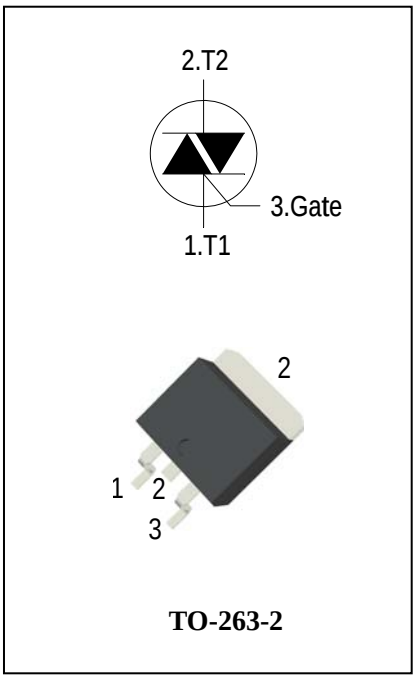
4 Quadrants Triacs

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.



TO-263-2

Features

- Repetitive Peak Off-State Voltage: 600Vand800V
- R.M.S On-State Current ($I_{T(RMS)}$= 12 A)
- These Devices are Pb-Free and are RoHS Compliant

Absolute Maximum Ratings

Symbol	Items	Conditions		Ratings	Unit
V_{DRM}	Repetitive Peak Off-State Voltage	Tj = 25°C	ADS12D60G	600	V
V_{RRM}			ADS12D80G	800	V
$I_{T(RMS)}$	R.M.S On-State Current	T_C = 105 °C		12	A
I_{TSM}	Surge On-State Current	tp=20ms(50Hz)/tp=16.7ms(60Hz)		120/126	A
I^2t	I^2t for fusing	tp=10ms		78	A^2s
dI/dt	Critical rate of rise of on-state current	F = 120 Hz Tj = 125°C I_G = 2 x I_{GT} , tr ≤ 100 ns		50	A/μs
I_{GM}	Peak Gate Current	tp = 20 μs Tj = 125°C		4	A
$P_{G(AV)}$	Average Gate Power Dissipation(Tj=125°C)			1	W
P_{GM}	Peak Gate Power Dissipation(tp=20us,Tj=125°C)			10	W
T_j	Operating Junction Temperature			- 40 ~ 125	°C
T_{STG}	Storage Temperature			- 40 ~ 150	°C

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

Symbol	Items		Conditions		ADS12D60G/80G				Unit
					T	S	Blank	B	
I_{DRM}	Peak Forward Reverse Blocking Current		V_{DRM} = V_{RRM}, Tj = 25°C	Max.	5				uA
I_{RRM}			V_{DRM} = V_{RRM}, Tj = 125°C		1				mA
V_{TM}	Peak On-State Voltage		I_{TM} = 17A, t_p = 380 μs	Max.	1.55				V
V_{GD}	Q1-Q2-Q3-Q4	Non－Trigger Gate Voltage	V_D = V_{DRM} R_L = 3.3 kΩ Tj = 125°C	Min.	0.2				V
V_{GT}	Q1-Q2-Q3-Q4	GateTrigger Voltage	V_D = 12V ， R_L = 33Ω	Max.	1.3				V
I_{GT}	Q1-Q2-Q3	GateTrigger Current		Max.	5	10	35	50	mA
	Q4				10	25	70	100	
I_H	Q1-Q2-Q3-Q4	Holding Current	I_T = 0.1A	Max.	10	15	35	50	mA
I_L	Q1-Q3-Q4	Latching Current	I_G = 1.2 I_{GT}	Max.	10	25	50	70	mA
	Q2				15	30	70	80	
dV/dt	Critical Rate of Rise of Off-State Voltage		V_D = 2/3V_{DRM} gate open Tj = 125°C	Min.	20	40	200	400	V/μs
(dV/dt)c	Rate of Change of Commutating Current,		(dI/dt)c=-5.3A/ms Tj = 125°C	Min.	0.5	1	5	10	V/μs
$R_{th(j-c)}$	Junction to case (AC)			Max.	1.4				°C/W
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab:S=1cm^2)			Max.	45				°C/W

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

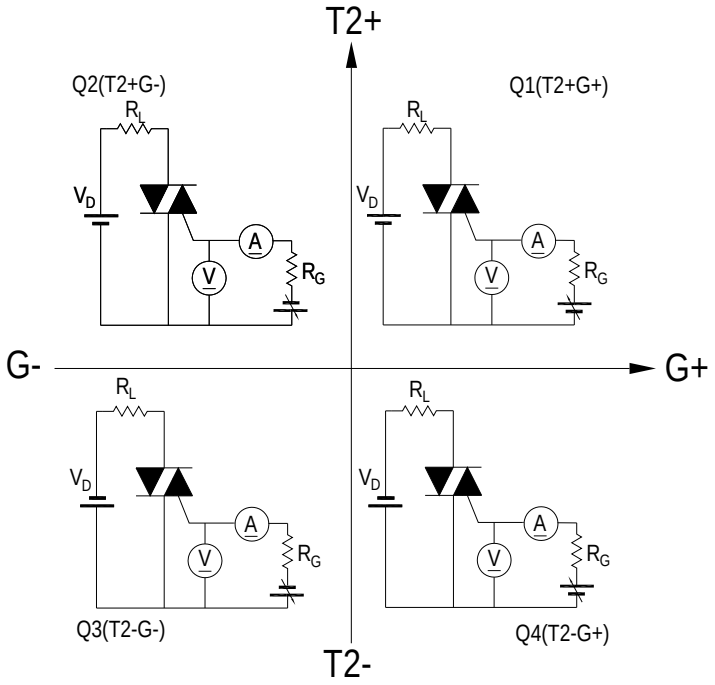


FIG.2: Maximum on-state power dissipation

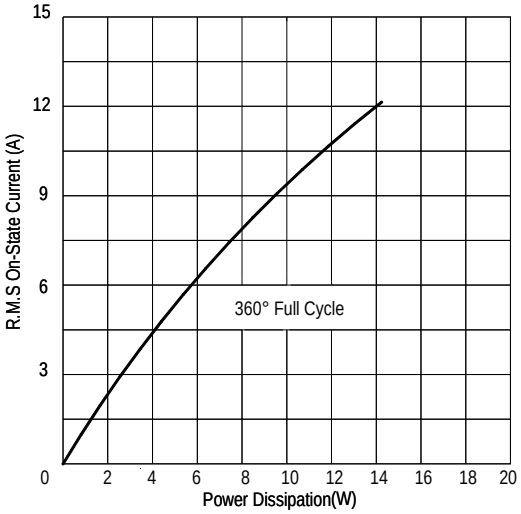


FIG.3: Typical RMS on-state current VS Allowable case Temperature

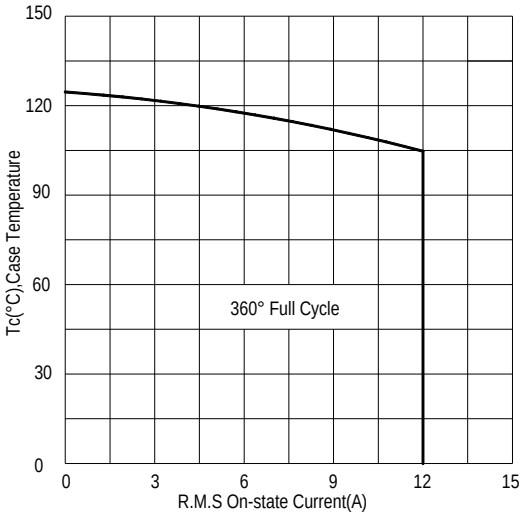


FIG.4: Maximum transient thermal impedance

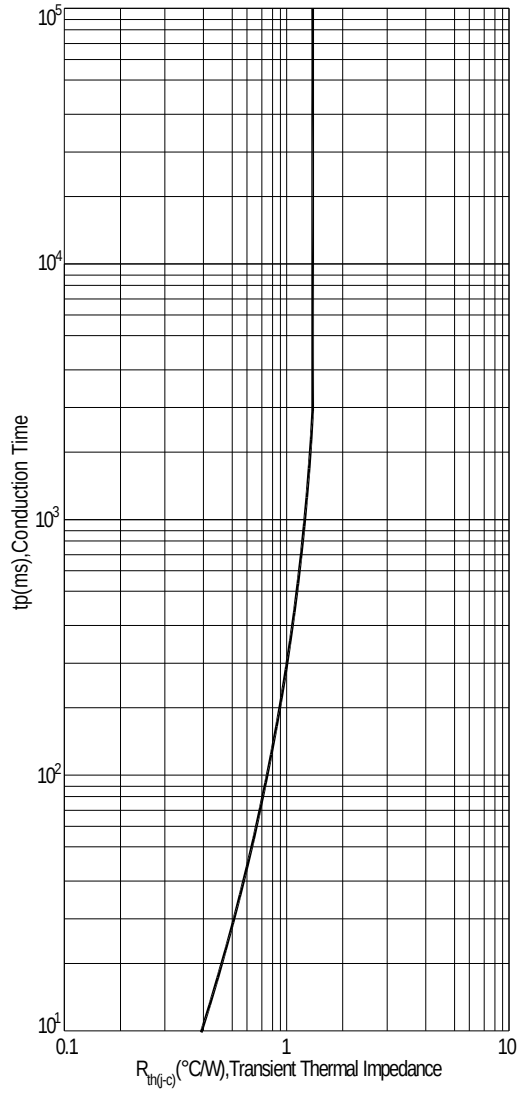


FIG.5: Rated surge on-state current (Non-Repetitive)

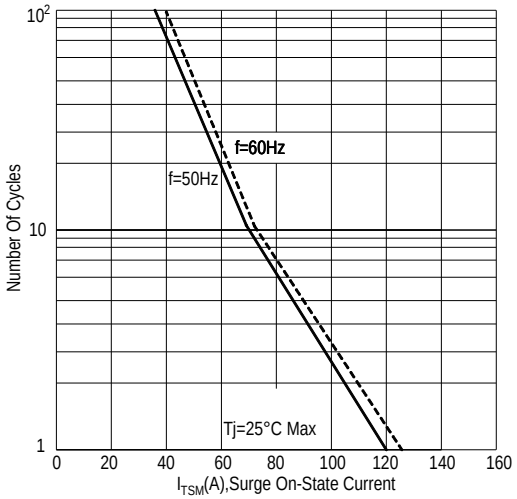


FIG.6: Gate trigger current VS Junction temperature

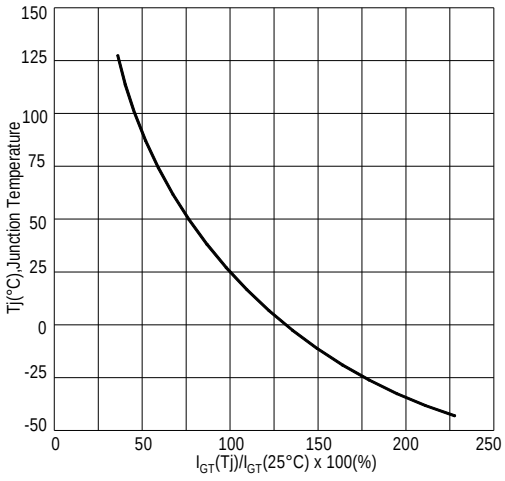


FIG.7:Holding current and Latching current VS Junction temperature

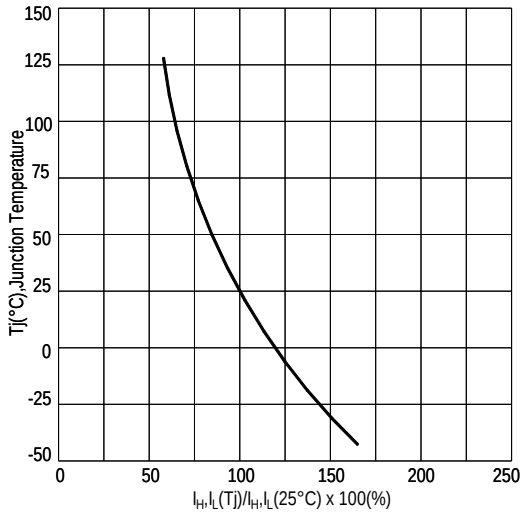


FIG.8: Gate trigger voltage VS Junction temperature

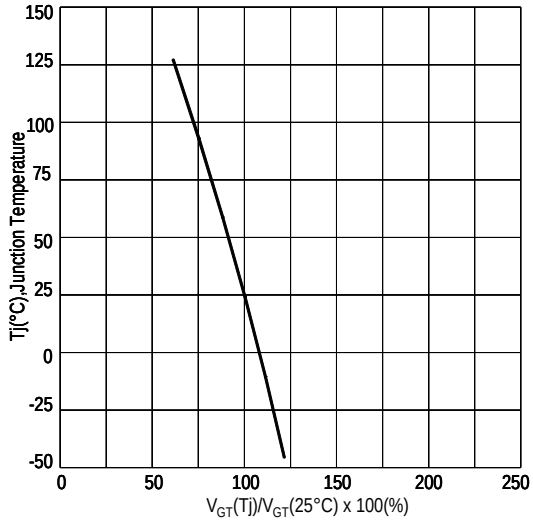
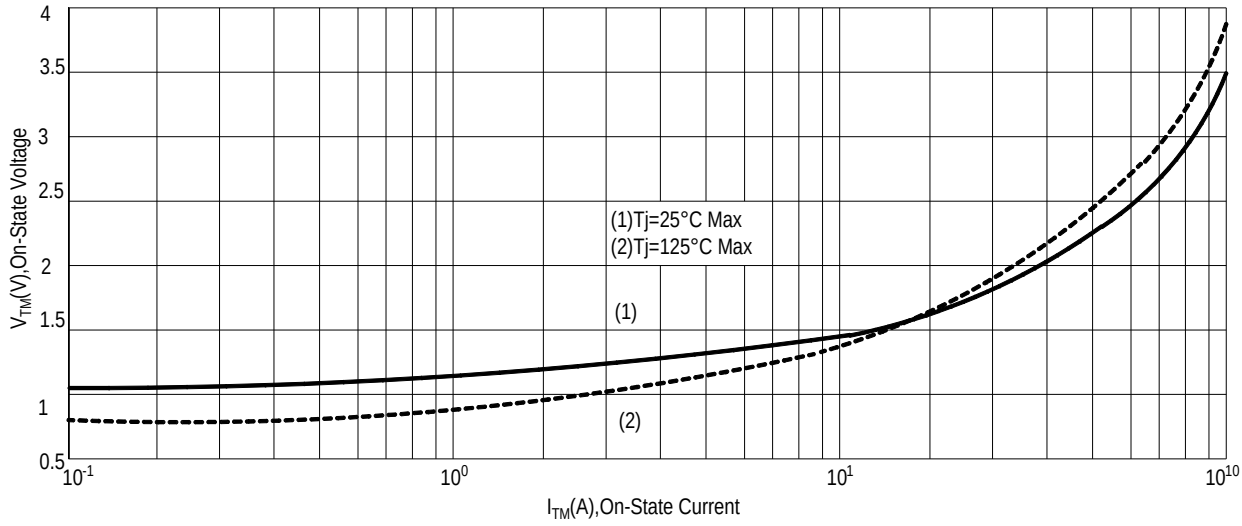
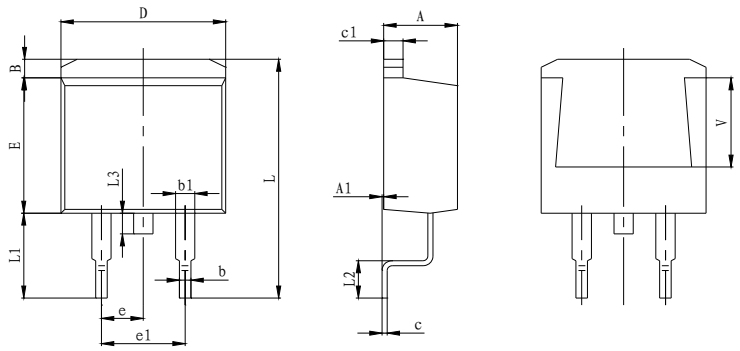


FIG.9: On-state characteristics(Max)



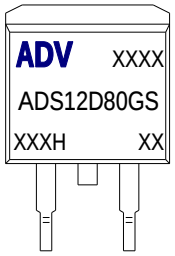
PACKAGE MECHANICAL DATA

TO-263-2 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.170	1.370	0.046	0.054
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
L	15.050	15.450	0.593	0.608
L1	5.080	5.480	0.200	0.216
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
V	5.600 REF		0.220 REF	

Making Diagram



ADV:Logo
ADS12D80GS:Part number
X:Internal control code
H:Halogen Free

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

- AD: ADVANCED
- S: Internal control code
- 12: Current:12=12A
- D: Quadrant:D=4Q
- 80: Voltage:60=600V 80=800V
- G: Package explain:G=TO263-2
- T(S)(B): Sensitivity and type:
  - T=5mA
  - S=10mA
  - Blank=35mA
  - B=50mA

Ordering information

Part number	Package	Marking	Packing	Quantity
ADS12D60G#	TO-263-2	ADS12D60G#	Tube	50pcs
			Embossed tape	800pcs
ADS12D80G#	TO-263-2	ADS12D80G#	Tube	50pcs
			Embossed tape	800pcs

Note:# = Gate Trigger Current Sensitivity and type

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