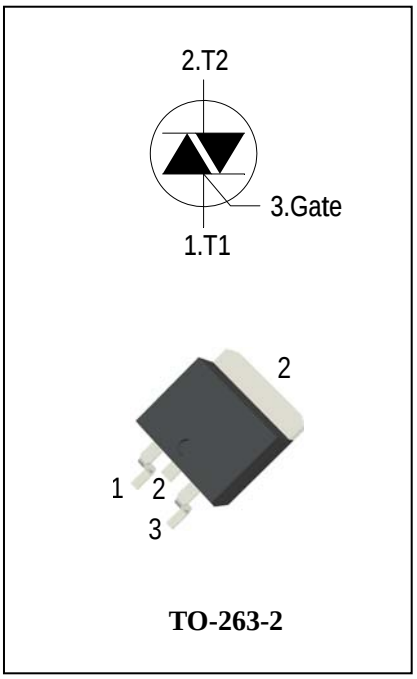
3 Quadrants Triacs

General Description

High current density due to mesa technology . the ADT12C 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: 600Vand800V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 12 A)
- ◆ High Commutation dv/dt
- ◆ 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	ADT12C60G	600	V
V_{RRM}			ADT12C80G	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)		140/146	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		ADT12C60G/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	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	Gate Trigger Voltage	V_D = 12V ， R_L = 33Ω	Max.	1.3				V
I_{GT}	Q1-Q2-Q3	Gate Trigger Current		Max.	5	10	35	50	mA
I_H	Q1-Q2-Q3	Holding Current	I_T = 0.1A	Max.	10	15	35	50	mA
I_L	Q1-Q3	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	500	1000	V/μs
(dV/dt)c	Rate of Change of Commutating Current,		(dI/dt)c=-5.3A/ms Tj = 125°C	Min.	0.5	1	10	25	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

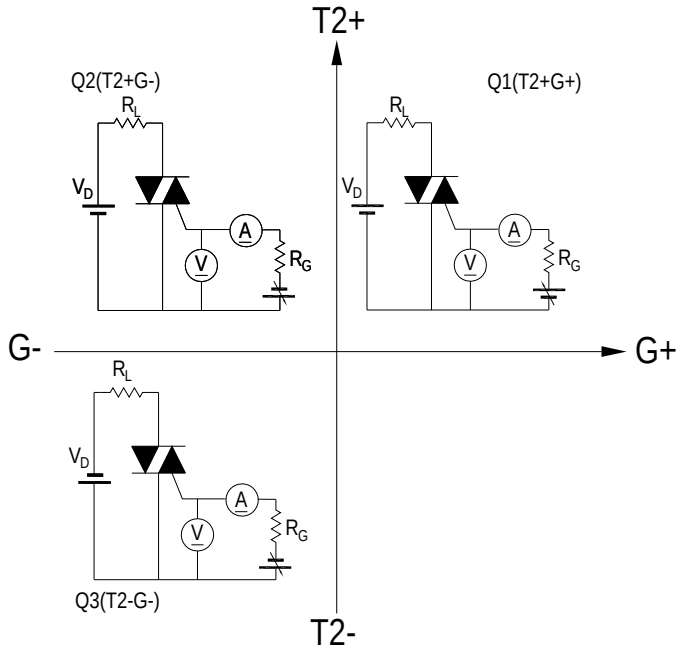


FIG.2: Maximum on-state power dissipation

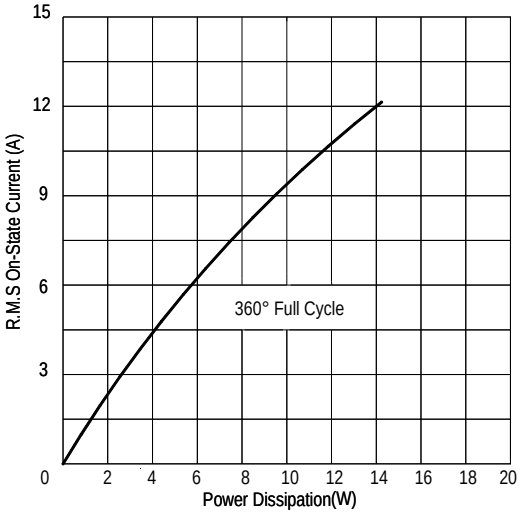


FIG.3: Typical RMS on-state current VS Allowable case Temperature

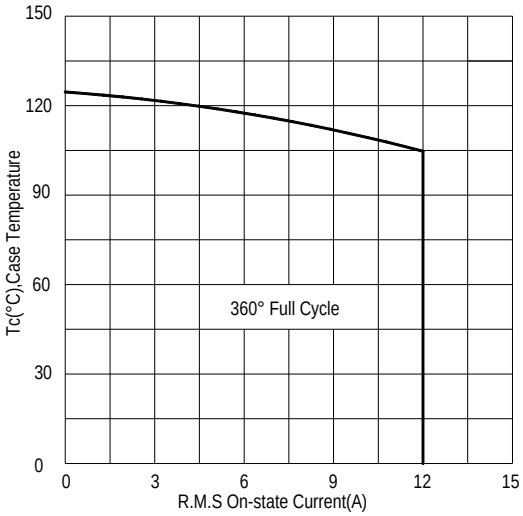


FIG.4: Maximum transient thermal impedance

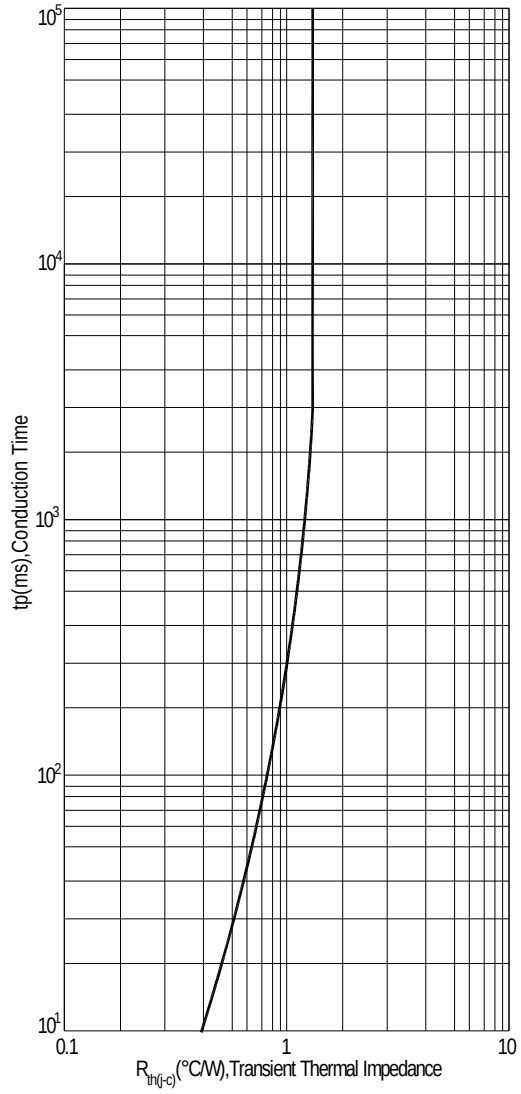


FIG.5: Rated surge on-state current (Non-Repetitive)

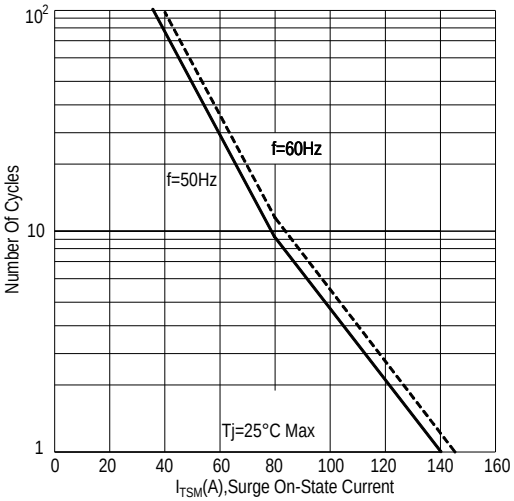


FIG.6: Gate trigger current VS Junction temperature

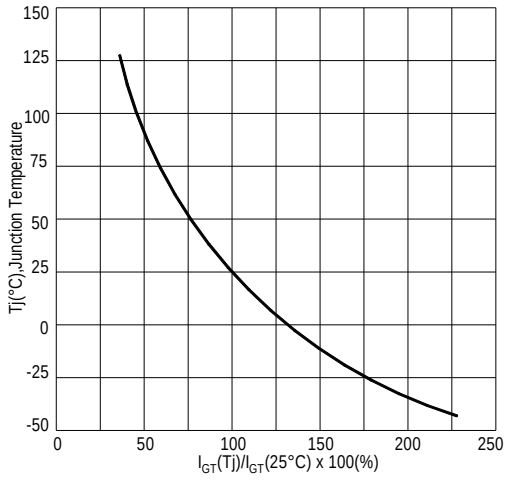


FIG.7:Holding current and Latching current VS Junction temperature

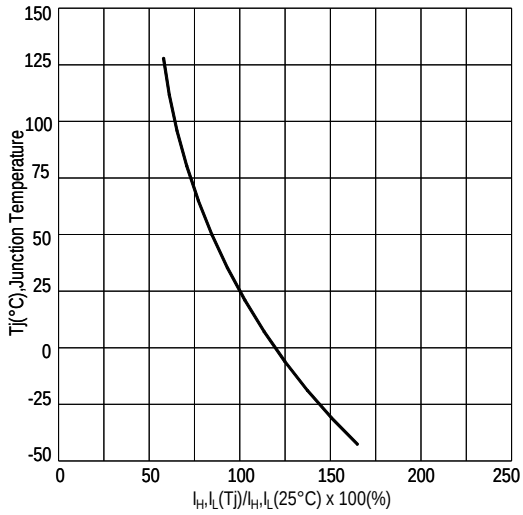


FIG.8: Gate trigger voltage VS Junction temperature

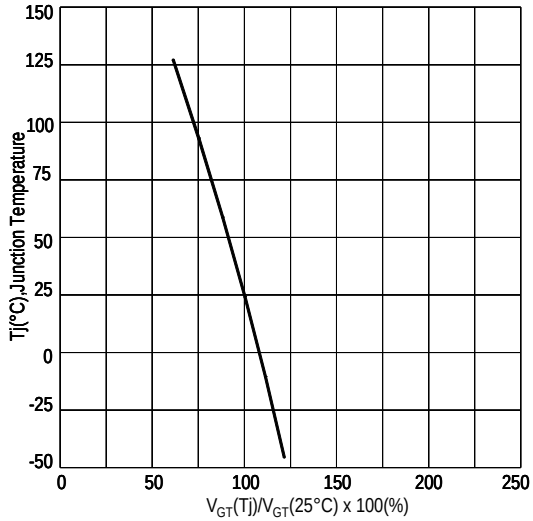
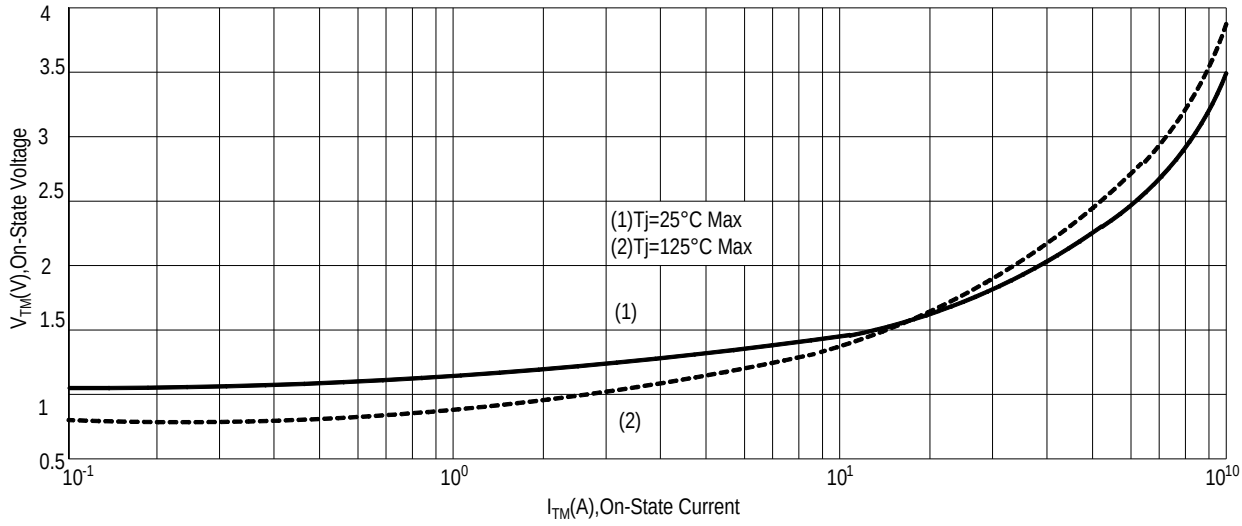
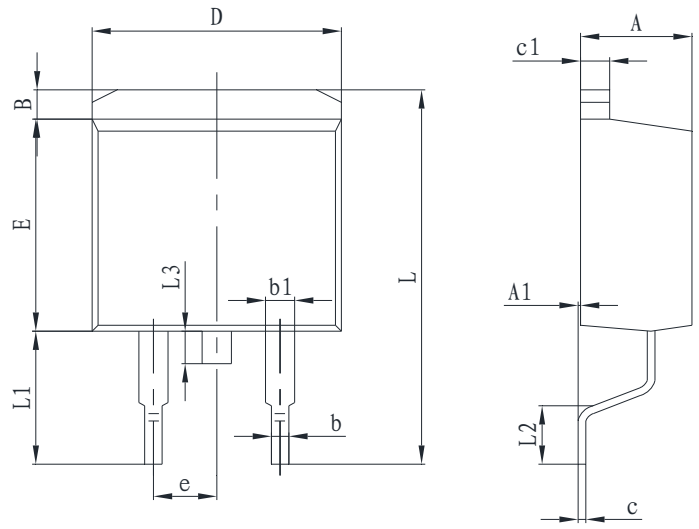


FIG.9: On-state characteristics(Max)



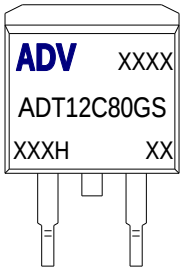
PACKAGE MECHANICAL DATA

TO-263-2 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.400	4.700	0.173	0.185
A1	0.000	0.250	0.000	0.010
B	1.300	1.600	0.051	0.063
b	0.710	0.910	0.028	0.036
b1	1.170	1.400	0.046	0.055
c	0.310	0.550	0.012	0.022
c1	1.170	1.370	0.046	0.054
D	9.900	10.200	0.390	0.402
E	9.400	9.600	0.370	0.378
e	2.540 TYP		0.100 TYP	
L	14.700	15.800	0.579	0.622
L1	3.800	4.360	0.149	0.171
L2	2.050	2.600	0.081	0.102
L3		1.750		0.069

Making Diagram



ADV:Logo
ADT12C80GS:Part number
X:Internal control code
H:Halogen Free

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

ADVANCED
Internal control code
Current:12=12A
Quadrant:C=3Q
Voltage:60=600V 80=800V
Package explain:G=TO263-2
Sensitivity and type:
T=5mA
S=10mA
Blank=35mA
B=50mA

Ordering information

Part number	Package	Marking	Packing	Quantity
ADT12C60G#	TO-263-2	ADT12C60G#	Tube	50pcs
			Embossed tape	800pcs
ADT12C80G#	TO-263-2	ATS12C80G#	Tube	50pcs
			Embossed tape	800pcs
Note:# = Gate Trigger Current Sensitivity and type				

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