C3 Semiconductor, LLC

CTA/CTB24

25Amp - 400/600/800/1000V - TRIAC

Applications

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

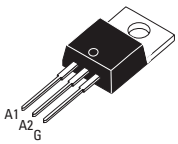
> **Suitable for General Purpose AC Switching**

> **Alternistor/No Snubber Versions for Inductive Loads**

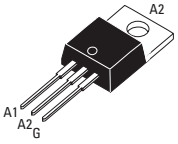
> **Logic Level Available for use with Microcontrollers and Low Level Devices**

> **IGT Range 35-50 mA (Q1)**

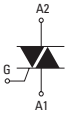
> **V_{DRM}/V_{RMM} 400, 600, 800, 1000V**



TO-220AB Isolated
(CTA24)



TO-220AB Non-Isolated
(CTB24)



Absolute Maximum Ratings

		CONDITIONS	SYMBOL	RATING
RMS On-State Current (full sine wave)	Tc = 100°C Tc = 75°C	TO-220AB TO-220AB Iso	$I_{T(RMS)}$	25A
Non Repetitive Surge Peak On-State Current (Full Cycle, Tj Initial = 25°C)		F =50 Hz F =60 Hz	I_{TSM}	250A 260A
I^2t Value for fusing		tp = 10 ms	I^2t	$340A^2s$
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)			CW	BW
I_{GT} MAX @ V_D =12 V, R_L = 30Ω NOTE 1		QI-II-III	35mA	50mA
V_{GT} MAX @ V_D =12 V, R_L = 30Ω		QI-II-III	1.3V	1.3V
V_{GD} MIN @ V_D =V_{DRM}, R_L = 3.3kΩ	Tj = 125°C	QI-II-III	0.2V	0.2V
I_H MAX @ I_T = 500 mA NOTE 2			50mA	75mA
I_L MAX @ I_G = 1.2 I_{GT}		QI-III	50mA	70mA
I_L MAX @ I_G = 1.2 I_{GT}		Q-II	80mA	100mA
dv/dt MIN @ V_D = 67%V_{DRM} (gate open) NOTE 2	Tj = 125°C		500V/µs	1000V/µs
(di/dt)c MIN without Snubber NOTE 2	Tj = 125°C		13A/ms	22A/ms

STANDARD (4 Quadrants)			B
I_{GT} MAX @ V_D =12 V, R_L = 30Ω NOTE 1		QI-II-III	50mA
I_{GT} MAX @ V_D =12 V, R_L = 30Ω NOTE 1		QIV	100mA
V_{GT} MAX @ V_D =12 V, R_L = 30Ω		Q-AII	1.3V
V_{GD} MIN @ V_D =V_{DRM}, R_L = 3.3kΩ	Tj = 125°C	Q-AII	0.2V
I_H MAX @ I_T = 500 mA NOTE 2			80mA
I_L MAX @ I_G = 1.2 I_{GT}		QI-III-IV	70mA
I_L MAX @ I_G = 1.2 I_{GT}		Q-II	160mA
dv/dt MIN @ V_D = 67%V_{DRM} (gate open) NOTE 2	Tj = 125°C		500V/µs
(dv/dt)c MIN @ (di/dt)c = 13.3 A/ms NOTE 2	Tj = 125°C		10V/µs

ISO9001 Certified

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.

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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-220AB	$R_{th(j-c)}$	0.8˚C/W
Junction to Case (AC)	TO-220AB Isolated	$R_{th(j-c)}$	1.7˚C/W
Junction to Ambient	TO-220AB	$R_{th(j-a)}$	60˚C/W
Junction to Ambient	TO-220AB Isolated	$R_{th(j-a)}$	60˚C/W

Part Number Selection

Part Number	Voltage [Vpk]	I_{GT} [mA]	Type	Package
CTA/CTB24-xxxB	400, 600, 800, 1000	50mA	Standard	TO-220AB
CTA/CTB24-xxxBW	400, 600, 800, 1000	50mA	Alternistor/No Snubber	TO-220AB
CTA/CTB24-xxxCW	400, 600, 800, 1000	35mA	Alternistor/No Snubber	TO-220AB

Part Number Designation

SERIES: CT

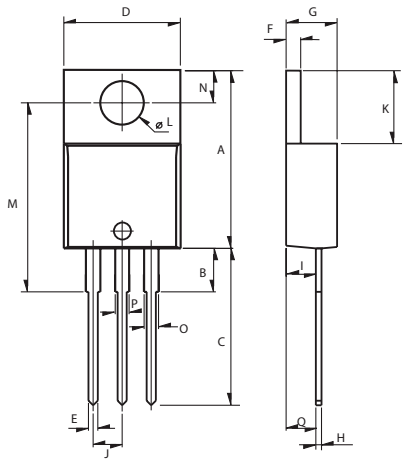
B — Isolation Type
A: Isolated
B: Non-Isolated

24 — Rated Current
24:25 Amp

800 — Maximum Blocking Voltage
400:400Vpk
600:600Vpk
800:800Vpk
1000:1000Vpk

CW — Type
B: Standard (I_{GT}=50mA)
BW: Alternistor/No Snubber (I_{GT}=50mA)
CW: Alternistor/No Snubber (I_{GT}=35mA)

PT — Packaging
Blank: Bulk
PT: Plastic Tube



Weight: 2.3g (0.08 oz)

Dimensions

	Millimeters			Inches		
REF.	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	

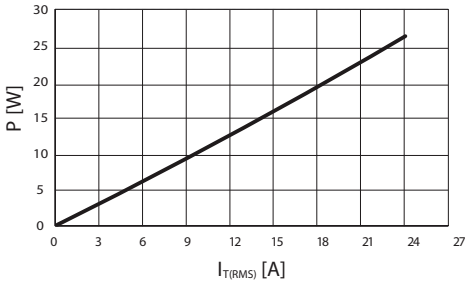


Fig. 1: Power dissipation versus RMS on-state current (full cycle).

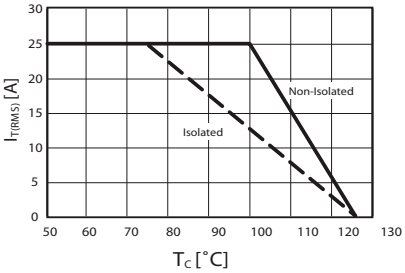


Fig. 2: RMS on-state current versus case temperature (full cycle)

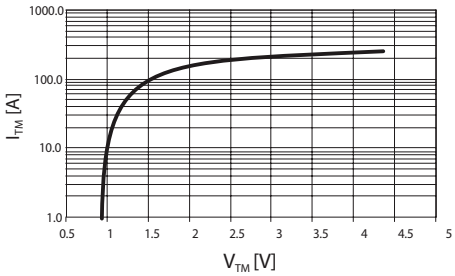


Fig. 3: On-state current versus on-state voltage (instantaneous values)

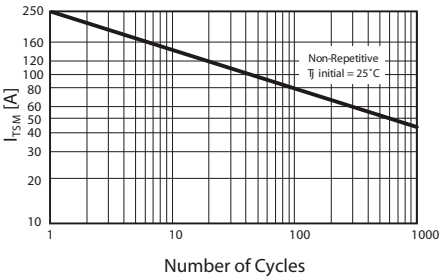


Fig. 4: Non-repetitive surge peak on-state current versus number of cycles.

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For recommended applications and more information contact:
USA : Sales Support (888) 882-8689

Email : sales@c3semi.com WEB SITE: http://www.C3semi.com

Approvals

UL - E72445