

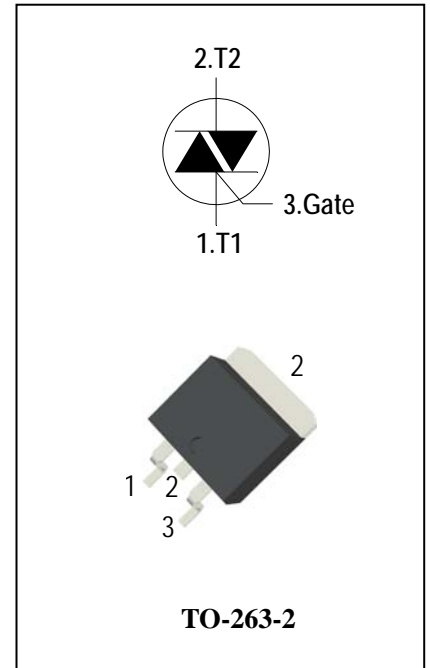
## 3 Quadrants Triacs

### General Description

High current density due to mesa technology .the ADT20C 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 (  $I_{T(RMS)} = 20A$  )
- ◆ High Commutation  $dv/dt$
- ◆ These Devices are Pb-Free and are RoHS Compliant



### Absolute Maximum Ratings

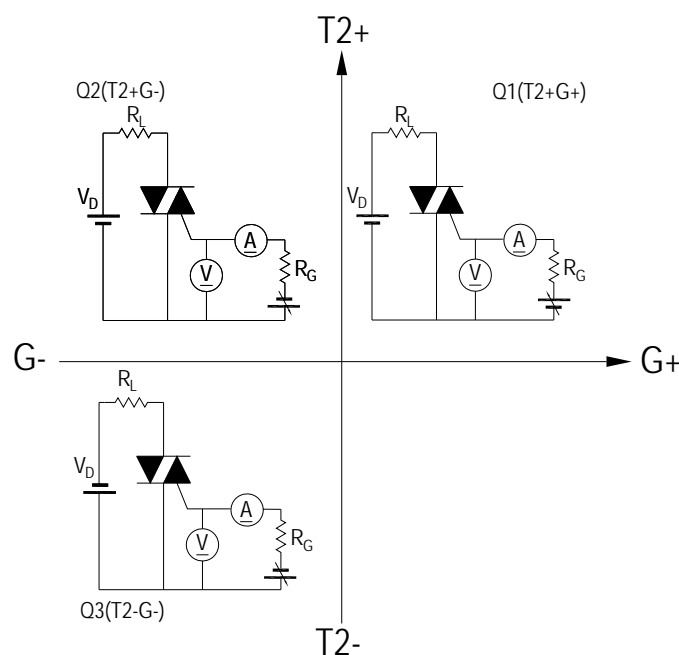
Symbol	Items	Conditions	Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ C$	ADT20C60G 600 ADT20C80G 800	V V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 90^\circ C$	20	A
$I_{TSM}$	Surge On-State Current	$t_p = 20ms(50Hz) / t_p = 16.7ms(60Hz)$	210/220	A
$I^2t$	$I^2t$ for fusing	$t_p = 10ms$	205	$A^2s$
$di/dt$	Critical rate of rise of on-state current	$F = 120 Hz$ $T_j = 125^\circ C$ $I_G = 2 \times I_{GT}$ , $t_r \leq 100 ns$	50	$A/\mu s$
$I_{GM}$	Peak Gate Current	$t_p = 20 \mu s$ $T_j = 125^\circ C$	4	A
$P_{G(AV)}$	Average Gate Power Dissipation( $T_j = 125^\circ C$ )		1	W
$P_{GM}$	Peak Gate Power Dissipation( $t_p = 20\mu s, T_j = 125^\circ C$ )		10	W
$T_j$	Operating Junction Temperature		- 40 ~ 125	$^\circ C$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^\circ C$



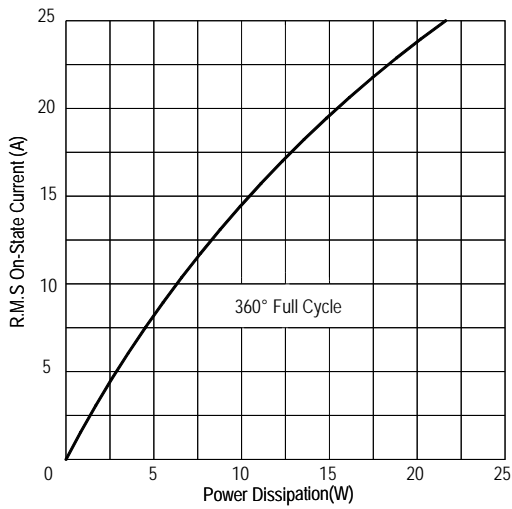
## Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)

Symbol	Items		Conditions		ADT20C60G/80G			Unit
					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		2.5			mA
V <sub>TM</sub>	Peak On-State Voltage		I <sub>TM</sub> = 28A, 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.	1.5			V
I <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Current		Max.	10	35	50	mA
I <sub>H</sub>	Q1-Q2-Q3	Holding Current	I <sub>T</sub> = 0.1A	Max.	20	50	75	mA
I <sub>L</sub>	Q1-Q3	Latching Current	I <sub>G</sub> = 1.2 I <sub>GT</sub>	Max.	20	80	90	mA
	Q2				35	90	110	
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.	500	1000	1500	V/μs
(dV/dt) <sub>c</sub>	Critical Rate of Change of Commutating Voltage		(dI/dt) <sub>c</sub> = -8.8A/ms T <sub>j</sub> = 125°C	Min.	1	15	20	V/μs
R <sub>th(j-c)</sub>	Junction to case (AC)			Max.	1			°C/W
R <sub>th(j-a)</sub>	Junction to ambient(S=1cm <sup>2</sup> )			Max.	45			°C/W

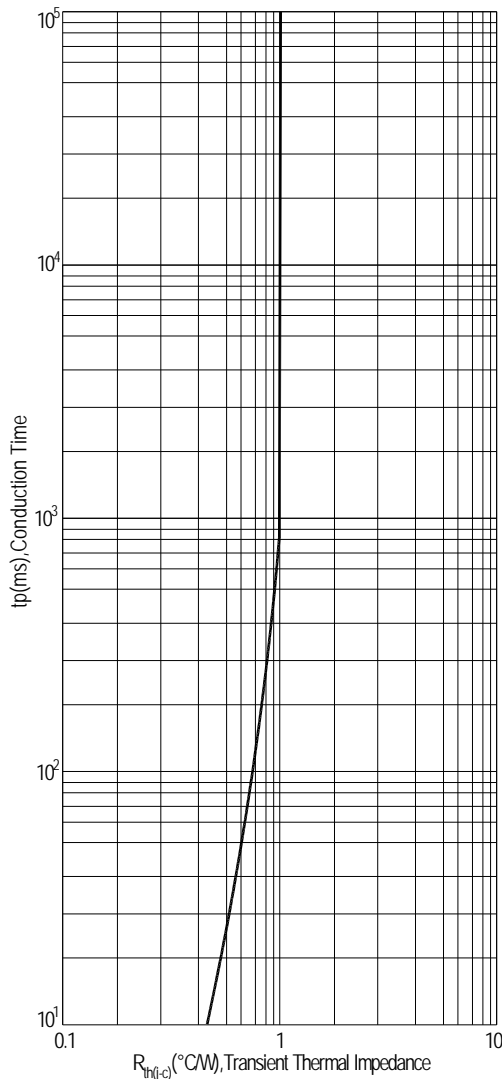
FIG.1: Triac quadrant are defined and the gate trigger test circuit



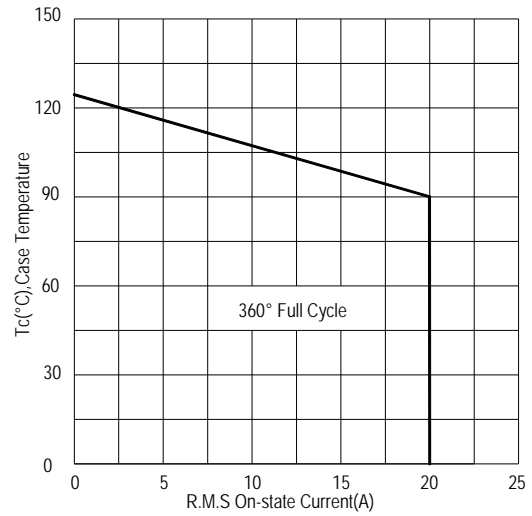
**FIG.2: Maximum on-state power dissipation**



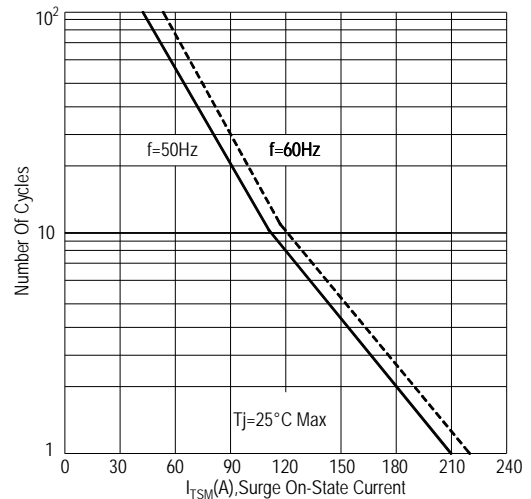
**FIG.4: Maximum transient thermal impedance**



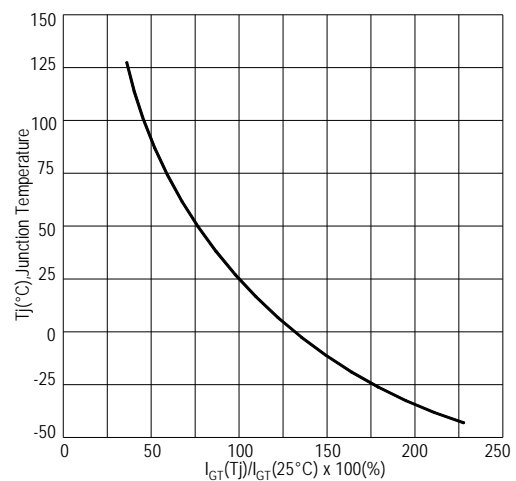
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



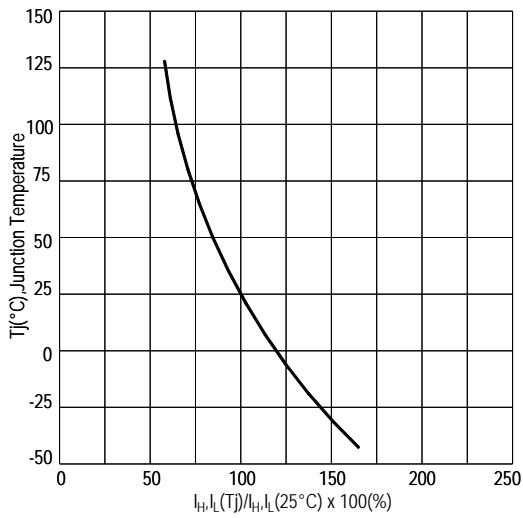
**FIG.5: Rated surge on-state current (Non-Repetitive)**



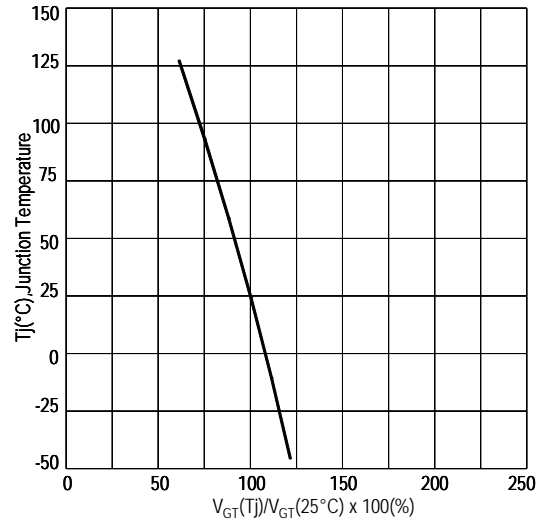
**FIG.6: Gate trigger current VS Junction temperature**



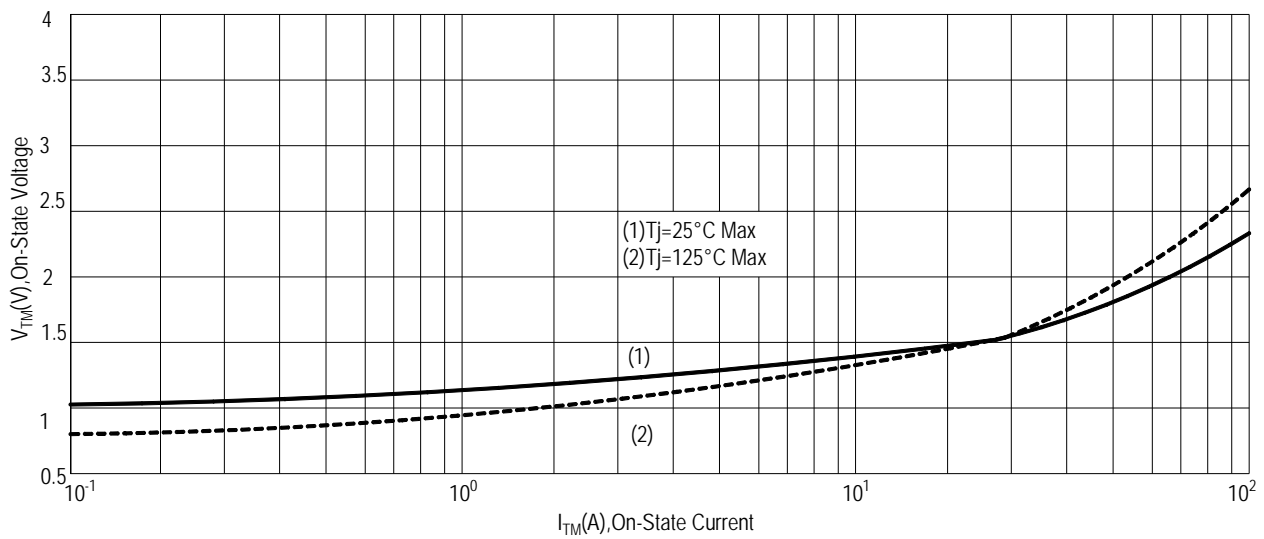
**FIG.7: Holding current and Latching current VS Junction temperature**



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

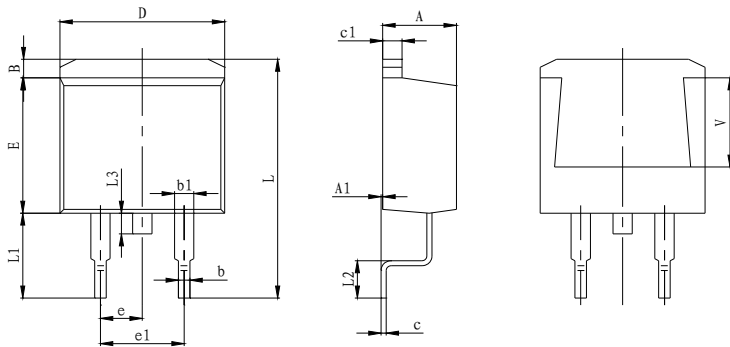


**FIG.9: On-state characteristics(Max)**



## PACKAGE MECHANICAL DATA

### TO-263-2 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	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** XXXX  
 ADT20C60GB  
 XXXH XX

ADV:Logo  
 ADT20C60GB:Part number  
 X:Internal control code  
 H:Halogen Free

AD T 20 C 60 G S(B)

ADVANCED	Internal control code	Current:20=20A	Quadrant:C=3Q
Voltage:60=600V 80=800V	Sensitivity and type: S=10mA Blank=35mA B=50mA		
Package explain:G=TO-263-2			

### Ordering information

Part number	Package	Marking	Packing	Quantity
ADT20C60G#	TO-263-2	ADT20C60G#	Tube	50pcs
			Embossed tape	800pcs
ADT20C80G#	TO-263-2	ADT20C80G#	Tube	50pcs
			Embossed tape	800pcs

Note:# = Gate Trigger Current Sensitivity and type

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