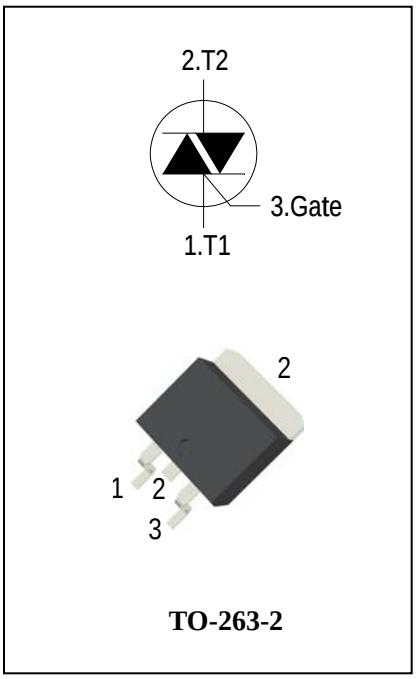
# *4 Quadrants Triacs*

## General Description

High current density due to mesa technology . the ADT8D 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.




TO-263-2

## Features

- Repetitive Peak Off-State Voltage: 600Vand800V
- R.M.S On-State Current ( $I_{T(RMS)}$= 8 A )
- High Commutation dv/dt
- These Devices are Pb-Free and are RoHS Compliant

## Absolute Maximum Ratings

| Symbol | Items | Conditions | | Ratings | Unit |
|---|---|---|---|---|---|
| $V_{DRM}$ | Repetitive Peak Off-State Voltage | Tj = 25°C | ADT8D60G | 600 | V |
| $V_{RRM}$ | | | ADT8D80G | 800 | V |
| $I_{T(RMS)}$ | R.M.S On-State Current | $T_C$ = 110 °C | | 8 | A |
| $I_{TSM}$ | Surge On-State Current | tp=20ms(50Hz)/tp=16.7ms(60Hz) | | 100/106 | A |
| $I^2t$ | $I^2t$ for fusing | tp=10ms | | 38 | $A^2s$ |
| dI/dt | Critical rate of rise of on-state current | F = 120 Hz Tj = 125°C<br>$I_G$ = 2 x $I_{GT}$ , tr ≤ 100 ns | | 50 | A/μs |
| $I_{GM}$ | Peak Gate Current | tp = 20 μs Tj = 125°C | | 4 | A |
| $P_{G(AV)}$ | Average Gate Power Dissipation(Tj=125°C) | | | 1 | W |
| $P_{GM}$ | Peak Gate Power Dissipation(tp=20us,Tj=125°C) | | | 10 | W |
| $T_j$ | Operating Junction Temperature | | | - 40 ~ 125 | °C |
| $T_{STG}$ | Storage Temperature | | | - 40 ~ 150 | °C |

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## Electrical Characteristics ( $T_j$ = 25°C unless otherwise specified )

| Symbol | Items | | Conditions | | ADT8D60G/80G | | | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | S | Blank | B | |
| $I_{DRM}$ | Peak Forward Reverse Blocking Current | | $V_{DRM}$ = $V_{RRM}$, $T_J$ = 25°C | Max. | 5 | | | | uA |
| $I_{RRM}$ | | | $V_{DRM}$ = $V_{RRM}$, $T_J$ = 125°C | | 1 | | | | mA |
| $V_{TM}$ | Peak On-State Voltage | | $I_{TM}$ = 11A, $t_p$ = 380 μs | Max. | 1.55 | | | | V |
| $V_{GD}$ | Q1-Q2-Q3-Q4 | Non－Trigger Gate Voltage | $V_D$ = $V_{DRM}$ $R_L$ = 3.3 kΩ $T_J$ = 125°C | Min. | 0.2 | | | | V |
| $V_{GT}$ | Q1-Q2-Q3-Q4 | GateTrigger Voltage | $V_D$ = 12V ， $R_L$ = 33Ω | Max. | 1.3 | | | | V |
| $I_{GT}$ | Q1-Q2-Q3 | GateTrigger Current | | Max. | 5 | 10 | 35 | 50 | mA |
| | Q4 | | | | 10 | 25 | 70 | 100 | |
| $I_H$ | Q1-Q2-Q3-Q4 | Holding Current | $I_T$ = 0.1A | Max. | 10 | 25 | 35 | 60 | mA |
| $I_L$ | Q1-Q3-Q4 | Latching Current | $I_G$ = 1.2 $I_{GT}$ | Max. | 15 | 30 | 40 | 60 | mA |
| | Q2 | | | | 20 | 40 | 60 | 90 | |
| dV/dt | Critical Rate of Rise of Off-State Voltage | | $V_D$ = 2/3$V_{DRM}$ gate open Tj = 125°C | Min. | 10 | 20 | 200 | 400 | V/μs |
| (dV/dt)c | Rate of Change of Commutating Current, | | (dI/dt)c=-3.5A/ms Tj = 125°C | Min. | 1 | 2 | 5 | 10 | V/μs |
| $R_{th(j-c)}$ | Junction to case (AC) | | | Max. | 1.6 | | | | °C/W |
| $R_{th(j-a)}$ | Junction to ambient(Copper surface under tab:S=1cm$^2$) | | | Max. | 45 | | | | °C/W |

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

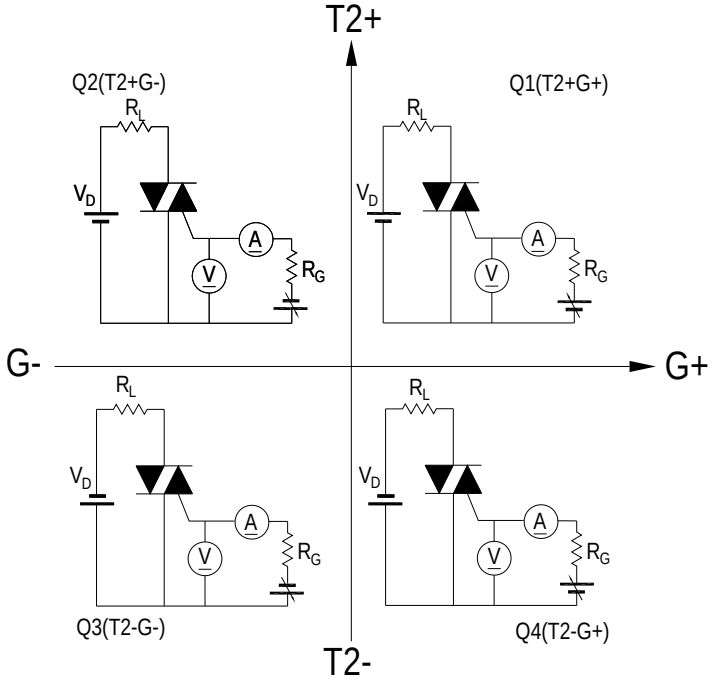


**FIG.2: Maximum on-state power dissipation**

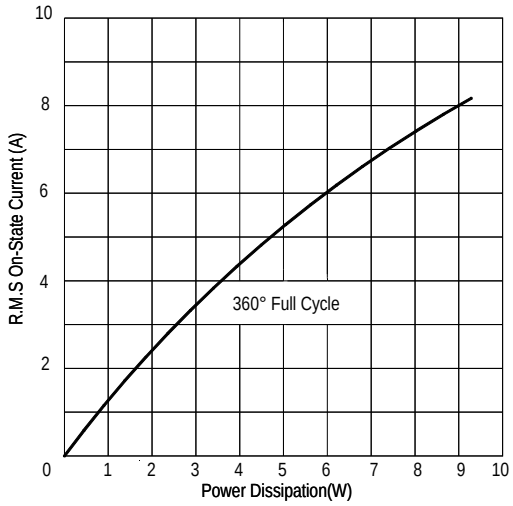



**FIG.3: Typical RMS on-state current VS Allowable case Temperature**

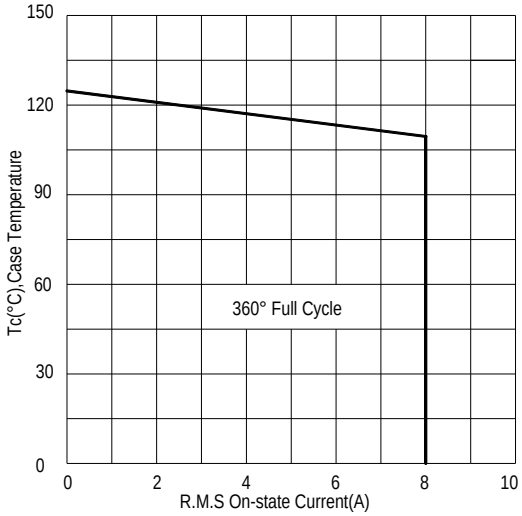



**FIG.4: Maximum transient thermal impedance**

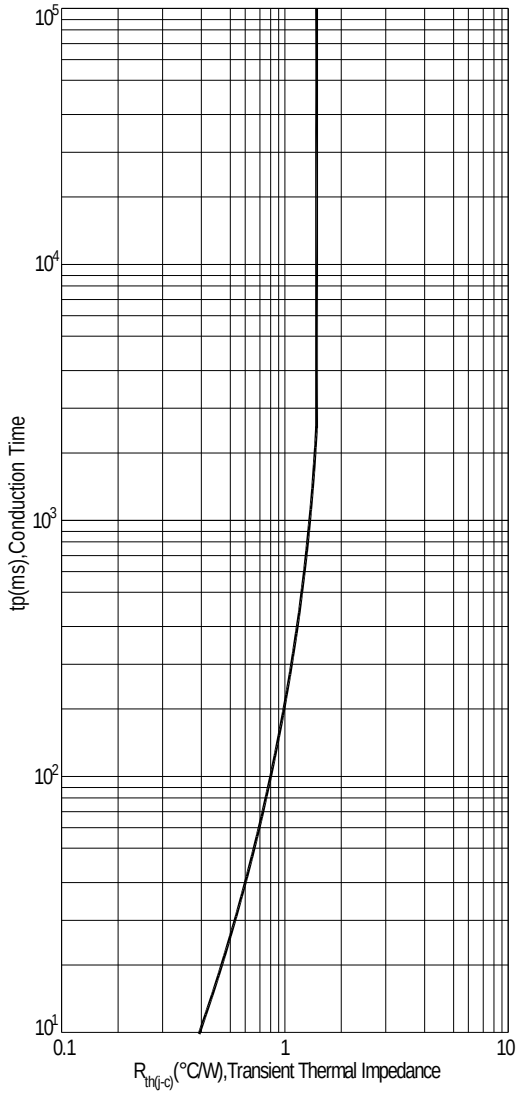



**FIG.5: Rated surge on-state current ( Non-Repetitive)**

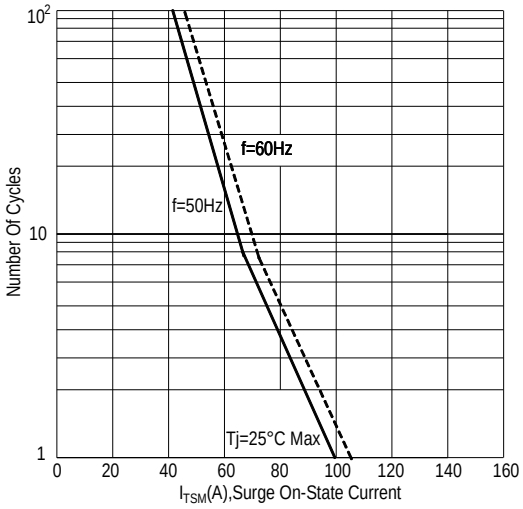



**FIG.6: Gate trigger current VS Junction temperature**

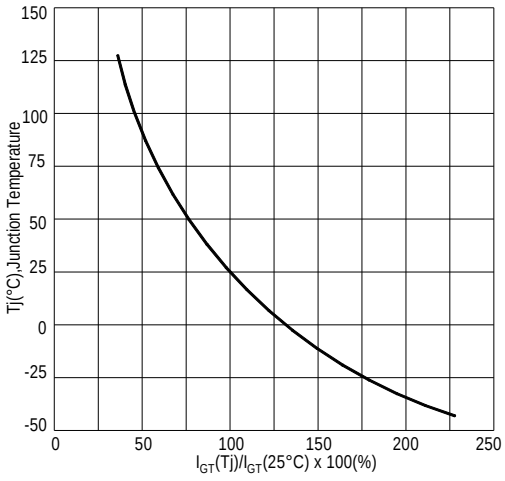


**FIG.7:Holding current and Latching current VS Junction temperature**

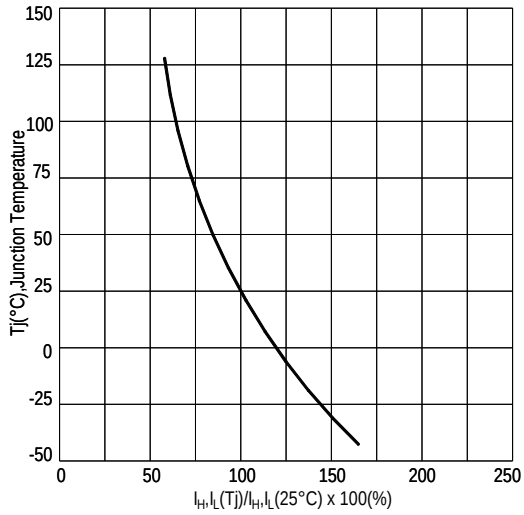



**FIG.8: Gate trigger voltage VS Junction temperature**

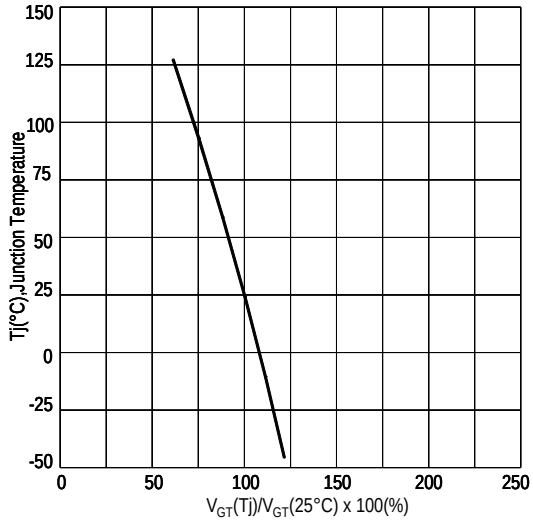
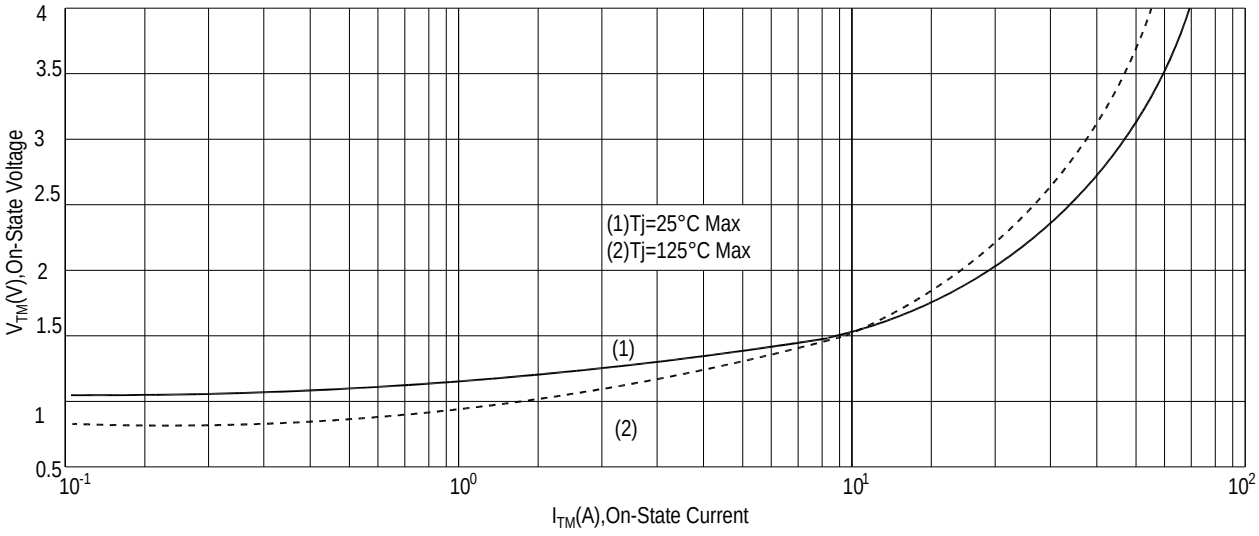
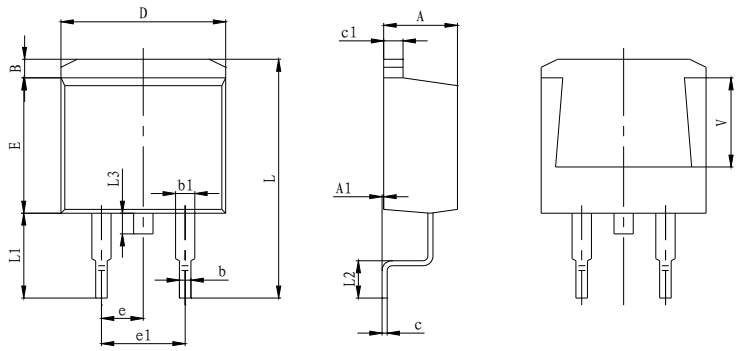



**FIG.9: On-state characteristics(Max)**



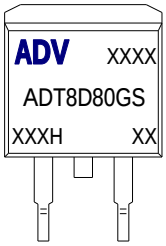
**PACKAGE MECHANICAL DATA**

**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
ADT8D80GS:Part number
X:Internal control code
H:Halogen Free

AD T 8 D 80 G T(S)(B)

ADVANCED
Internal control code
Current:8=8A
Quadrant:D=4Q
Voltage:60=600V 80=800V
Package explain:G=TO263-2
Sensitivity and type:
T=5mA
S=10mA
Blank=35mA
B=50mA

**Ordering information**

| Part number | Package | Marking | Packing | Quantity |
|---|---|---|---|---|
| ADT8D60G# | TO-263-2 | ADT8D60G# | Tube | 50pcs |
| | | | Embossed tape | 800pcs |
| ADT8D80G# | TO-263-2 | ADT8D80G# | Tube | 50pcs |
| | | | Embossed tape | 800pcs |
| Note:# = Gate Trigger Current Sensitivity and type | | | | |

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