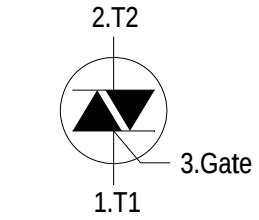
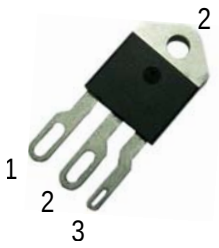
3 Quadrants Triacs

General Description

High current density due to mesa technology .the ADT40C 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.





TO-3PX

Features

- ◆ Repetitive Peak Off-State Voltage: 1200Vand1600V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 40A)
- ◆ High Commutation dv/dt
- ◆ These Devices are Pb-Free and are RoHS Compliant

Absolute Maximum Ratings

Symbol	Items	Conditions		Ratings	Unit
V_{DRM}	Repetitive Peak Off-State Voltage	Tj = 25°C	ADT40C120X	1200	V
V_{RRM}			ADT40C160X	1600	V
$I_{T(RMS)}$	R.M.S On-State Current	T_C = 95°C		40	A
I_{TSM}	Surge On-State Current	tp=20ms(50Hz)/tp=16.7ms(60Hz)		400/420	A
I^2t	I^2t for fusing	tp=10ms		880	A^2s
dI/dt	Critical rate of rise of on-state current	F = 120 Hz Tj = 125°C I_G = 2 x I_{GT} , tr ≤ 100 ns		55	A/μs
I_{GM}	Peak Gate Current	tp = 20 μs Tj = 125°C		8	A
$P_{G(AV)}$	Average Gate Power Dissipation(Tj=125°C)			1	W
P_{GM}	Peak Gate Power Dissipation(tp=20us,Tj=125°C)			10	W
T_j	Operating Junction Temperature			- 40 ~ 125	°C
T_{STG}	Storage Temperature			- 40 ~ 150	°C

ADV

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Electrical Characteristics(T_j = 25°C unless otherwise specified)

Symbol	Items		Conditions		ADT40C120XB/160XB	Unit
I_{DRM}	Peak Forward Reverse Blocking Current		V_{DRM} = V_{RRM}, Tj = 25°C	Max.	5	uA
I_{RRM}			V_{DRM} = V_{RRM}, Tj = 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 Tj = 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 Tj = 125°C	Min.	1500	V/μs
(dV/dt)c	Critical Rate of Change of Commutating Voltage		(dI/dt)c=-20A/ms Tj = 125°C	Min.	20	V/μs
$R_{th(j-c)}$	Junction to case (AC)			Max.	0.6	°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

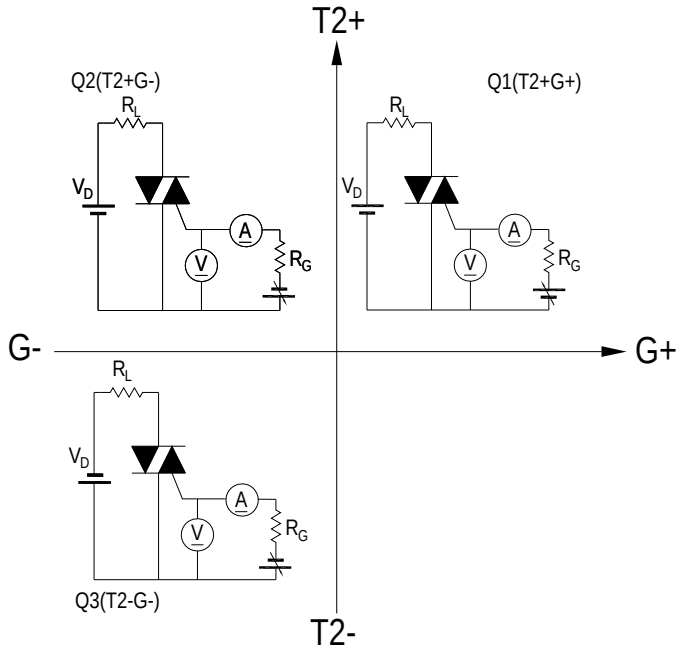


FIG.2: Maximum on-state power dissipation

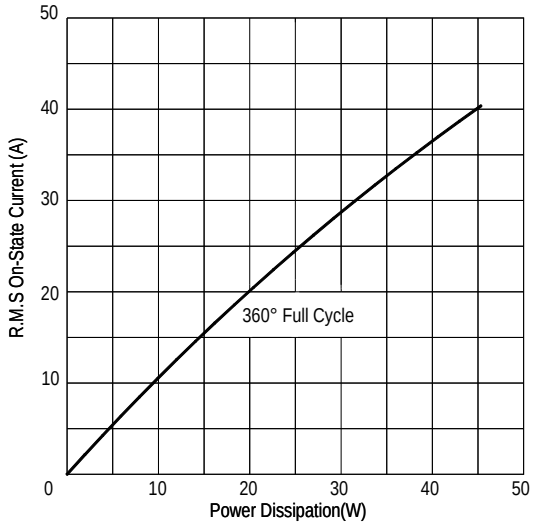


FIG.3: Typical RMS on-state current VS Allowable case Temperature

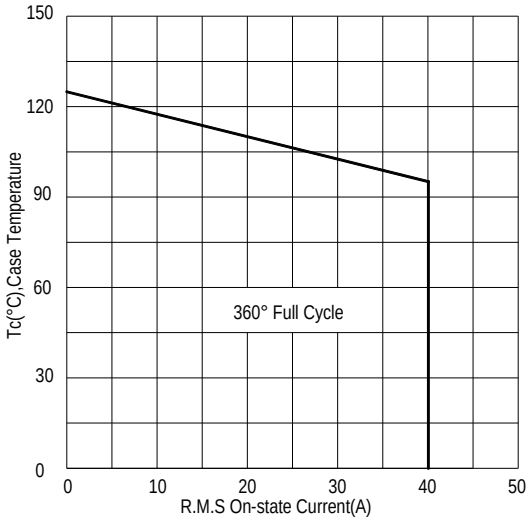


FIG.4: Maximum transient thermal impedance

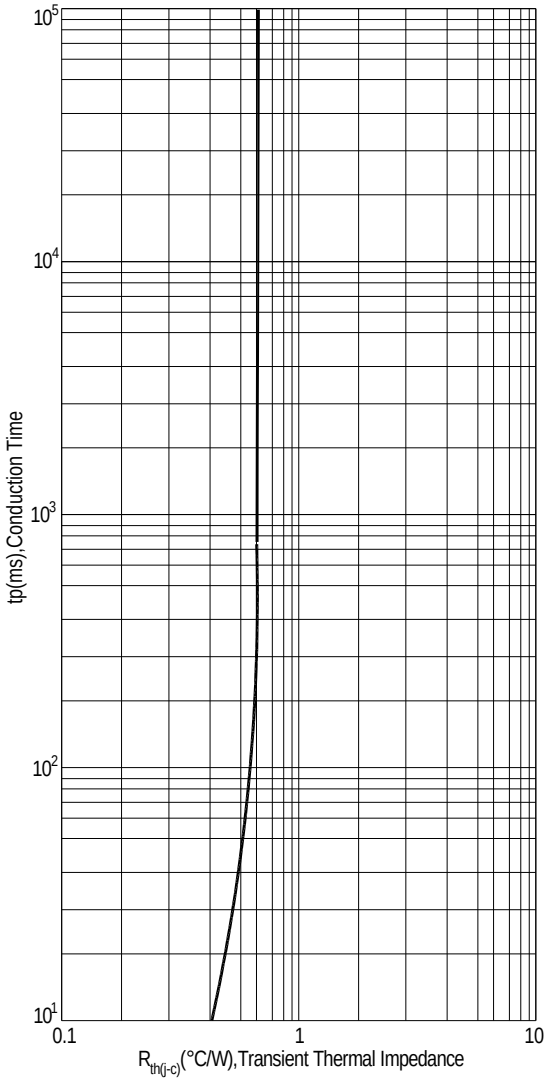


FIG.5: Rated surge on-state current (Non-Repetitive)

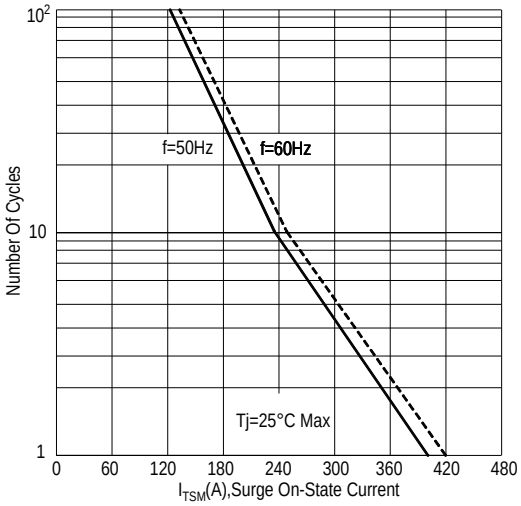


FIG.6: Gate trigger current VS Junction temperature

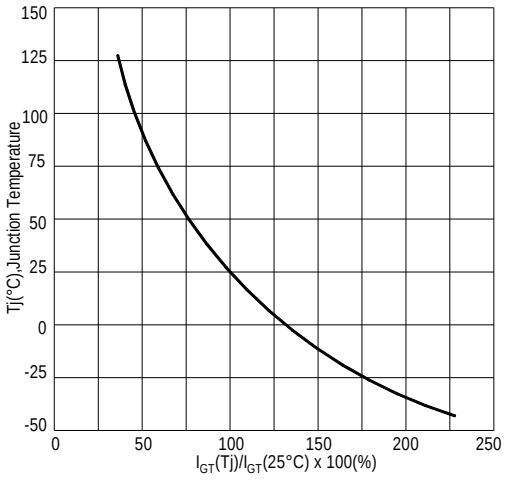


FIG.7:Holding current and Latching current VS Junction temperature

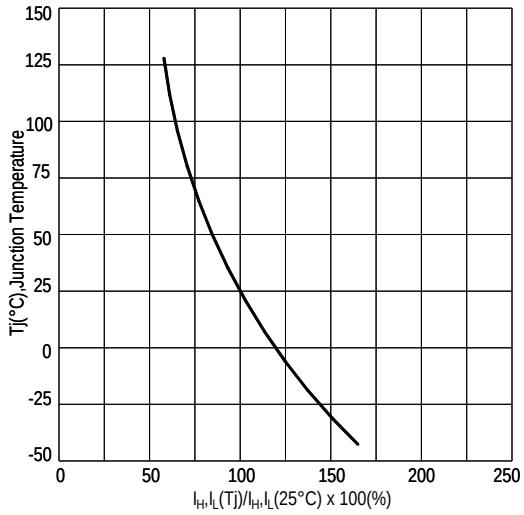


FIG.8: Gate trigger voltage VS Junction temperature

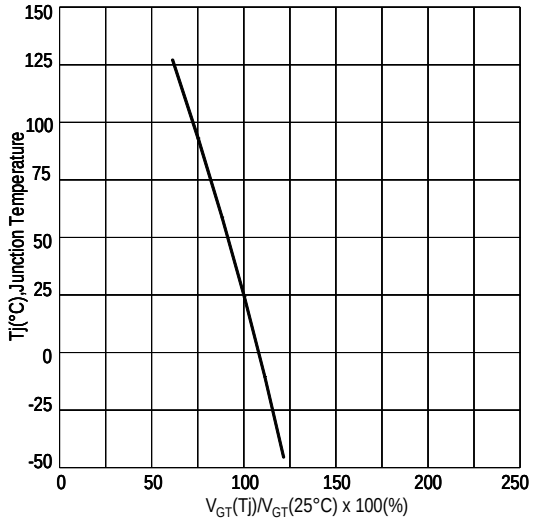
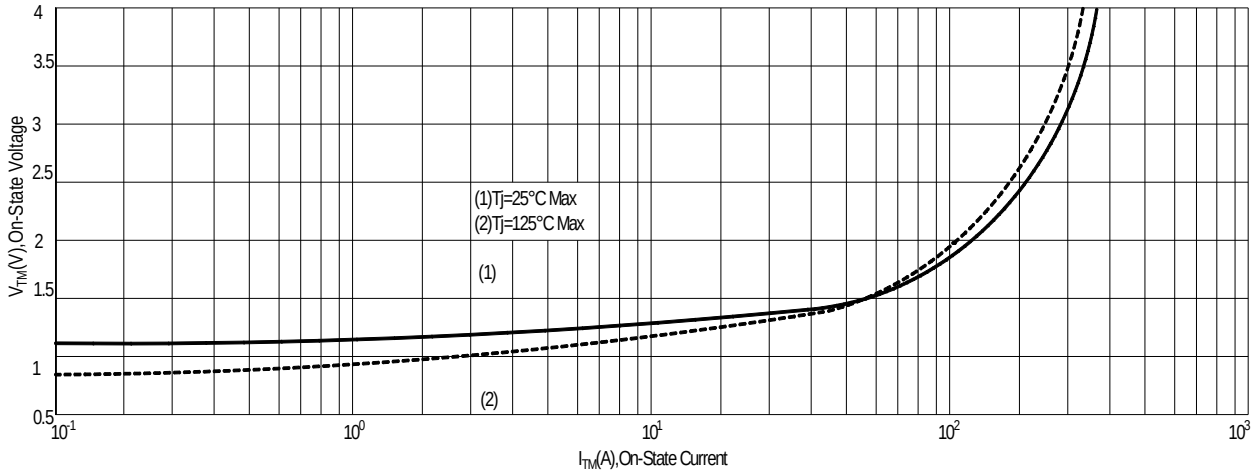
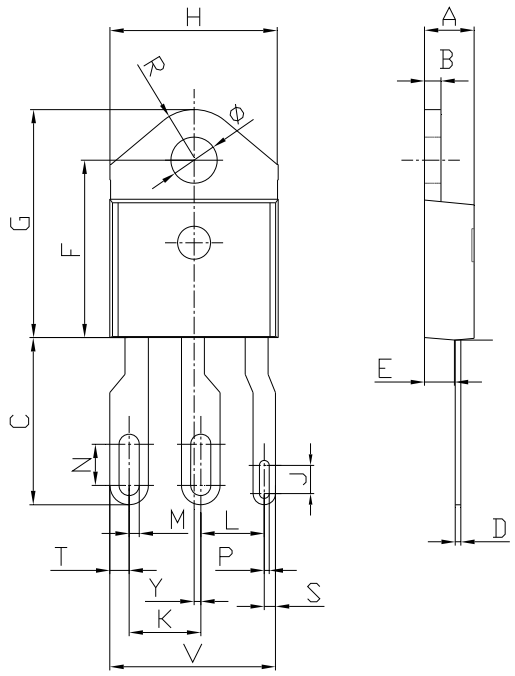


FIG.9: On-state characteristics(Max)



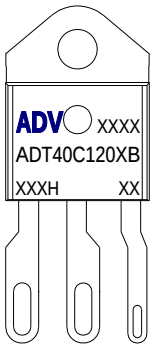
PACKAGE MECHANICAL DATA

TO-3PX 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
ADT40C120XB:Part number
X:Internal control code
H:Halogen Free

AD T 40 C 120 X B

ADVANCED
Internal control code
Current:40=40A
Quadrant:C=3Q
Voltage:120=1200V 160=1600V
Sensitivity and type: B=50mA
Package explain:X=TO-3PX

Ordering information

Part number	Package	Marking	Packing	Quantity
ADT40C120XB	TO-3PX	ADT40C120XB	Tube	30pcs
ADT40C160XB	TO-3PX	ADT40C160XB	Tube	30pcs
Note:B = Gate Trigger Current Sensitivity and type				

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