

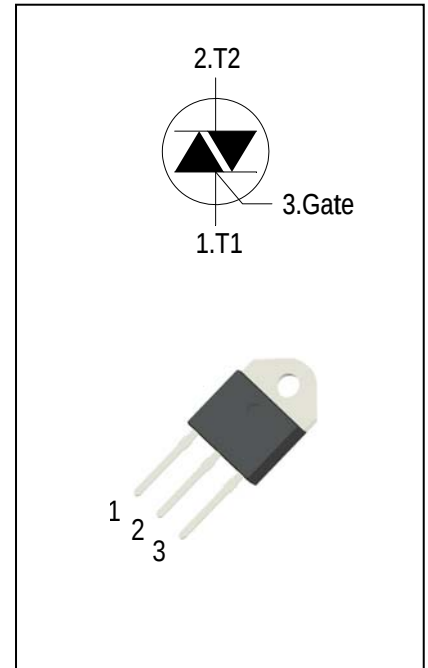
3 Quadrants High temperature Triacs

General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The AIT30CH 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 ($I_{T(RMS)}$)= 30A)
- ◆ High Commutation dv/dt
- ◆ High junction temperature operating capability
- ◆ These Devices are Pb-Free and are RoHS Compliant
- ◆ Isolated heatsink mounted , Isolation Voltage (V_{ISO} = 2500V AC)



Absolute Maximum Ratings

Symbol	Items	Conditions		Ratings	Unit
V_{DRM} V_{RRM}	Repetitive Peak Off-State Voltage	$T_j = 25^{\circ}\text{C}$	AIT30CH60H	600	V
			AIT30CH80H	800	V
$I_{\text{T(RMS)}}$	R.M.S On-State Current	$T_{\text{C}} = 95^{\circ}\text{C}$		30	A
I_{TSM}	Surge On-State Current	$t_p=20\text{ms}(50\text{Hz})/t_p=16.7\text{ms}(60\text{Hz})$		270/285	A
I^2t	I^2t for fusing	$t_p=10\text{ms}$		488	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 150^{\circ}\text{C}$ $I_{\text{G}} = 2 \times I_{\text{GT}} , t_r \leq 100\text{ ns}$		55	$\text{A}/\mu\text{s}$
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu\text{s } T_j = 150^{\circ}\text{C}$		4	A
$P_{\text{G(AV)}}$	Average Gate Power Dissipation($T_j=150^{\circ}\text{C}$)			1	W
P_{GM}	Peak Gate Power Dissipation($t_p=20\mu\text{s}, T_j=150^{\circ}\text{C}$)			10	W
T_j	Operating Junction Temperature			- 40 ~ 150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature			- 40 ~ 150	$^{\circ}\text{C}$



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

Symbol	Items		Conditions		AIT30CH60H/80H			Unit
					S	Blank	B	
I _{DRM}	Peak Forward Reverse Blocking Current		V _{DRM} = V _{RRM} , T _j = 25°C	Max.	10			uA
I _{RRM}			V _{DRM} = V _{RRM} , T _j = 150°C		8.5			mA
V _{TM}	Peak On-State Voltage		I _{TM} = 42A, 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.	0.15			V
V _{GT}	Q1-Q2-Q3	Gate Trigger Voltage	V _D = 12V , R _L = 33Ω	Max.	1.3			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	50	75	mA
I _L	Q1-Q3	Latching Current	I _G = 1.2 I _{GT}	Max.	20	80	90	mA
	Q2				35	90	110	
dV/dt	Critical Rate of Rise of Off-State Voltage		V _D = 2/3V _{DRM} gate open T _j = 150°C	Min.	500	1000	1500	V/μs
(dV/dt) _c	Critical Rate of Change of Commutating Voltage		VD=400V T _j = 150°C (dI/dt) _c =-16A/ms	Min.	1	15	20	V/μs
R _{th(j-c)}	Junction to case (AC)			Max.	0.9			°C/W
R _{th(j-a)}	Junction to ambient			Max.	50			°C/W

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

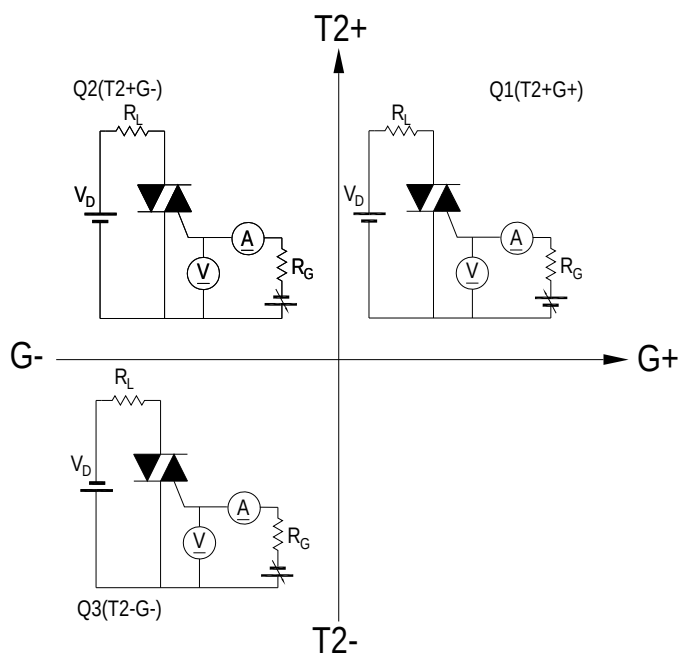


FIG.2: Maximum on-state power dissipation

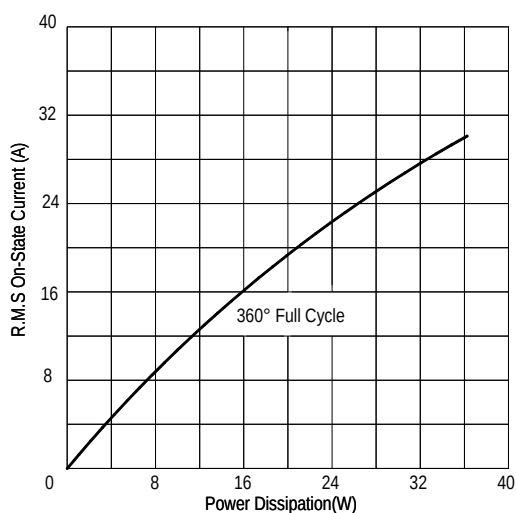


FIG.4: Maximum transient thermal impedance

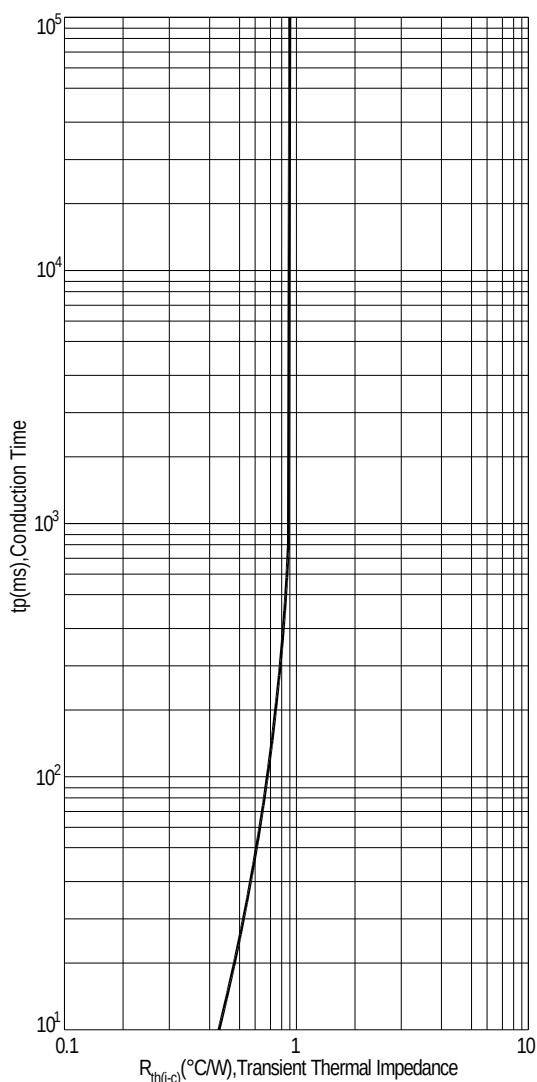


FIG.3: Typical RMS on-state current VS Allowable case Temperature

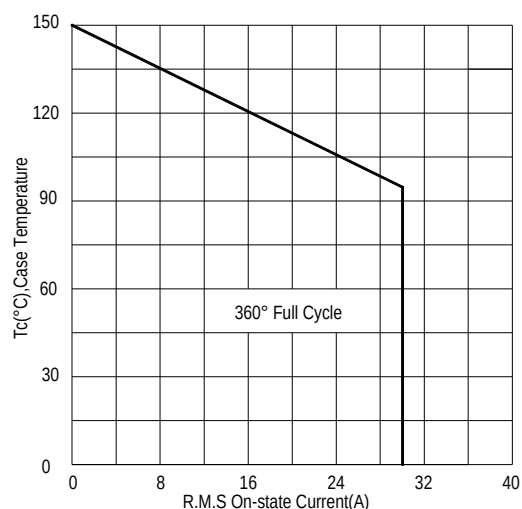


FIG.5: Rated surge on-state current (Non-Repetitive)

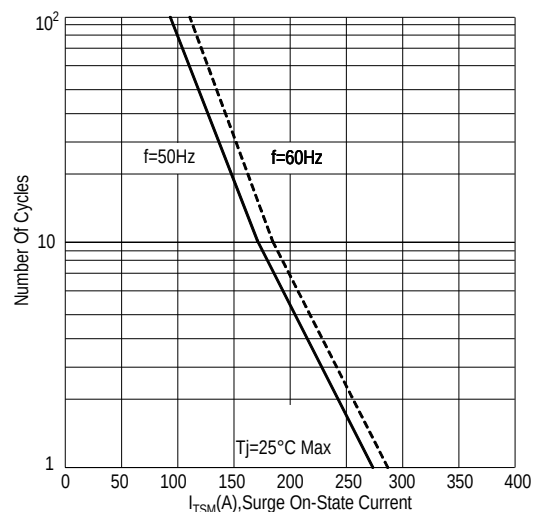


FIG.6: Gate trigger current VS Junction temperature

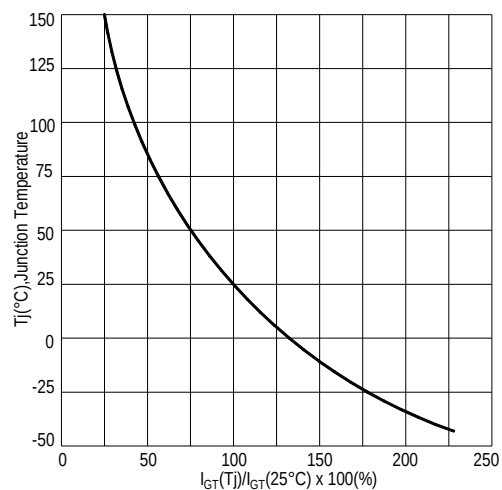


FIG.7: Holding current and Latching current VS Junction temperature

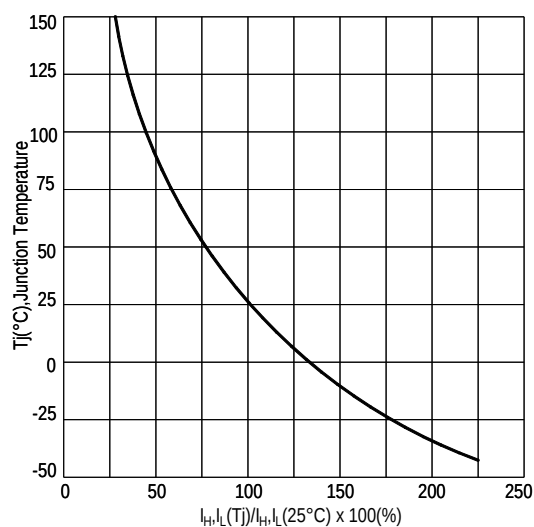


FIG.8: Gate trigger voltage VS Junction temperature

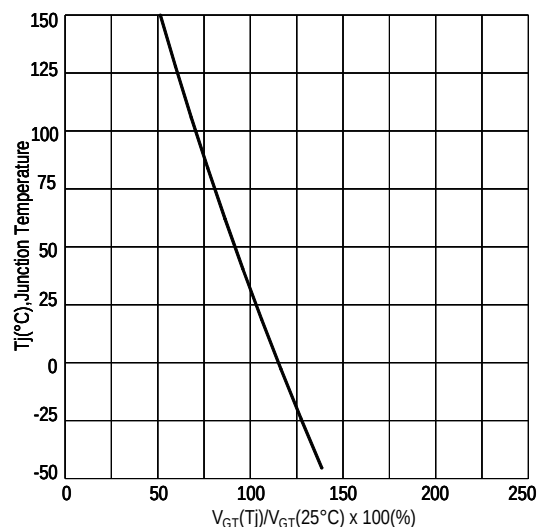
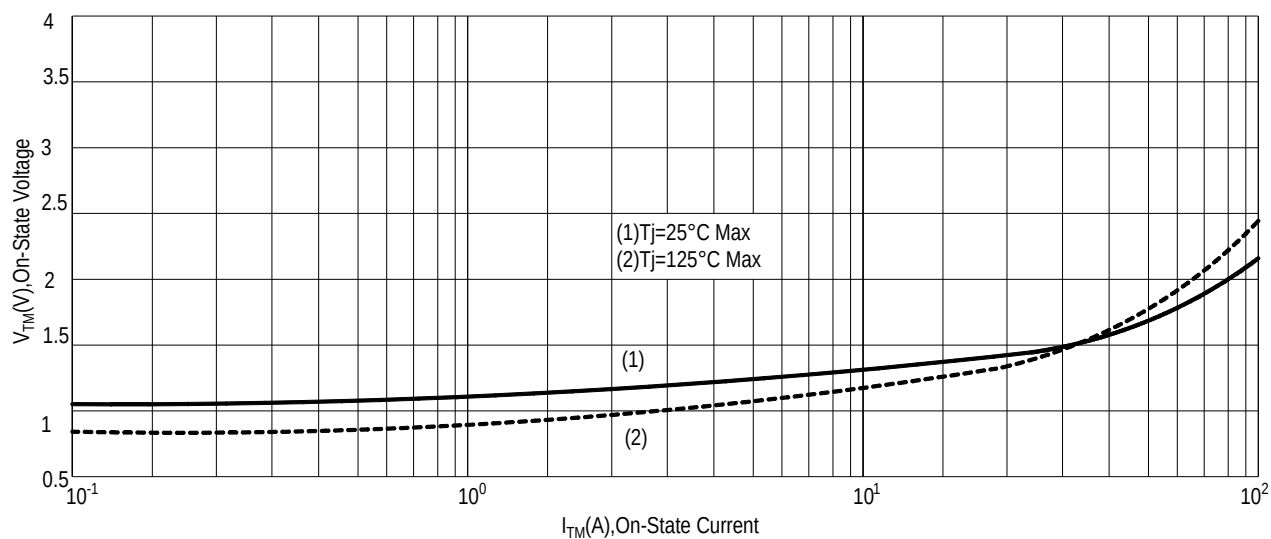
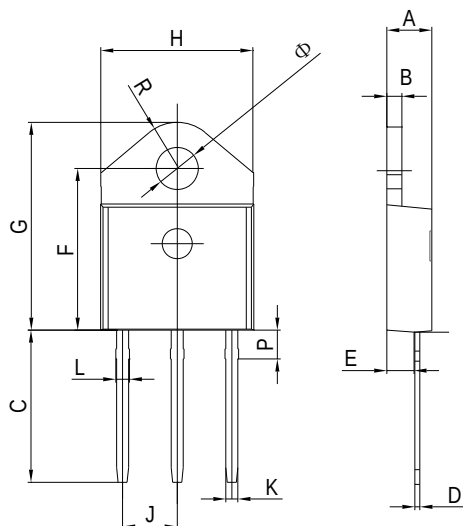


FIG.9: On-state characteristics(Max)



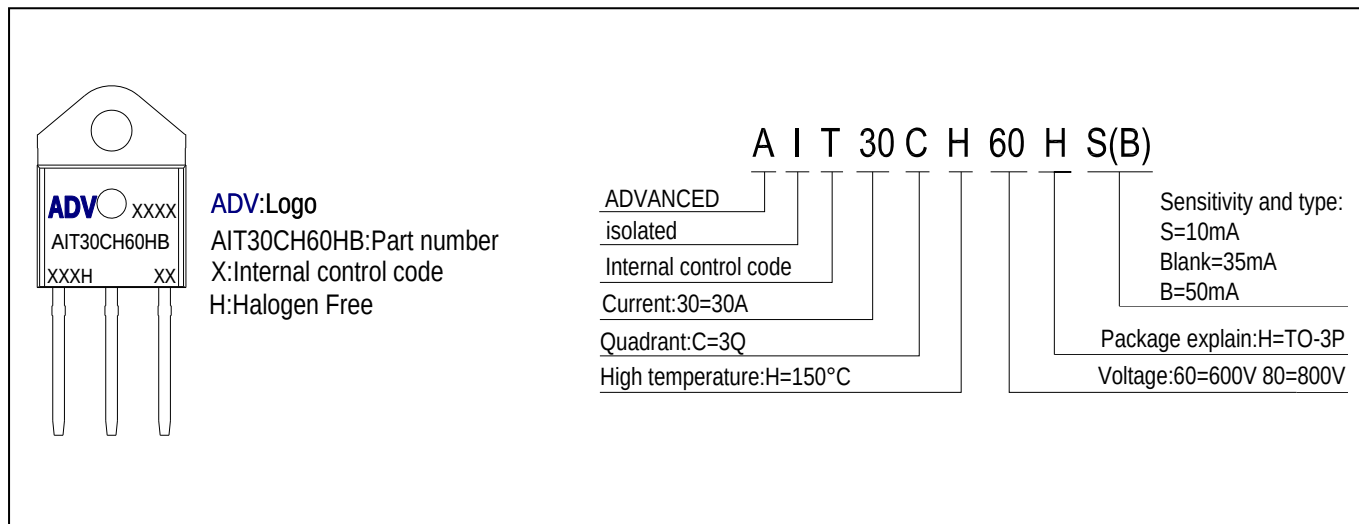
PACKAGE MECHANICAL DATA

TO-3P(isolated) Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.4	4.6	0.173	0.181
B	1.45	1.55	0.057	0.061
C	14.35	15.60	0.565	0.614
D	0.5	0.7	0.020	0.028
E	2.7	2.9	0.106	0.114
F	15.8	16.5	0.622	0.650
G	20.4	21.1	0.815	0.831
H	15.1	15.5	0.594	0.610
J	5.4	5.65	0.213	0.222
K	1.2	1.4	0.047	0.055
Ø	4.08	4.20	0.161	0.165
L	1.35	1.50	0.053	0.059
P	2.8	3.0	0.110	0.118
R	4.60 typ.		0.181 typ.	

Making Diagram



Ordering information

Part number	Package	Marking	Packing	Quantity
AIT30CH60H#	TO-3P isolated	AIT30CH60H#	Tube	30pcs
AIT30CH80H#	TO-3P isolated	AIT30CH80H#	Tube	30pcs

Note:# = Gate Trigger Current Sensitivity and type

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