

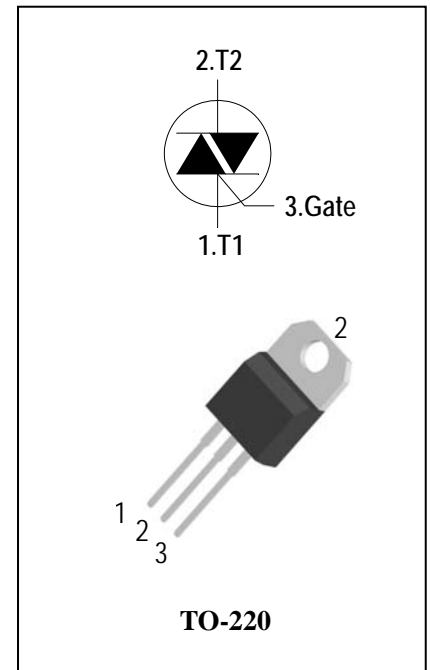
4 Quadrants Triacs

General Description

High current density due to mesa technology . the ADS12D 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 ($I_{T(RMS)} = 12 A$)
- ◆ These Devices are Pb-Free and are RoHS Compliant



Absolute Maximum Ratings ($T_j = 25^\circ C$ unless otherwise specified)

Symbol	Items	Conditions	Ratings	Unit
V_{DRM} V_{RRM}	Repetitive Peak Off-State Voltage	$T_j = 25^\circ C$	ADS12D60 600 ADS12D80 800	V V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 105^\circ C$	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	$F = 120 Hz$ $T_j = 125^\circ C$ $I_G = 2 \times I_{GT}$, $tr \leq 100 ns$	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		ADS12D60/80				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.	1.4				$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient		Max.	60				$^\circ\text{C}/\text{W}$

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

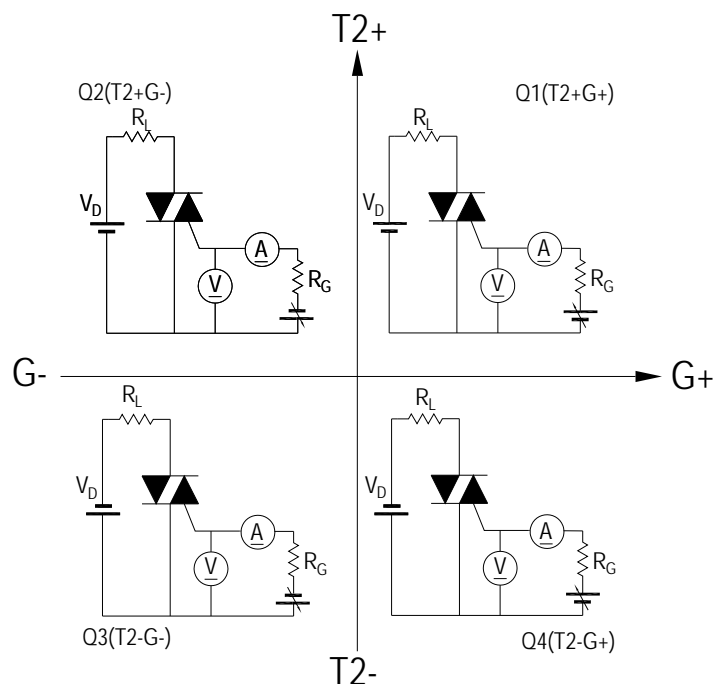


FIG.2: Maximum on-state power dissipation

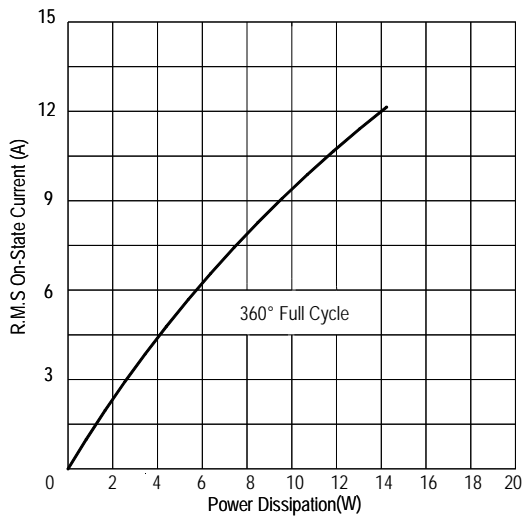


FIG.3: Typical RMS on-state current VS Allowable case Temperature

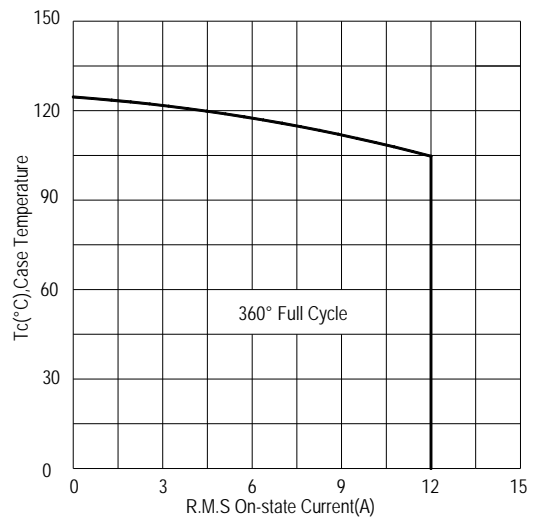


FIG.4: Maximum transient thermal impedance

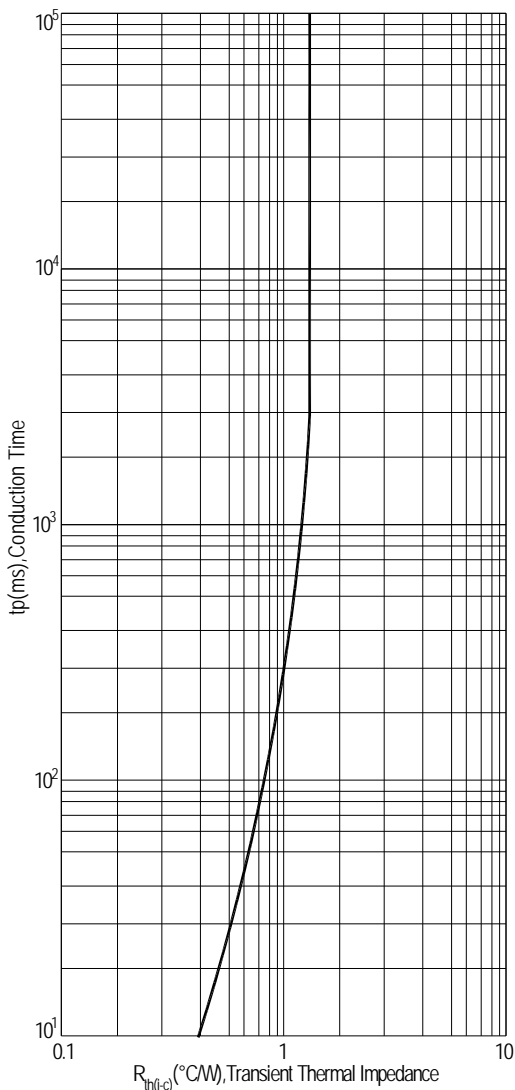


FIG.5: Rated surge on-state current (Non-Repetitive)

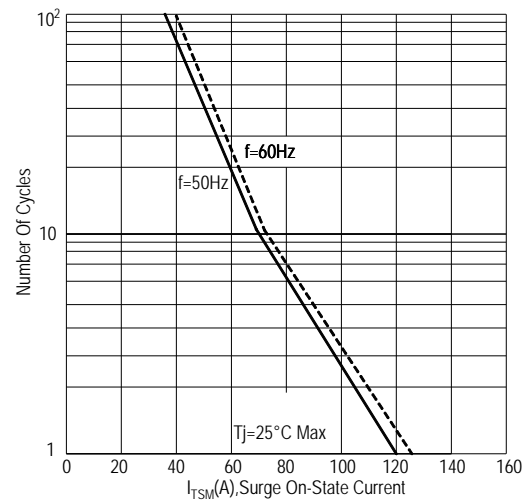


FIG.6: Gate trigger current VS Junction temperature

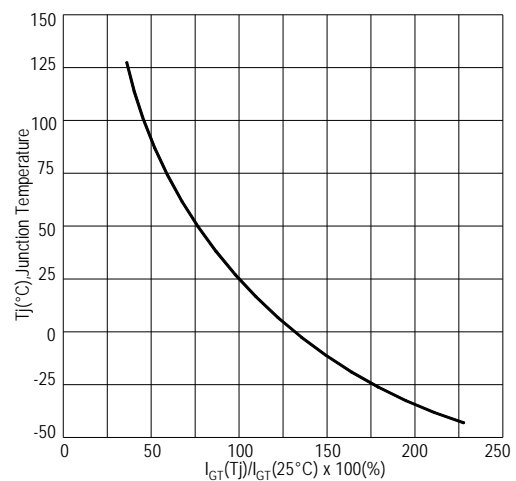


FIG.7: Holding current and Latching current VS Junction temperature

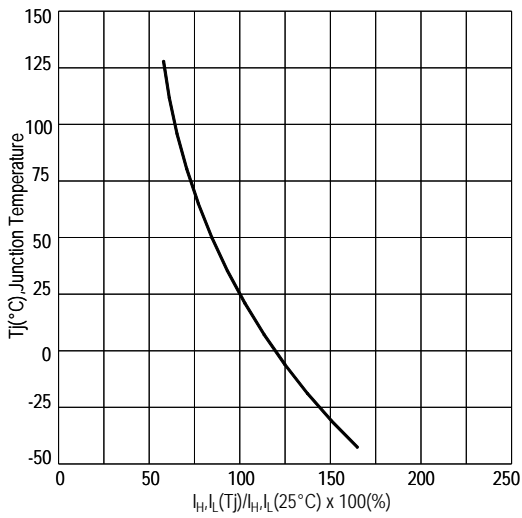


FIG.8: Gate trigger voltage VS Junction temperature

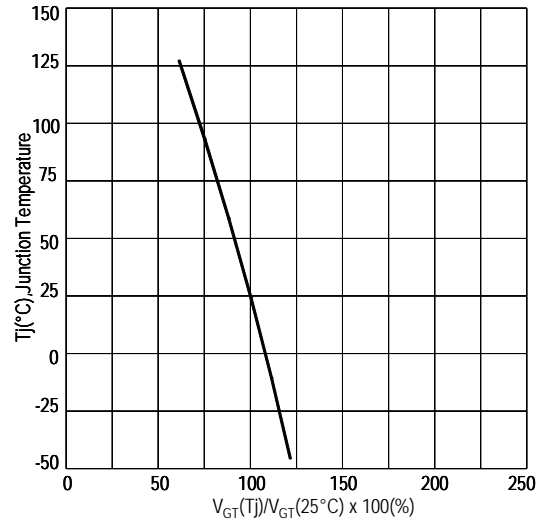
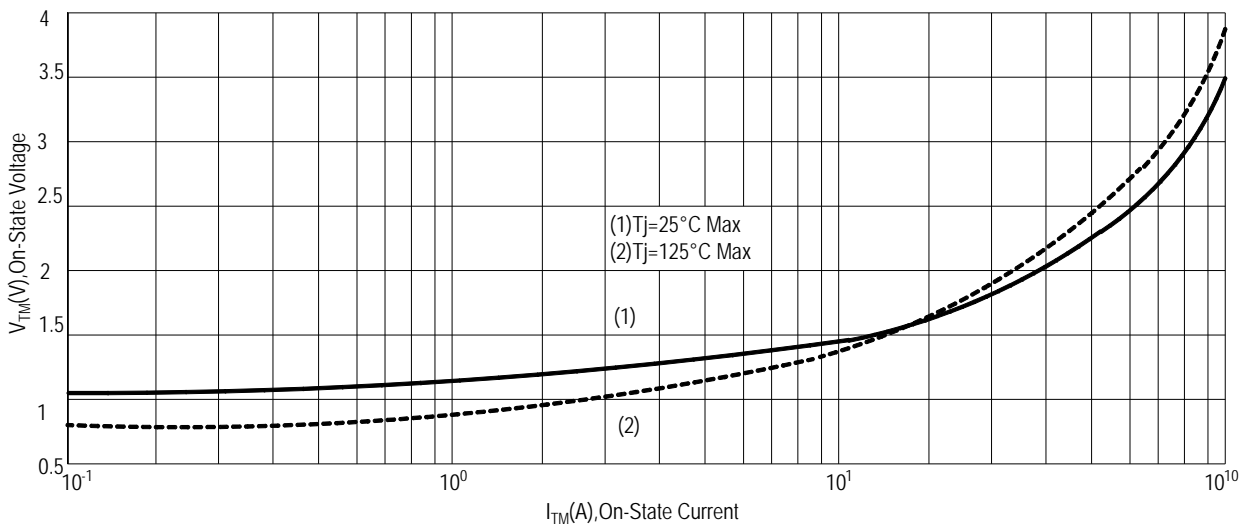
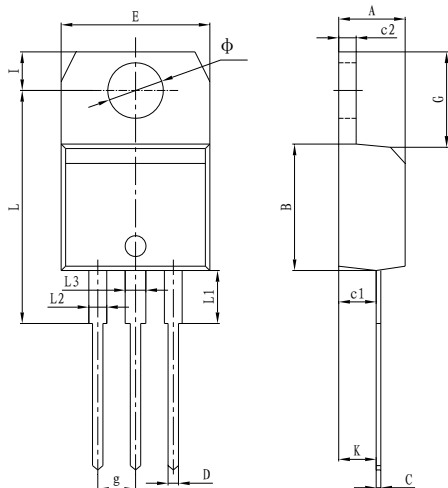


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA

TO-220 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.40	4.60	0.173	0.181
B	9.00	9.30	0.354	0.366
C	0.40	0.60	0.015	0.023
c1	2.00	2.60	0.078	0.102
c2	1.23	1.32	0.048	0.051
D	0.70	1.00	0.027	0.039
E	10.00	10.40	0.393	0.409
g	2.40	2.70	0.094	0.106
G	6.20	6.80	0.244	0.267
I	2.65	2.95	0.104	0.116
L	15.80	16.80	0.622	0.661
L1	3.75		0.147	
L2	1.14	1.70	0.044	0.066
L3	1.14	1.70	0.044	0.066
Φ	3.60	3.90	0.141	0.153
K	2.60TYP		0.102TYP	

Making Diagram

ADV xxxx
 ADS12D80S
 xxxH ○ xx

ADV: Logo
 ADS12D80S: Part number
 X: Internal control code
 H: Halogen Free

A D S 1 2 D 8 0 # T(S)(B)

ADVANCED	S	12	D	80	#	T(S)(B)
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: Blank=TO220

Ordering information

Part number	Package	Marking	Packing	Quantity
ADS12D60#	TO-220	ADS12D60#	Tube	50pcs
ADS12D80#	TO-220	ADS12D80#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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