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C3 Semiconductor, LLC

POWER SEMICONDUCTORS

**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<sub>DRM</sub>/V<sub>RMM</sub> 400, 600, 800, 1000V**

**CTA/CTB26**

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

**Absolute Maximum Ratings**

|   | CONDITIONS                                     | SYMBOL                                      | RATING                |
|---|--|---|-----------------------|
| RMS On-State Current (full sine wave)   | T <sub>c</sub> = 90°C<br>T <sub>c</sub> = 75°C | TO-218<br>TO-218 Iso<br>I <sub>T(RMS)</sub> | 25A                   |
| Non Repetitive Surge Peak On-State Current (Full Cycle, T <sub>j</sub> Initial = 25°C)                                  | F = 50 Hz<br>F = 60 Hz                         | I <sub>TSM</sub>                            | 250A<br>260A          |
| I <sup>2</sup> t Value for fusing   | tp = 10 ms                                     | I <sup>2</sup> t                            | 340A <sup>2</sup> s   |
| Critical rate of rise of on-state current<br>I <sub>G</sub> = 2 x I <sub>GT</sub> , tr < 100 ns, T <sub>j</sub> = 125°C |  | di/dt                                       | 100A/μs               |
| Peak Gate Current @ T <sub>j</sub> = 125°C  | tp = 20 μs                                     | I <sub>GM</sub>                             | 4A                    |
| Average Gate Power Dissipation @ T <sub>j</sub> = 125°C   |  | P <sub>G(AV)</sub>                          | 1W                    |
| Storage Temperature Range   |  | T <sub>stg</sub>                            | -40 to +150°C         |
| Operating Junction Temperature Range  |  | T <sub>j</sub>                              | -40 to +125°C         |
| Isolation Voltage (CTA Series only)   |  | V <sub>ISO</sub>                            | 2500 V <sub>RMS</sub> |

**Electrical Characteristics**

**ALTERNISTOR/NO SNUBBER AND LOGIC LEVEL (3 Quadrants)**

|  |                                     | CW      | BW       |
|--|-------------------------------------|---------|----------|
| I <sub>GT</sub> MAX @ V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω NOTE 1         | QI-II-III                           | 35mA    | 50mA     |
| V <sub>GT</sub> MAX @ V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω                | QI-II-III                           | 1.3V    | 1.3V     |
| V <sub>GD</sub> MIN @ V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3kΩ | T <sub>j</sub> = 125°C<br>QI-II-III | 0.2V    | 0.2V     |
| I <sub>H</sub> MAX @ I <sub>T</sub> = 500 mA NOTE 2                              |                                     | 50mA    | 75mA     |
| I <sub>L</sub> MAX @ I <sub>G</sub> = 1.2 I <sub>GT</sub>                        | QI-III                              | 50mA    | 70mA     |
| I <sub>L</sub> MAX @ I <sub>G</sub> = 1.2 I <sub>GT</sub>                        | Q-II                                | 80mA    | 100mA    |
| dv/dt MIN @ V <sub>D</sub> = 67%V <sub>DRM</sub> (gate open) NOTE 2              | T <sub>j</sub> = 125°C              | 500V/μs | 1000V/μs |
| (di/dt) <sub>c</sub> MIN without Snubber NOTE 2                                  | T <sub>j</sub> = 125°C              | 13A/ms  | 22A/ms   |

**STANDARD (4 Quadrants)**

|  |                                 | B       |
|--|---------------------------------|---------|
| I <sub>GT</sub> MAX @ V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω NOTE 1         | QI-II-III                       | 50mA    |
| I <sub>GT</sub> MAX @ V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω NOTE 1         | QIV                             | 100mA   |
| V <sub>GT</sub> MAX @ V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω                | Q-All                           | 1.3V    |
| V <sub>GD</sub> MIN @ V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3kΩ | T <sub>j</sub> = 125°C<br>Q-All | 0.2V    |
| I <sub>H</sub> MAX @ I <sub>T</sub> = 500 mA NOTE 2                              |                                 | 80mA    |
| I <sub>L</sub> MAX @ I <sub>G</sub> = 1.2 I <sub>GT</sub>                        | QI-III-IV                       | 70mA    |
| I <sub>L</sub> MAX @ I <sub>G</sub> = 1.2 I <sub>GT</sub>                        | Q-II                            | 160mA   |
| dv/dt MIN @ V <sub>D</sub> = 67%V <sub>DRM</sub> (gate open) NOTE 2              | T <sub>j</sub> = 125°C          | 500V/μs |
| (dv/dt) <sub>c</sub> MIN @ (di/dt) <sub>c</sub> = 13.3 A/ms NOTE 2               | T <sub>j</sub> = 125°C          | 10V/μs  |



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**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.

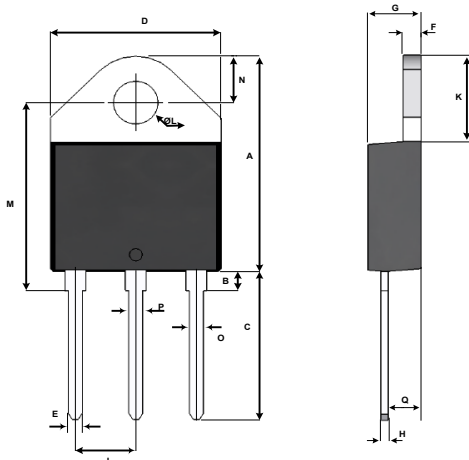


## Static Characteristics

|  |                     |              |
|--|---------------------|--------------|
| $V_T$ MAX @ $I_{TM} = 35$ A, $t_p = 380\mu s$ NOTE 2 | $T_j = 25^\circ C$  | 1.55V        |
| $V_{to}$ MAX @ Threshold Voltage NOTE 2              | $T_j = 125^\circ C$ | 0.85V        |
| $R_d$ MAX @ Dynamic Resistance NOTE 2                | $T_j = 125^\circ C$ | 16m $\Omega$ |
| $I_{DRM}$ MAX @ $V_{DRM} = V_{RRM}$                  | $T_j = 25^\circ C$  | 5mA          |
| $I_{RRM}$ MAX @ $V_{DRM} = V_{RRM}$                  | $T_j = 125^\circ C$ | 3mA          |

## Thermal Resistances

|                       | SYMBOL          | RATING                |
|-----------------------|-----------------|-----------------------|
| Junction to Case (AC) | TO-218          | $R_{th(j-c)}$ 0.8°C/W |
| Junction to Case (AC) | TO-218 Isolated | $R_{th(j-c)}$ 1.1°C/W |
| Junction to Ambient   | TO-218          | $R_{th(j-a)}$ 50°C/W  |
| Junction to Ambient   | TO-218 Isolated | $R_{th(j-a)}$ 50°C/W  |



## Dimensions

| REF. | Millimeters |      |       | Inches |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Min.        | Typ. | Max.  | 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]       | $I_{GT}$ [mA] | Type                   | Package |
|-----------------|---------------------|---------------|------------------------|---------|
| CTA/CTB26-xxxB  | 400, 600, 800, 1000 | 50mA          | Standard               | TO-218  |
| CTA/CTB26-xxxBW | 400, 600, 800, 1000 | 50mA          | Alternistor/No Snubber | TO-218  |
| CTA/CTB26-xxxCW | 400, 600, 800, 1000 | 35mA          | Alternistor/No Snubber | TO-218  |

## Part Number Designation

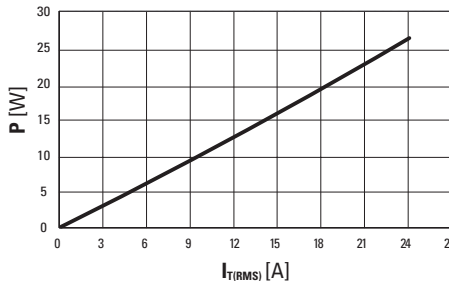
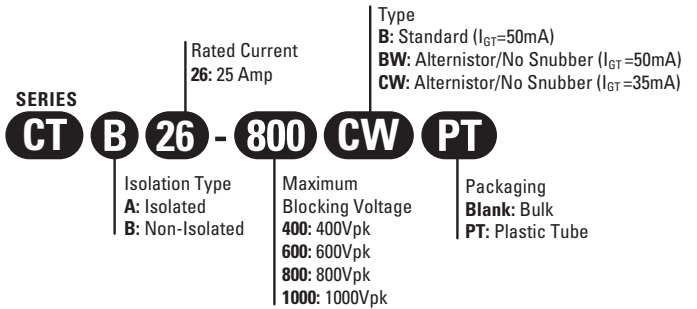


Fig. 1: Power dissipation versus RMS on-state current (full cycle).

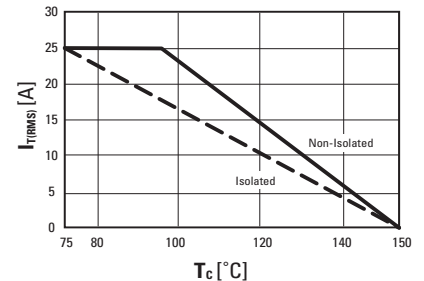


Fig. 2: RMS on-state current versus case temperature (full cycle)

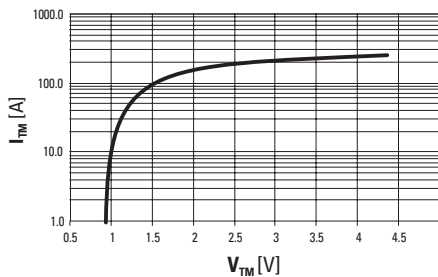


Fig. 3: On-state current versus on-state voltage (instantaneous values)

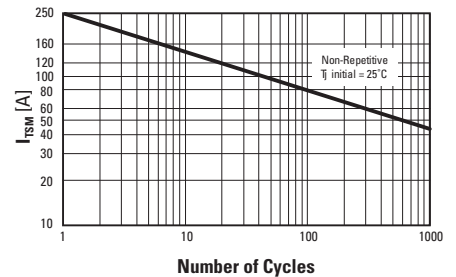


Fig. 4: Non-repetitive surge peak on-state current versus number of cycles.

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## Approvals

UL - E72445

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