

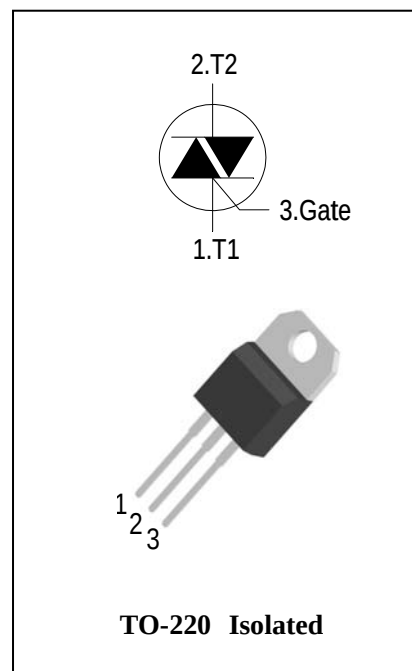
4 Quadrants Triacs

General Description

High current density due to mesa technology . the AIT4D 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, Rectifier-fed DC inductive loads e.g.DC motors and solenoids , motor speed controllers.

Features

- ◆ Repetitive Peak Off-State Voltage: 600Vand800V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 4A$)
- ◆ 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	$T_j = 25^{\circ}C$	AIT4D60	600	V
			AIT4D80	800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 105^{\circ}C$		4	A
I_{TSM}	Surge On-State Current	$t_p=20ms(50Hz)/t_p=16.7ms(60Hz)$		30/32	A
I^2t	I^2t for fusing	$t_p=10ms$		5.1	A^2s
di/dt	Critical rate of rise of on-state current	$F = 120\text{ Hz}$ $T_j = 125^{\circ}C$ $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$	Q1-Q2-Q3	50	$A/\mu s$
			Q4	10	
I_{GM}	Peak Gate Current	$t_p = 20\text{ }\mu s$ $T_j = 125^{\circ}C$		4	A
$P_{G(AV)}$	Average Gate Power Dissipation($T_j=125^{\circ}C$)			1	W
P_{GM}	Peak Gate Power Dissipation($t_p=20\mu s, T_j=125^{\circ}C$)			5	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		AIT4D60/80				Unit
					T	S	Blank	B	
I _{DRM}	Peak Forward Reverse Blocking Current		V _{DRM} = V _{RRM} , T _j = 25°C	Max.	5				uA
I _{RRM}			V _{DRM} = V _{RRM} , T _j = 125°C		1				mA
V _{TM}	Peak On-State Voltage		I _{TM} = 5.5A, t _p = 380 μs	Max.	1.6				V
V _{GD}	Q1-Q2-Q3-Q4	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-Q4	GateTrigger Voltage	V _D = 12V , R _L = 33Ω	Max.	1.3				V
I _{GT}	Q1-Q2-Q3	GateTrigger Current		Max.	5	10	35	50	mA
	Q4				10	25	70	100	
I _H	Q1-Q2-Q3-Q4	Holding Current	I _T = 0.1A	Max.	10	25	35	60	mA
I _L	Q1-Q3-Q4	Latching Current	I _G = 1.2 I _{GT}	Max.	15	30	40	60	mA
	Q2				20	40	60	90	
dV/dt	Critical Rate of Rise of Off-State Voltage		V _D = 2/3V _{DRM} gate open T _j = 125°C	Min.	5	10	50	200	V/μs
(dV/dt) _c	Rate of Change of Commutating Current,		(dI/dt) _c =-1.8A/ms T _j = 125°C	Min.	1	2	5	10	V/μs
R _{th(j-c)}	Junction to case (AC)			Max.	4.0				°C/W
R _{th(i-a)}	Junction to ambient			Max.	60				°C/W

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

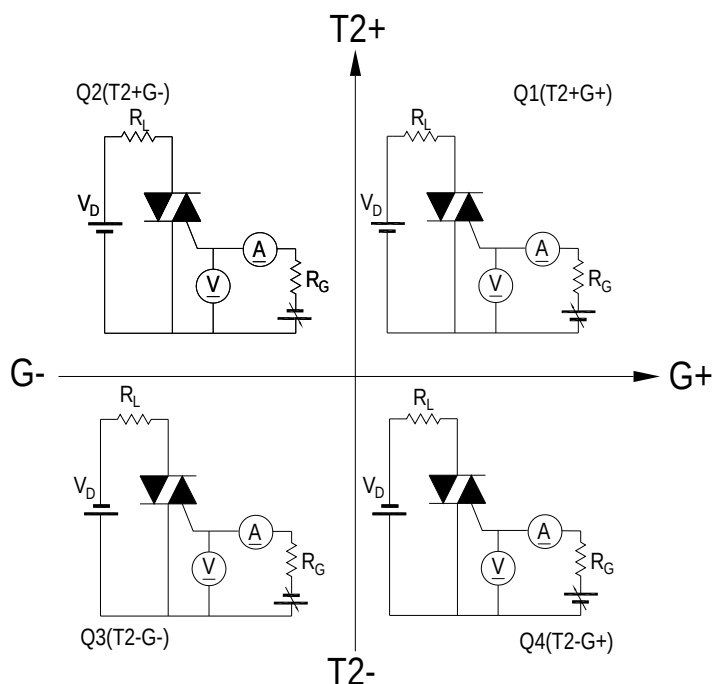


FIG.2: Maximum on-state power dissipation

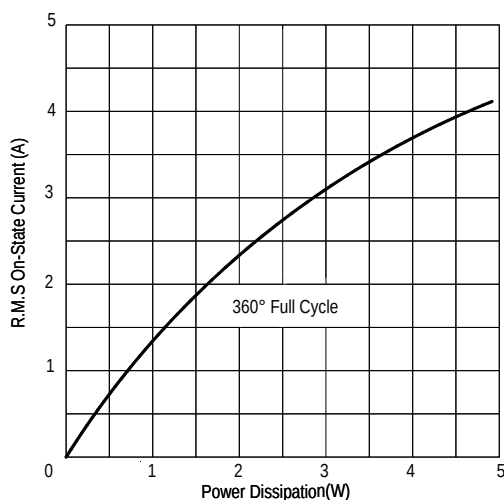


FIG.4: Maximum transient thermal impedance

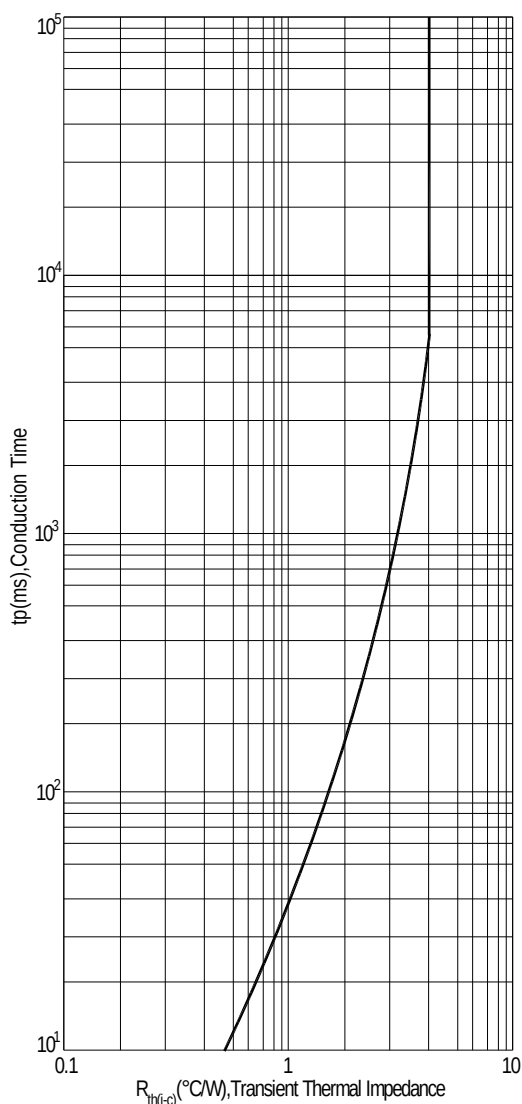


FIG.3: Typical RMS on-state current VS Allowable case Temperature

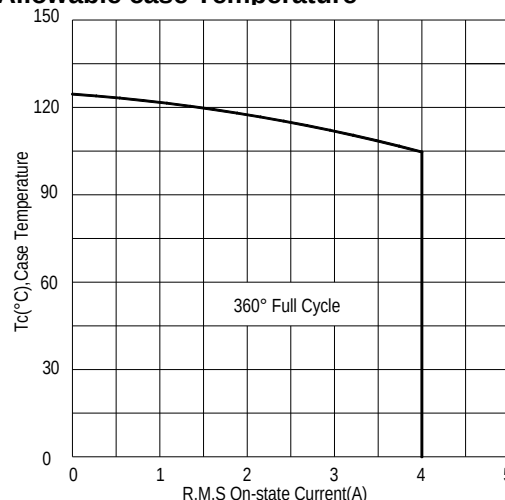


FIG.5: Rated surge on-state current (Non-Repetitive)

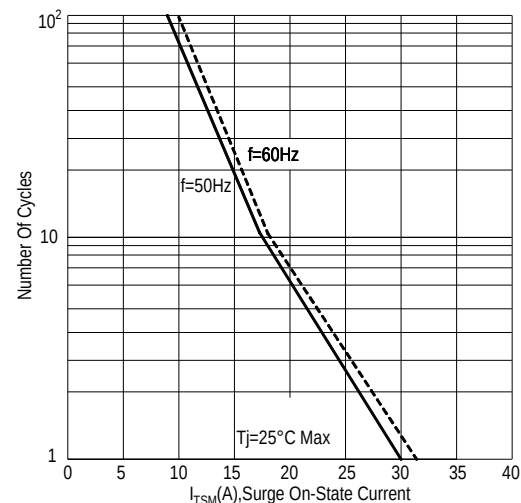


FIG.6: Gate trigger current VS Junction temperature

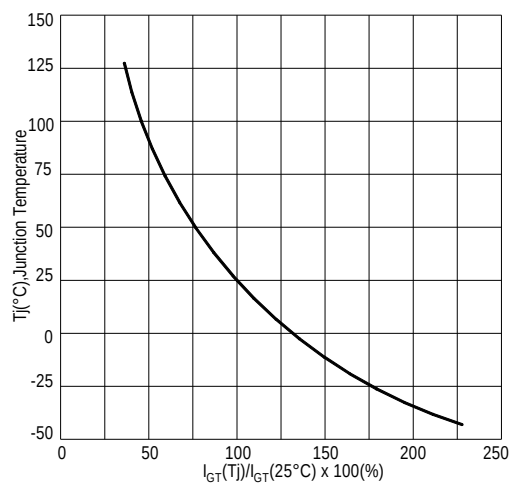


FIG.7:Holding current and Latching current VS Junction temperature

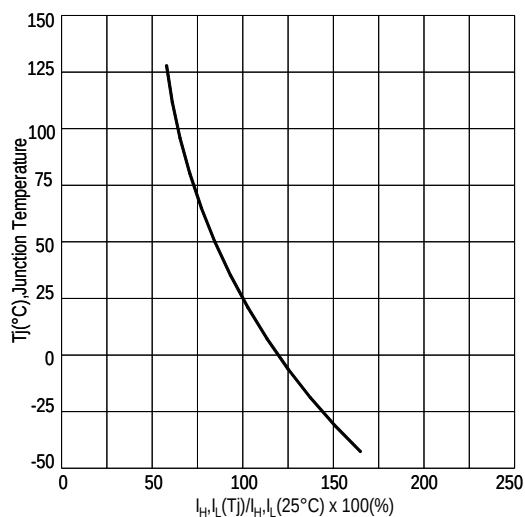


FIG.8: Gate trigger voltage VS Junction temperature

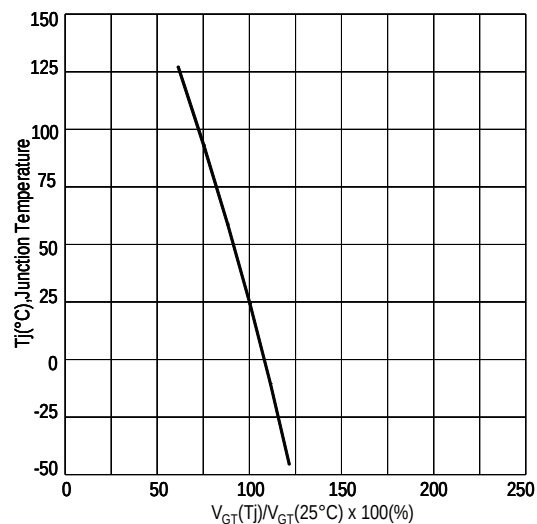
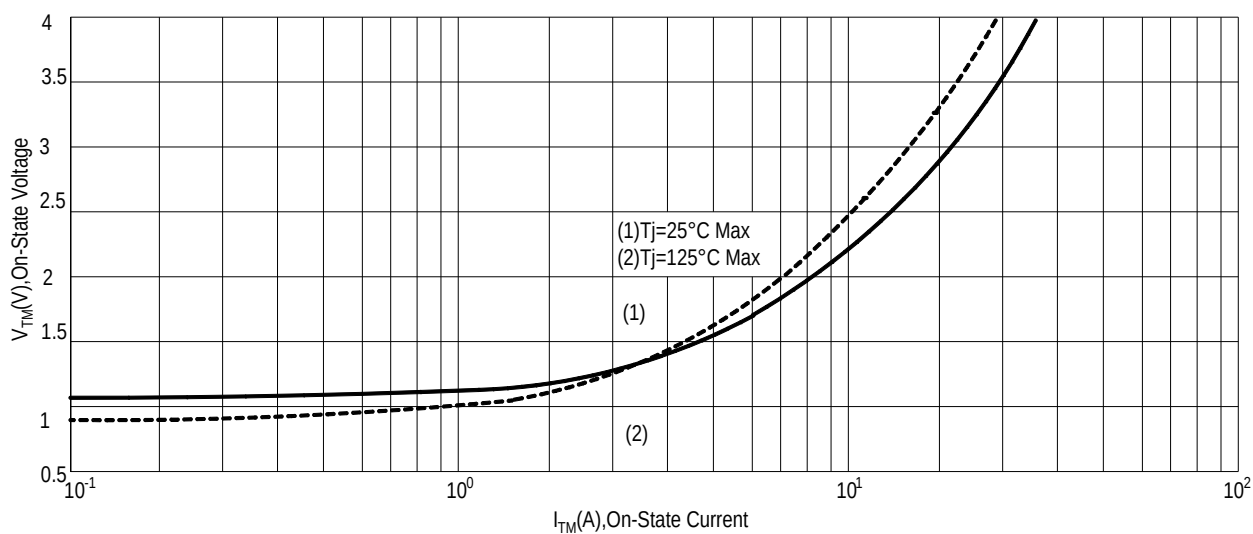
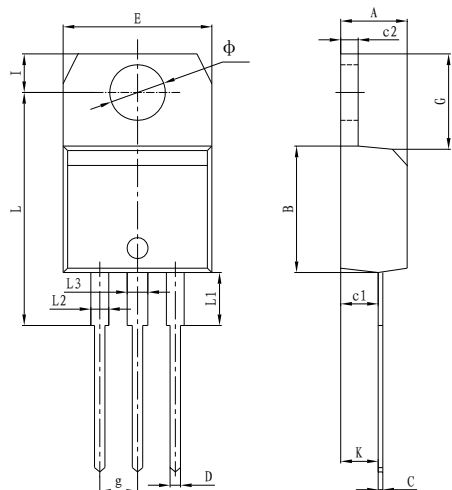


FIG.9: On-state characteristics(Max)



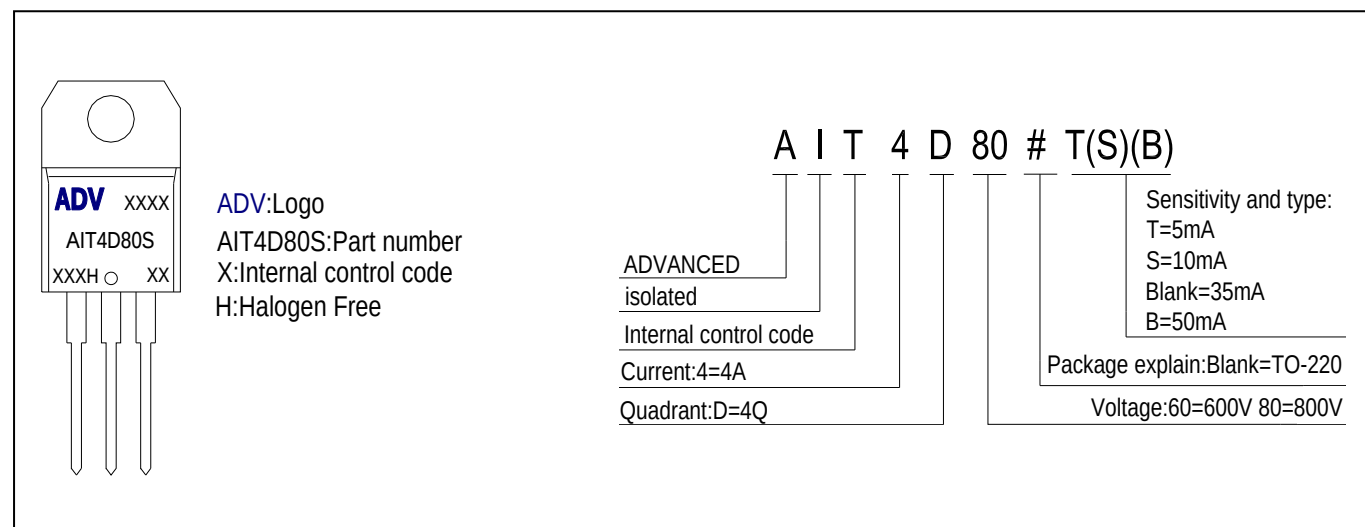
PACKAGE MECHANICAL DATA

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



Ordering information

Part number	Package	Marking	Packing	Quantity
AIT4D60#	TO-220 isolated	AIT4D60#	Tube	50pcs
AIT4D80#	TO-220 isolated	AIT4D80#	Tube	50pcs

Note: # = Gate Trigger Current Sensitivity and type

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