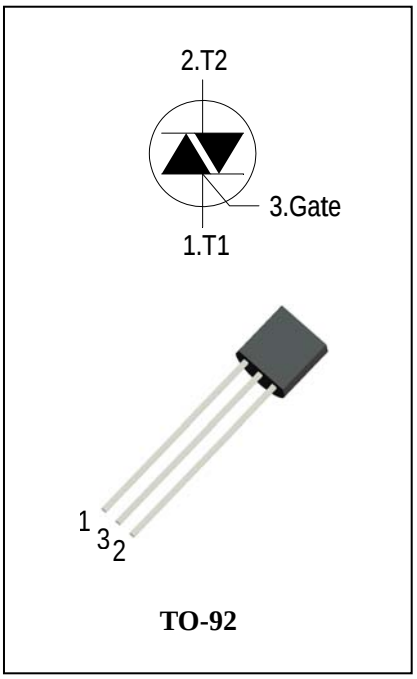
# *4 Quadrants Triacs*

## General Description

High current density due to mesa technology . the ADT2D 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, Rectifier-fed DC inductive loads e.g.DC motors and solenoids , motor speed controllers.




**TO-92**

## Features

- Repetitive Peak Off-State Voltage: 600Vand800V
- R.M.S On-State Current ( $I_{T(RMS)}$= 2A )
- 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 | ADT2D60 | 600 | V |
| $V_{RRM}$ | | | ADT2D80 | 800 | V |
| $I_{T(RMS)}$ | R.M.S On-State Current | $T_C$ = 54°C | | 2 | A |
| $I_{TSM}$ | Surge On-State Current | tp=20ms(50Hz)/tp=16.7ms(60Hz) | | 16/17 | A |
| $I^2t$ | $I^2t$ for fusing | tp=10ms | | 3.1 | $A^2s$ |
| dI/dt | Critical rate of rise of on-state current | F = 120 Hz Tj = 125°C | Q1-Q2-Q3 | 50 | A/μs |
| | | $I_G$ = 2 x $I_{GT}$ , tr ≤ 100 ns | Q4 | 10 | |
| $I_{GM}$ | Peak Gate Current | tp = 20 μs Tj = 125°C | | 2 | A |
| $P_{G(AV)}$ | Average Gate Power Dissipation(Tj=125°C) | | | 0.5 | W |
| $P_{GM}$ | Peak Gate Power Dissipation(tp=20us,Tj=125°C) | | | 5 | W |
| $T_j$ | Operating Junction Temperature | | | - 40 ~ 125 | °C |
| $T_{STG}$ | Storage Temperature | | | - 40 ~ 150 | °C |

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

| Symbol | Items | | Conditions | | ADT2D60/80 | Unit |
|---|---|---|---|---|---|---|
| $I_{DRM}$ | Peak Forward Reverse Blocking Current | | $V_{DRM}$ = $V_{RRM}$, Tj = 25°C | Max. | 5 | uA |
| $I_{RRM}$ | | | $V_{DRM}$ = $V_{RRM}$, Tj = 125°C | | 1 | mA |
| $V_{TM}$ | Peak On-State Voltage | | $I_{TM}$ = 5A, $t_p$ = 380 μs | Max. | 1.7 | V |
| $V_{GD}$ | Q1-Q2-Q3-Q4 | Non – Trigger Gate Voltage | $V_D$ = $V_{DRM}$ $R_L$ = 3.3 kΩ Tj = 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. | 6 | mA |
| | Q4 | | | | 12 | |
| $I_H$ | Q1-Q2-Q3-Q4 | Holding Current | $I_T$ = 0.1A | Max. | 16 | mA |
| $I_L$ | Q1-Q3-Q4 | Latching Current | $I_G$ = 1.2 $I_{GT}$ | Max. | 20 | mA |
| | Q2 | | | | 25 | |
| dV/dt | Critical Rate of Rise of Off-State Voltage | | $V_D$ = 2/3$V_{DRM}$ gate open Tj = 125°C | Min. | 5 | V/μs |
| (dV/dt)c | Rate of Change of Commutating Current, | | (dI/dt)c=-1.1A/ms Tj = 125°C | Min. | 1 | V/μs |
| $R_{th(j-c)}$ | Junction to case (AC) | | | Max. | 60 | °C/W |
| $R_{th(j-a)}$ | Junction to ambient(Copper surface under tab:S=0.5cm$^2$) | | | Max. | 150 | °C/W |

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

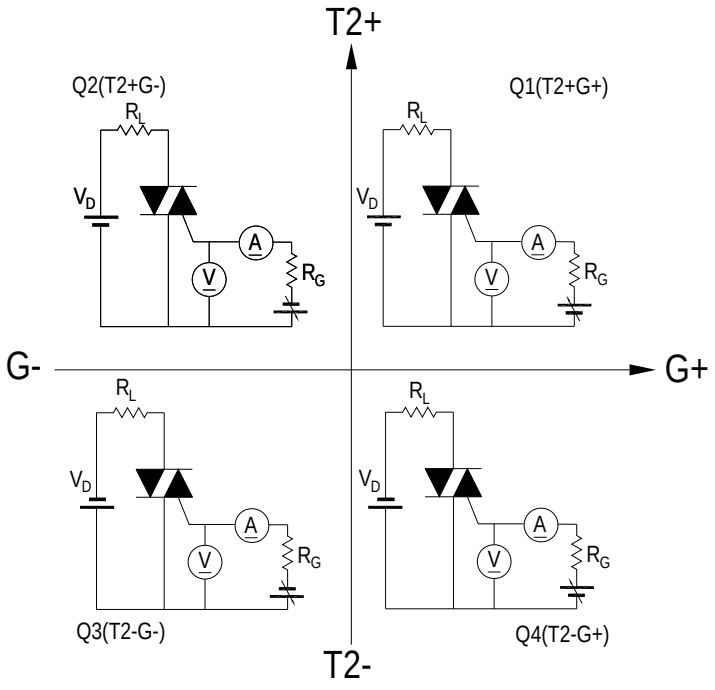


**FIG.2: Maximum on-state power dissipation**

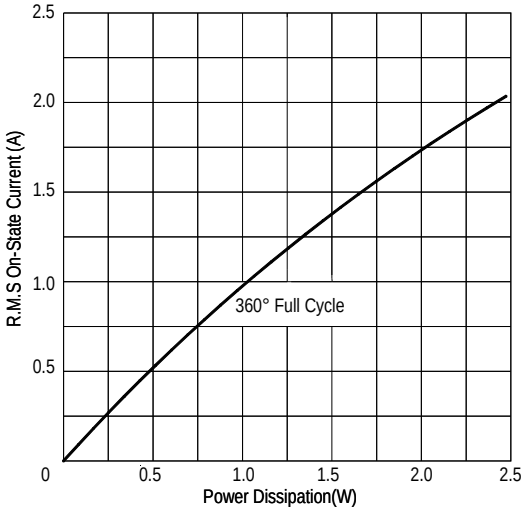



**FIG.3: Typical RMS on-state current VS Allowable case Temperature**

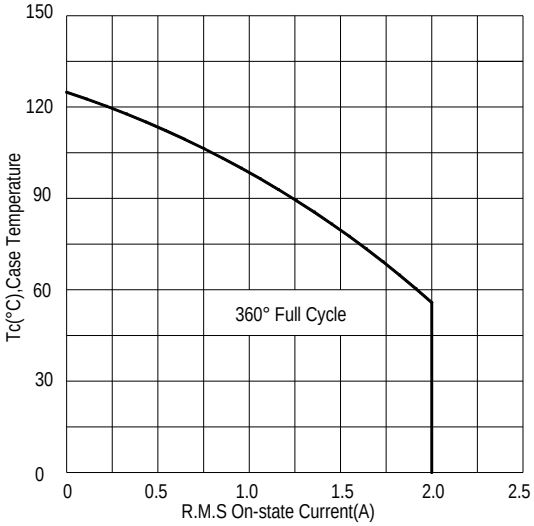



**FIG.4: Gate trigger current VS Junction temperature**

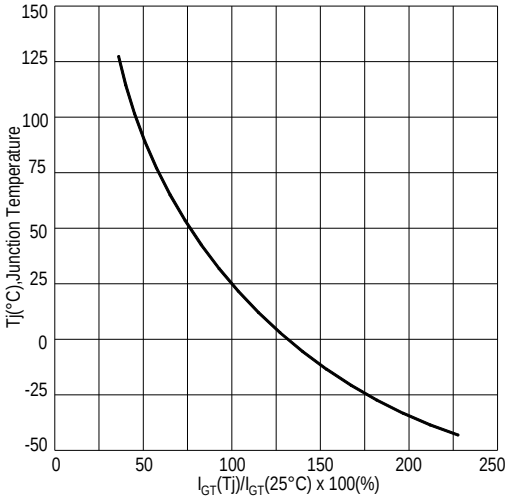



**FIG.5: Rated surge on-state current ( Non-Repetitive)**

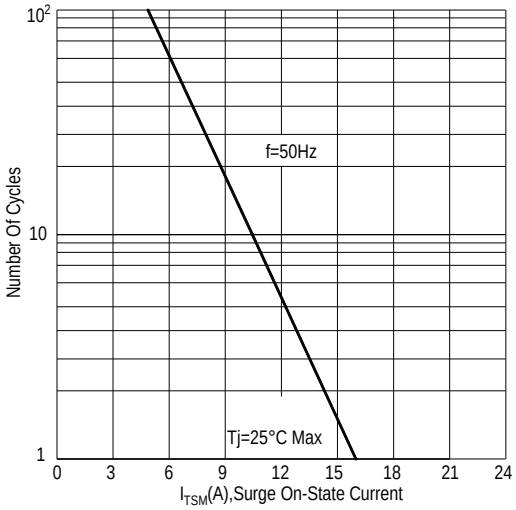



**FIG.6: On-state characteristics(Max)**

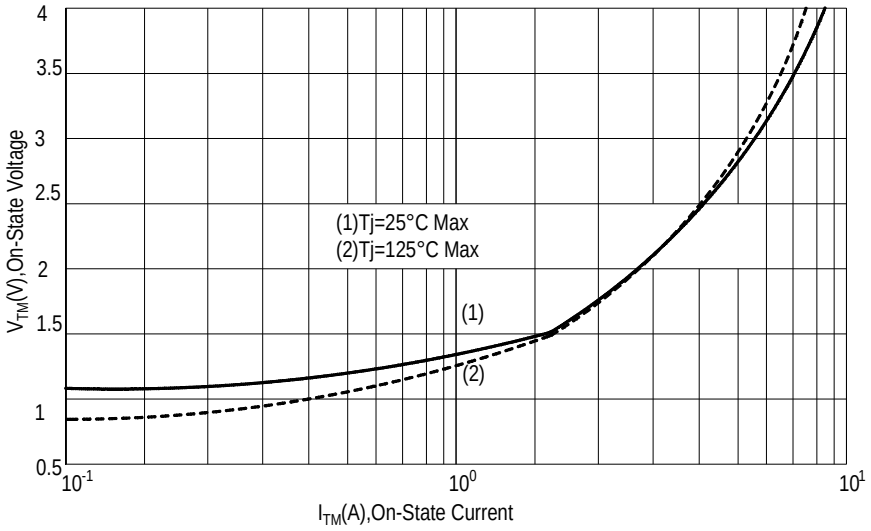


**FIG.7:Holding current and Latching current VS Junction temperature**

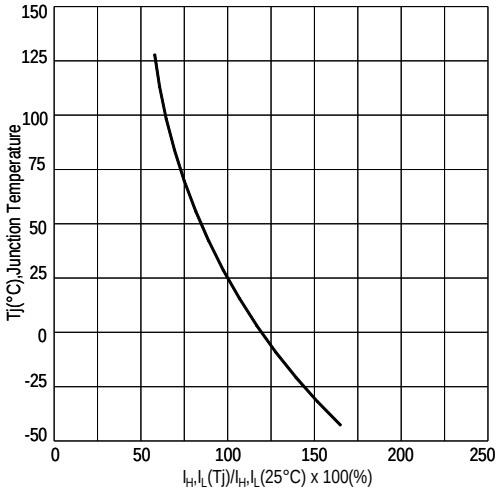
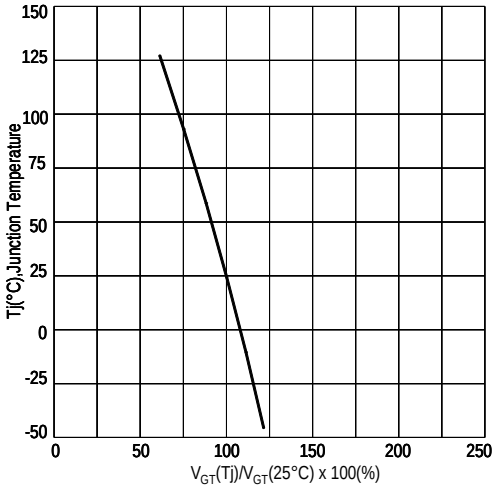
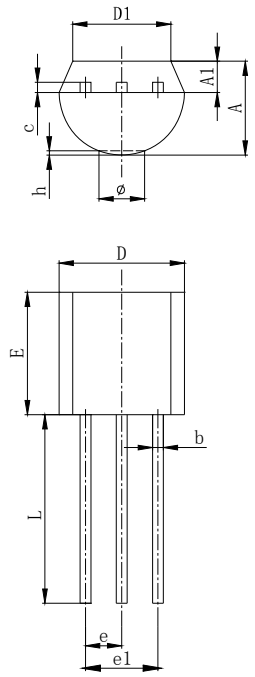



**FIG.8: Gate trigger voltage VS Junction temperature**



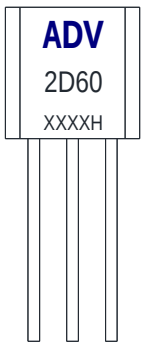
**PACKAGE MECHANICAL DATA**

**TO-92 Package Dimension**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 3.180 | 4.190 | 0.125 | 0.165 |
| A1 | 1.100 | 1.400 | 0.043 | 0.055 |
| b | 0.380 | 0.550 | 0.015 | 0.022 |
| c | 0.360 | 0.510 | 0.014 | 0.020 |
| D | 4.400 | 5.200 | 0.173 | 0.205 |
| D1 | 3.430 | | 0.135 | |
| E | 4.300 | 5.330 | 0.169 | 0.210 |
| e | 1.270 TYP | | 0.050 TYP | |
| e1 | 2.420 | 2.660 | 0.095 | 0.105 |
| L | 12.70 | - | 0.500 | - |
| Φ | | 1.600 | | 0.063 |
| h | 0.000 | 0.380 | 0.000 | 0.015 |

**Making Diagram**




**ADV**:Logo
2D60:Part number(ADT2D60)
X:Internal control code
H:Halogen Free

AD T 2 D 60 #

ADVANCED
Internal control code
Current:2=2A
Quadrant:D=4Q
Voltage:60=600V 80=800V
Package explain:Blank=TO-92

**Ordering information**

| Part number | Package | Marking | Packing | Quantity |
|---|---|---|---|---|
| ADT2D60 | TO-92 | 2D60 | Vinyl sack | 1000pcs |
| ADT2D80 | TO-92 | 2D80 | Vinyl sack | 1000pcs |

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