

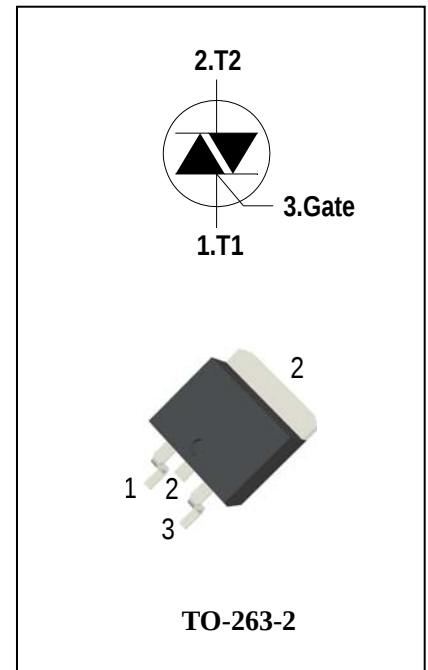
3 Quadrants Triacs

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: 600V and 800V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 12\text{ A}$)
- ◆ High Commutation dv/dt
- ◆ 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	$T_j = 25^{\circ}\text{C}$	ADT12C60G	600	V
			ADT12C80G	800	V
$I_{\text{T(RMS)}}$	R.M.S On-State Current	$T_{\text{C}} = 105^{\circ}\text{C}$		12	A
I_{TSM}	Surge On-State Current	$t_{\text{p}}=20\text{ms}(50\text{Hz})/t_{\text{p}}=16.7\text{ms}(60\text{Hz})$		140/146	A
I^2t	I^2t for fusing	$t_{\text{p}}=10\text{ms}$		78	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz}$ $T_j = 125^{\circ}\text{C}$ $I_{\text{G}} = 2 \times I_{\text{GT}}$, $t_{\text{r}} \leq 100\text{ ns}$		50	$\text{A}/\mu\text{s}$
I_{GM}	Peak Gate Current	$t_{\text{p}} = 20\text{ }\mu\text{s}$ $T_j = 125^{\circ}\text{C}$		4	A
$P_{\text{G(AV)}}$	Average Gate Power Dissipation($T_j=125^{\circ}\text{C}$)			1	W
P_{GM}	Peak Gate Power Dissipation($t_{\text{p}}=20\mu\text{s}$, $T_j=125^{\circ}\text{C}$)			10	W
T_j	Operating Junction Temperature			- 40 ~ 125	$^{\circ}\text{C}$
T_{STG}	Storage Temperature			- 40 ~ 150	$^{\circ}\text{C}$



Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Items		Conditions		ADT12C60G/80G				Unit
					T	S	Blank	B	
I _{DRM}	Peak Forward Reverse Blocking Current		V _{DRM} = V _{RRM} , T _j = 25°C	Max.	5				uA
I _{RRM}			V _{DRM} = V _{RRM} , T _j = 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 T _j = 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 T _j = 125°C	Min.	20	40	500	1000	V/μs
(dV/dt) _c	Rate of Change of Commutating Current,		(dI/dt) _c = -5.3A/ms T _j = 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

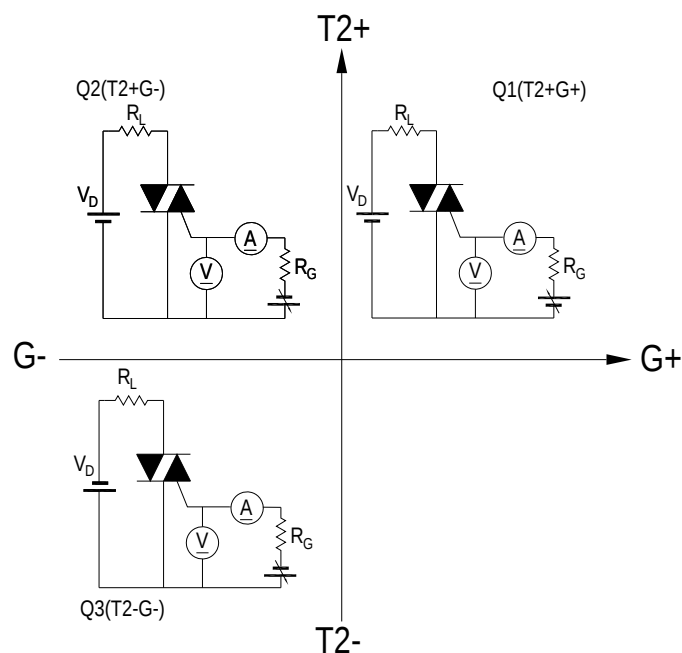
FIG.1: Triac quadrant are defined and the gate trigger test circuit

FIG.2: Maximum on-state power dissipation

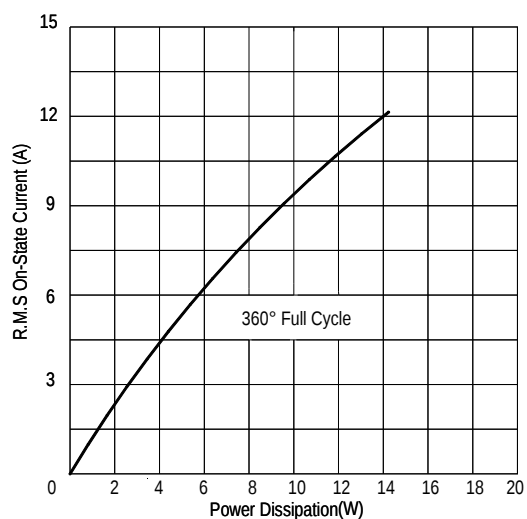


FIG.4: Maximum transient thermal impedance

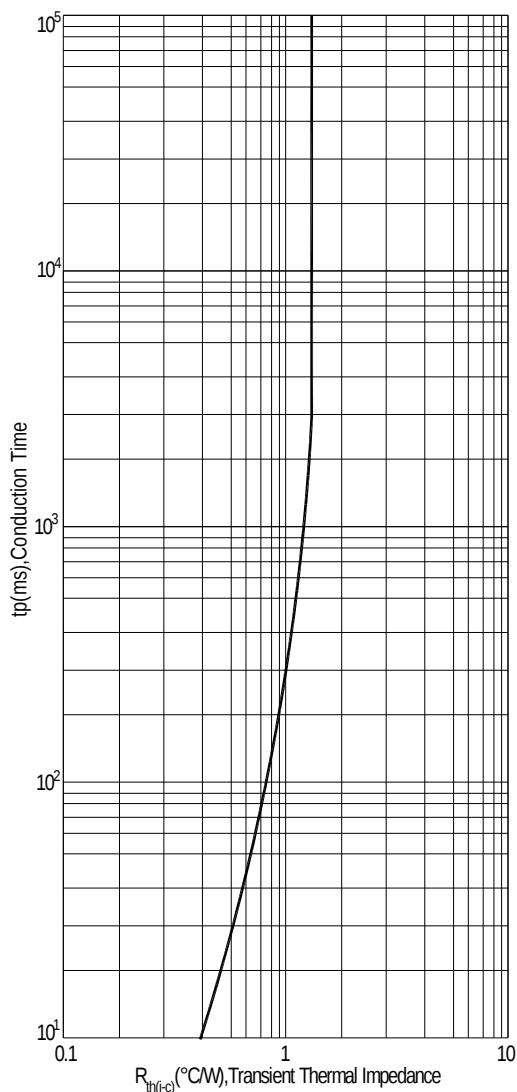


FIG.3: Typical RMS on-state current VS Allowable case Temperature

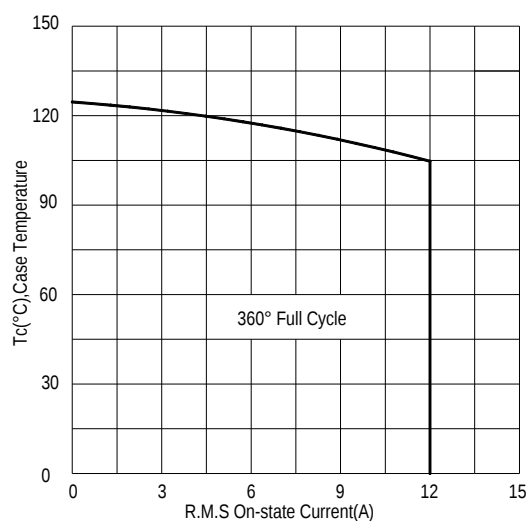


FIG.5: Rated surge on-state current (Non-Repetitive)

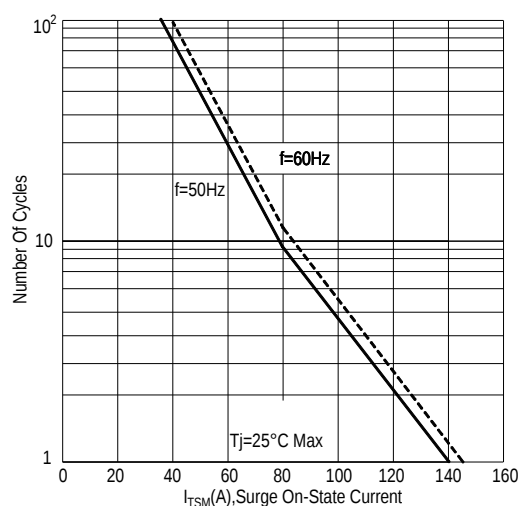


FIG.6: Gate trigger current VS Junction temperature

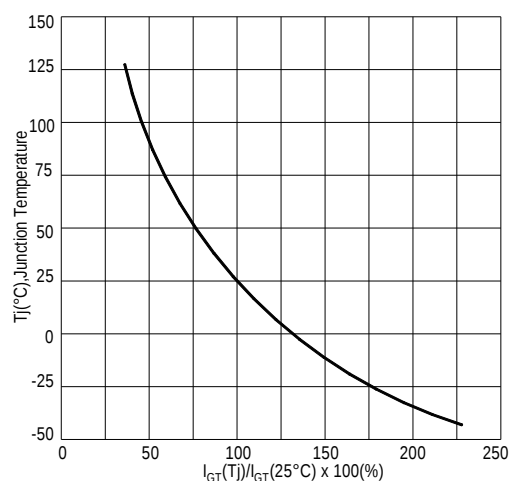


FIG.7:Holding current and Latching current VS Junction temperature

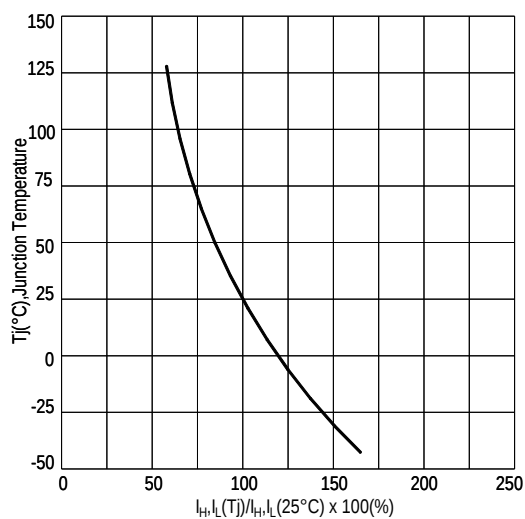


FIG.8: Gate trigger voltage VS Junction temperature

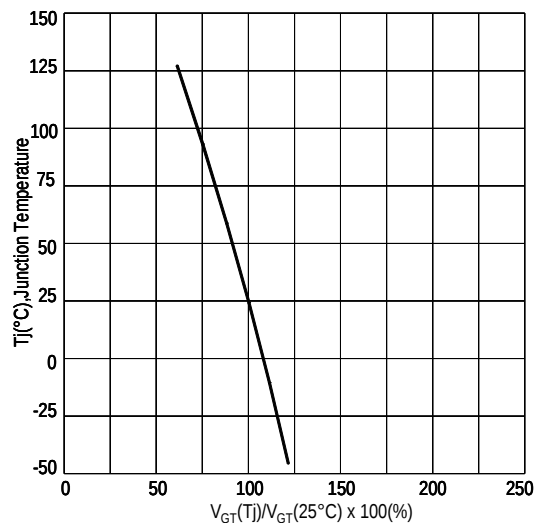
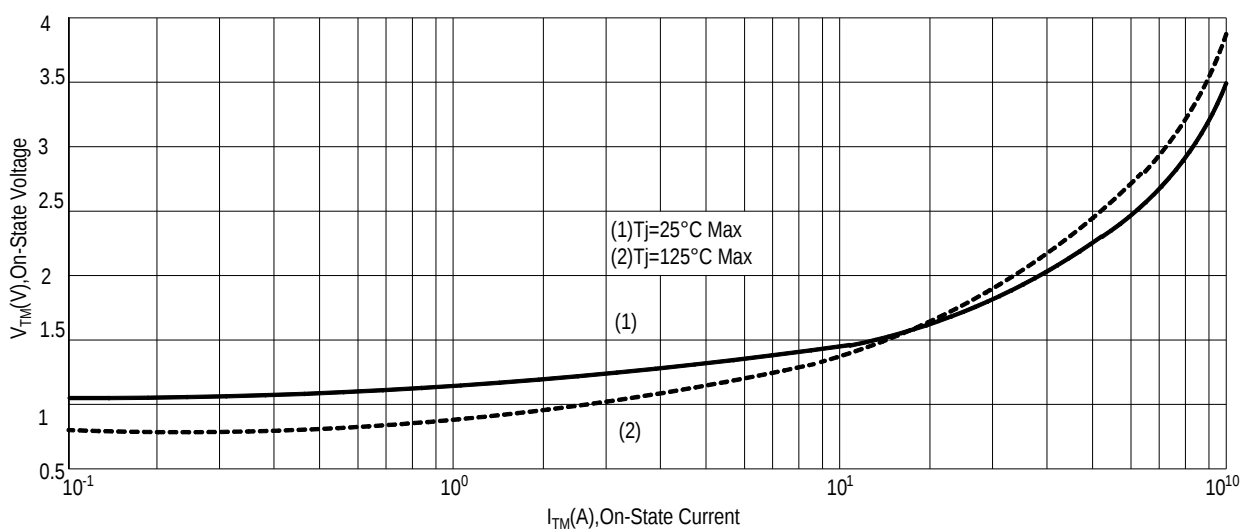
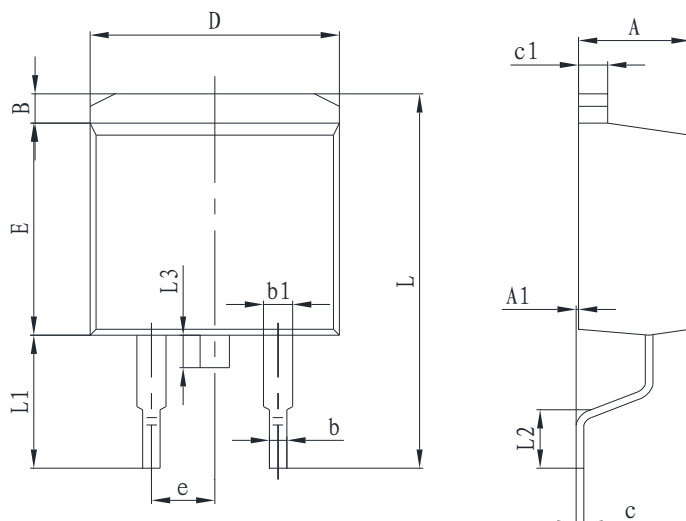


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA

TO-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	Sensitivity and type: T=5mA S=10mA Blank=35mA B=50mA Package explain:G=TO263-2
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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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