

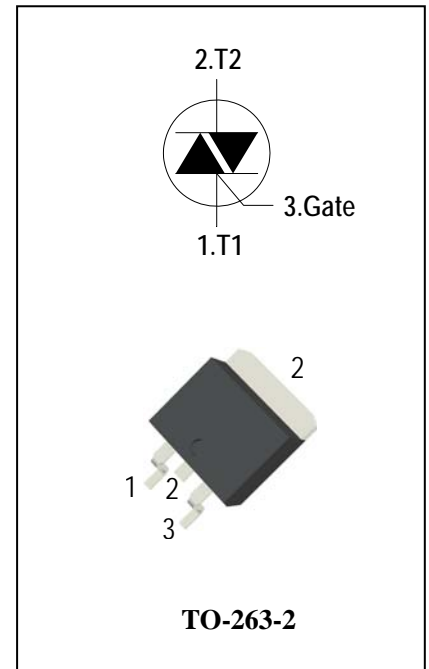
## 3 Quadrants Triacs

### General Description

High current density due to mesa technology .the ADT16C 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 (  $I_{T(RMS)}=16A$  )
- ◆ High Commutation  $dv/dt$
- ◆ These Devices are Pb-Free and are RoHS Compliant



### Absolute Maximum Ratings

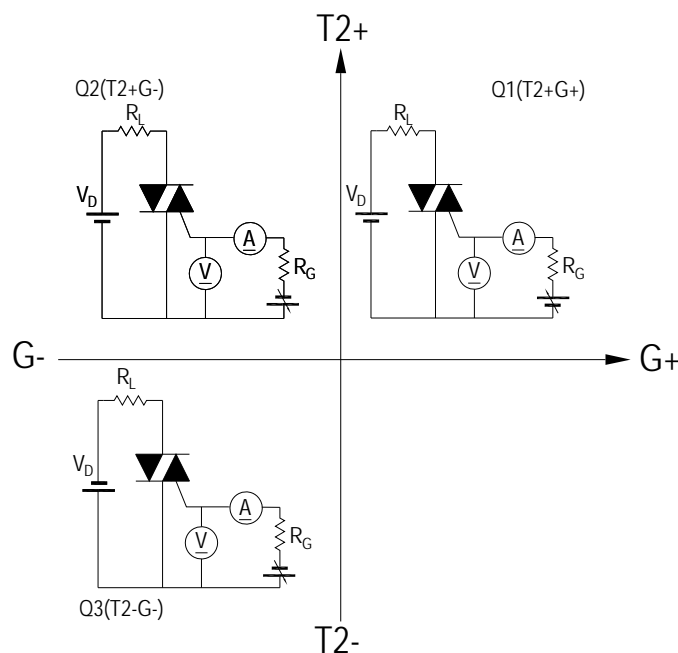
Symbol	Items	Conditions	Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ\text{C}$	ADT16C60G 600 ADT16C80G 800	V V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 100^\circ\text{C}$	16	A
$I_{TSM}$	Surge On-State Current	$t_p=20\text{ms}(50\text{Hz})/t_p=16.7\text{ms}(60\text{Hz})$	180/188	A
$I^2t$	$I^2t$ for fusing	$t_p=10\text{ms}$	165	$\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of on-state current	$F = 120 \text{ Hz } T_j = 125^\circ\text{C}$ $I_G = 2 \times I_{GT}, tr \leq 100 \text{ ns}$	50	$\text{A}/\mu\text{s}$
$I_{GM}$	Peak Gate Current	$t_p = 20 \mu\text{s } T_j = 125^\circ\text{C}$	4	A
$P_{G(AV)}$	Average Gate Power Dissipation( $T_j=125^\circ\text{C}$ )		1	W
$P_{GM}$	Peak Gate Power Dissipation( $t_p=20\mu\text{s}, T_j=125^\circ\text{C}$ )		10	W
$T_j$	Operating Junction Temperature		- 40 ~ 125	$^\circ\text{C}$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^\circ\text{C}$



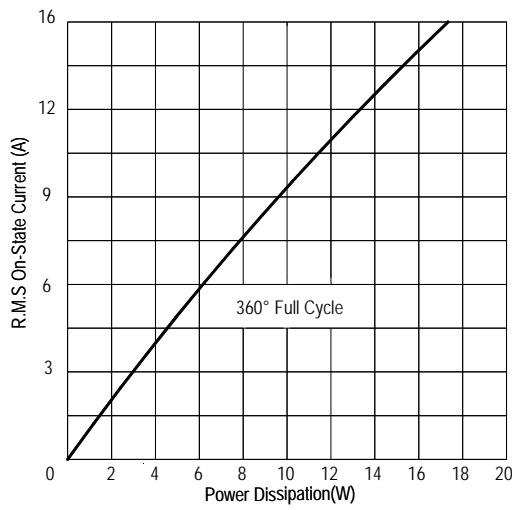
## Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified )

Symbol	Items		Conditions		ADT16C60G/80G				Unit
					T	S	Blank	B	
I <sub>DRM</sub> I <sub>RRM</sub>	Peak Forward Reverse Blocking Current		V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 25°C	Max.	5				uA
			V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 125°C		2				mA
V <sub>TM</sub>	Peak On-State Voltage		I <sub>TM</sub> = 22.5A, t <sub>p</sub> = 380 μs	Max.	1.55				V
V <sub>GD</sub>	Q1-Q2-Q3	Non-Trigger Gate Voltage	V <sub>D</sub> = V <sub>DRM</sub> R <sub>L</sub> = 3.3 kΩ T <sub>j</sub> = 125°C	Min.	0.2				V
V <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Voltage	V <sub>D</sub> = 12V , R <sub>L</sub> = 33Ω	Max.	1.3				V
I <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Current		Max.	5	10	35	50	mA
I <sub>H</sub>	Q1-Q2-Q3	Holding Current	I <sub>T</sub> = 0.1A	Max.	10	15	40	60	mA
I <sub>L</sub>	Q1-Q3	Latching Current	I <sub>G</sub> = 1.2 I <sub>GT</sub>	Max.	15	20	50	70	mA
	Q2				25	35	60	80	
dV/dt	Critical Rate of Rise of Off-State Voltage		V <sub>D</sub> = 2/3V <sub>DRM</sub> gate open T <sub>j</sub> = 125°C	Min.	20	40	400	1000	V/μs
(dV/dt) <sub>c</sub>	Critical Rate of Change of Commutating Voltage		(dI/dt) <sub>c</sub> = -7A/ms T <sub>j</sub> = 125°C	Min.	0.5	1	10	25	V/μs
R <sub>th(j-c)</sub>	Junction to case (AC)			Max.	1.2				°C/W
R <sub>th(j-a)</sub>	Junction to ambient(Copper surface under tab:S=1cm <sup>2</sup> )			Max.	50				°C/W

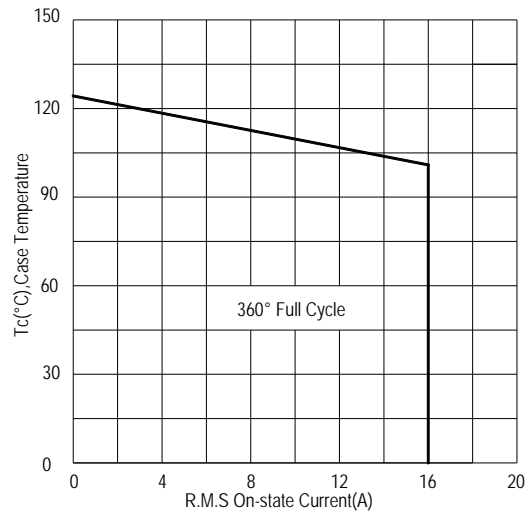
FIG.1:Triac quadrant are defined and the gate trigger test circuit



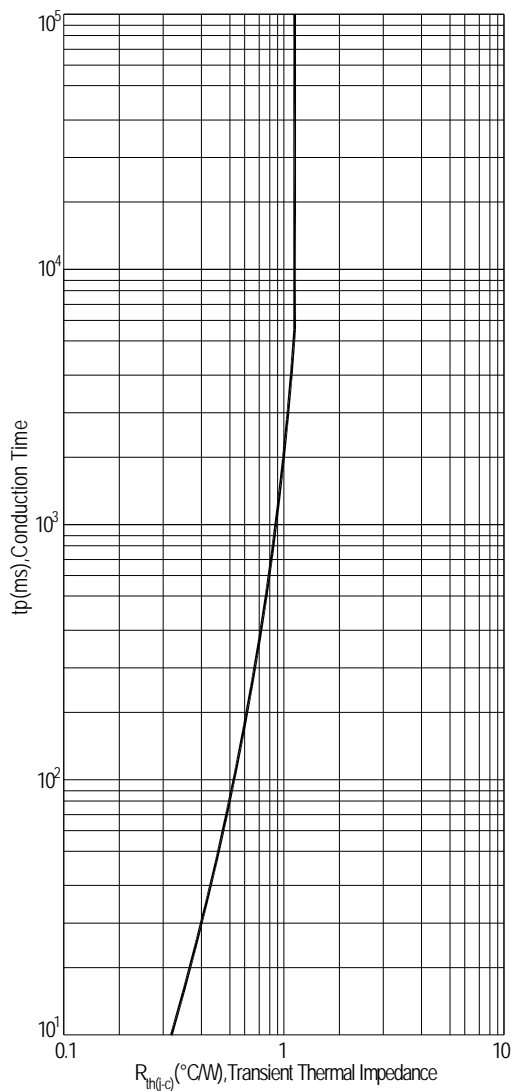
**FIG.2: Maximum on-state power dissipation**



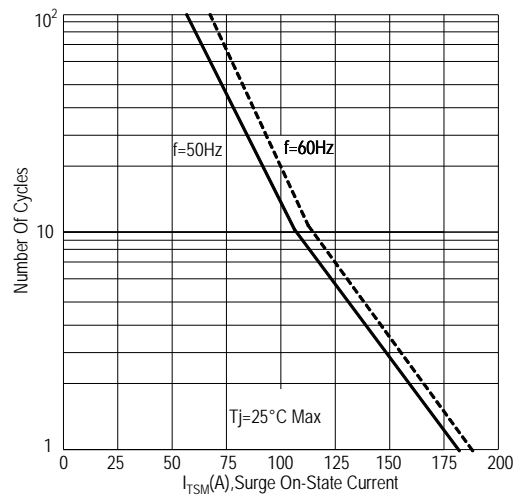
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



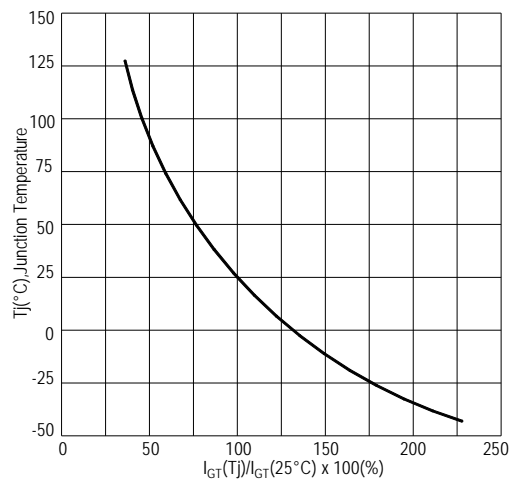
**FIG.4: Maximum transient thermal impedance**



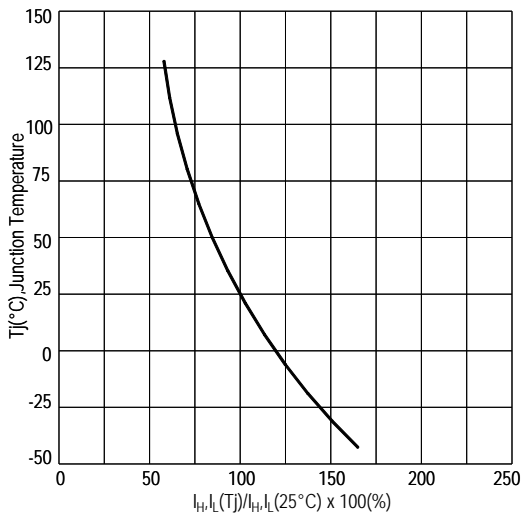
**FIG.5: Rated surge on-state current ( Non-Repetitive)**



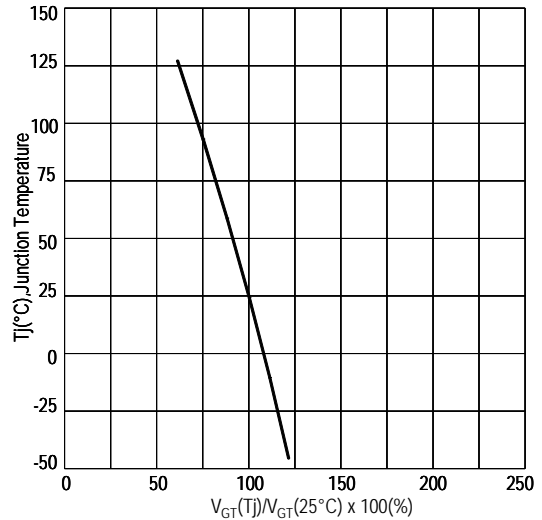
**FIG.6: Gate trigger current VS Junction temperature**



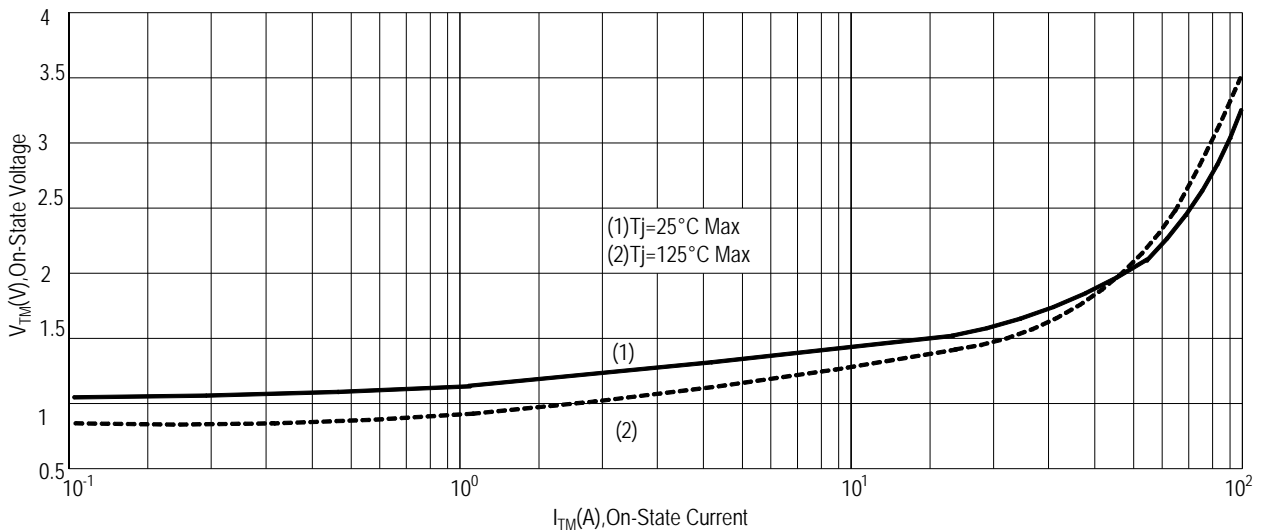
**FIG.7: Holding current and Latching current VS Junction temperature**



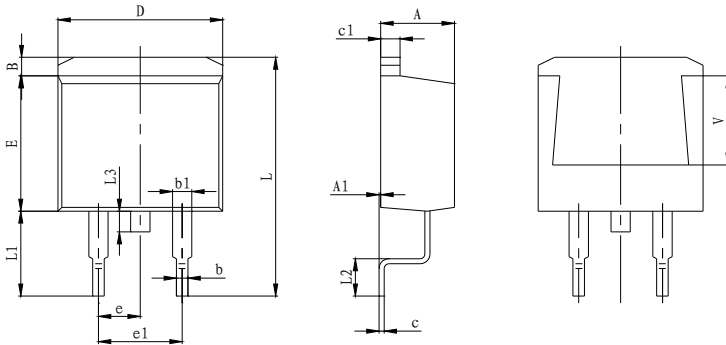
**FIG.8: Gate trigger voltage VS Junction temperature**



**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  
ADT16C60GS:Part number  
X:Internal control code  
H:Halogen Free

**AD T 16 C 60 G T(S)(B)**

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

### Ordering information

Part number	Package	Marking	Packing	Quantity
ADT16C60G#	TO-263-2	ADT16C60G#	Tube	50pcs
			Embossed tape	800pcs
ADT16C80G#	TO-263-2	ADT16C80G#	Tube	50pcs
			Embossed tape	800pcs

Note:# = Gate Trigger Current Sensitivity and type

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