

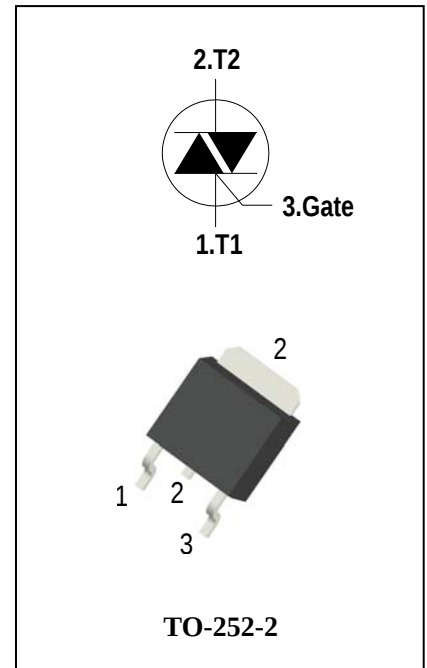
3 Quadrants High temperature Triacs

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 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. 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 ($I_{T(RMS)} = 4A$)
- ◆ 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} V_{RRM}	Repetitive Peak Off-State Voltage	$T_j = 25^{\circ}C$	ADT4CH60E	600	V
			ADT4CH80E	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 130^{\circ}C$		4	A
I_{TSM}	Surge On-State Current	$t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$		40/42	A
I^2t	I^2t for fusing	$t_p=10ms$		8	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz}$ $T_j = 150^{\circ}C$ $I_G = 2 \times I_{GT}$, $tr \leq 100\text{ ns}$		50	$A/\mu s$
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu s$ $T_j = 150^{\circ}C$		4	A
$P_{G(AV)}$	Average Gate Power Dissipation($T_j=150^{\circ}C$)			1	W
P_{GM}	Peak Gate Power Dissipation($t_p=20\mu s, T_j=150^{\circ}C$)			5	W
T_j	Operating Junction Temperature			- 40 ~ 150	$^{\circ}C$
T_{STG}	Storage Temperature			- 40 ~ 150	$^{\circ}C$



Electrical Characteristics($T_j = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Items		Conditions		ADT4CH60E/80E			Unit
					S	Blank	B	
I_{DRM}	Peak Forward Reverse Blocking Current		$V_{\text{DRM}} = V_{\text{RRM}}, T_{\text{j}} = 25^{\circ}\text{C}$	Max.	5			μA
I_{RRM}			$V_{\text{DRM}} = V_{\text{RRM}}, T_{\text{j}} = 150^{\circ}\text{C}$		1.75			mA
V_{TM}	Peak On-State Voltage		$I_{\text{TM}} = 5.5\text{A}, t_{\text{p}} = 380\text{ }\mu\text{s}$	Max.	1.55			V
V_{GD}	Q1-Q2-Q3	Non–Trigger Gate Voltage	$V_{\text{D}} = V_{\text{DRM}}\quad R_{\text{L}} = 3.3\text{ k}\Omega$ $T_{\text{j}} = 150^{\circ}\text{C}$	Min.	0.2			V
V_{GT}	Q1-Q2-Q3	Gate Trigger Voltage	$V_{\text{D}} = 12\text{V}\text{ , } R_{\text{L}} = 33\Omega$	Max.	1.5			V
I_{GT}	Q1-Q2-Q3	Gate Trigger Current		Max.	10	35	50	mA
I_{H}	Q1-Q2-Q3	Holding Current	$I_{\text{T}} = 0.1\text{A}$	Max.	20	45	60	mA
I_{L}	Q1-Q3	Latching Current	$I_{\text{G}} = 1.2\text{ }I_{\text{GT}}$	Max.	20	50	70	mA
	Q2				35	70	100	
dV/dt	Critical Rate of Rise of Off-State Voltage		$V_{\text{D}} = 2/3V_{\text{DRM}}\quad \text{gate open}$ $T_{\text{j}} = 150^{\circ}\text{C}$	Min.	200	1000	1500	V/ μs
(dV/dt)c	Critical Rate of Change of Commutating Voltage		$V_{\text{D}}=400\text{V}\quad T_{\text{j}} = 150^{\circ}\text{C}$ (dI/dt)c=-1.7A/ms	Min.	1	15	20	V/ μs
$R_{\text{th(j-c)}}$	Junction to case (AC)			Max.	3.0			$^{\circ}\text{C/W}$
$R_{\text{th(j-a)}}$	Junction to ambient(Copper surface under tab:S=0.5cm ²)			Max.	70			$^{\circ}\text{C/W}$

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

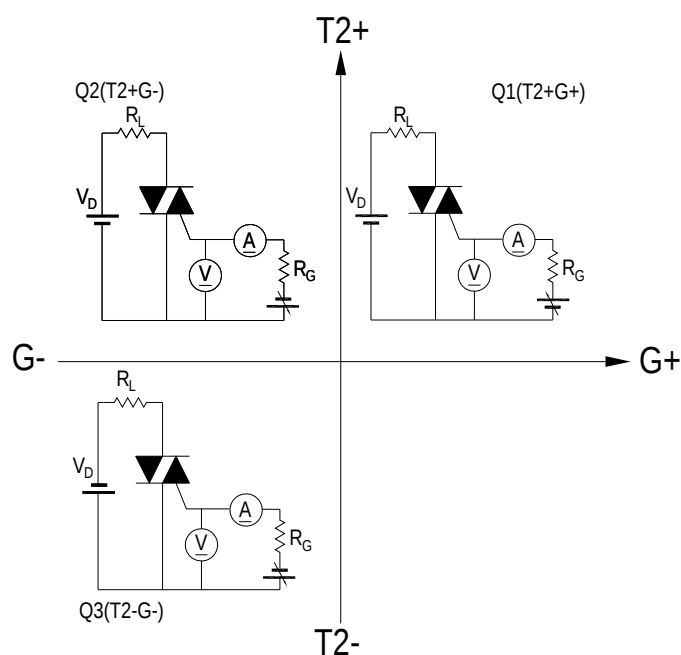


FIG.2: Maximum on-state power dissipation

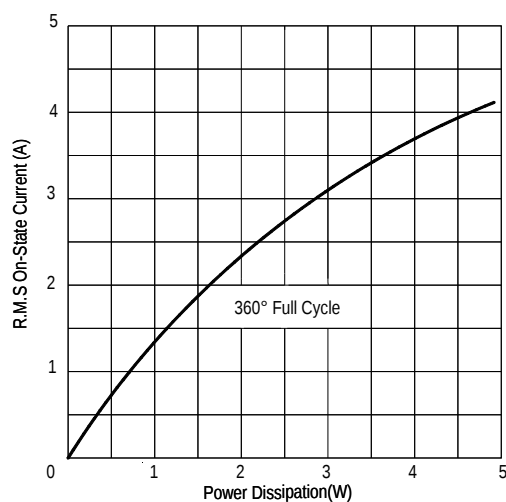


FIG.3: Typical RMS on-state current VS Allowable case Temperature

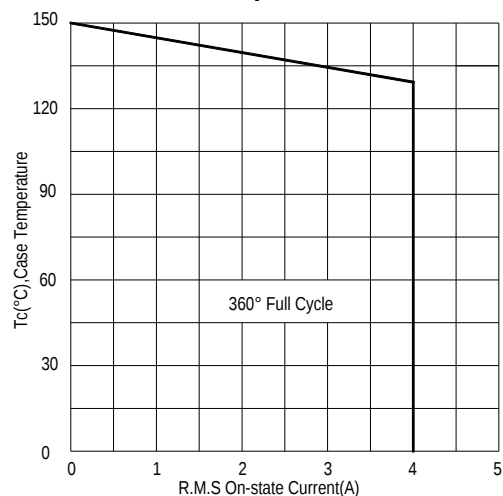


FIG.4: Maximum transient thermal impedance

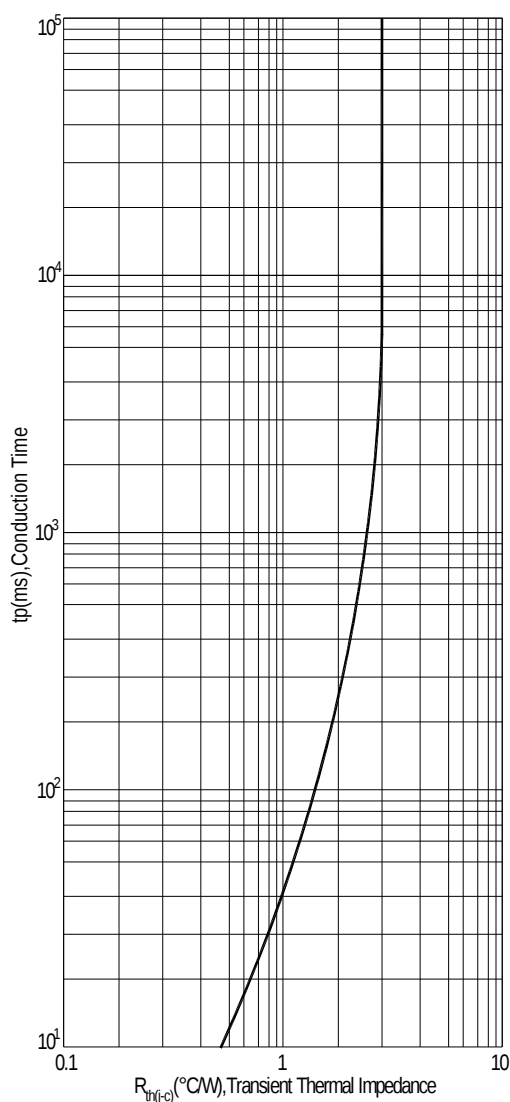


FIG.5: Rated surge on-state current (Non-Repetitive)

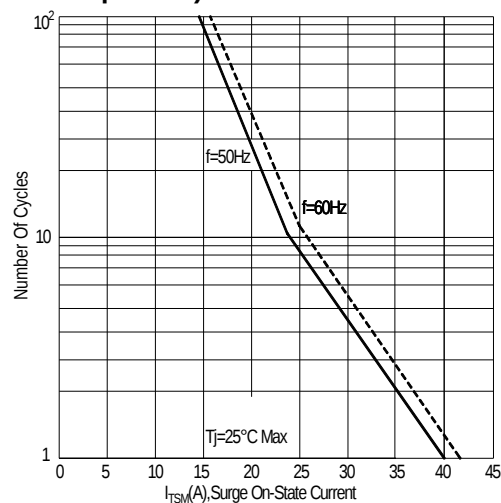


FIG.6: Gate trigger current VS Junction temperature

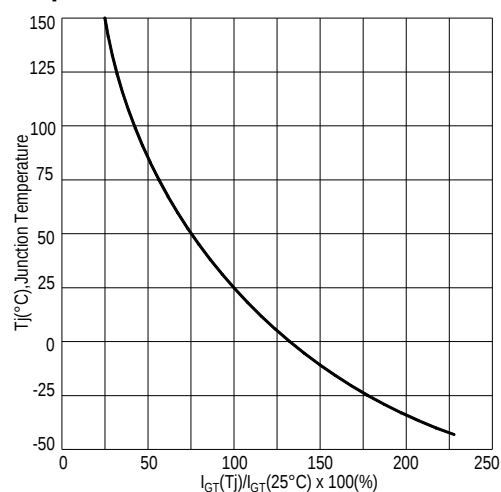


FIG.7:Holding current and Latching current VS Junction temperature

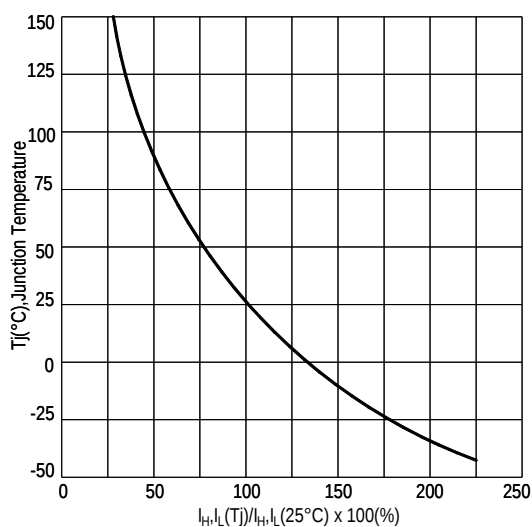


FIG.9: On-state characteristics(Max)

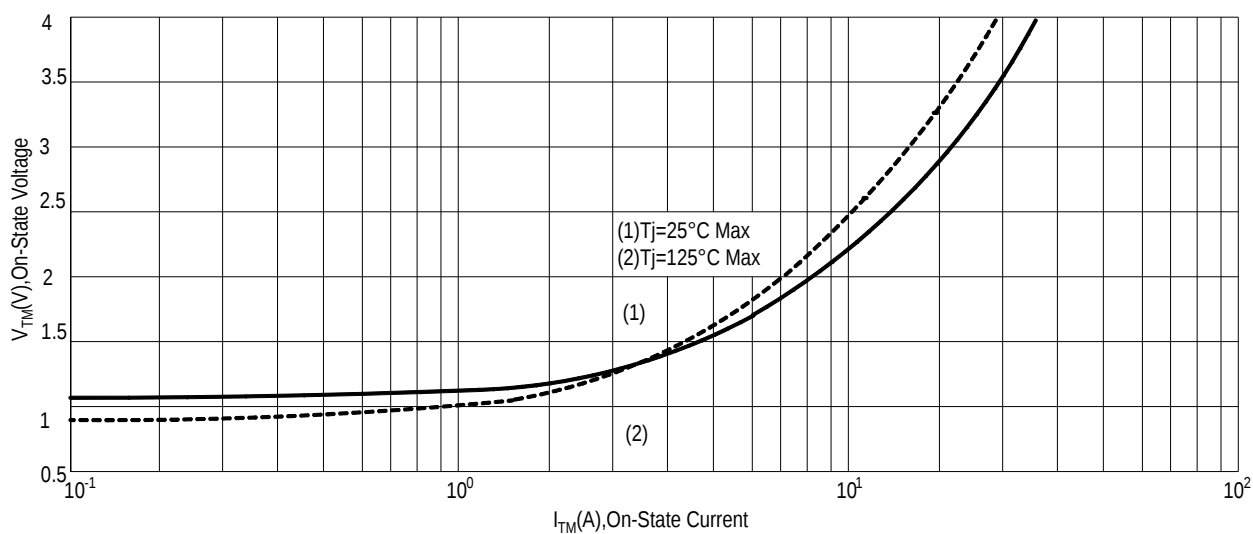
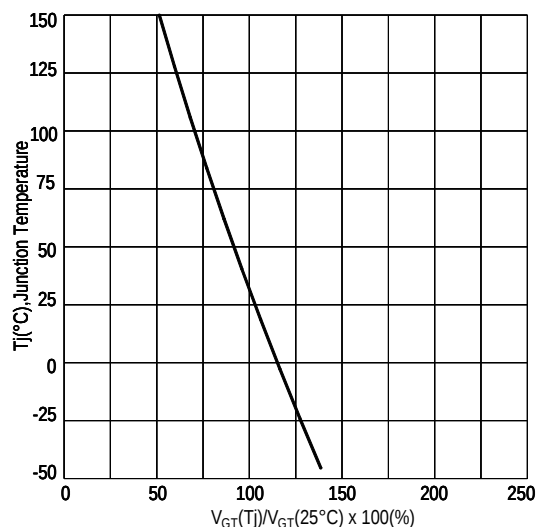
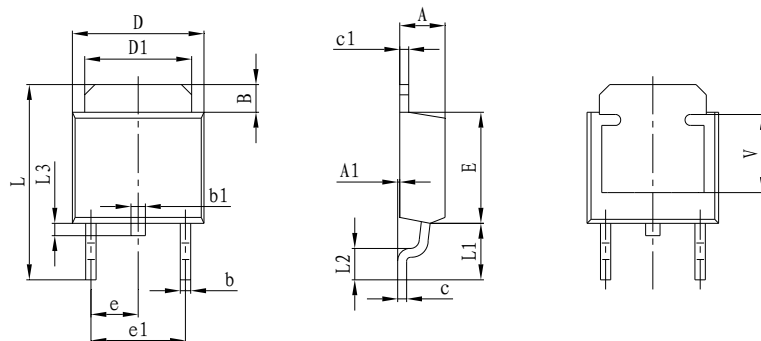


FIG.8: Gate trigger voltage VS Junction temperature



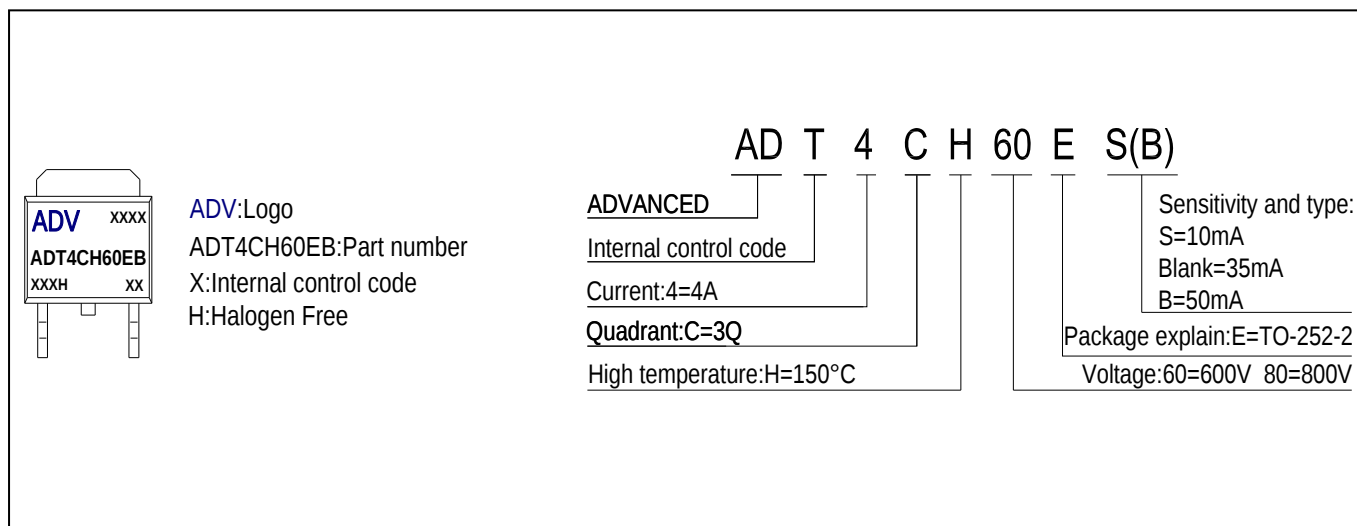
PACKAGE MECHANICAL DATA

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



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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