

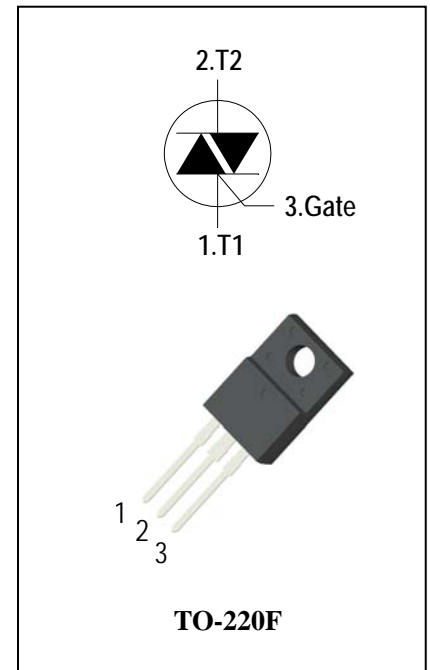
3 Quadrants High temperature Triacs

General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The ADT8CH 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. The heatsink can be reduced, compared to traditional triacs, according to the high performance at given junction temperatures.

Features

- ◆ Repetitive Peak Off-State Voltage: 600V/800V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 8A$)
- ◆ High Commutation dv/dt
- ◆ High junction temperature operating capability
- ◆ 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 | $T_j = 25^\circ C$ | ADT8CH60F ADT8CH80F | 600 800 V |
| $I_{T(RMS)}$ | R.M.S On-State Current | $T_C = 125^\circ C$ | | 8 A |
| I_{TSM} | Surge On-State Current | $t_p = 20ms(50Hz) / t_p = 16.7ms(60Hz)$ | | 100/106 A |
| I^2t | I^2t for fusing | $t_p = 10ms$ | | 48 A^2s |
| di/dt | Critical rate of rise of on-state current | $F = 120 Hz$ $T_j = 150^\circ C$ $I_G = 2 \times I_{GT}$, $t_r \leq 100 ns$ | | 50 $A/\mu s$ |
| I_{GM} | Peak Gate Current | $t_p = 20 \mu s$ $T_j = 150^\circ C$ | | 4 A |
| $P_{G(AV)}$ | Average Gate Power Dissipation($T_j = 150^\circ C$) | | | 1 W |
| P_{GM} | Peak Gate Power Dissipation($t_p = 20\mu s, T_j = 150^\circ C$) | | | 10 W |
| T_j | Operating Junction Temperature | | | - 40 ~ 150 $^\circ C$ |
| T_{STG} | Storage Temperature | | | - 40 ~ 150 $^\circ C$ |



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

| Symbol | Items | | Conditions | | ADT8CH60F/80F | | | Unit |
|--------------------------------------|--|--------------------------|---|------|---------------|-------|------|----------|
| | | | | | S | Blank | B | |
| I _{DRM} I _{RRM} | Peak Forward Reverse Blocking Current | | V _{DRM} = V _{RRM} , T _j = 25°C V _{DRM} = V _{RRM} , T _j = 150°C | Max. | 5 2.5 | | | uA mA |
| V _{TM} | Peak On-State Voltage | | I _{TM} = 11A, 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 T _j = 150°C | Min. | 0.2 | | | V |
| V _{GT} | Q1-Q2-Q3 | Gate Trigger Voltage | V _D = 12V , R _L = 33Ω | Max. | 1.5 | | | V |
| I _{GT} | Q1-Q2-Q3 | Gate Trigger Current | | Max. | 10 | 35 | 50 | mA |
| I _H | Q1-Q2-Q3 | Holding Current | I _T = 0.1A | Max. | 20 | 45 | 60 | mA |
| I _L | Q1-Q3 | Latching Current | I _G = 1.2 I _{GT} | Max. | 20 | 50 | 70 | mA |
| | Q2 | | | | 35 | 70 | 100 | |
| dV/dt | Critical Rate of Rise of Off-State Voltage | | V _D = 2/3V _{DRM} gate open T _j = 150°C | Min. | 200 | 1000 | 1500 | V/μs |
| (dV/dt) _c | Critical Rate of Change of Commutating Voltage | | V _D =400V T _j = 150°C (dI/dt) _c =-3.5A/ms | Min. | 1 | 15 | 20 | V/μs |
| R _{th(j-c)} | Junction to case (AC) | | | Max. | 2.5 | | | °C/W |
| R _{th(j-a)} | Junction to ambient | | | Max. | 60 | | | °C/W |

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

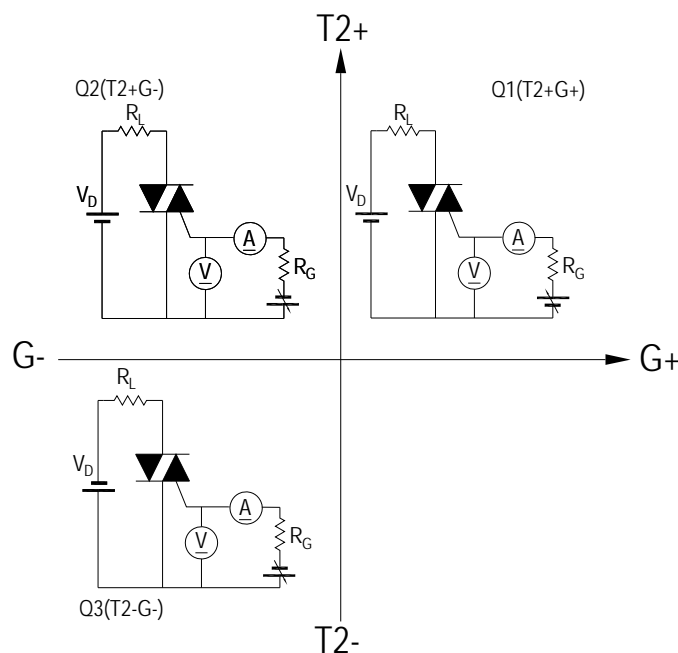


FIG.2: Maximum on-state power dissipation

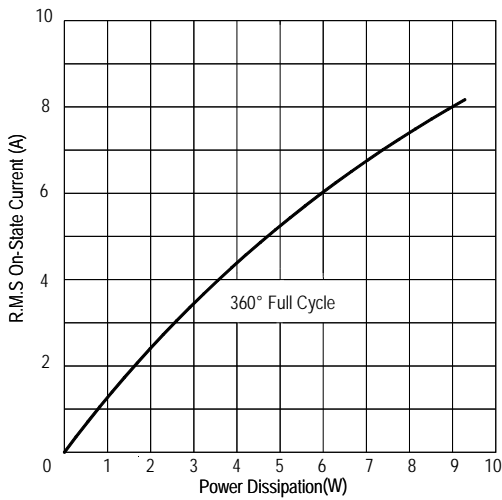


FIG.3: Typical RMS on-state current VS Allowable case Temperature

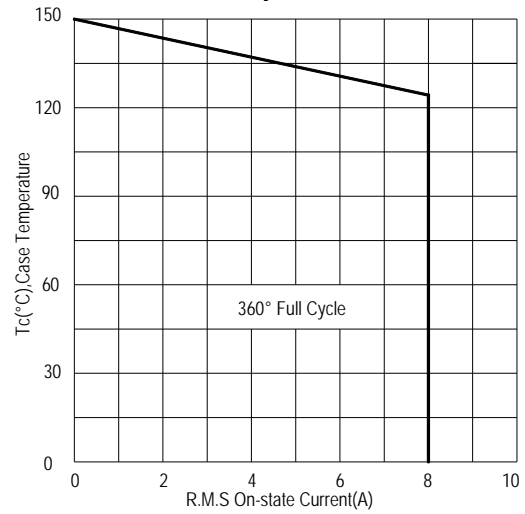


FIG.4: Maximum transient thermal impedance

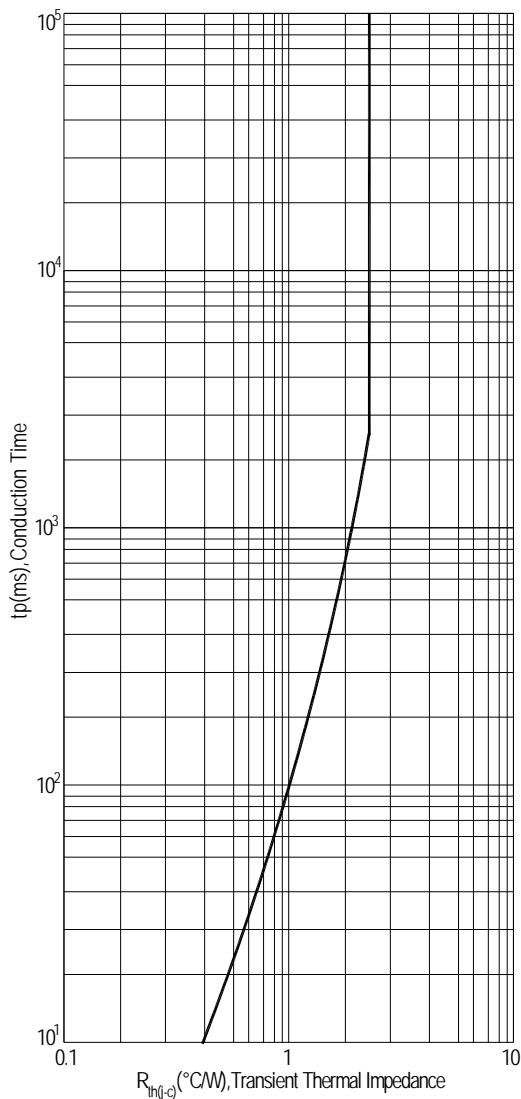


FIG.5: Rated surge on-state current (Non-Repetitive)

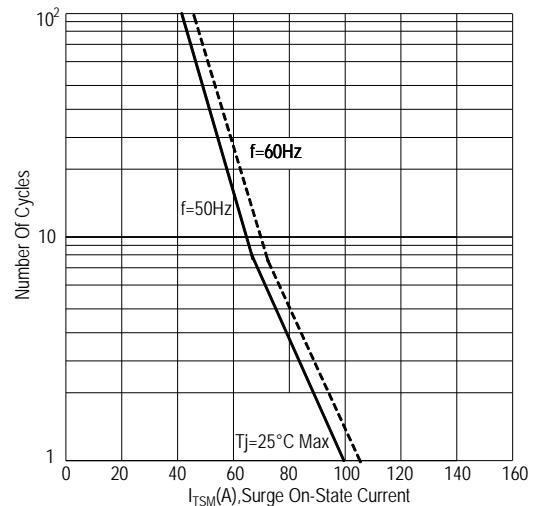


FIG.6: Gate trigger current VS Junction temperature

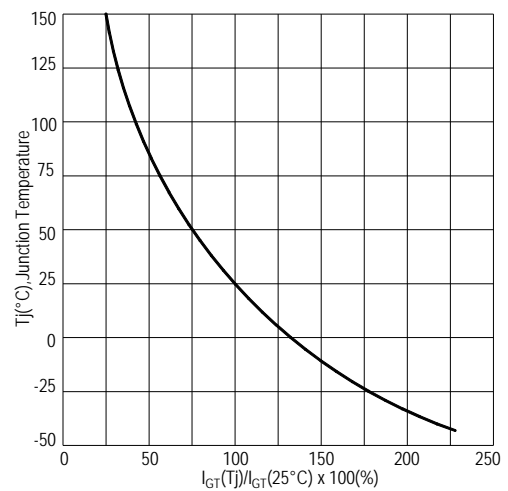


FIG.7: Holding current and Latching current VS Junction temperature

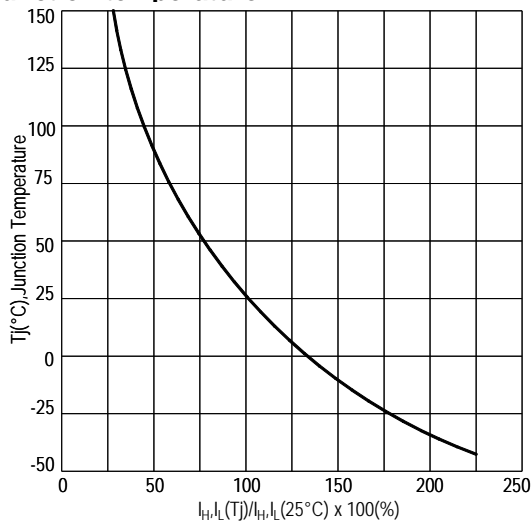


FIG.8: Gate trigger voltage VS Junction temperature

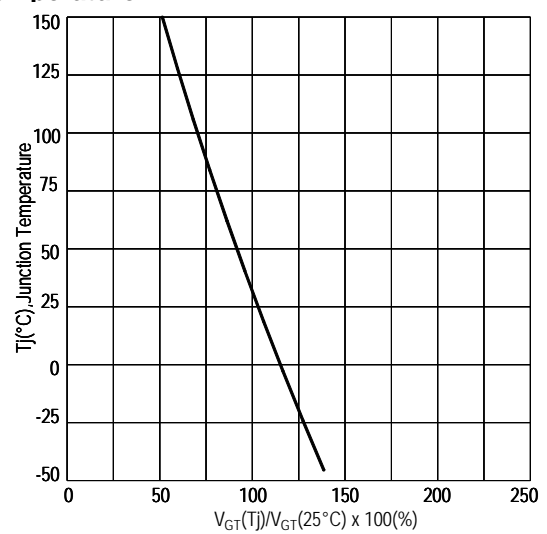
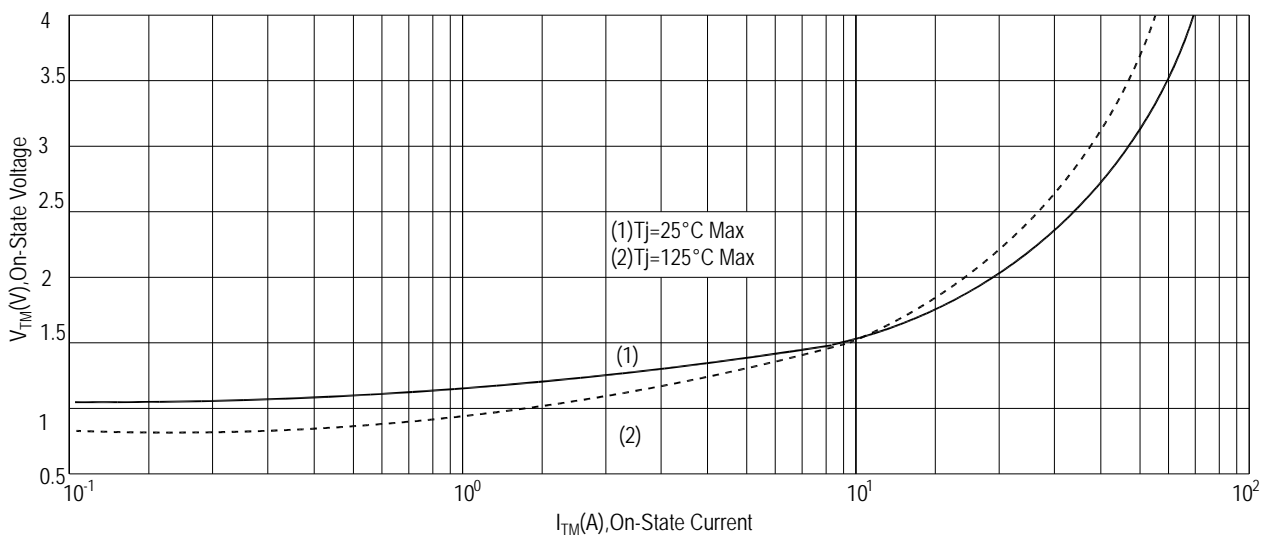
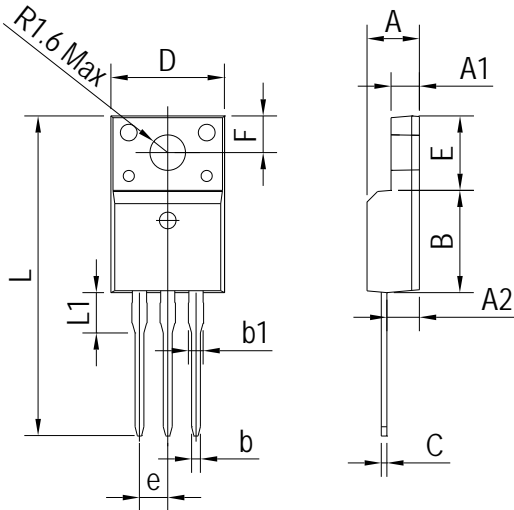


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA

TO-220F Package Dimension



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.300 | 4.800 | 0.169 | 0.189 |
| A1 | 2.400 | 2.700 | 0.094 | 0.106 |
| A2 | 2.500 | 3.000 | 0.098 | 0.118 |
| B | 8.800 | 9.300 | 0.346 | 0.367 |
| b | 0.600 | 0.950 | 0.023 | 0.037 |
| b1 | 1.100 | 1.700 | 0.043 | 0.067 |
| C | 0.500 | 0.750 | 0.020 | 0.030 |
| D | 9.700 | 10.360 | 0.382 | 0.408 |
| E | 6.400 | 6.800 | 0.252 | 0.268 |
| e | 2.540 TYP | | 0.100 TYP | |
| F | 3.300 REF | | 0.130 REF | |
| L | 28.000 | 30.000 | 1.102 | 1.181 |
| L1 | 2.900 | 3.630 | 0.114 | 0.143 |

Making Diagram

ADV: Logo
ADT8CH60FB: Part number
XXXH: Internal control code
XX: Halogen Free

AD T 8 C H 60 F S(B)

| | | | |
|---------------|--------------------------|---------------------------|---|
| ADVANCED | Internal control code | Current:8=8A | Sensitivity and type: S=10mA Blank=35mA B=50mA |
| Quadrant:C=3Q | High temperature:H=150°C | Package explain:F=TO-220F | Voltage:60=600V 80=800V |

Ordering information

| Part number | Package | Marking | Packing | Quantity |
|-------------|---------|------------|---------|----------|
| ADT8CH60F# | TO-220F | ADT8CH60F# | Tube | 50pcs |
| ADT8CH80F# | TO-220F | ADT8CH80F# | Tube | 50pcs |

Note:# = Gate Trigger Current Sensitivity and type

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