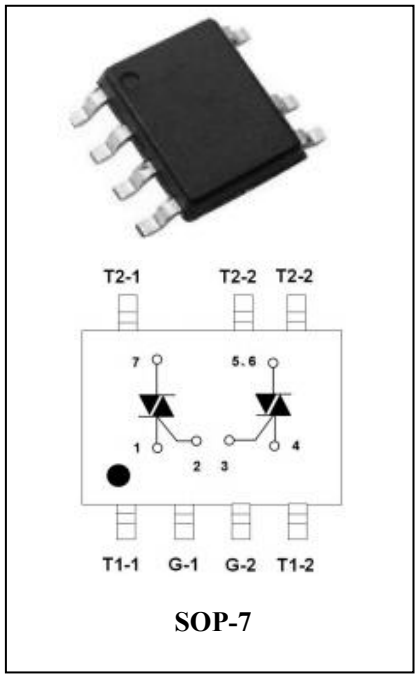
# 3 Quadrants Triacs

## General Description

High current density due to mesa technology . the ADD1C 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.




SOP-7

## Features

- Repetitive Peak Off-State Voltage: 600Vand800V
- R.M.S On-State Current ( $I_{T(RMS)}$= 1A )
- 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 | ADD1C60S | 600 | V |
| $V_{RRM}$ | | | ADD1C80S | 800 | V |
| $I_{T(RMS)}$ | R.M.S On-State Current | $T_C$ = 72°C | | 1 | A |
| $I_{TSM}$ | Surge On-State Current | tp=20ms(50Hz)/tp=16.7ms(60Hz) | | 10/11 | A |
| $I^2t$ | $I^2t$ for fusing | tp=10ms | | 0.42 | $A^2s$ |
| dI/dt | Critical rate of rise of on-state current | F = 120 Hz Tj = 110°C<br>$I_G$ = 2 x $I_{GT}$ , tr ≤ 100 ns | Q1-Q2-Q3 | 50 | A/μs |
| $I_{GM}$ | Peak Gate Current | tp = 20 μs Tj = 110°C | | 1 | A |
| $P_{G(AV)}$ | Average Gate Power Dissipation(Tj=80°C) | | | 0.1 | W |
| $P_{GM}$ | Peak Gate Power Dissipation(tp=20us,Tj=80°C) | | | 1 | W |
| $T_j$ | Operating Junction Temperature | | | - 40 ~ 110 | °C |
| $T_{STG}$ | Storage Temperature | | | - 40 ~ 150 | °C |

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

| Symbol | Items | | Conditions | | ADD1C60S/80S | 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 = 110°C | | 0.1 | mA |
| $V_{TM}$ | Peak On-State Voltage | | $I_{TM}$ = 1.4A, $t_p$ = 380 μs | Max. | 1.5 | V |
| $V_{GD}$ | Q1-Q2-Q3 | Non − Trigger Gate Voltage | $V_D$ = $V_{DRM}$ $R_L$ = 3.3 kΩ Tj = 110°C | Min. | 0.2 | V |
| $V_{GT}$ | Q1-Q2-Q3 | GateTrigger Voltage | $V_D$ = 12V ， $R_L$ = 33Ω | Max. | 1.3 | V |
| $I_{GT}$ | Q1-Q2-Q3 | GateTrigger Current | | Max. | 25 | mA |
| $I_H$ | Q1-Q2-Q3 | Holding Current | $I_T$ = 0.2A | Max. | 35 | mA |
| $I_L$ | Q1-Q3 | Latching Current | $I_G$ = 1.2 $I_{GT}$ | Max. | 40 | mA |
| | Q2 | | | | 45 | |
| dV/dt | Critical Rate of Rise of Off-State Voltage | | $V_D$ = 2/3$V_{DRM}$ gate open Tj = 110°C | Min. | 50 | V/μs |
| (dV/dt)c | Rate of Change of Commutating Current, | | (dI/dt)c=-0.3A/ms Tj = 110°C | Min. | 0.5 | V/μs |
| $R_{th(j-c)}$ | Junction to case (AC) | | | Max. | 50 | °C/W |
| $R_{th(j-a)}$ | Junction to ambient(Copper surface under tab:S=0.5cm$^2$) | | | Max. | 75 | °C/W |

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

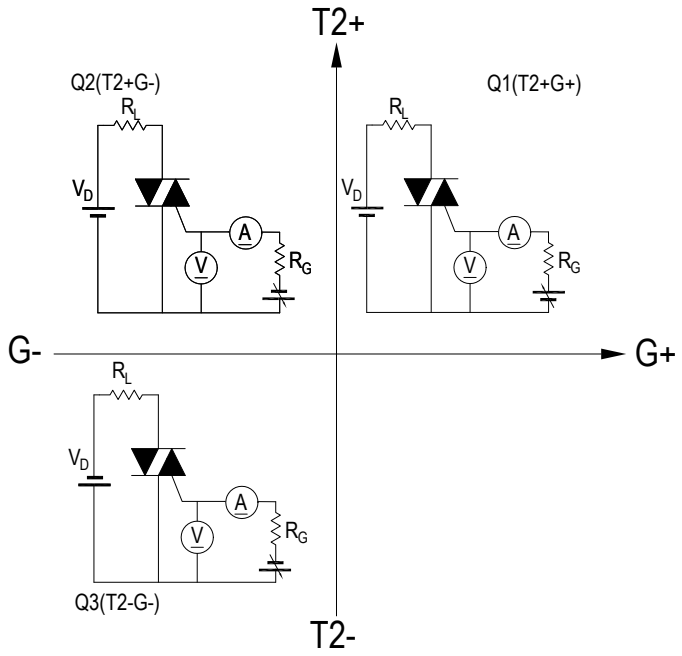


**FIG.2: Maximum on-state power dissipation**

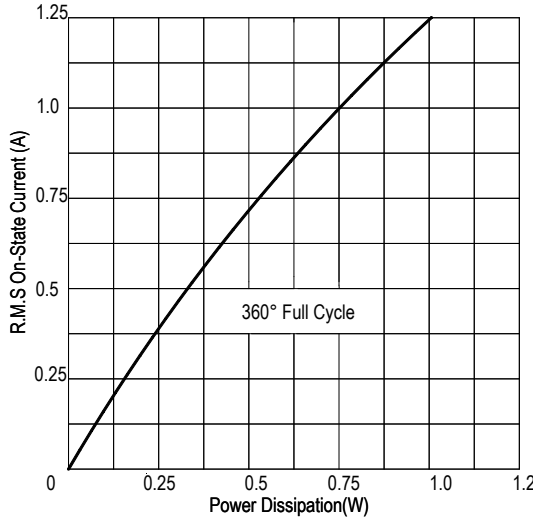



**FIG.3: Typical RMS on-state current VS Allowable case Temperature**

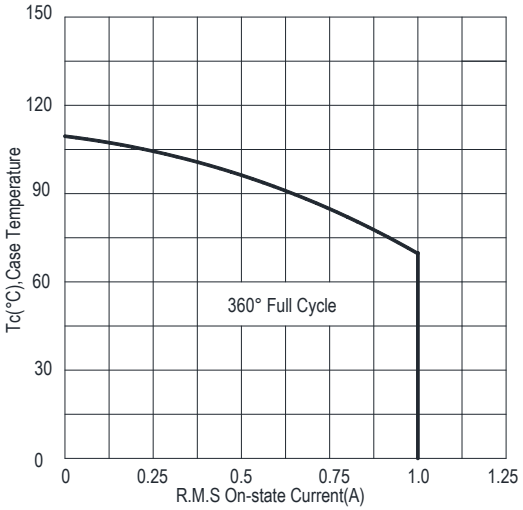



**FIG.4: Gate trigger current VS Junction temperature**

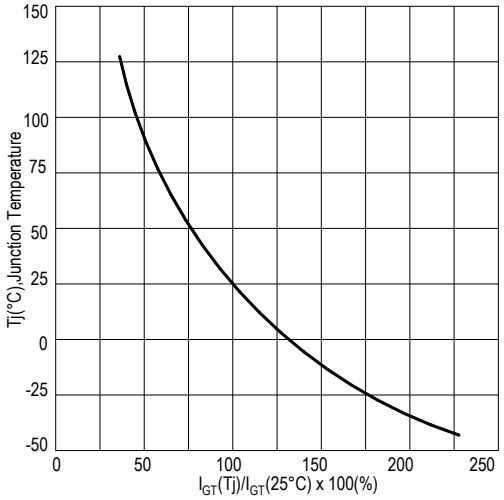



**FIG.5: Rated surge on-state current ( Non-Repetitive)**

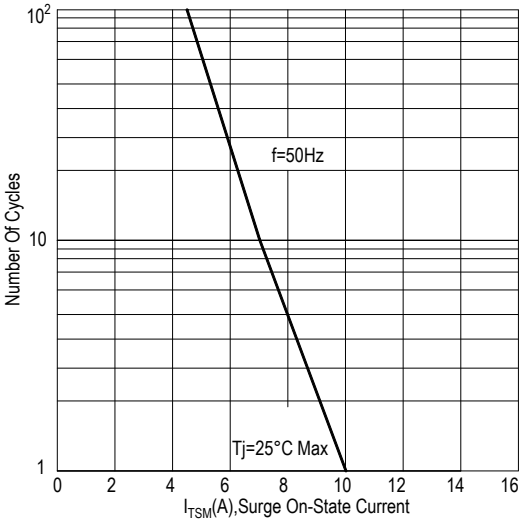



**FIG.6: On-state characteristics(Max)**

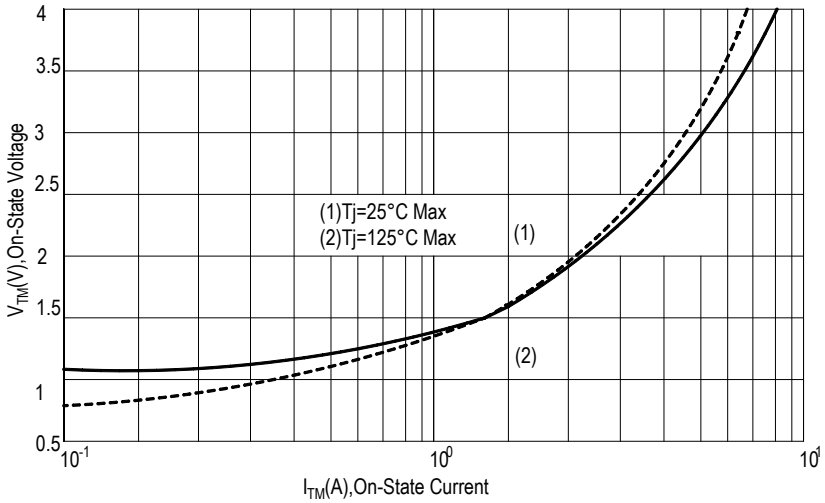


**FIG.7:Holding current and Latching current VS Junction temperature**

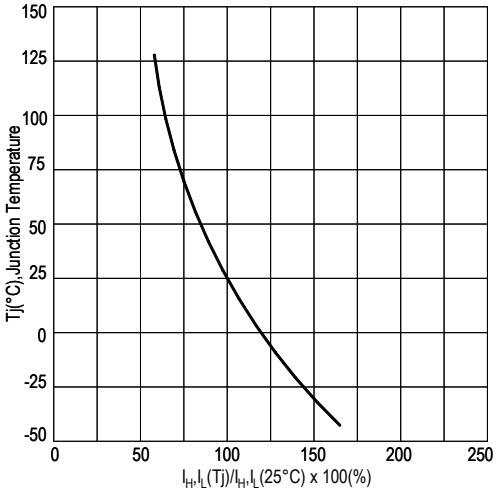
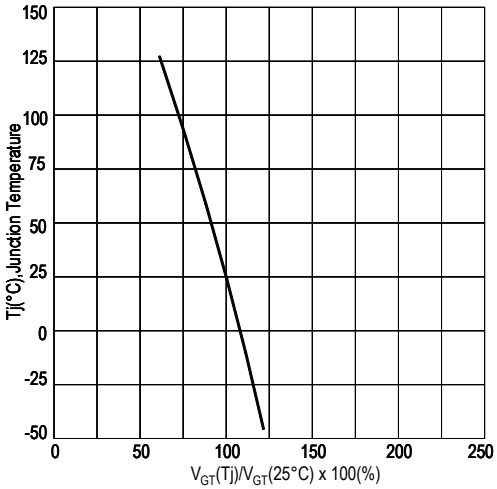
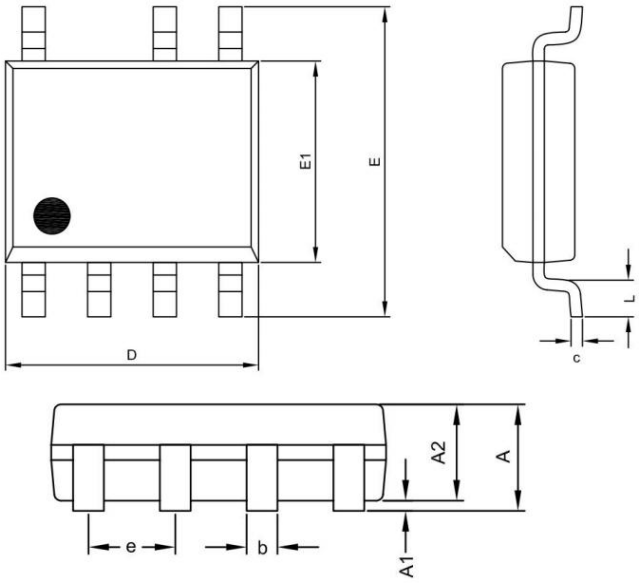



**FIG.8: Gate trigger voltage VS Junction temperature**



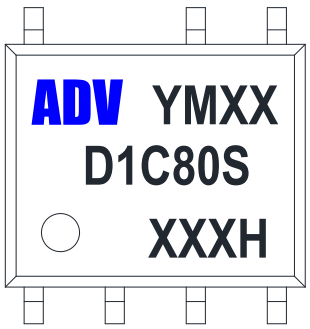
## PACKAGE MECHANICAL DATA

### SOP-7 Package Dimension




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.000 | 0.250 | 0.000 | 0.010 |
| A2 | 1.150 | 1.500 | 0.045 | 0.059 |
| c | 0.170 | 0.250 | 0.007 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.201 |
| E | 5.800 | 6.200 | 0.228 | 0.244 |
| E1 | 3.800 | 4.000 | 0.150 | 0.157 |
| e | 1.270BSC | | 0.050BSC | |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| L | 0.400 | 1.270 | 0.016 | 0.050 |

### Making Diagram




ADV:Logo
D1C80S:ADD1C80S Part number
X:Internal control code
H:Halogen Free
Y:Year
M:Month

AD D 1 C 80 S

ADVANCED
Internal control code
Current:1=1A
Quadrant:C=3Q
Voltage:60=600V 80=800V
Package explain:S=SOP-7

### Ordering information

| Part number | Package | Marking | Packing | Quantity |
|---|---|---|---|---|
| ADD1C60S | SOP-7 | D1C60S | Embossed tape | 4000pcs |
| ADD1C80S | SOP-7 | D1C80S | Embossed tape | 4000pcs |

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