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C3 Semiconductor, LLC

Applications

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

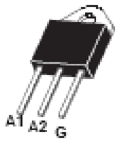
> ***Suitable for General Purpose AC Switching***
> ***400A Surge***
> ***IGT = 50 mA***
> ***V_{DRM}/V_{RMM} 400, 600, 800V***

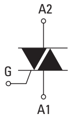
CTA/CTB41

40Amp - 400/600/800V - ***TRIAC***

Absolute Maximum Ratings

		CONDITIONS	SYMBOL	RATING
RMS On-State Current (full sine wave)	Tc = 80°C Tc = 95°C	TO-218 TO-218 Iso	$I_{T(RMS)}$	40A
Non Repetitive Surge Peak On-State Current (Full Cycle, Tj Initial = 25°C)		F =50 Hz F =60 Hz	I_{TSM}	400A 420A
I^2t Value for fusing		tp = 10 ms	I^2t	880A^{2}s
Critical rate of rise of on-state current I_G=2 x I_{GT}, tr<100 ns, Tj = 125°C			di/dt	100A/µs
Peak Gate Current @ Tj = 125°C		tp = 20 µs	I_{GM}	4A
Average Gate Power Dissipation @ Tj = 125°C			$P_{G(AV)}$	1W
Storage Temperature Range			Tstg	-40 to +150°C
Operating Junction Temperature Range			Tj	-40 to +125°C
Isolation Voltage (CTA Series only)			V_{ISO}	2500 V_{RMS}





Electrical Characteristics

ALTERNISTOR/NO SNUBBER AND LOGIC LEVEL (3 Quadrants)			**BW**
I_{GT} MAX @ V_D =12 V, R_L = 30Ω $^{\text{NOTE 1}}$		QI-II-III	50mA
V_{GT} MAX @ V_D =12 V, R_L = 30Ω		QI-II-III	1.3V
V_{GD} MIN @ V_D =V_{DRM}, R_L = 3.3kΩ	Tj = 125°C	QI-II-III	0.2V
I_H MAX @ I_T = 500 mA $^{\text{NOTE 2}}$			75mA
I_L MAX @ I_G = 1.2 I_{GT}		QI-III	70mA
I_L MAX @ I_G = 1.2 I_{GT}		Q-II	100mA
dv/dt MIN @ V_D = 67%V_{DRM} (gate open) $^{\text{NOTE 2}}$	Tj = 125°C		1000V/µs
(di/dt)c MIN without Snubber $^{\text{NOTE 2 \& 4}}$	Tj = 125°C		22A/ms
STANDARD (4 Quadrants)			**B**
I_{GT} MAX @ V_D =12 V, R_L = 30Ω $^{\text{NOTE 1}}$		QI-II-III	50mA
I_{GT} MAX @ V_D =12 V, R_L = 30Ω $^{\text{NOTE 1}}$		QIV	100mA
V_{GT} MAX @ V_D =12 V, R_L = 30Ω		Q-All	1.3V
V_{GD} MIN @ V_D =V_{DRM}, R_L = 3.3kΩ	Tj = 125°C	Q-All	0.2V
I_H MAX @ I_T = 100 mA $^{\text{NOTE 2}}$			75mA
I_L MAX @ I_G = 1.2 I_{GT}		QI-III-IV	75mA
I_L MAX @ I_G = 1.2 I_{GT}		Q-II	160mA
dv/dt MIN @ V_D = 67%V_{DRM} (gate open) $^{\text{NOTE 2}}$	Tj = 125°C		500V/µs
(dv/dt)c MIN @ (di/dt)c = 13.3 A/ms $^{\text{NOTE 2}}$	Tj = 125°C		10V/µs

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GENERAL NOTES

1. Minimum IGT is guaranted at 5% of IGT max.
2. For both polarities of A2 referenced to A1
3. All parameters at 25 degrees C unless otherwise specified.
4. Commutating dv/dt = 50V/µs, (exponential to 200 Vpk)

C3 Semiconductor, LLC

CTA/CTB41

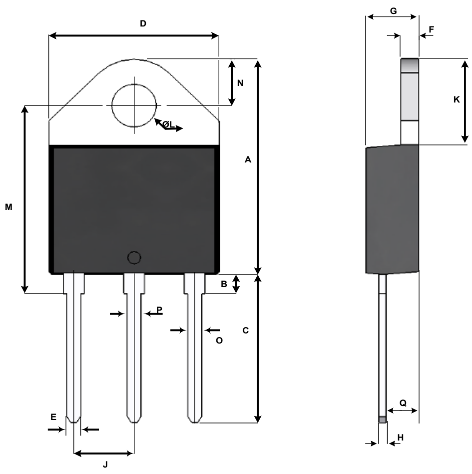
40Amp - 400/600/800/1000V - TRIAC

Static Characteristics

V_T MAX @ I_{TM} = 35 A, tp = 380µs NOTE 2	Tj = 25°C	1.55V
V_{to} MAX @ Threshold Voltage NOTE 2	Tj = 125°C	0.85V
R_d MAX @ Dynamic Resistance NOTE 2	Tj = 125°C	16mΩ
I_{DRM} MAX @ $V_{DRM} = V_{RRM}$	Tj = 25°C	5µA
I_{RRM} MAX @ $V_{DRM} = V_{RRM}$	Tj = 125°C	3mA

Thermal Resistances

		SYMBOL	RATING
Junction to Case (AC)	TO-218	Rth(j-c)	0.8°C/W
Junction to Case (AC)	TO-218 Isolated	Rth(j-c)	1.1°C/W
Junction to Ambient	TO-218	Rth(j-a)	50°C/W
Junction to Ambient	TO-218 Isolated	Rth(j-a)	50°C/W



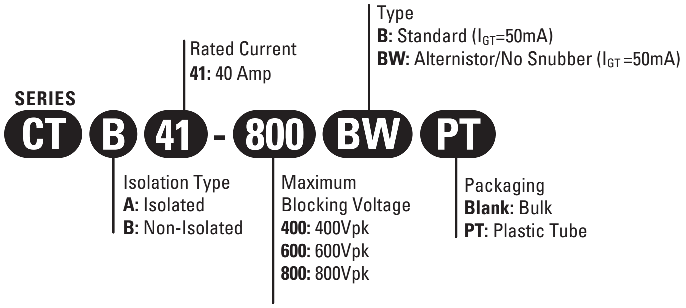
Dimensions

REF.	Millimeters Min.	Typ.	Max.	Inches Min.	Typ.	Max.
A	20.4		21.1	0.8		0.831
B		3.23			0.127	
C	14.35		15.60	0.565		0.614
D	15.1		15.5	0.594		0.610
E	1.20		1.40	0.047		0.055
F	1.45		1.55	0.057		0.061
G	4.4		4.6	0.173		0.181
H	0.5		0.7	0.020		0.028
J	5.4		5.65	0.213		0.222
K	8.0		8.25	0.315		0.325
L	4.08		4.17	0.161		0.164
M	15.8		16.5	0.622		0.650
N	4.6		4.8	0.181		0.189
O	1.20		1.40	0.047		0.055
P	1.20		1.40	0.047		0.055
Q	2.7		2.9	0.106		0.114

Part Number Selection

Part Number	Voltage [Vpk]	IGT [mA]	Type	Package
CTA/CTB41-xxxB	400, 600, 800	50mA	Standard	TO-218
CTA/CTB41-xxxBW	400, 600, 800	50mA	Alternistor/No Snubber	TO-218

Part Number Designation



Rated Current
41: 40 Amp

Type
B: Standard (I_{GT}=50mA)
BW: Alternistor/No Snubber (I_{GT}=50mA)

Isolation Type
A: Isolated
B: Non-Isolated

Maximum Blocking Voltage
400: 400Vpk
600: 600Vpk
800: 800Vpk

Packaging
Blank: Bulk
PT: Plastic Tube

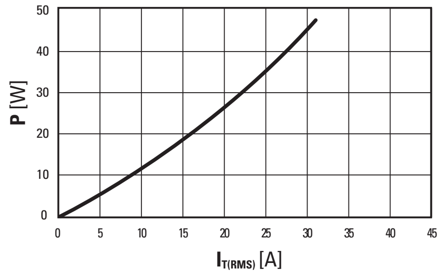


Fig. 1: Power dissipation versus RMS on-state current (full cycle).

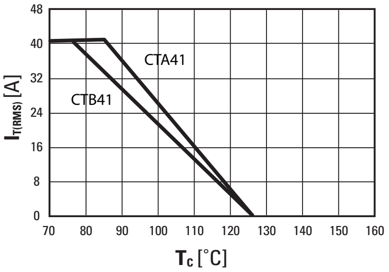


Fig. 2: RMS on-state current versus case temperature (full cycle)

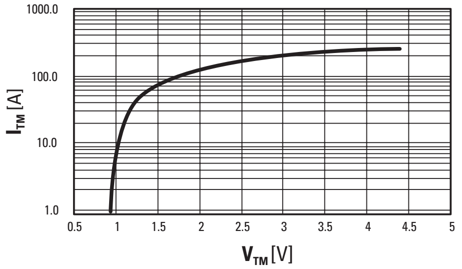


Fig. 3: On-state current versus on-state voltage (instantaneous values)

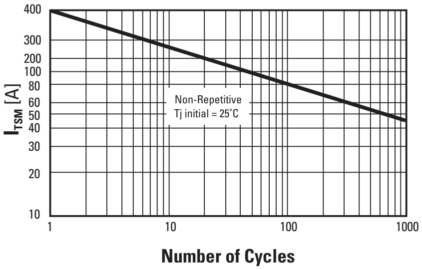


Fig. 4: Non-repetitive surge peak on-state current versus number of cycles.

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Approvals

UL - E72445