



CTB40

400/600/800V - TRIAC

Applications

- Phase Control
- Static Switching
- Light Dimming
- Motor Speed Control
- Kitchen Equipment
- Power Tools
- Solenoid Valve Controls:
 - Dishwashers
 - Washing Machines

- > **400A Surge**
- > **Suitable for General Purpose AC Switching**
- > **IGT 50mA**
- > **VDRM/VRMM 400, 600, 800V**

Absolute Maximum Ratings

	CONDITIONS	SYMBOL	RATING
RMS On-State Current (full sine wave)	$T_c = 90^\circ\text{C}$	IT(RMS)	40A
Non Repetitive Surge Peak On-State Current (Full Cycle, T_j Initial = 25°C)	F = 50 Hz F = 60 Hz	I_{TSM}	380A 400A
I^2t Value for fusing	$t_p = 10\text{ ms}$	I^2t	660 A^2s
Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r < 100\text{ ns}$, $T_j = 125^\circ\text{C}$		di/dt	100A/ μsec
Peak Gate Current @ $T_j = 125^\circ\text{C}$	$t_p = 20\text{ }\mu\text{s}$	I_{GM}	4A
Average Gate Power Dissipation @ $T_j = 125^\circ\text{C}$		PG(AV)	1W
Storage Temperature Range		T_{stg}	$-40\text{ to }+150^\circ\text{C}$
Operating Junction Temperature Range		T_j	$-40\text{ to }+125^\circ\text{C}$

Electrical Characteristics

STANDARD (4 Quadrants)

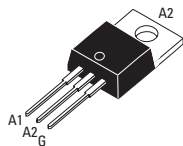
		"B"
$I_{GT}\text{ MAX @ }V_D = 12\text{ V, }R_L = 30\Omega$ ^{NOTE 1}	QI-II-III	50mA
$I_{GT}\text{ MAX @ }V_D = 12\text{ V, }R_L = 30\Omega$ ^{NOTE 1}	QIV	100 mA
$V_{GT}\text{ MAX @ }V_D = 12\text{ V, }R_L = 30\Omega$	Q-AII	1.3V
$V_{GD}\text{ MIN @ }V_D = V_{DRM}, R_L = 3.3k\Omega$	Q-AII	0.2 V
$I_H\text{ MAX @ }I_T = 500\text{ mA}$ ^{NOTE 2}		75mA
$I_L\text{ MAX @ }I_G = 1.2 I_{GT}$	QI-III-IV	75mA
$I_L\text{ MAX @ }I_G = 1.2 I_{GT}$	Q-II	100mA
$dv/dt\text{ MIN @ }V_D = 67\%V_{DRM}\text{ (gate open)}$ ^{NOTE 2}	$T_j = 125^\circ\text{C}$	500V/ μsec
$(dv/dt)_c\text{ MIN @ } (di/dt)_c = 13.3\text{ A/ms}$ ^{NOTE 2}	$T_j = 125^\circ\text{C}$	10V/ μsec

Static Characteristics

$V_T\text{ MAX @ }I_{TM} = 56\text{ A, }t_p = 380\mu\text{s}$ ^{NOTE 2}	$T_j = 25^\circ\text{C}$	1.6 V
$V_{to}\text{ MAX @ Threshold Voltage}$ ^{NOTE 2}	$T_j = 125^\circ\text{C}$	0.85 V
$R_d\text{ MAX @ Dynamic Resistance}$ ^{NOTE 2}	$T_j = 125^\circ\text{C}$	16 m Ω
$I_{DRM}\text{ MAX @ }V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	5 μA
$I_{RRM}\text{ MAX @ }V_{DRM} = V_{RRM}$	$T_j = 125^\circ\text{C}$	3 mA

GENERAL NOTES

1. Minimum IGT is guaranteed at 5% of IGT max.
2. For both polarities of A2 referenced to A1
3. All parameters at 25 degrees C unless otherwise specified.



TO-220AB Non-Isolated (CTB40)

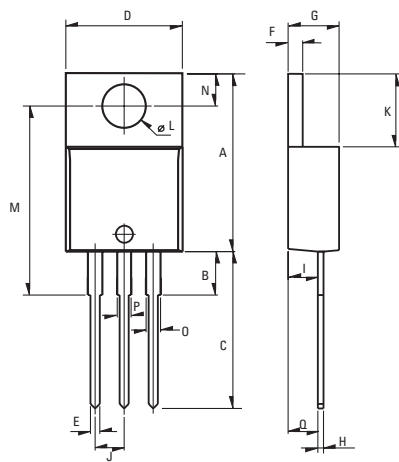


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Thermal Resistances

		SYMBOL	RATING
Junction to Case (AC)	TO-220AB	$R_{th(j-c)}$	0.8°C/W
Junction to Ambient	TO-220AB	$R_{th(j-a)}$	60°C/W

Part Number Designation



Weight: 2.3g (0.08 oz)

Dimensions

REF.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.24		15.75	0.6		0.62
B		3.23			0.127	
C	12.78		13.79	0.503		0.543
D	9.96		10.36	0.392		0.408
E	0.69		0.94	0.027		0.037
F	1.22		1.32	0.048		0.052
G	4.62		4.83	0.182		0.19
H	0.46		0.61	0.018		0.024
I	2.49		2.84	0.098		0.112
J	2.39		2.69	0.094		0.106
K	6.48		6.88	0.255		0.271
L	3.78		3.89	0.149		0.153
M	15.49	16	16.51	0.61	0.63	0.65
N	2.59		2.9	0.102		0.114
O	0.99		1.55	0.039		0.061
P	0.99		1.55	0.039		0.061
Q		2.67			0.105	

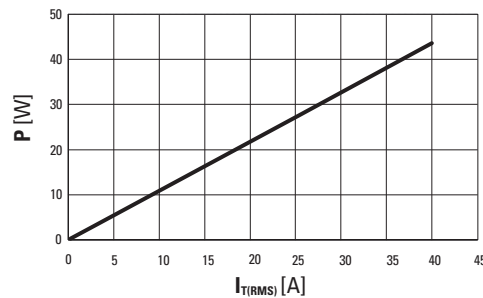
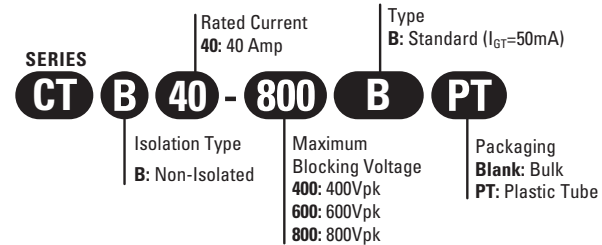


Fig. 1: Power dissipation versus RMS on-state current (full cycle).

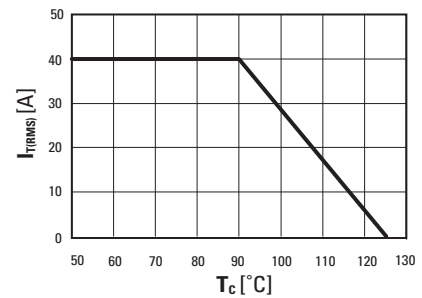


Fig. 2: RMS on-state current versus case temperature (full cycle)

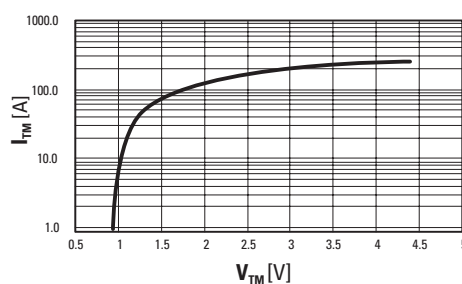


Fig. 3: On-state current versus on-state voltage (instantaneous values)

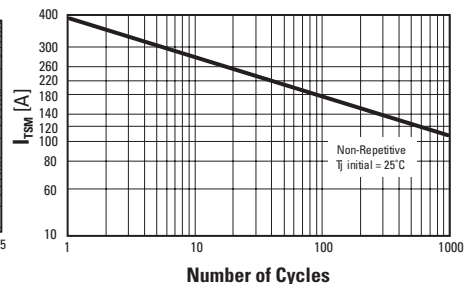


Fig. 4: Non-repetitive surge peak on-state current versus number of cycles.

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