

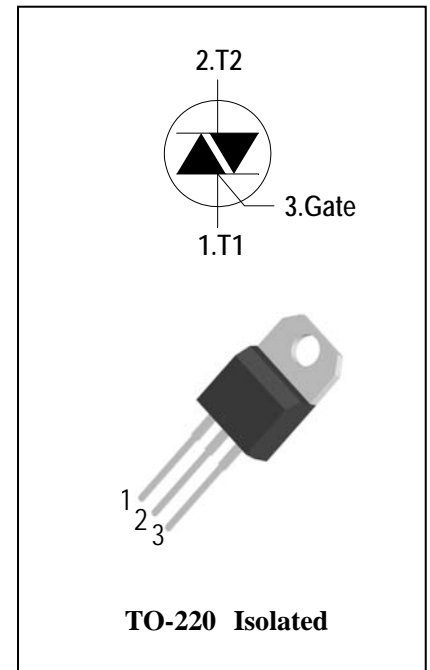
3 Quadrants High temperature Triacs

General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The AIT12CH 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 ($I_{T(RMS)}$) = 12 A)
- ◆ 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	$T_j = 25^\circ C$	AIT12CH60	600	V
			AIT12CH80	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 120^\circ C$		12	A
I_{TSM}	Surge On-State Current	$t_p = 20ms(50Hz) / t_p = 16.7ms(60Hz)$		140/146	A
I^2t	I^2t for fusing	$t_p = 10ms$		96	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		AIT12CH60/80			Unit
					S	Blank	B	
I _{DRM} I _{RRM}	Peak Forward Reverse Blocking Current		V _{DRM} = V _{RRM} , T _j = 25°C	Max.	5			uA
			V _{DRM} = V _{RRM} , T _j = 150°C		3.8			mA
V _{TM}	Peak On-State Voltage		I _{TM} = 17A, 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	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.	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 =-5.3A/ms	Min.	1	16	21	V/μs
R _{th(j-c)}	Junction to case (AC)			Max.	2.3			°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

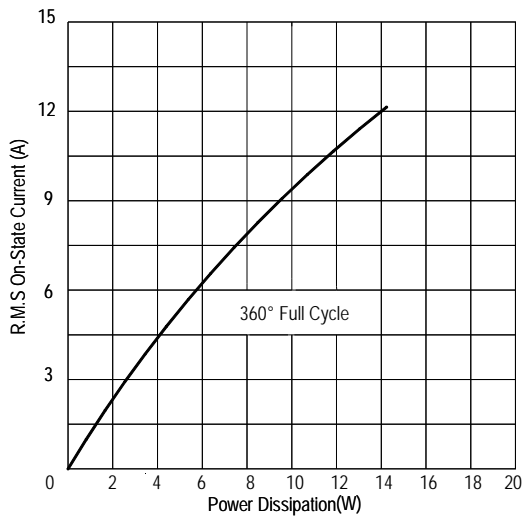


FIG.4: Maximum transient thermal impedance

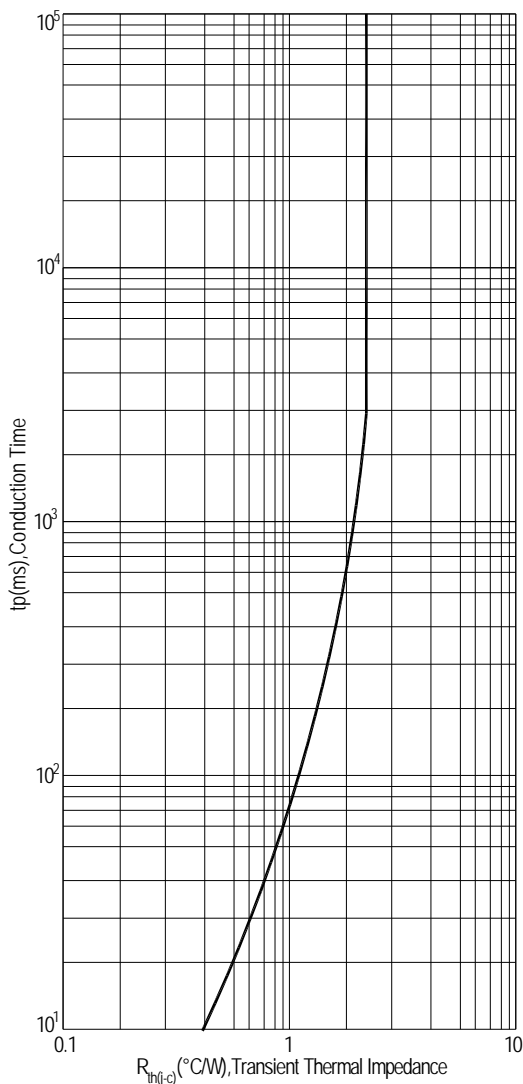


FIG.3: Typical RMS on-state current VS Allowable case Temperature

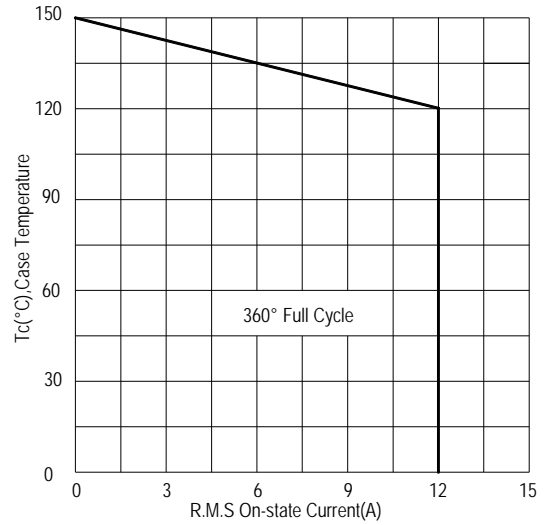


FIG.5: Rated surge on-state current (Non-Repetitive)

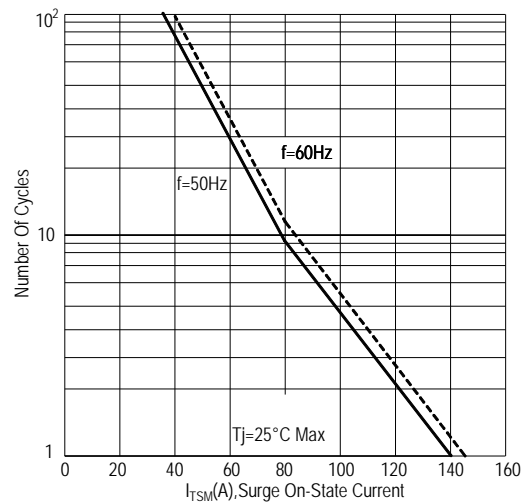


FIG.6: Gate trigger current VS Junction temperature

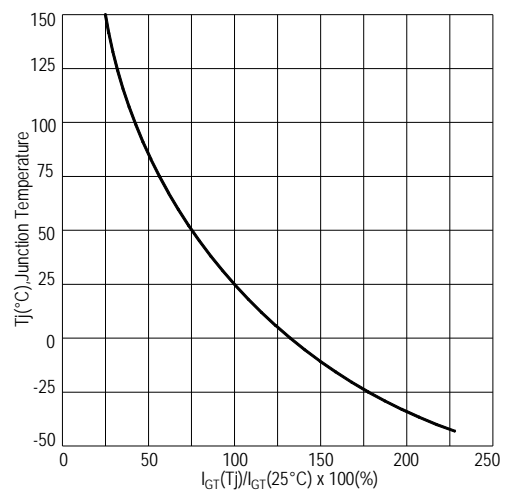


FIG.7: Holding current and Latching current VS Junction temperature

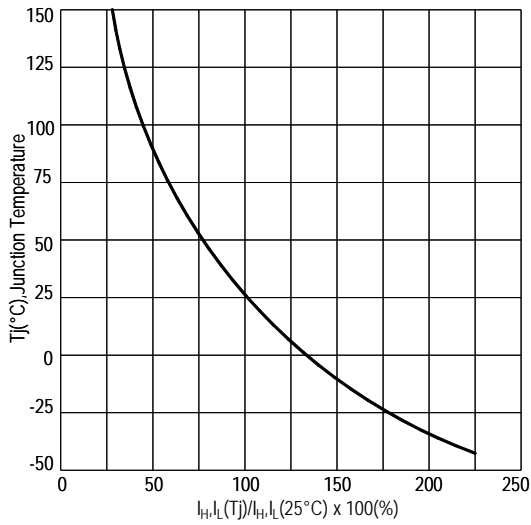


FIG.8: Gate trigger voltage VS Junction temperature

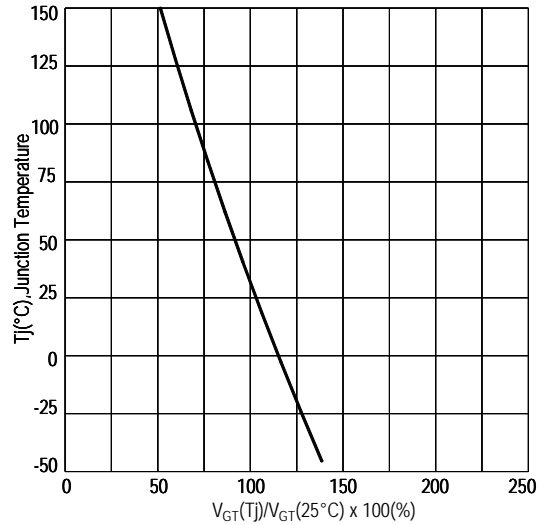
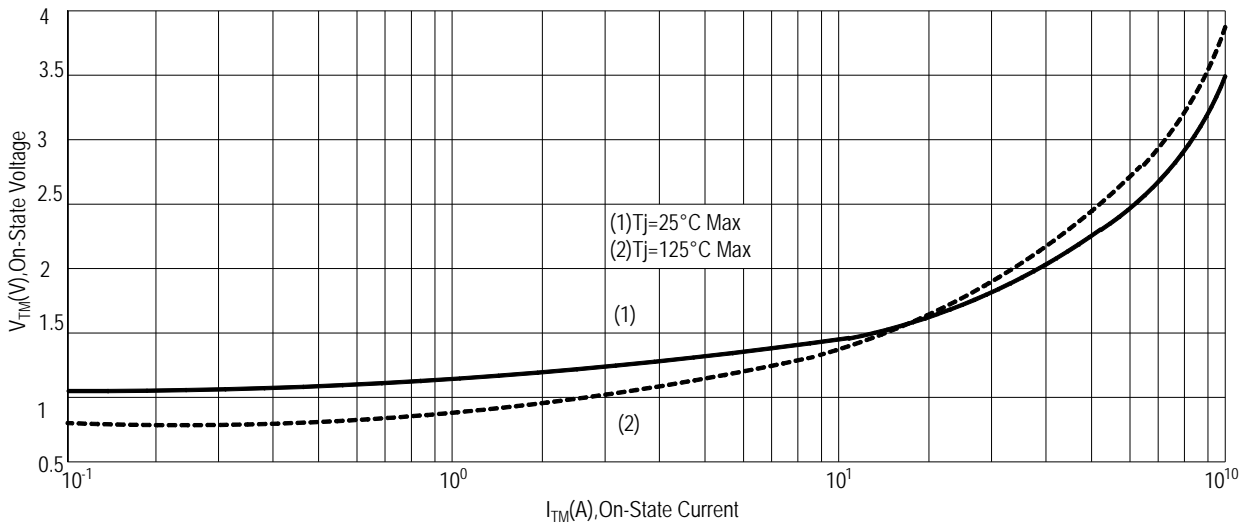
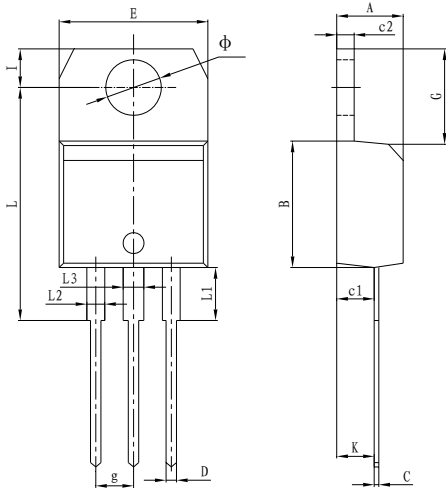


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA TO-220(isolated) Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.40	4.60	0.173	0.181
B	9.00	9.30	0.354	0.366
C	0.40	0.60	0.015	0.023
c1	2.00	2.60	0.078	0.102
c2	1.23	1.32	0.048	0.051
D	0.70	1.00	0.027	0.039
E	10.00	10.40	0.393	0.409
g	2.40	2.70	0.094	0.106
G	6.20	6.80	0.244	0.267
I	2.65	2.95	0.104	0.116
L	15.80	16.80	0.622	0.661
L1	3.75		0.147	
L2	1.14	1.70	0.044	0.066
L3	1.14	1.70	0.044	0.066
Φ	3.60	3.90	0.141	0.153
K	2.60TYP		0.102TYP	

Making Diagram

ADV: Logo
AIT12CH60B: Part number
X: Internal control code
H: Halogen Free

A I T 12 C H 60 # S(B)

ADVANCED isolated Internal control code Current: 12=12A Quadrant: C=3Q High temperature: H=150°C	Sensitivity and type: S=10mA Blank=35mA B=50mA	Package explain: Blank=TO-220 Voltage: 60=600V 80=800V
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Ordering information

Part number	Package	Marking	Packing	Quantity
AIT12CH60#	TO-220 isolated	AIT12CH60#	Tube	50pcs
AIT12CH80#	TO-220 isolated	AIT12CH80#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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