

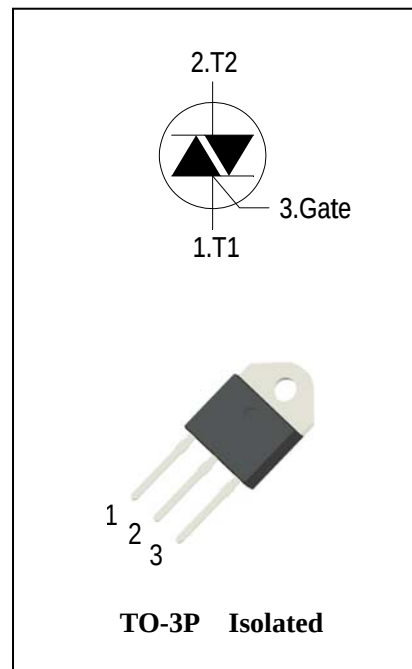
3 Quadrants Triacs

General Description

High current density due to mesa technology .the AIT40C 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.

Features

- ◆ Repetitive Peak Off-State Voltage: 1200V and 1600V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 40A$)
- ◆ High Commutation dv/dt
- ◆ 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	$T_j = 25^{\circ}C$	AIT40C120H	1200	V
			AIT40C160H	1600	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 80^{\circ}C$		40	A
I_{TSM}	Surge On-State Current	$t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$		400/420	A
I^2t	I^2t for fusing	$t_p=10ms$		880	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz}$ $T_j = 125^{\circ}C$ $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$		55	$A/\mu s$
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu s$ $T_j = 125^{\circ}C$		8	A
$P_{G(AV)}$	Average Gate Power Dissipation($T_j=125^{\circ}C$)			1	W
P_{GM}	Peak Gate Power Dissipation($t_p=20\mu s, T_j=125^{\circ}C$)			10	W
T_j	Operating Junction Temperature			- 40 ~ 125	$^{\circ}C$
T_{STG}	Storage Temperature			- 40 ~ 150	$^{\circ}C$



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

Symbol	Items		Conditions		AIT40C120HB/160HB	Unit
I_{DRM} I_{RRM}	Peak Forward Reverse Blocking Current		$V_{\text{DRM}} = V_{\text{RRM}}, T_{\text{j}} = 25^{\circ}\text{C}$	Max.	5	uA
			$V_{\text{DRM}} = V_{\text{RRM}}, T_{\text{j}} = 125^{\circ}\text{C}$		5	mA
V_{TM}	Peak On-State Voltage		$I_{\text{TM}} = 60\text{A}, t_{\text{p}} = 380 \mu\text{s}$	Max.	1.55	V
V_{GD}	Q1-Q2-Q3	Non—Trigger Gate Voltage	$V_{\text{D}} = V_{\text{DRM}} \quad R_{\text{L}} = 3.3 \text{ k}\Omega$ $T_{\text{j}} = 125^{\circ}\text{C}$	Min.	0.2	V
V_{GT}	Q1-Q2-Q3	Gate Trigger Voltage	$V_{\text{D}} = 12\text{V} \quad , \quad R_{\text{L}} = 33\Omega$	Max.	1.3	V
I_{GT}	Q1-Q2-Q3	Gate Trigger Current		Max.	50	mA
I_{H}	Q1-Q2-Q3	Holding Current	$I_{\text{T}} = 0.5\text{A}$	Max.	75	mA
I_{L}	Q1-Q3	Latching Current	$I_{\text{G}} = 1.2 I_{\text{GT}}$	Max.	90	mA
	Q2				110	
dV/dt	Critical Rate of Rise of Off-State Voltage		$V_{\text{D}} = 2/3V_{\text{DRM}} \quad \text{gate open}$ $T_{\text{j}} = 125^{\circ}\text{C}$	Min.	1500	V/μs
(dV/dt)c	Critical Rate of Change of Commutating Voltage		$(\text{dI/dt})_{\text{c}}=-20\text{A/ms}$ $T_{\text{j}} = 125^{\circ}\text{C}$	Min.	20	V/μs
$R_{\text{th(j-c)}}$	Junction to case (AC)			Max.	0.9	°C/W
$R_{\text{th(j-a)}}$	Junction to ambient			Max.	50	°C/W

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

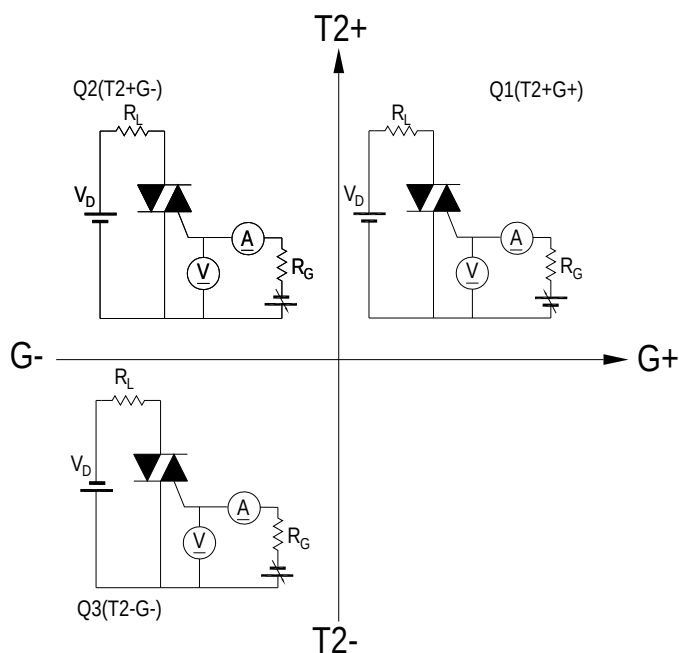


FIG.2: Maximum on-state power dissipation

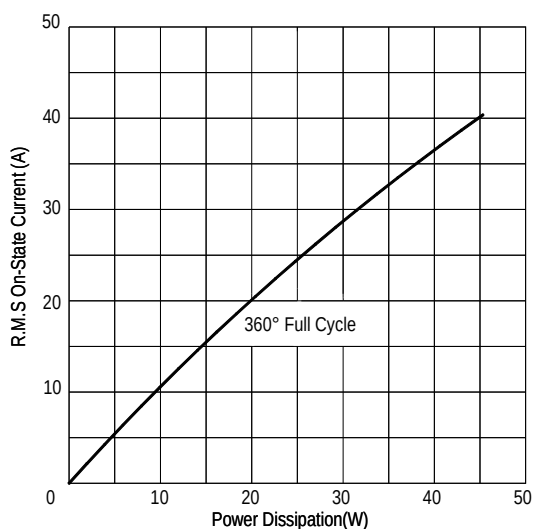


FIG.4: Maximum transient thermal impedance

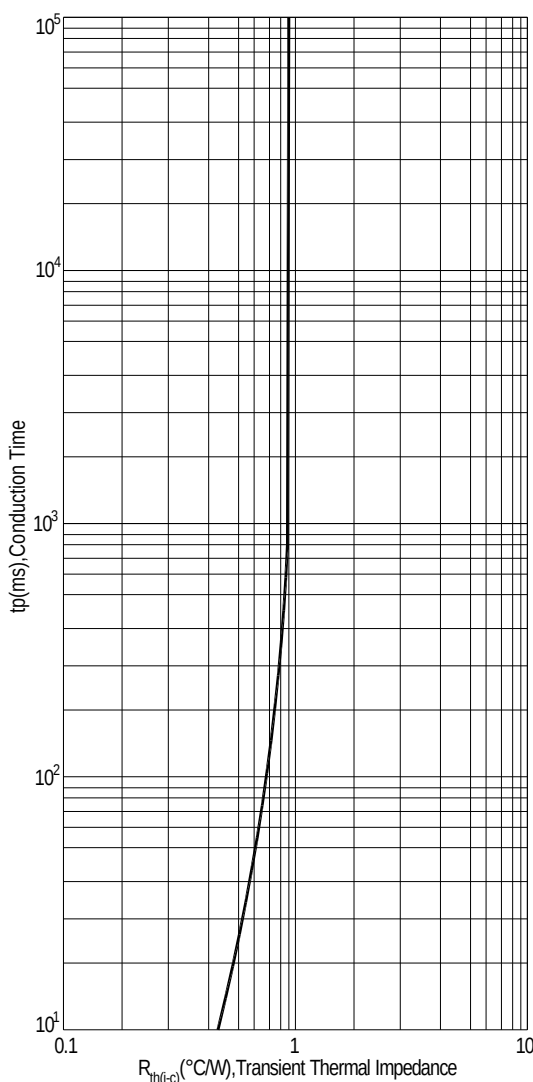


FIG.3: Typical RMS on-state current VS Allowable case Temperature

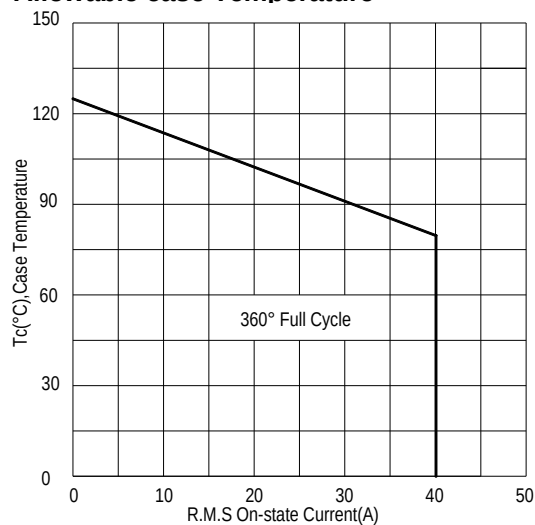


FIG.5: Rated surge on-state current (Non-Repetitive)

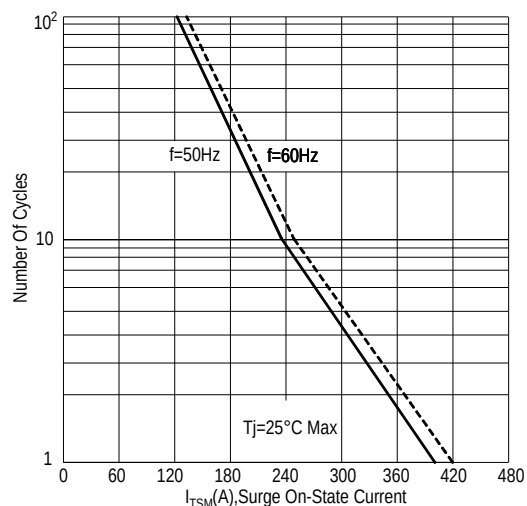


FIG.6: Gate trigger current VS Junction temperature

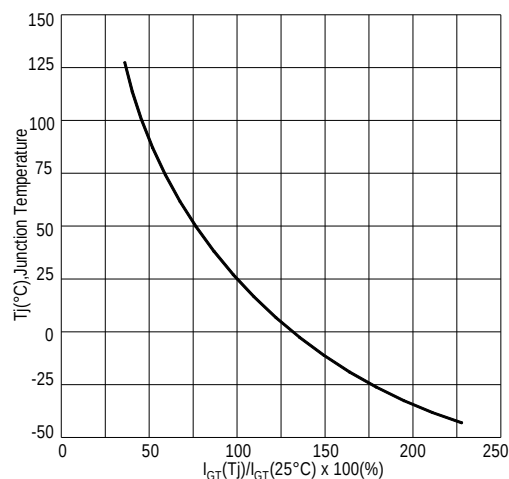


FIG.7: Holding current and Latching current VS Junction temperature

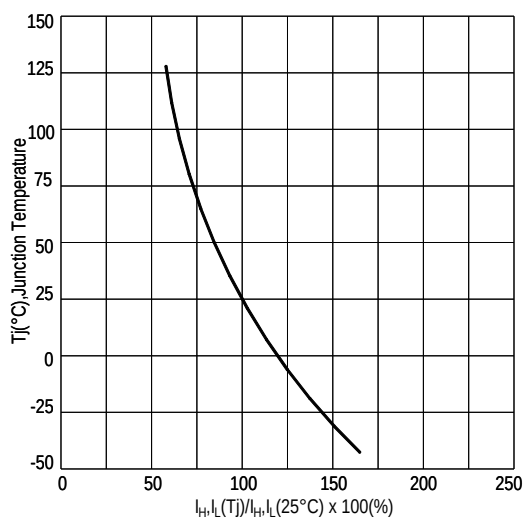


FIG.8: Gate trigger voltage VS Junction temperature

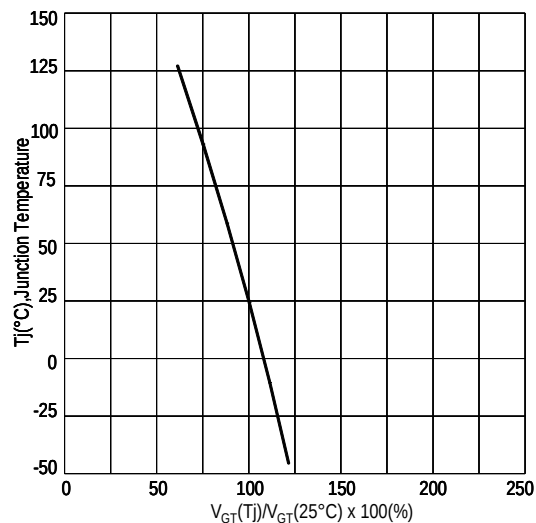
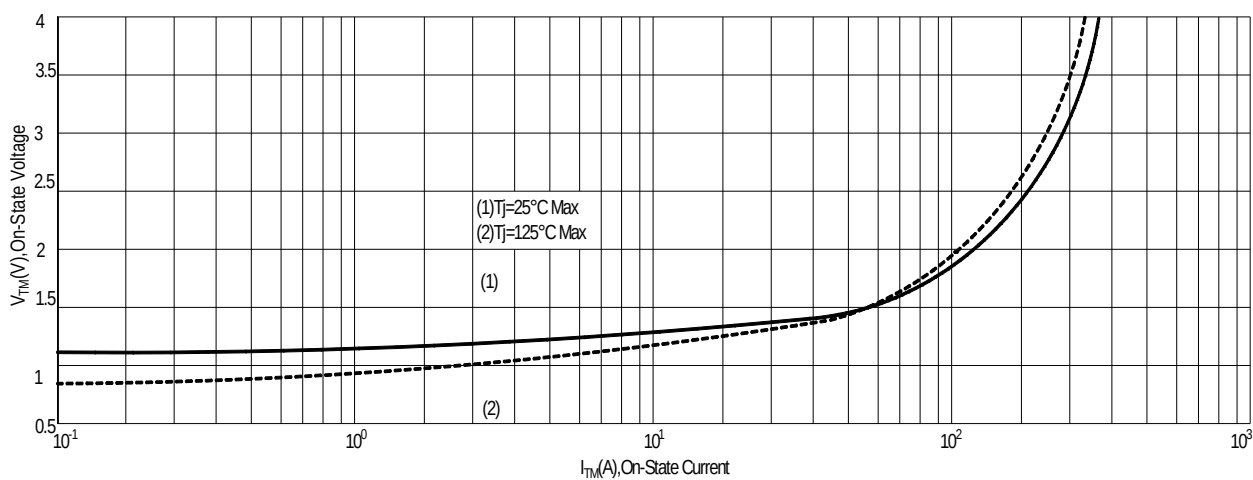
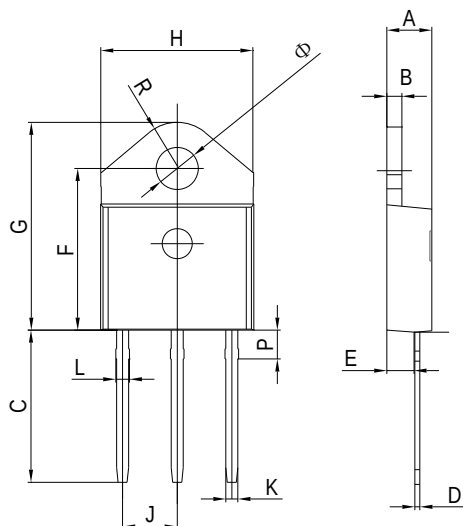


FIG.9: On-state characteristics(Max)



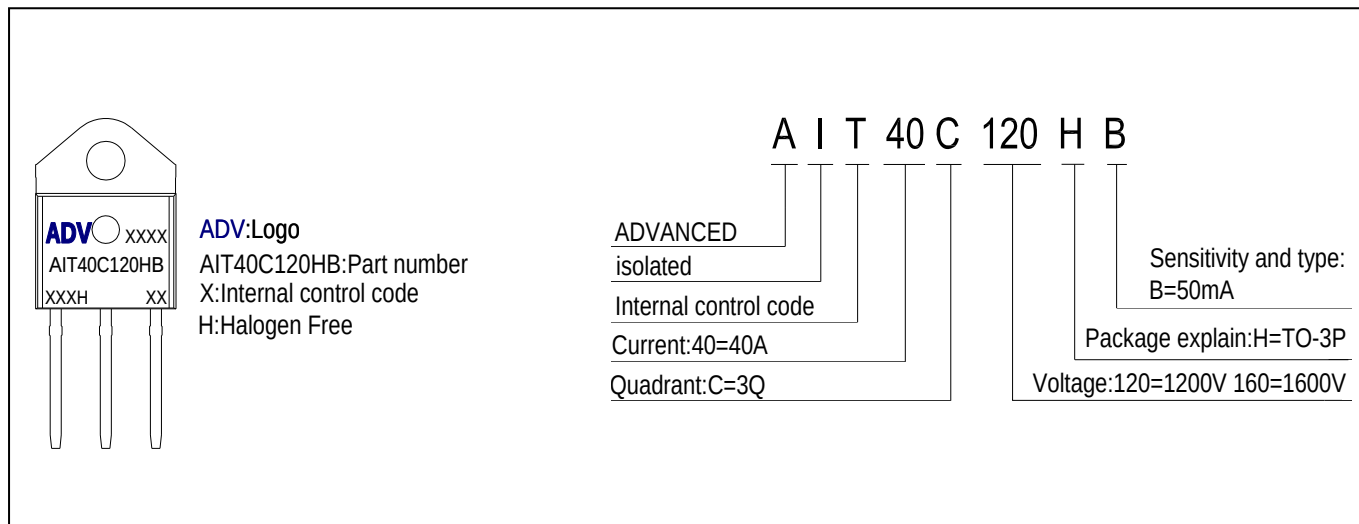
PACKAGE MECHANICAL DATA

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
AIT40C120HB	TO-3P isolated	AIT40C120HB	Tube	30pcs
AIT40C160HB	TO-3P isolated	AIT40C160HB	Tube	30pcs

Note: B = Gate Trigger Current Sensitivity and type

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