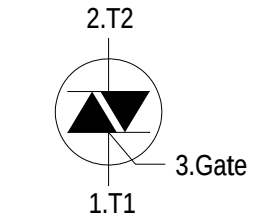
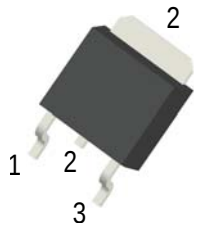
3 Quadrants High temperature Triacs

General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The ADT4CH triac series is suitable for general purpose AC switching. They can beused 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. The heatsink can be reduced,compared to traditional triacs, according to the high performance at given junction temperatures.





TO-252-2

Features

- ◆ Repetitive Peak Off-State Voltage: 600V/800V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 4A)
- ◆ 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}	Repetitive Peak Off-State Voltage	Tj = 25°C	ADT4CH60E	600	V
V_{RRM}			ADT4CH80E	800	V
$I_{T(RMS)}$	R.M.S On-State Current	T_C = 130 °C		4	A
I_{TSM}	Surge On-State Current	tp=20ms(50Hz)/tp=16.7ms(60Hz)		40/42	A
I^2t	I^2t for fusing	tp=10ms		8	A^2s
dI/dt	Critical rate of rise of on-state current	F = 120 Hz Tj = 150°C I_G = 2 x I_{GT} , tr ≤ 100 ns		50	A/μs
I_{GM}	Peak Gate Current	tp = 20 μs Tj = 150°C		4	A
$P_{G(AV)}$	Average Gate Power Dissipation(Tj=150°C)			1	W
P_{GM}	Peak Gate Power Dissipation(tp=20us,Tj=150°C)			5	W
T_j	Operating Junction Temperature			- 40 ~ 150	°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		ADT4CH60E/80E			Unit
					S	Blank	B	
I_{DRM}	Peak Forward Reverse Blocking Current		V_{DRM} = V_{RRM}, Tj = 25°C	Max.	5			uA
I_{RRM}			V_{DRM} = V_{RRM}, Tj = 150°C		1.75			mA
V_{TM}	Peak On-State Voltage		I_{TM} = 5.5A, t_p = 380 μs	Max.	1.55			V
V_{GD}	Q1-Q2-Q3	Non−Trigger Gate Voltage	V_D = V_{DRM} R_L = 3.3 kΩ Tj = 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 Tj = 150°C	Min.	200	1000	1500	V/μs
(dV/dt)c	Critical Rate of Change of Commutating Voltage		V_D=400V Tj = 150°C (dI/dt)c=-1.7A/ms	Min.	1	15	20	V/μs
$R_{th(j-c)}$	Junction to case (AC)			Max.	3.0			°C/W
$R_{th(j-a)}$	Junction to ambient(Copper surface under tab:S=0.5cm^2)			Max.	70			°C/W

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

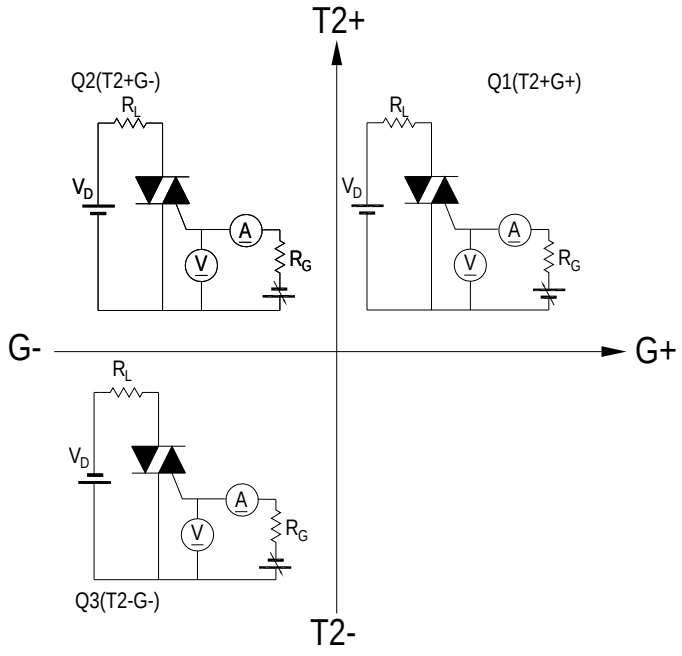


FIG.2: Maximum on-state power dissipation

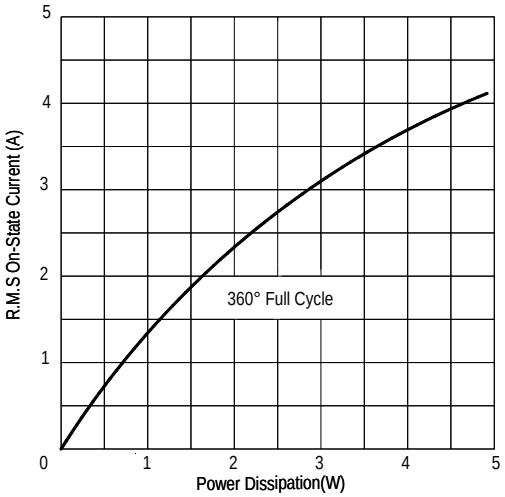


FIG.3: Typical RMS on-state current VS Allowable case Temperature

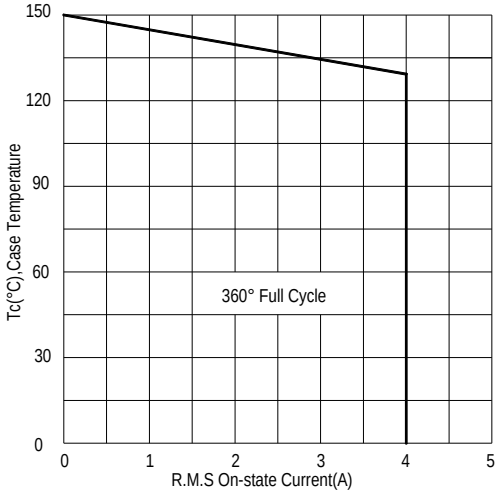


FIG.4: Maximum transient thermal impedance

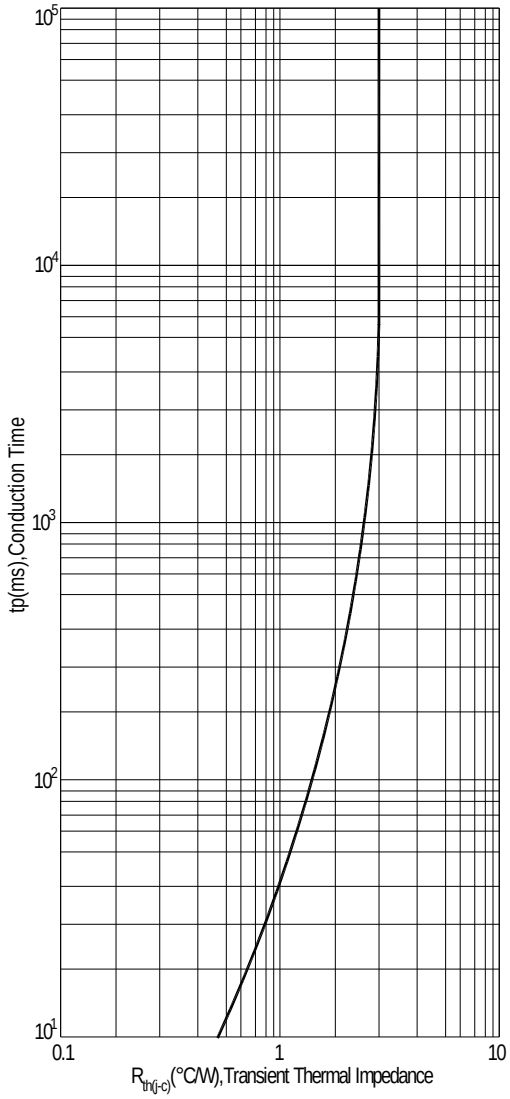


FIG.5: Rated surge on-state current (Non-Repetitive)

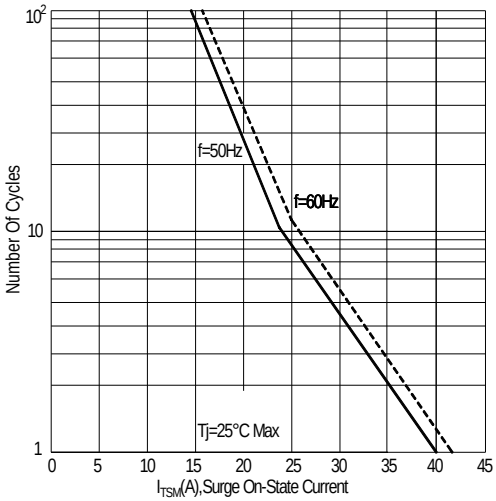


FIG.6: Gate trigger current VS Junction temperature

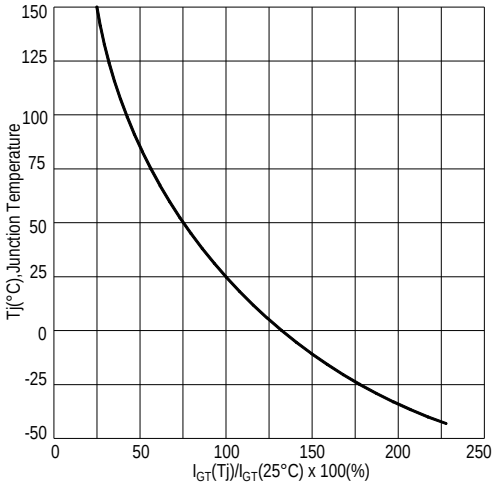


FIG.7:Holding current and Latching current VS Junction temperature

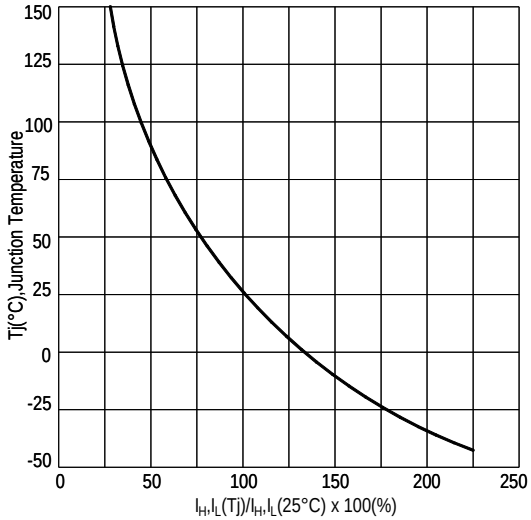


FIG.8: Gate trigger voltage VS Junction temperature

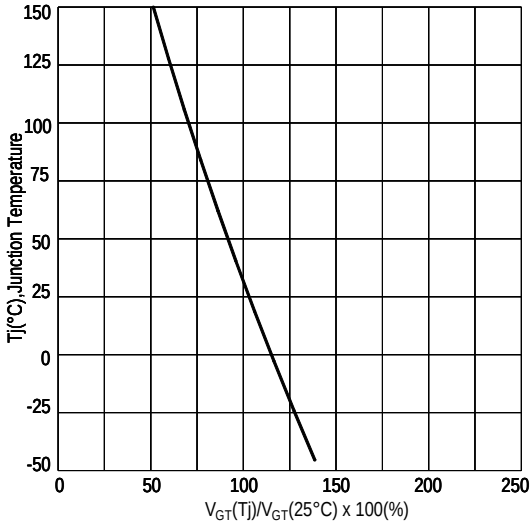
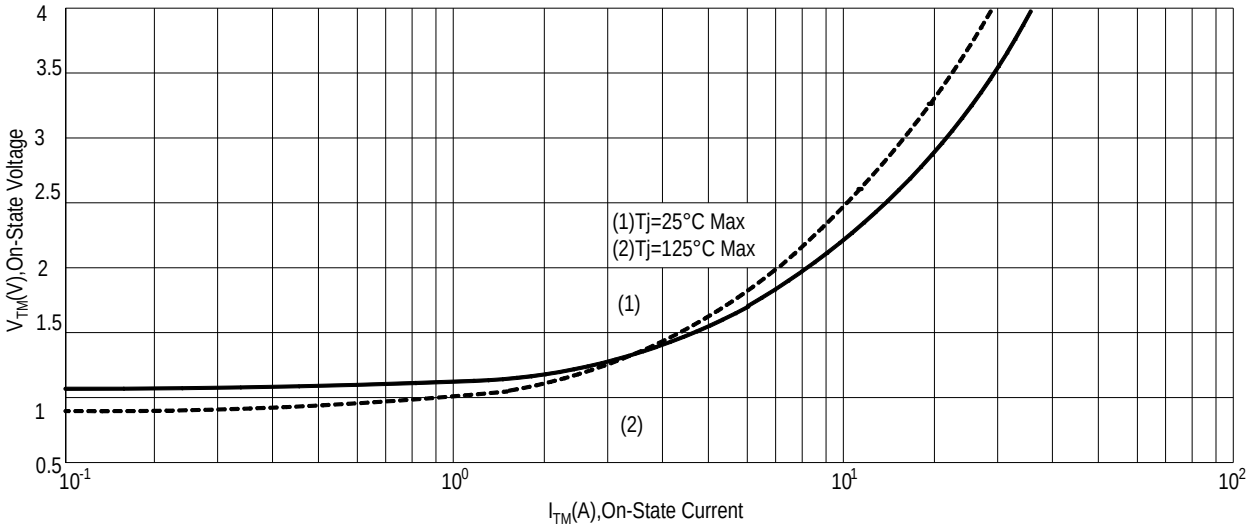
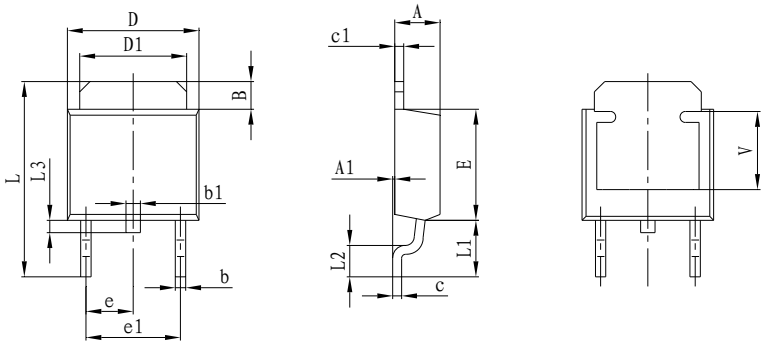


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA

TO-252-2 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.450	0.620	0.017	0.024
c1	0.450	0.620	0.017	0.024
D	6.350	6.650	0.250	0.262
D1	5.100	5.400	0.200	0.213
E	5.900	6.200	0.232	0.244
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	9.500	10.60	0.374	0.396
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	0.900	0.024	0.035
V	4.100 REF.		0.161 REF.	

Making Diagram

ADV:Logo
ADT4CH60EB:Part number
X:Internal control code
H:Halogen Free

AD T 4 C H 60 E S(B)

- AD: ADVANCED
- T: Internal control code
- 4: Current:4=4A
- C: Quadrant:C=3Q
- H: High temperature:H=150°C
- 60: Voltage:60=600V 80=800V
- E: Package explain:E=TO-252-2
- S(B): Sensitivity and type: S=10mA, Blank=35mA, B=50mA

Ordering information

Part number	Package	Marking	Packing	Quantity
ADT4CH60E#	TO-252-2	ADT4CH60E#	Tube	80pcs
			Embossed tape	2500pcs
ADT4CH80E#	TO-252-2	ADT4CH80E#	Tube	80pcs
			Embossed tape	2500pcs

Note:# = Gate Trigger Current Sensitivity and type

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