

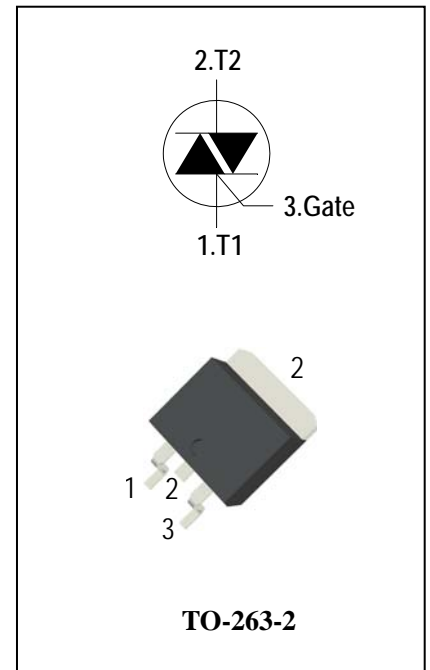
## 3 Quadrants Triacs

### General Description

High current density due to mesa technology . the ADT8C 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 (  $I_{T(RMS)} = 8\text{ A}$  )
- ◆ High Commutation  $dv/dt$
- ◆ These Devices are Pb-Free and are RoHS Compliant



### Absolute Maximum Ratings

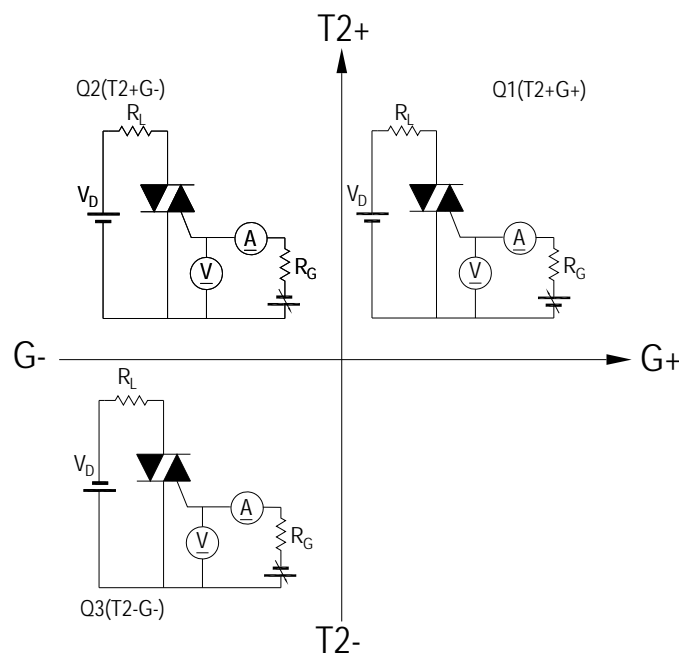
Symbol	Items	Conditions		Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ\text{C}$	ADT8C60G	600	V
			ADT8C80G	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 110^\circ\text{C}$		8	A
$I_{TSM}$	Surge On-State Current	$t_p = 20\text{ms}(50\text{Hz}) / t_p = 16.7\text{ms}(60\text{Hz})$		100/106	A
$I^2t$	$I^2t$ for fusing	$t_p = 10\text{ms}$		38	$\text{A}^2\text{s}$
$di/dt$	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	$^\circ\text{C}$



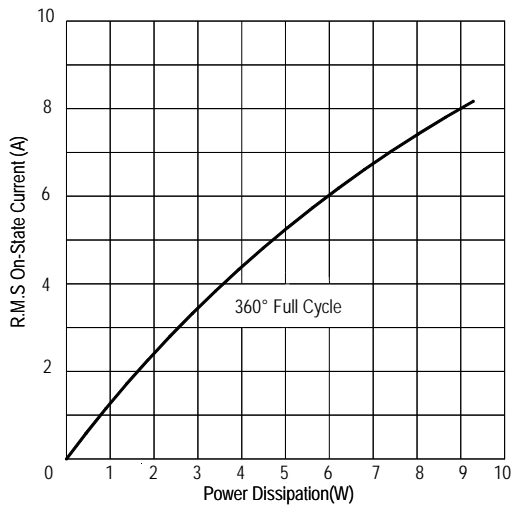
## Electrical Characteristics ( $T_j = 25^\circ\text{C}$ unless otherwise specified )

Symbol	Items		Conditions		ADT8C60G/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		$I_{TM} = 11\text{A}, t_p = 380 \mu\text{s}$	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	Gate Trigger 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	40	60	$\text{mA}$
$I_L$	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	400	1000	$\text{V}/\mu\text{s}$
$(dV/dt)_c$	Rate of Change of Commutating Current,		$(dI/dt)_c = -3.5\text{A}/\text{ms}$ $T_j = 125^\circ\text{C}$	Min.	0.5	1	10	25	$\text{V}/\mu\text{s}$
$R_{th(j-c)}$	Junction to case (AC)			Max.	1.6				$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab:S=1cm <sup>2</sup> )			Max.	45				$^\circ\text{C}/\text{W}$

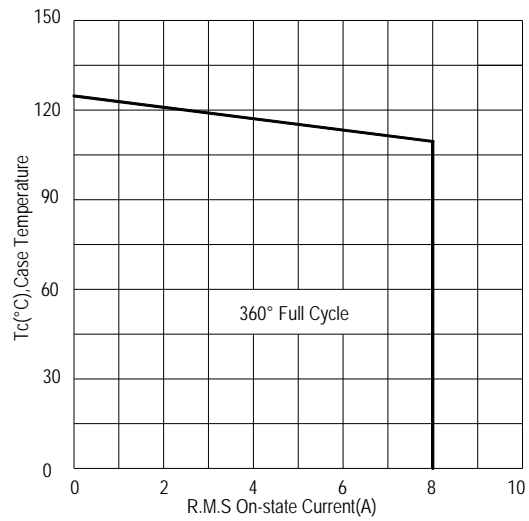
**FIG.1:Triac quadrant are defined and the gate trigger test circuit**



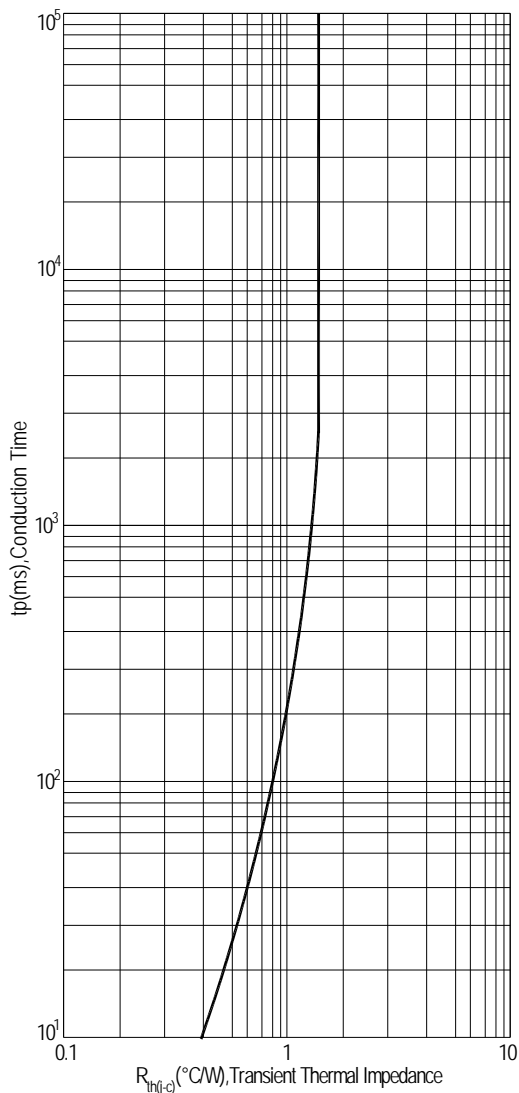
**FIG.2: Maximum on-state power dissipation**



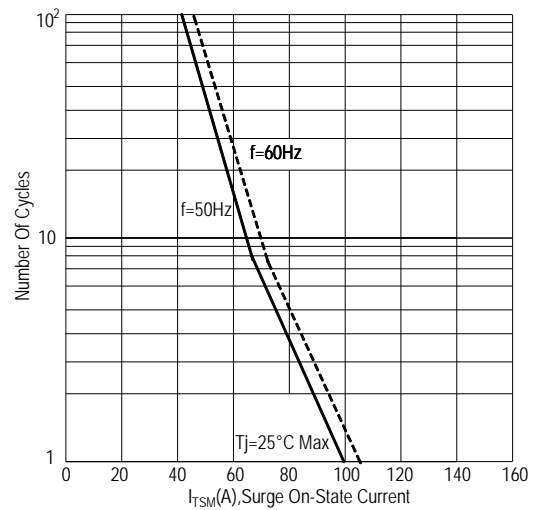
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



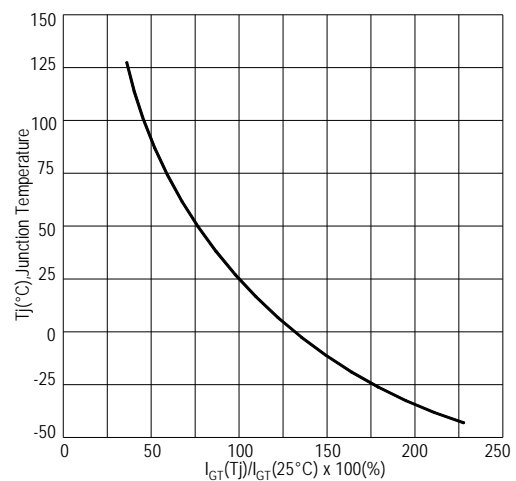
**FIG.4: Maximum transient thermal impedance**



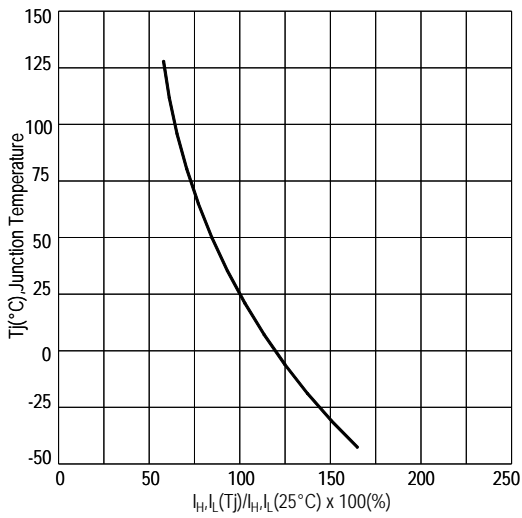
**FIG.5: Rated surge on-state current (Non-Repetitive)**



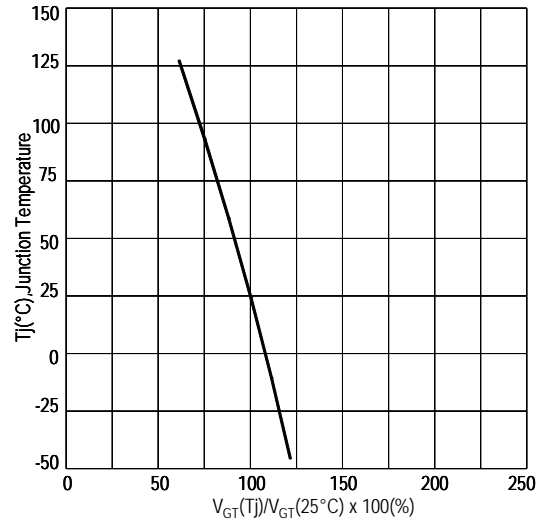
**FIG.6: Gate trigger current VS Junction temperature**



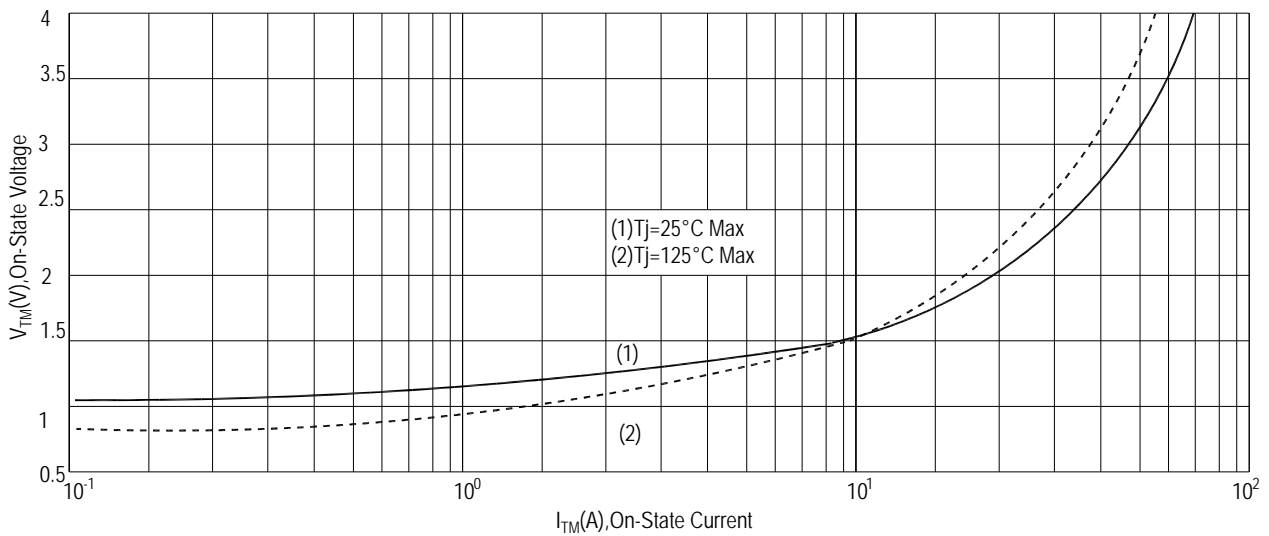
**FIG.7: Holding current and Latching current VS Junction temperature**



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



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





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