



semi C3 Semiconductor, LLC

### Applications

- Motor Control
- Overvoltage Crowbar Protection
- Capacitive Discharge Ignition
- Voltage Regulation
- Welding Equipment
- Capacitive Filter Soft Start (Inrush Current Control)

> Suitable for General Purpose AC Switching

> IGT 25 mA Max.

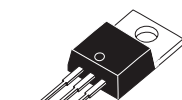
> VDRM/VRMM 400, 600, 800, 1000V

## CYNA/CYNB16

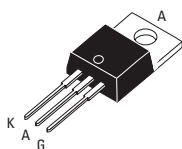
16Amp - 400/600/800/1000V - **SCR**

### Absolute Maximum Ratings

|                                                                                                                           | CONDITIONS                                                                        | SYMBOL            | RATING                      |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------|
| RMS On-State Current (full sine wave)                                                                                     | $T_c = 110^\circ\text{C}$<br>$T_c = 95^\circ\text{C}$<br>T0-220AB<br>T0-220AB Iso | $I_T(\text{RMS})$ | 16A                         |
| Average On-State Current                                                                                                  | $T_c = 110^\circ\text{C}$<br>$T_c = 95^\circ\text{C}$<br>T0-220AB<br>T0-220AB Iso | $I_T(\text{AV})$  | 10A                         |
| Non Repetitive Surge Peak On-State Current<br>(Full Cycle, $T_j$ Initial = $25^\circ\text{C}$ )                           | F = 50 Hz<br>F = 60 Hz                                                            | $I_{\text{TSM}}$  | 190A<br>200A                |
| $I^2t$ Value for fusing                                                                                                   | $t_p = 10 \text{ ms}$                                                             | $I^2t$            | 180A <sup>2</sup> s         |
| Critical rate of rise of on-state current<br>$I_G = 2 \times I_{GT}$ , $t_r < 100 \text{ ns}$ , $T_j = 125^\circ\text{C}$ |                                                                                   | $di/dt$           | 100A/ $\mu\text{s}$         |
| Peak Gate Current @ $T_j = 125^\circ\text{C}$                                                                             | $t_p = 20 \mu\text{s}$                                                            | $I_{GM}$          | 4A                          |
| Average Gate Power Dissipation @ $T_j = 125^\circ\text{C}$                                                                |                                                                                   | $P_G(\text{AV})$  | 1W                          |
| Storage Temperature Range                                                                                                 |                                                                                   | $T_{\text{stg}}$  | -40 to $+150^\circ\text{C}$ |
| Operating Junction Temperature Range                                                                                      |                                                                                   | $T_j$             | -40 to $+125^\circ\text{C}$ |
| Isolation Voltage (CYNA Series only)                                                                                      |                                                                                   | $V_{\text{ISO}}$  | 2500V <sub>RMS</sub>        |
| Maximum Peak Reverse Gate Voltage                                                                                         |                                                                                   | $V_{\text{RGM}}$  | 5V                          |



TO-220AB Isolated  
(CYNA25)



TO-220AB Non-Isolated  
(CYNB25)



### Electrical Characteristics <sup>NOTE 1</sup>

|                                                                                    |                           |                     |
|------------------------------------------------------------------------------------|---------------------------|---------------------|
| $I_{GT} \text{ MAX @ } V_D = 12 \text{ V, } R_L = 30\Omega$                        |                           | 25mA                |
| $V_{GT} \text{ MAX @ } V_D = 12 \text{ V, } R_L = 30\Omega$                        |                           | 1.3V                |
| $V_{GD} \text{ MIN @ } V_D = V_{\text{DRM}}, R_L = 3.3\text{k}\Omega$              | $T_j = 125^\circ\text{C}$ | 0.2V                |
| $I_H \text{ MAX @ } I_T = 500 \text{ mA (gate open)}$                              |                           | 40mA                |
| $I_L \text{ MAX @ } I_G = 1.2 I_{GT}$                                              |                           | 60mA                |
| $dv/dt \text{ MIN @ } V_D = 67\% V_{\text{DRM}} \text{ (gate open)}$               | $T_j = 125^\circ\text{C}$ | 500V/ $\mu\text{s}$ |
| $V_{\text{TM}} \text{ MAX @ } I_{\text{TM}} = 32 \text{ A, } t_p = 380\mu\text{s}$ | $T_j = 25^\circ\text{C}$  | 1.6V                |
| $I_{\text{DRM}} \text{ MAX @ } V_{\text{DRM}} = V_{\text{RRM}}$                    | $T_j = 25^\circ\text{C}$  | 5 $\mu\text{A}$     |
| $I_{\text{RRM}} \text{ MAX @ } V_{\text{DRM}} = V_{\text{RRM}}$                    | $T_j = 125^\circ\text{C}$ | 2mA                 |

### GENERAL NOTES

1. All parameters at 25 degrees C unless otherwise specified.

**ISO9001 Certified**



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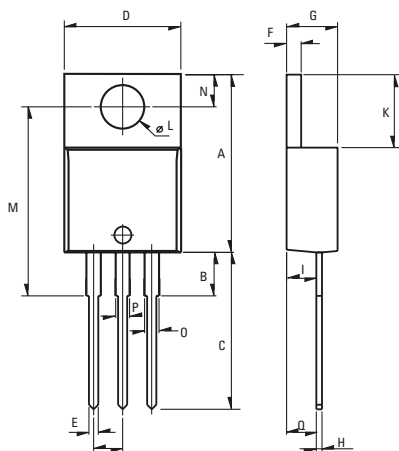
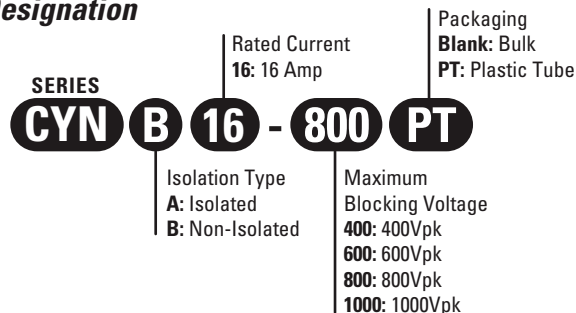
# CYNA/CYNB16

16Amp - 400/600/800/1000V - SCR

## Thermal Resistances

|                       |                   | SYMBOL        | RATING  |
|-----------------------|-------------------|---------------|---------|
| Junction to Case (AC) | T0-220AB          | $R_{th(j-c)}$ | 1.2°C/W |
| Junction to Case (AC) | T0-220AB Isolated | $R_{th(j-c)}$ | 2.1°C/W |
| Junction to Ambient   | T0-220AB          | $R_{th(j-a)}$ | 60°C/W  |
| Junction to Ambient   | T0-220AB Isolated | $R_{th(j-a)}$ | 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 |       |

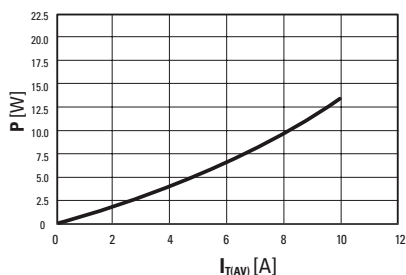


Fig. 1: Power dissipation versus average on-state current.

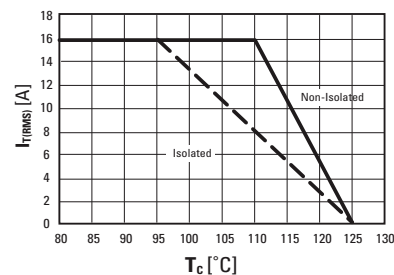


Fig. 2: RMS on-state current versus case temperature (full cycle)

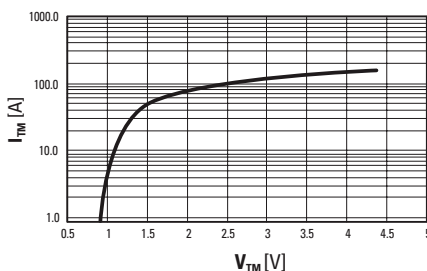


Fig. 3: On-state current versus on-state voltage (instantaneous values)

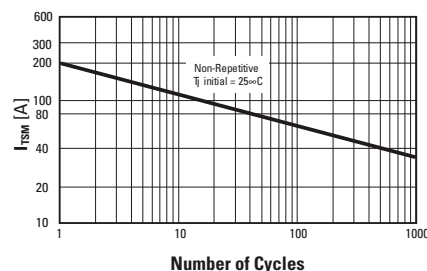


Fig. 4: Non-repetitive surge peak on-state current versus number of cycles.

ISO9001 Certified

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## Approvals

UL Recognized Component - E72445  
(For CYNA series)

For recommended applications and more information contact:

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