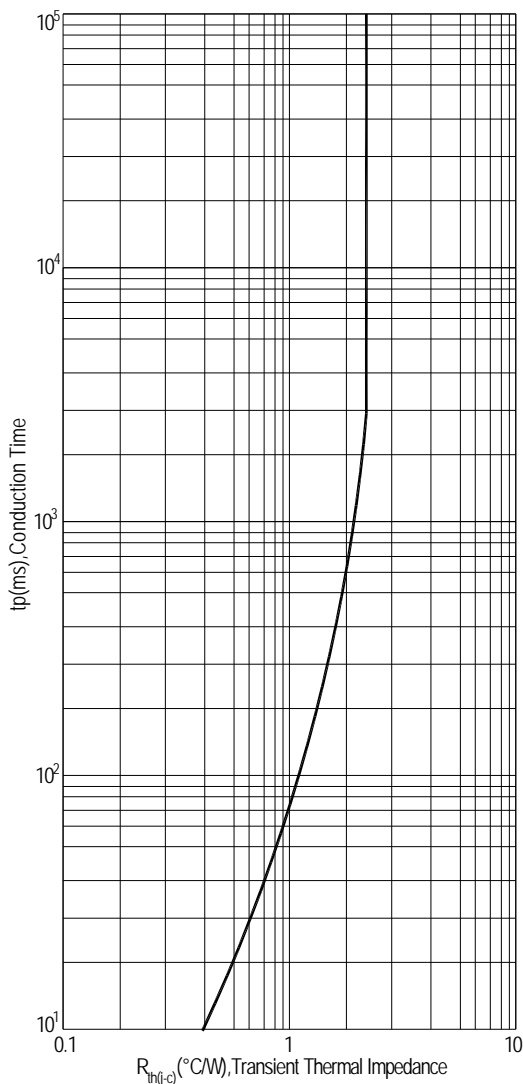


FIG.5: Rated surge on-state current (Non-Repetitive)

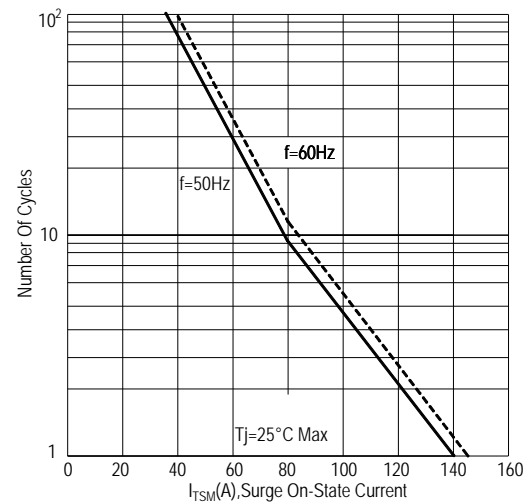


FIG.6: Gate trigger current VS Junction temperature

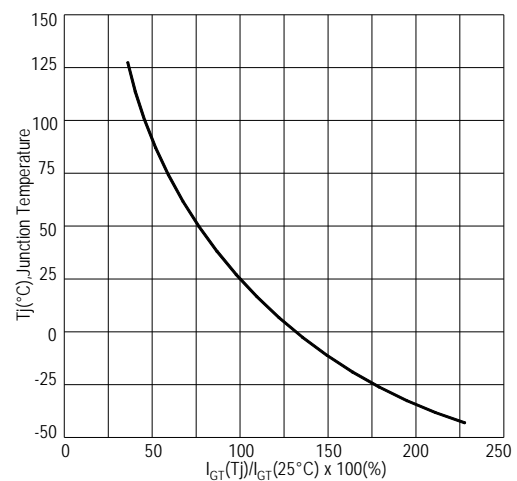


FIG.7: Holding current and Latching current VS Junction temperature

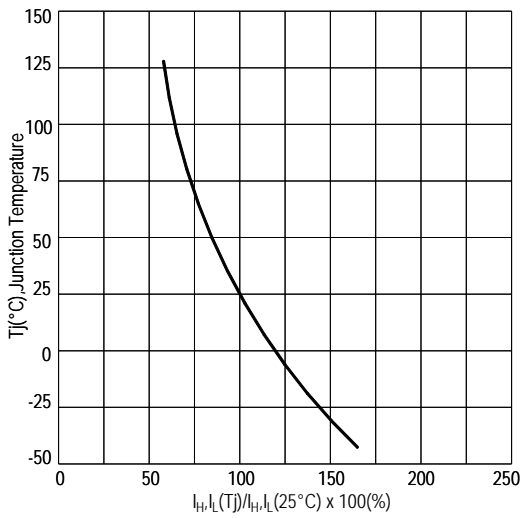


FIG.8: Gate trigger voltage VS Junction temperature

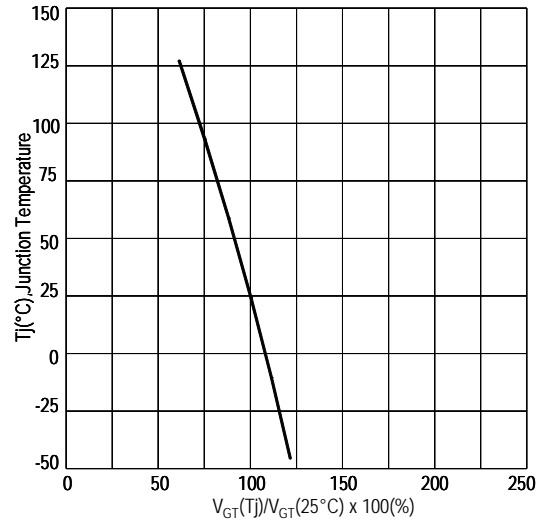
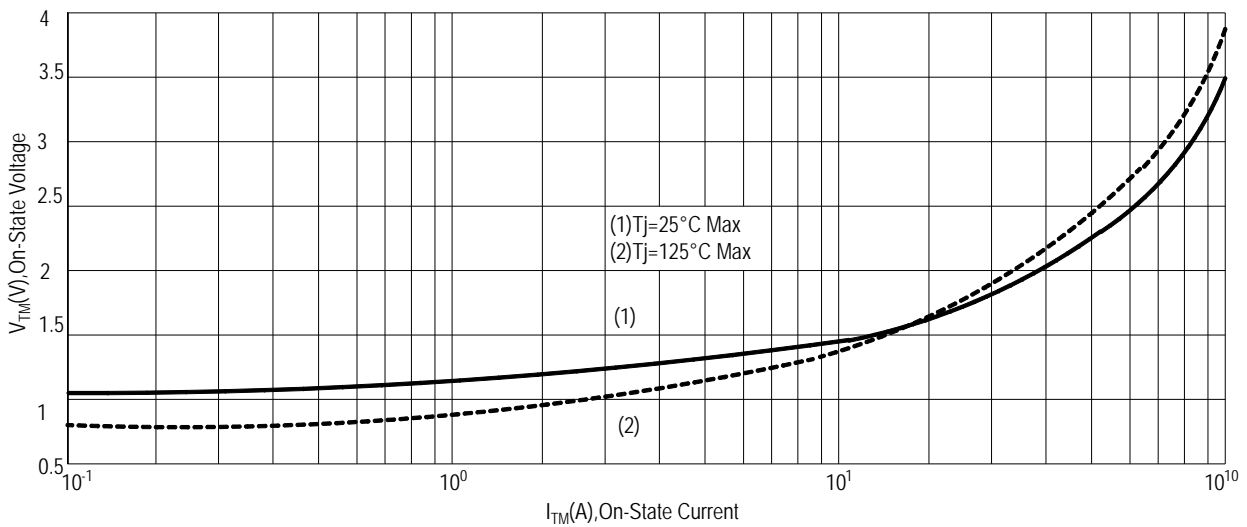
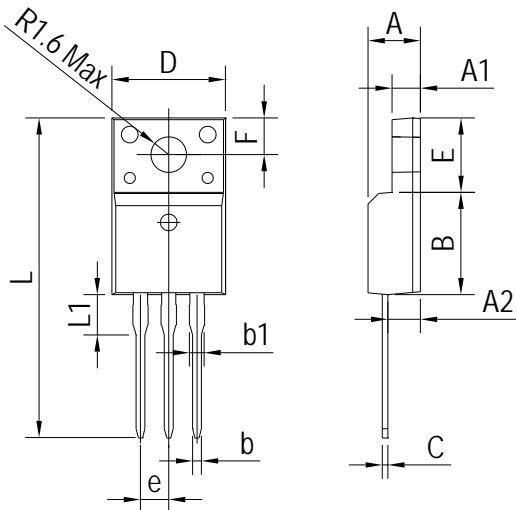


FIG.9: On-state characteristics(Max)



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
 ADT12D80FS: Part number
 X: Internal control code
 H: Halogen Free

AD T 12 D 80 F T(S)(B)

ADVANCED
 Internal control code
 Current: 12=12A
 Quadrant: D=4Q
 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
ADT12D60F#	TO-220F	ADT12D60F#	Tube	50pcs
ADT12D80F#	TO-220F	ADT12D80F#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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