

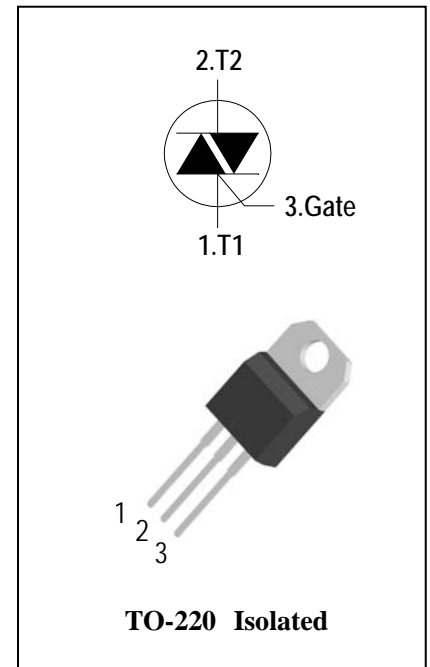
## 3 Quadrants High temperature Triacs

### General Description

High current density due to mesa technology , guaranteed maximum junction temperature 150° C. The AIT16CH 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 (  $I_{T(RMS)}$  ) = 16 A )
- ◆ High Commutation  $dv/dt$
- ◆ Isolated heatsink mounted , Isolation Voltage (  $V_{iso}$  = 2500V AC )
- ◆ High junction temperature operating capability
- ◆ These Devices are Pb-Free and are RoHS Compliant



### Absolute Maximum Ratings

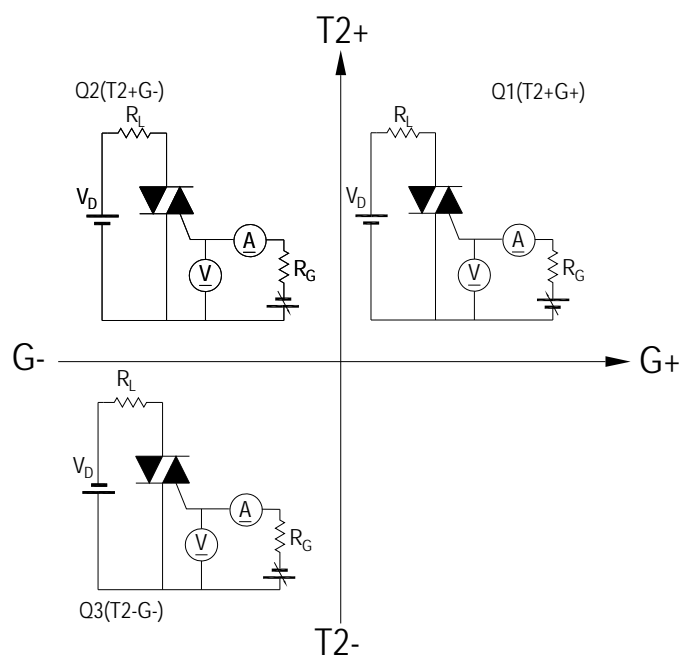
Symbol	Items	Conditions		Ratings	Unit
$V_{DRM}$ $V_{RRM}$	Repetitive Peak Off-State Voltage	$T_j = 25^\circ\text{C}$	AIT16CH60	600	V
			AIT16CH80	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 100^\circ\text{C}$		16	A
$I_{TSM}$	Surge On-State Current	$t_p=20\text{ms}(50\text{Hz})/t_p=16.7\text{ms}(60\text{Hz})$		180/188	A
$I^2t$	$I^2t$ for fusing	$t_p=10\text{ms}$		165	$\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of on-state current	$F = 120\text{ Hz } T_j = 150^\circ\text{C}$ $I_G = 2 \times I_{GT} , t_r \leq 100\text{ ns}$		50	$\text{A}/\mu\text{s}$
$I_{GM}$	Peak Gate Current	$t_p = 20\ \mu\text{s } T_j = 150^\circ\text{C}$		4	A
$P_{G(AV)}$	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	$^\circ\text{C}$



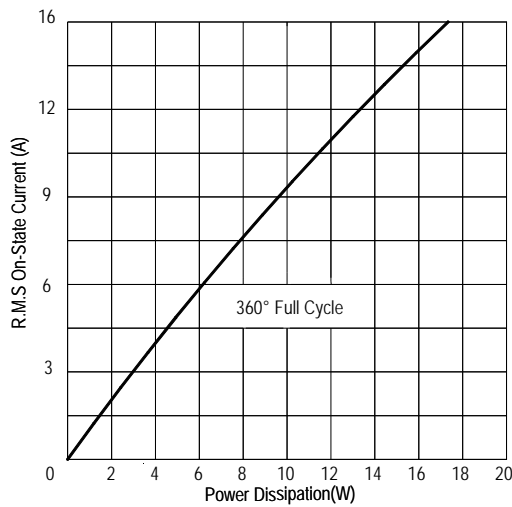
## Electrical Characteristics (T<sub>j</sub> = 25°C unless otherwise specified )

Symbol	Items		Conditions		AIT16CH60/80			Unit
					S	Blank	B	
I <sub>DRM</sub> I <sub>RRM</sub>	Peak Forward Reverse Blocking Current		V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 25°C	Max.	5			uA
			V <sub>DRM</sub> = V <sub>RRM</sub> , T <sub>j</sub> = 150°C		6.1			mA
V <sub>TM</sub>	Peak On-State Voltage		I <sub>TM</sub> = 25A, t <sub>p</sub> = 380 μs	Max.	1.55			V
V <sub>GD</sub>	Q1-Q2-Q3	Non-Trigger Gate Voltage	V <sub>D</sub> = V <sub>DRM</sub> R <sub>L</sub> = 3.3 kΩ T <sub>j</sub> = 150°C	Min.	0.2			V
V <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Voltage	V <sub>D</sub> = 12V , R <sub>L</sub> = 33Ω	Max.	1.5			V
I <sub>GT</sub>	Q1-Q2-Q3	Gate Trigger Current		Max.	10	35	50	mA
I <sub>H</sub>	Q1-Q2-Q3	Holding Current	I <sub>T</sub> = 0.1A	Max.	20	45	70	mA
I <sub>L</sub>	Q1-Q3	Latching Current	I <sub>G</sub> = 1.2 I <sub>GT</sub>	Max.	20	50	90	mA
	Q2				35	80	110	
dV/dt	Critical Rate of Rise of Off-State Voltage		V <sub>D</sub> = 2/3V <sub>DRM</sub> gate open T <sub>j</sub> = 150°C	Min.	500	1000	1500	V/μs
(dV/dt) <sub>c</sub>	Critical Rate of Change of Commutating Voltage		V <sub>D</sub> =400V(dI/dt) <sub>c</sub> =-7A/ms T <sub>j</sub> = 150°C	Min.	1	15	20	V/μs
R <sub>th(j-c)</sub>	Junction to case (AC)			Max.	2.1			°C/W
R <sub>th(j-a)</sub>	Junction to ambient			Max.	60			°C/W

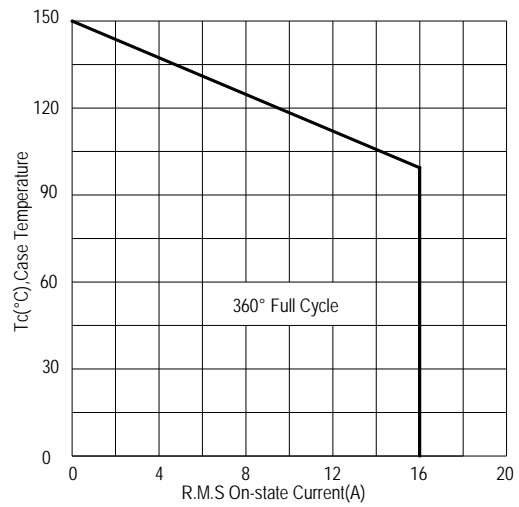
**FIG.1:Triac quadrant are defined and the gate trigger test circuit**



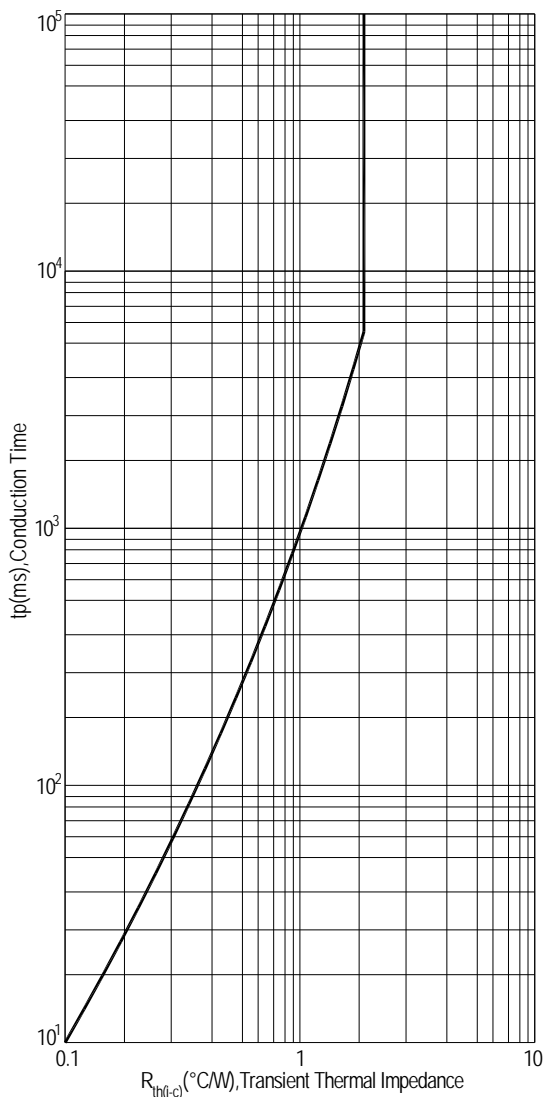
**FIG.2: Maximum on-state power dissipation**



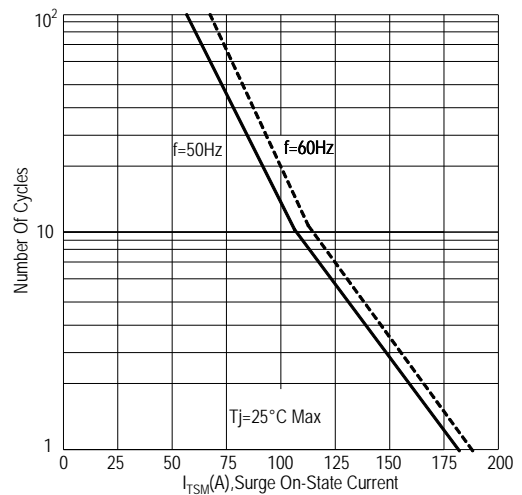
**FIG.3: Typical RMS on-state current VS Allowable case Temperature**



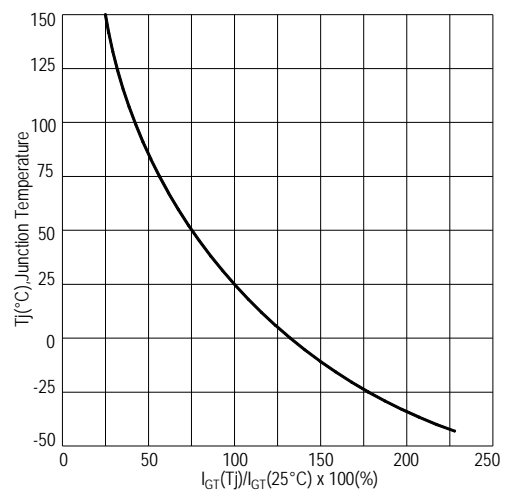
**FIG.4: Maximum transient thermal impedance**



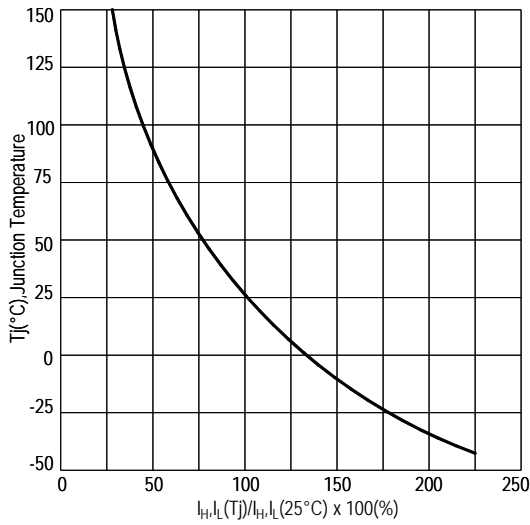
**FIG.5: Rated surge on-state current (Non-Repetitive)**



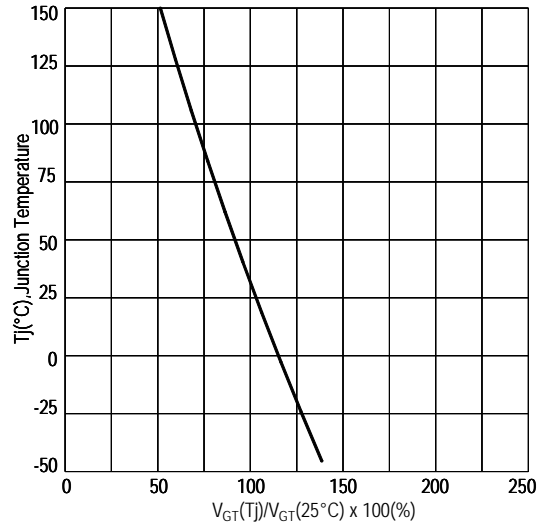
**FIG.6: Gate trigger current VS Junction temperature**



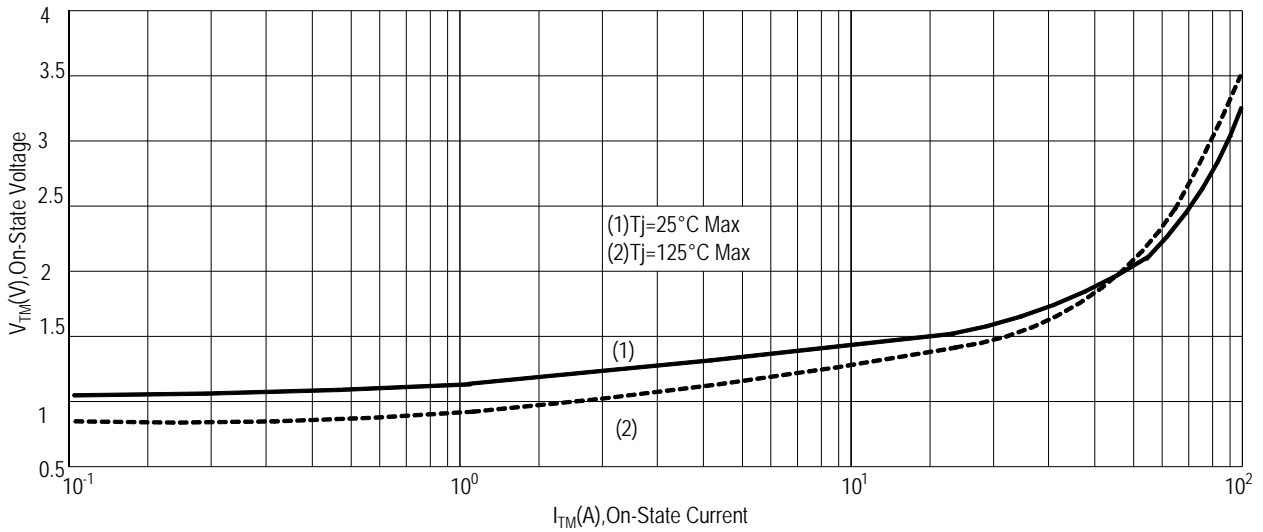
**FIG.7: Holding current and Latching current VS Junction temperature**



**FIG.8: Gate trigger voltage VS Junction temperature**

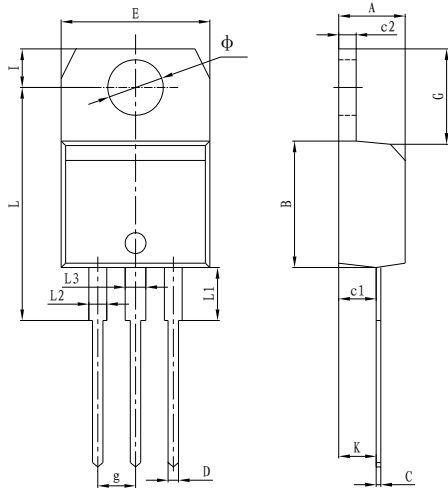


**FIG.9: On-state characteristics(Max)**



## PACKAGE MECHANICAL DATA

### TO-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
Phi	3.60	3.90	0.141	0.153
K	2.60TYP		0.102TYP	

### Making Diagram

ADV: Logo  
 AIT16CH60B: Part number  
 X: Internal control code  
 H: Halogen Free

A I T 16 C H 60 S(B)

<p>ADVANCED</p> <p>TO-220isolated</p> <p>Internal control code</p> <p>Current: 16=16A</p> <p>Quadrant: C=3Q</p> <p>High temperature: H=150°C</p>	<p>Sensitivity and type:                  S=10mA                  Blank=35mA                  B=50mA</p> <p style="text-align: right;">Voltage: 60=600V                  80=800V</p>
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### Ordering information

Part number	Package	Marking	Packing	Quantity
AIT16CH60#	TO-220isolated	AIT16CH60#	Tube	50pcs
AIT16CH80#	TO-220isolated	AIT16CH80#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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