

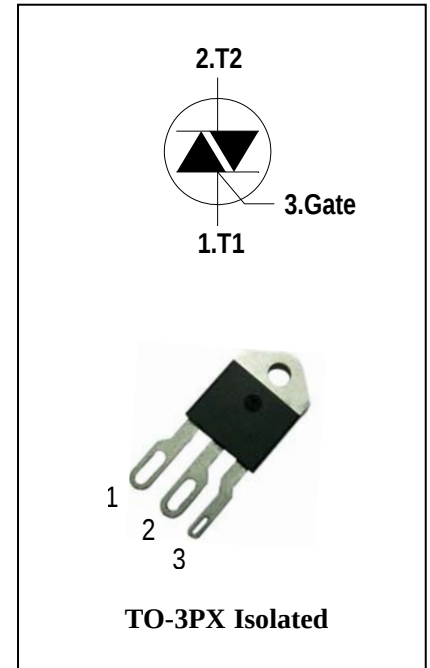
3 Quadrants Triacs

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	$T_j = 25^{\circ}C$	AIT40C120X	1200	V
			AIT40C160X	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		AIT40C120XB/160XB	Unit
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 = 125°C		5	mA
V _{TM}	Peak On-State Voltage		I _{TM} = 60A, t _p = 380 μs	Max.	1.55	V
V _{GD}	Q1-Q2-Q3	Non—Trigger Gate Voltage	V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C	Min.	0.2	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.	50	mA
I _H	Q1-Q2-Q3	Holding Current	I _T = 0.5A	Max.	75	mA
I _L	Q1-Q3	Latching Current	I _G = 1.2 I _{GT}	Max.	90	mA
	Q2				110	
dV/dt	Critical Rate of Rise of Off-State Voltage		V _D = 2/3V _{DRM} gate open T _j = 125°C	Min.	1500	V/μs
(dV/dt) _c	Critical Rate of Change of Commutating Voltage		(dI/dt) _c =-20A/ms T _j = 125°C	Min.	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

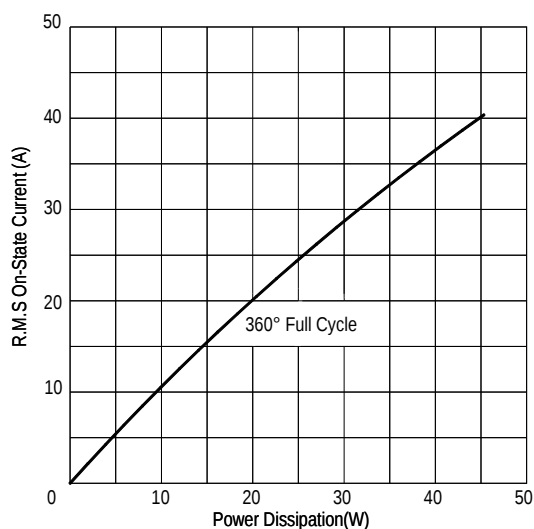


FIG.4: Maximum transient thermal impedance

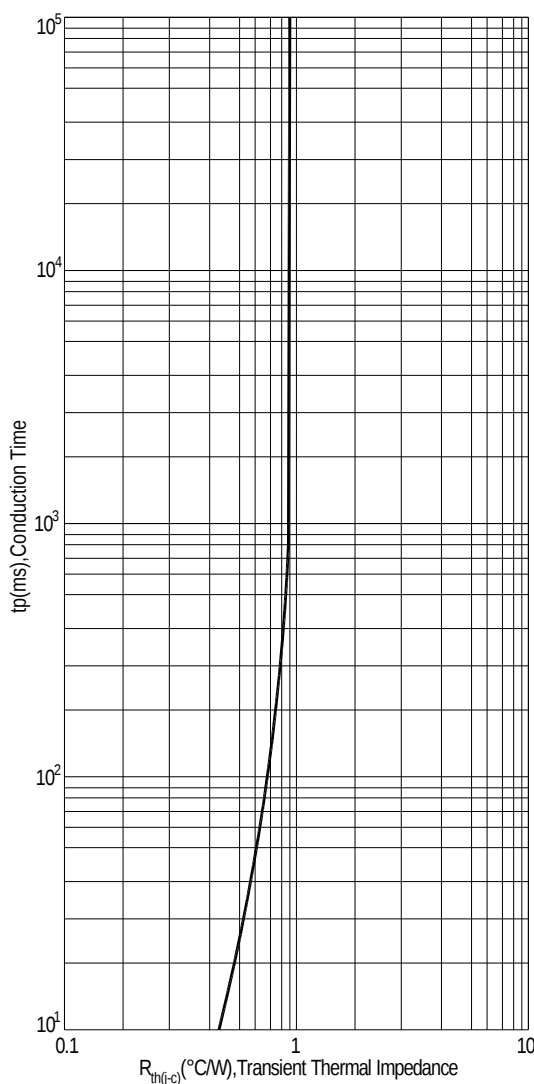


FIG.3: Typical RMS on-state current VS Allowable case Temperature

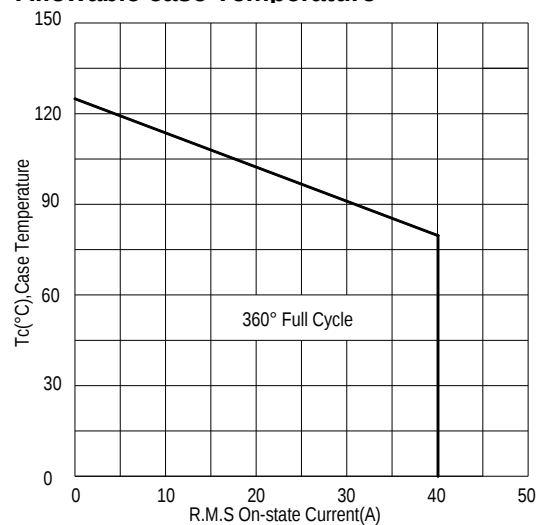


FIG.5: Rated surge on-state current (Non-Repetitive)

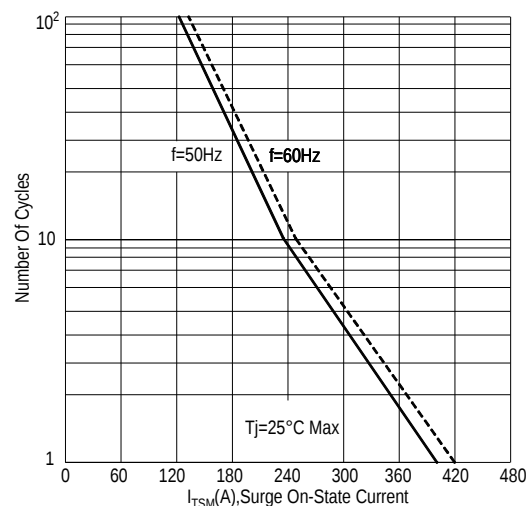


FIG.6: Gate trigger current VS Junction temperature

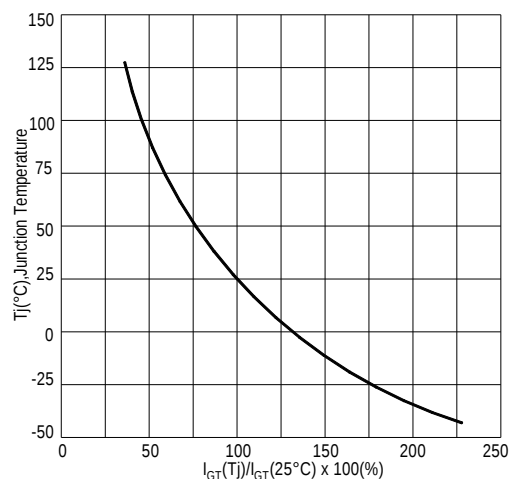


FIG.7: Holding current and Latching current VS Junction temperature

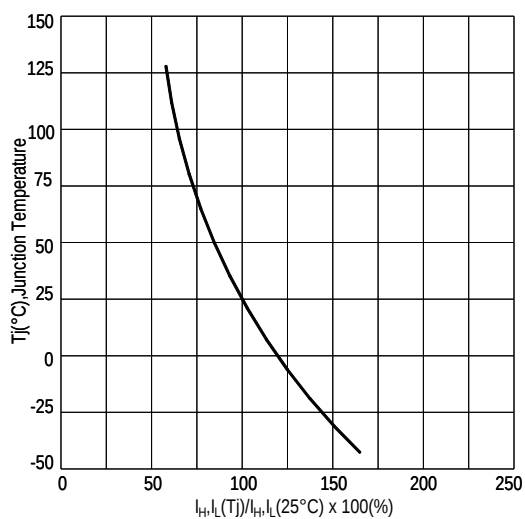


FIG.8: Gate trigger voltage VS Junction temperature

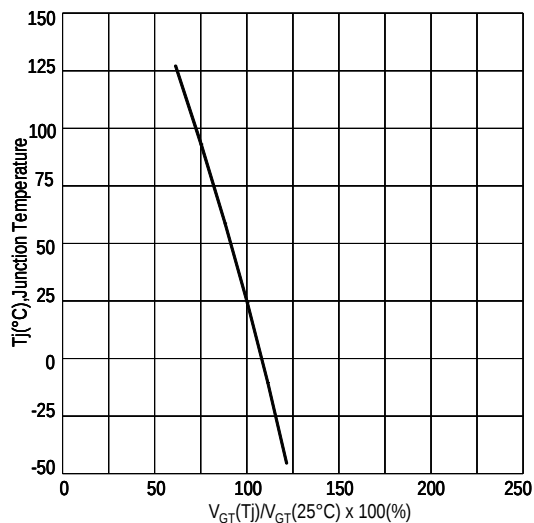
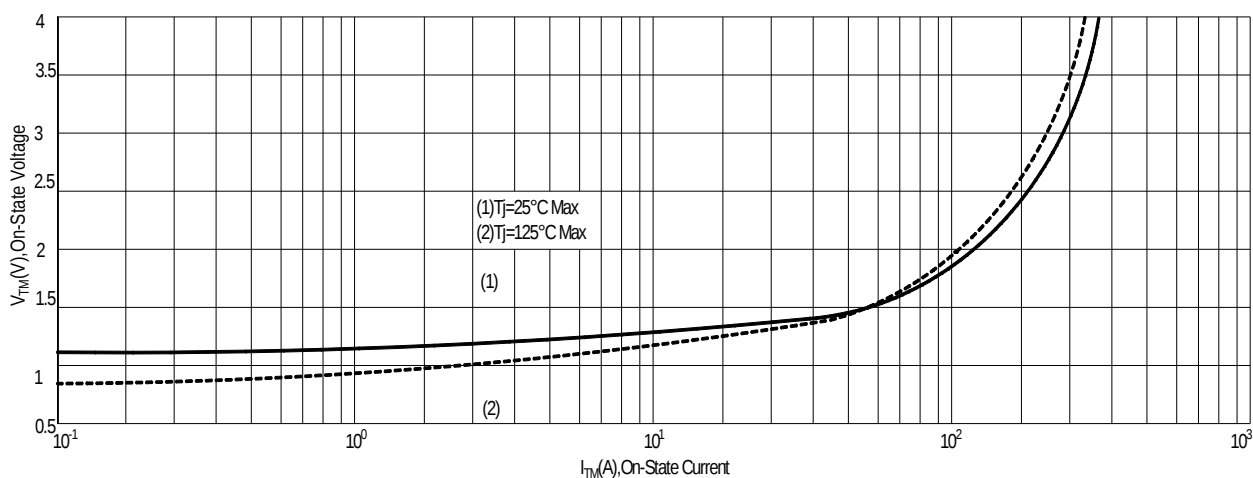
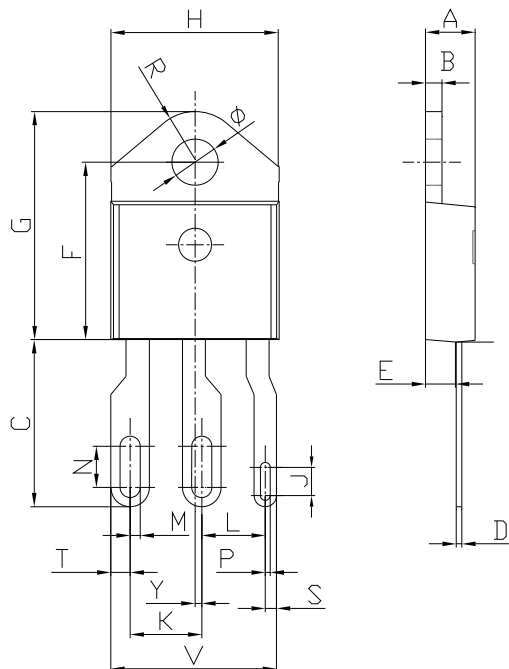


FIG.9: On-state characteristics(Max)



PACKAGE MECHANICAL DATA

TO-3PX(isolated) Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.40	4.60	0.173	0.181
B	1.45	1.55	0.057	0.061
C	14.35	15.60	0.565	0.614
D	0.50	0.70	0.020	0.028
E	2.70	2.90	0.106	0.114
F	15.80	16.50	0.622	0.650
G	20.40	21.10	0.815	0.831
H	15.10	15.50	0.594	0.610
J	2.87	3.07	0.113	0.121
K	6.50	6.71	0.256	0.264
Ø	4.08	4.20	0.161	0.165
L	5.58	5.79	0.220	0.228
P	0.43	0.53	0.017	0.020
N	4.29	4.49	0.169	0.177
M	1.015	1.12	0.040	0.044
T	1.98	2.11	0.078	0.083
Y	0.71	0.81	0.028	0.032
V	15.31	15.70	0.603	0.618
S	1.09	1.22	0.086	0.096
R	4.60 typ.		0.181 typ.	

Making Diagram

ADV:Logo
AIT40C120XB:Part number
X:Internal control code
H:Halogen Free

A I T 40 C 120 X B

ADVANCED
isolated
Internal control code
Current:40=40A
Quadrant:C=3Q

Sensitivity and type:
B=50mA
Package explain:X=TO-3PX
Voltage:120=1200V 160=1600V

Ordering information

Part number	Package	Marking	Packing	Quantity
AIT40C120XB	TO-3PX isolated	AIT40C120XB	Tube	30pcs
AIT40C160XB	TO-3PX isolated	AIT40C160XB	Tube	30pcs

Note:B = Gate Trigger Current Sensitivity and type

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