

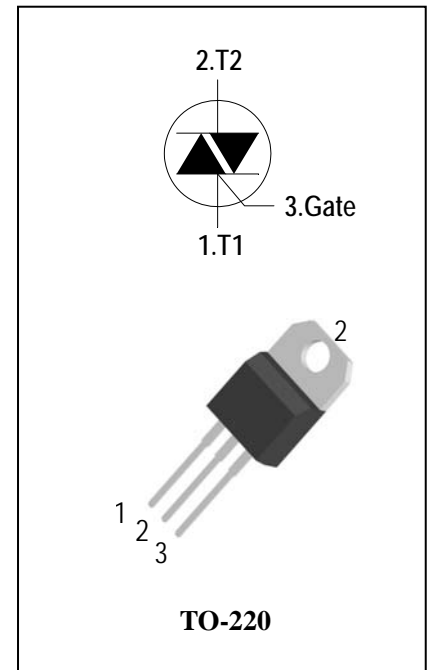
## 3 Quadrants Triacs

### 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

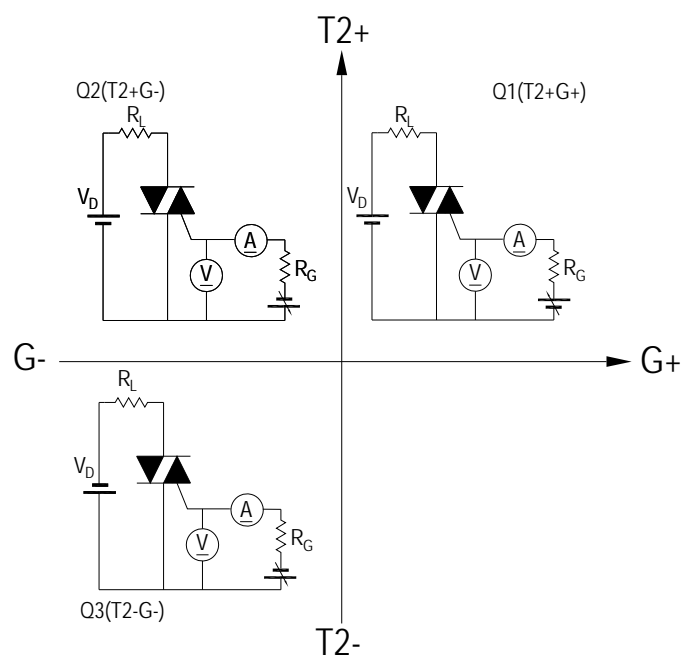
Symbol	Items	Conditions	Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ C$	ADT20C60 ADT20C80	600 800 V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 90^\circ C$		20 A
$I_{TSM}$	Surge On-State Current	$t_p = 20ms(50Hz) / t_p = 16.7ms(60Hz)$		210/220 A
$I^2t$	$I^2t$ for 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 $^\circ C$



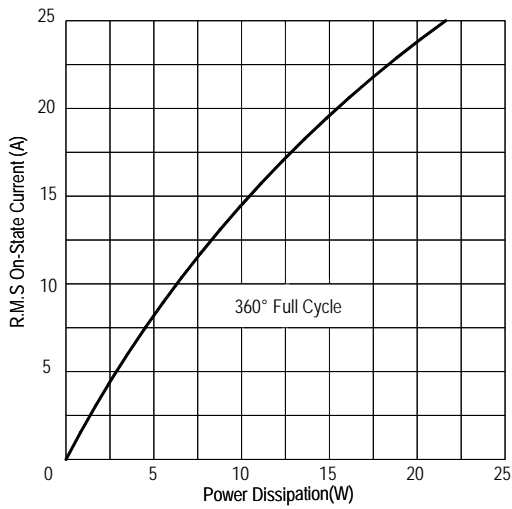
## Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified)

Symbol	Items		Conditions		ADT20C60/80			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 V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 125°C	Max.	5 2.5			uA 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	0.2	0.2			V
V <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Voltage	V <sub>D</sub> = 12V , R <sub>L</sub> = 33Ω	1.5	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			Max.	60			°C/W

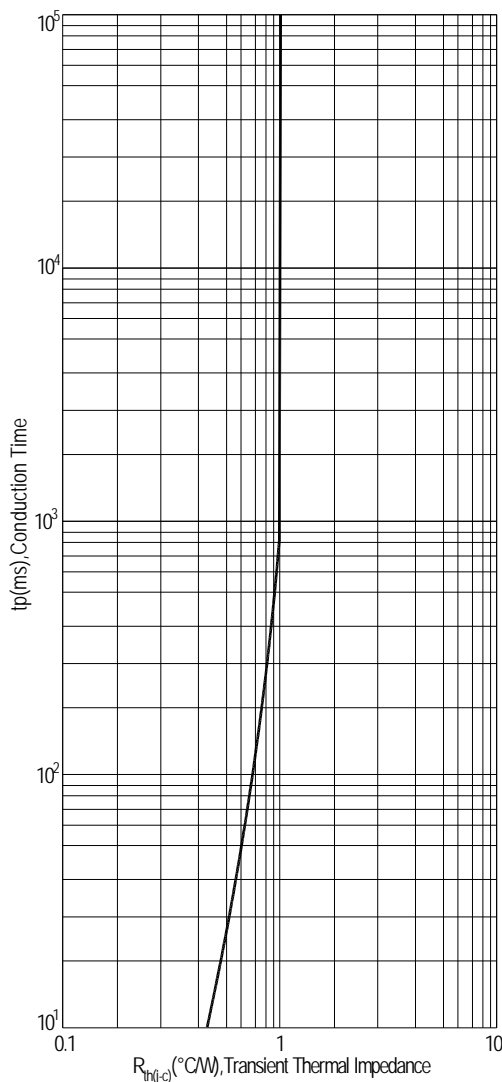
FIG.1: Triac quadrant are defined and the gate trigger test circuit



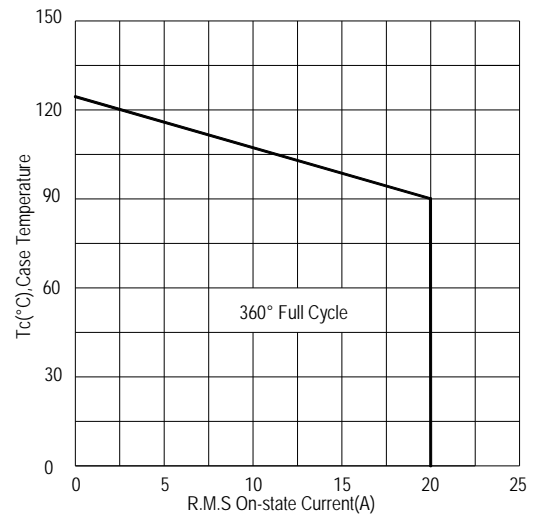
**FIG.2: Maximum on-state power dissipation**



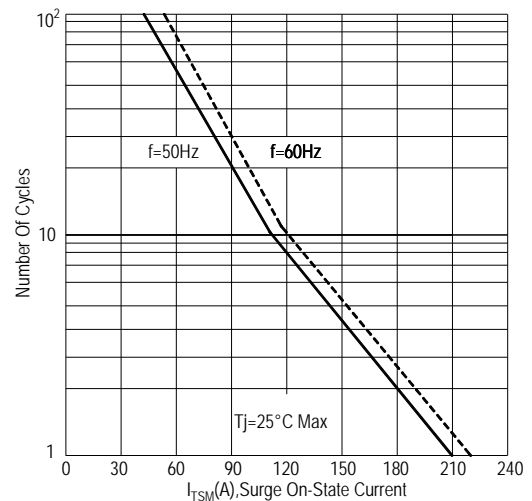
**FIG.4: Maximum transient thermal impedance**



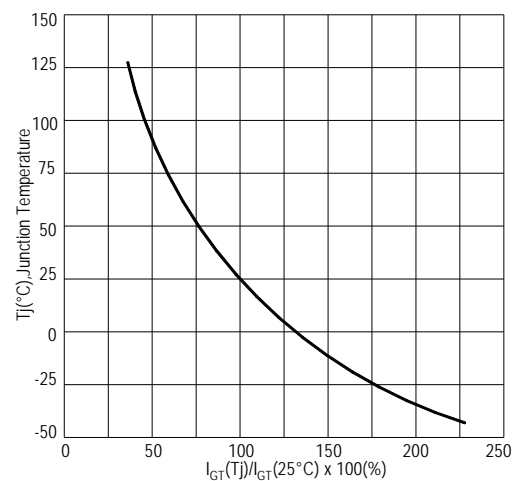
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



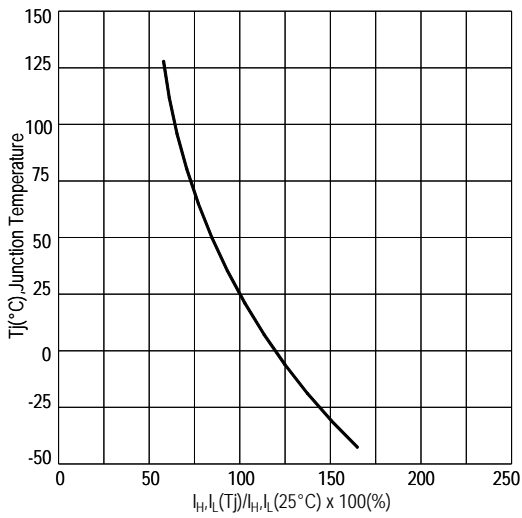
**FIG.5: Rated surge on-state current (Non-Repetitive)**



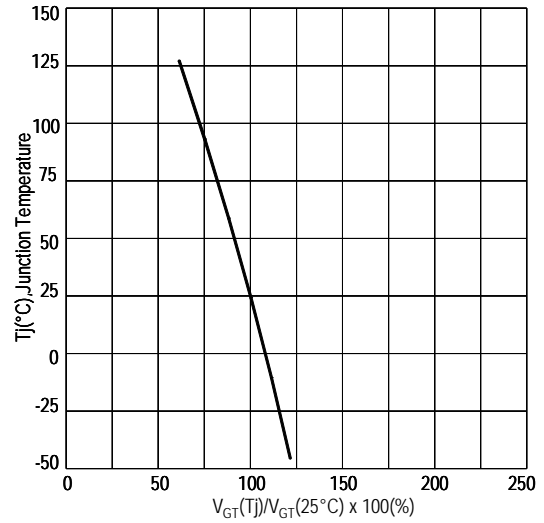
**FIG.6: Gate trigger current VS Junction temperature**



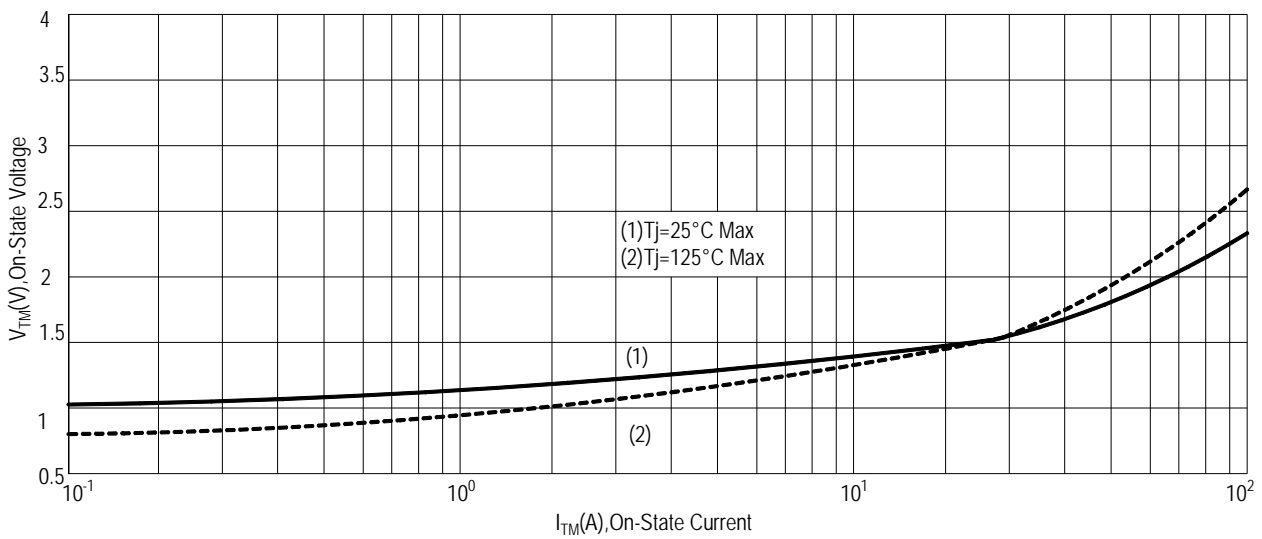
**FIG.7: Holding current and Latching current VS Junction temperature**



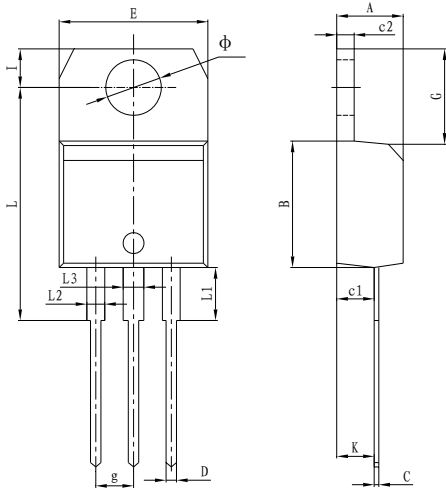
**FIG.8: Gate trigger voltage VS Junction temperature**



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



## PACKAGE MECHANICAL DATA TO-220 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.40	4.60	0.173	0.181
B	9.00	9.30	0.354	0.366
C	0.40	0.60	0.015	0.023
c1	2.00	2.60	0.078	0.102
c2	1.23	1.32	0.048	0.051
D	0.70	1.00	0.027	0.039
E	10.00	10.40	0.393	0.409
g	2.40	2.70	0.094	0.106
G	6.20	6.80	0.244	0.267
I	2.65	2.95	0.104	0.116
L	15.80	16.80	0.622	0.661
L1	3.75		0.147	
L2	1.14	1.70	0.044	0.066
L3	1.14	1.70	0.044	0.066
Φ	3.60	3.90	0.141	0.153
K	2.60TYP		0.102TYP	

## Making Diagram

**ADV** XXXX  
**ADT20C60B**  
 XXXH ○ XX

**ADV:Logo**  
**ADT20C60B:**Part number  
**X:**Internal control code  
**H:**Halogen Free

AD T 20 C 60 # S(B)

<p>ADVANCED</p> <p>Internal control code</p> <p>Current:20=20A</p> <p>Quadrant:C=3Q</p> <p>Voltage:60=600V 80=800V</p>	<p>Sensitivity and type: S=10mA Blank=35mA B=50mA</p> <p>Package explain:Blank=TO-220</p>
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## Ordering information

Part number	Package	Marking	Packing	Quantity
ADT20C60#	TO-220	ADT20C60#	Tube	50pcs
ADT20C80#	TO-220	ADT20C80#	Tube	50pcs

Note:# = Gate Trigger Current Sensitivity and type

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