

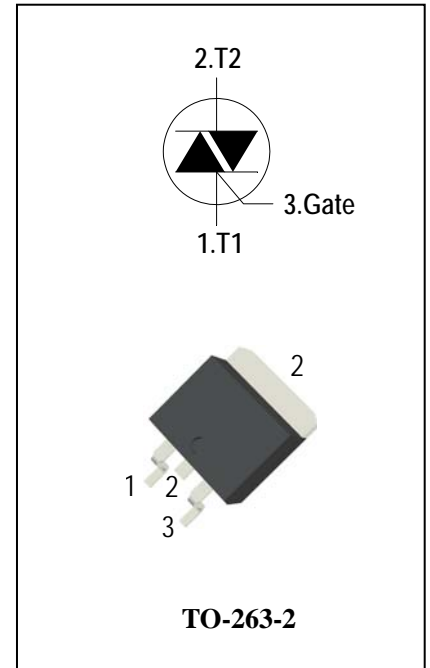
## 3 Quadrants Triacs

### General Description

High current density due to mesa technology . the ADS12C 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

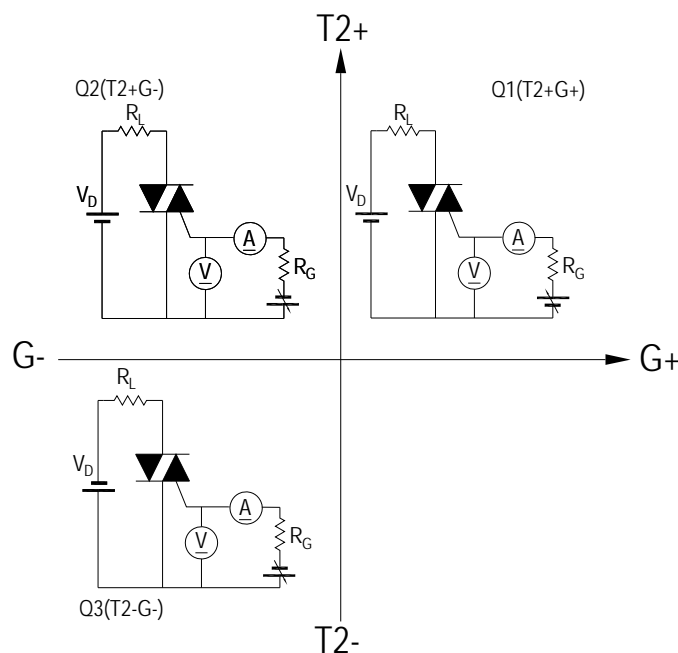
Symbol	Items	Conditions		Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ\text{C}$	ADS12C60G	600	V
			ADS12C80G	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 105^\circ\text{C}$		12	A
$I_{TSM}$	Surge On-State Current	$t_p = 20\text{ms}(50\text{Hz}) / t_p = 16.7\text{ms}(60\text{Hz})$		120/126	A
$I^2t$	$I^2t$ for fusing	$t_p = 10\text{ms}$		78	$\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 125^\circ\text{C}$ $I_G = 2 \times I_{GT}, t_r \leq 100\text{ ns}$		50	$\text{A}/\mu\text{s}$
$I_{GM}$	Peak Gate Current	$t_p = 20\text{ }\mu\text{s } T_j = 125^\circ\text{C}$		4	A
$P_{G(AV)}$	Average Gate Power Dissipation( $T_j = 125^\circ\text{C}$ )			1	W
$P_{GM}$	Peak Gate Power Dissipation( $t_p = 20\text{ }\mu\text{s}, T_j = 125^\circ\text{C}$ )			10	W
$T_j$	Operating Junction Temperature			- 40 ~ 125	$^\circ\text{C}$
$T_{STG}$	Storage Temperature			- 40 ~ 150	$^\circ\text{C}$



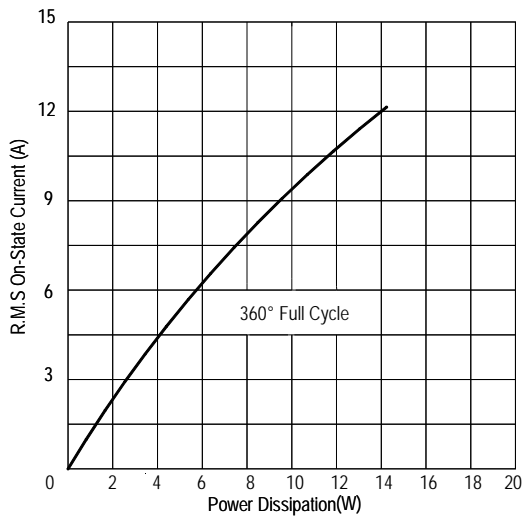
## Electrical Characteristics ( $T_j = 25^\circ\text{C}$ unless otherwise specified )

Symbol	Items		Conditions		ADS12C60G/80G				Unit
					T	S	Blank	B	
$I_{DRM}$ $I_{RRM}$	Peak Forward Reverse Blocking Current		$V_{DRM} = V_{RRM}, T_j = 25^\circ\text{C}$	Max.	5				$\mu\text{A}$
			$V_{DRM} = V_{RRM}, T_j = 125^\circ\text{C}$		1				$\text{mA}$
$V_{TM}$	Peak On-State Voltage		$I_{TM} = 17\text{A}, t_p = 380 \mu\text{s}$	Max.	1.55				$\text{V}$
$V_{GD}$	Q1-Q2-Q3	Non – Trigger Gate Voltage	$V_D = V_{DRM}, R_L = 3.3 \text{ k}\Omega$ $T_j = 125^\circ\text{C}$	Min.	0.2				$\text{V}$
$V_{GT}$	Q1-Q2-Q3	GateTrigger Voltage	$V_D = 12\text{V}, R_L = 33\Omega$	Max.	1.3				$\text{V}$
$I_{GT}$	Q1-Q2-Q3	Gate Trigger Current		Max.	5	10	35	50	$\text{mA}$
$I_H$	Q1-Q2-Q3	Holding Current	$I_T = 0.1\text{A}$	Max.	10	15	35	50	$\text{mA}$
$I_L$	Q1-Q3	Latching Current	$I_G = 1.2 I_{GT}$	Max.	10	25	50	70	$\text{mA}$
	Q2				15	30	70	80	
$dV/dt$	Critical Rate of Rise of Off-State Voltage		$V_D = 2/3V_{DRM}$ gate open $T_j = 125^\circ\text{C}$	Min.	20	40	300	1000	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	Rate of Change of Commutating Current,		$(dI/dt)_c = -5.3\text{A}/\text{ms}$ $T_j = 125^\circ\text{C}$	Min.	0.5	1	10	25	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	Junction to case (AC)			Max.	1.4				$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab:S=1cm <sup>2</sup> )			Max.	45				$^\circ\text{C}/\text{W}$

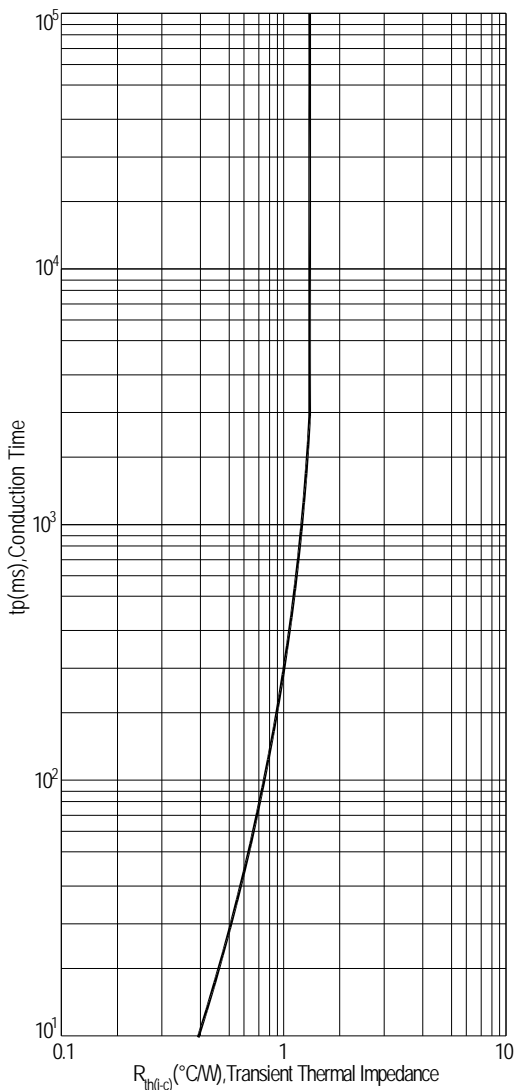
**FIG.1:Triac quadrant are defined and the gate trigger test circuit**



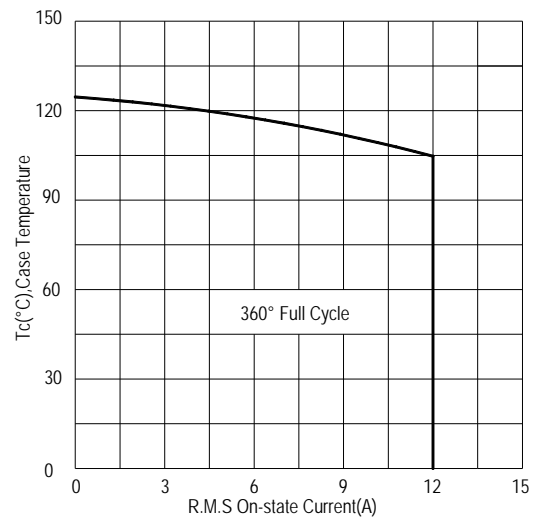
**FIG.2: Maximum on-state power dissipation**



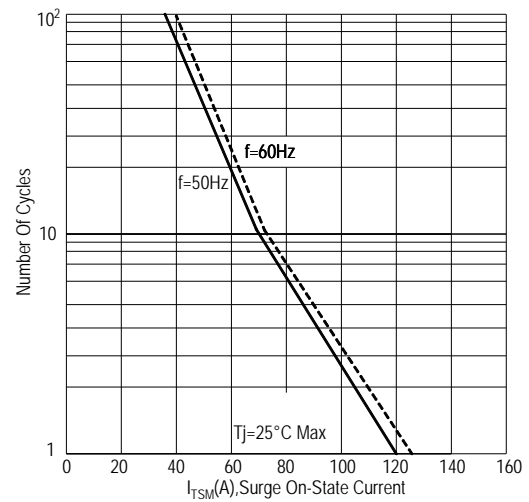
**FIG.4: Maximum transient thermal impedance**



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



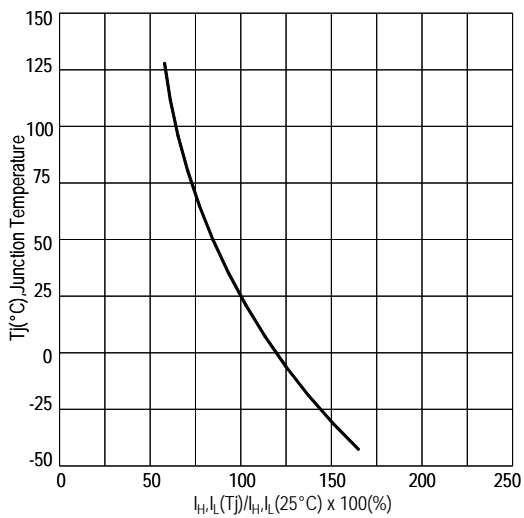
**FIG.5: Rated surge on-state current (Non-Repetitive)**



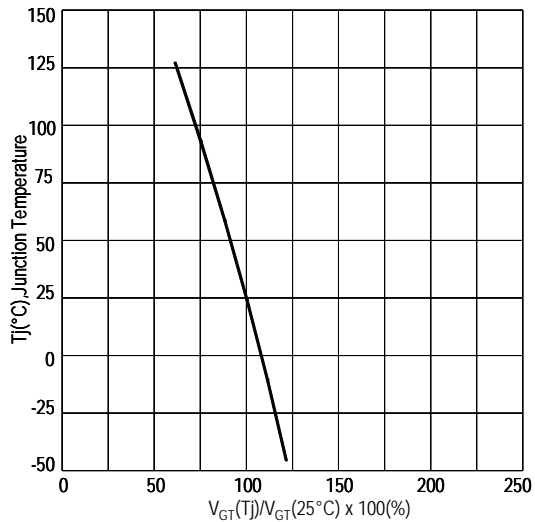
**FIG.6: Gate trigger current VS Junction temperature**



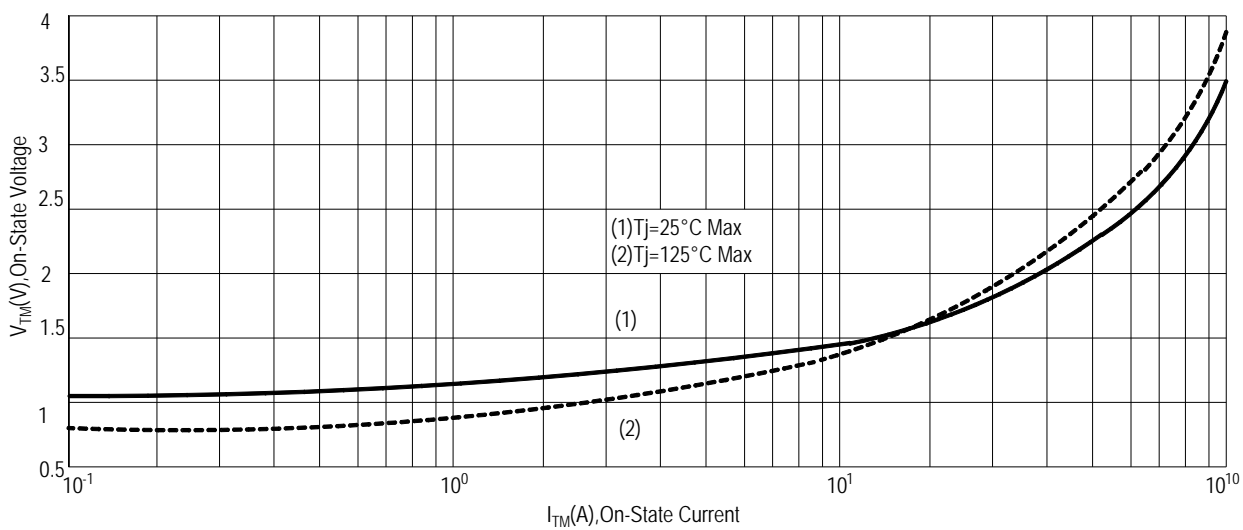
**FIG.7: Holding current and Latching current VS Junction temperature**



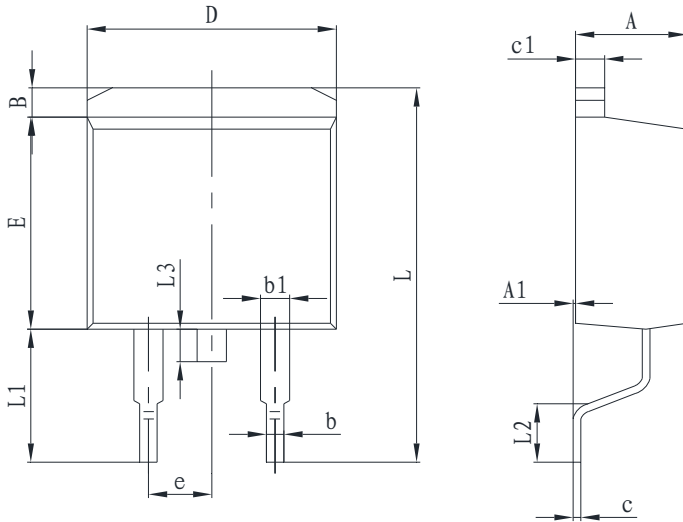
**FIG.8: Gate trigger voltage VS Junction temperature**



**FIG.9: On-state characteristics(Max)**

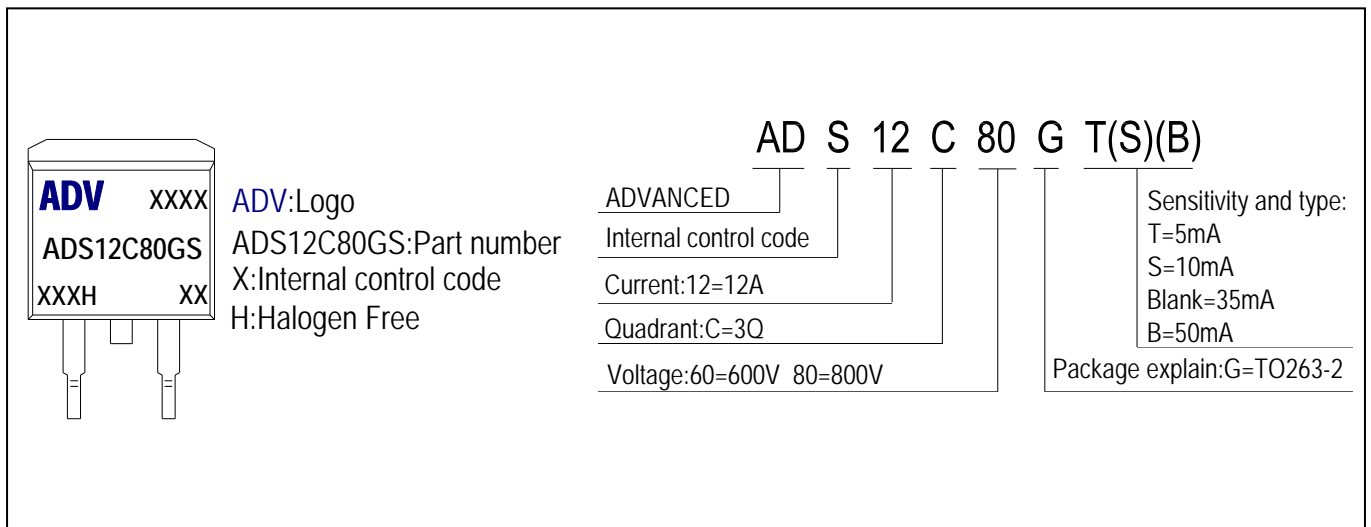


## PACKAGE MECHANICAL DATA TO-263-2 Package Dimension



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



## Ordering information

Part number	Package	Marking	Packing	Quantity
ADS12C60G#	TO-263-2	ADS12C60G#	Tube	50pcs
			Embossed tape	800pcs
ADS12C80G#	TO-263-2	ADS12C80G#	Tube	50pcs
			Embossed tape	800pcs

Note: # = Gate Trigger Current Sensitivity and type

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