



# CFB800 SERIES 800 WATT 2:1 INPUT ISOLATED DC-DC CONVERTER

## Features

- Efficiency Up to 90%
- Fixed Switching Frequency
- Regulated Outputs
- Remote On/Off
- Fully protected (OTP/OCP/OVP/UVLO)
- 1500Vdc I/O Isolation
- Operating Case Temperature -40 to +100°C
- Full-Brick Size Meet Industrial Standard  
4.60"x2.40"x0.5"
- Shock & Vibration Meets MIL-STD-810F
- Safety Meets UL/IEC/EN62368-1



| MODEL NUMBER | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT |        | INPUT CURRENT |           | % EFF. | CAPACITOR LOAD MAX. |
|--------------|---------------|----------------|----------------|--------|---------------|-----------|--------|---------------------|
|              |               |                | MIN.           | MAX.   | NO LOAD       | FULL LOAD |        |                     |
| CFB800-24S28 | 18-36 VDC     | 28 VDC         | 0 mA           | 28.5 A | 200 mA        | 36.94A    | 90     | 5000uF              |

**NOTE:**

1. Nominal Input Voltage 24 VDC
2. An External Input Capacitor 220uF for All Models are Recommended to Reduce Input Ripple Voltage
3. The Output Terminal Required a Minimum Capacitor 470uF to Maintain Specified Regulation

## PART NUMBER

| Series  | Nominal Input Voltage | Number of Outputs | Nominal Output Voltage | Remote On/Off Logic           | Mounting Inserts                         |
|---------|-----------------------|-------------------|------------------------|-------------------------------|--|
| CFB800- | II                    | O                 | XX                     | L                             | -Y (Option)                              |
| CFB800  | 24: 24 VDC            | S: Single         | 28: 28VDC              | P: Positive<br>None: Negative | None: Clear Mounting Insert (3.5mm DIA.) |

**Part Number Example:**

**CFB800-24S28P:** Full Brick, 800W, 2:1 18-36Vdc Input, Single 28Vdc Output, Positive Logic, Clear Mounting Insert



# CFB800 Series

## TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

### ABSOLUTE MAXIMUM RATINGS

| PARAMETER                  | NOTES and CONDITIONS             | Device | Min. | Typ. | Max. | Units           |
|----------------------------|----------------------------------|--------|------|------|------|-----------------|
| Input Voltage              | Continuous                       | All    | -0.3 |      | 36   | V <sub>dc</sub> |
| Input Surge Voltage        | 100ms max.                       | All    |      |      | 50   | V <sub>dc</sub> |
| Operating Case Temperature | At the Center Part of Base Plate | All    | -40  |      | 100  | °C              |
| Storage Temperature        |                                  | All    | -55  |      | 105  | °C              |

### INPUT CHARACTERISTICS

| PARAMETER                         | NOTES and CONDITIONS                     | Device                 | Min. | Typ. | Max. | Units            |    |
|-----------------------------------|--|------------------------|------|------|------|------------------|----|
| Operating Input Voltage           |  | All                    | 18   | 24   | 36   | V <sub>dc</sub>  |    |
| Input Under Voltage Lockout       |  |                        |      |      |      |                  |    |
| Turn-On Voltage Threshold         |  | All                    | 16.5 | 17.0 | 17.5 | V <sub>dc</sub>  |    |
| Turn-Off Voltage Threshold        |  | All                    | 15.5 | 16.0 | 16.5 | V <sub>dc</sub>  |    |
| Lockout Hysteresis Voltage        |  | All                    |      | 1.0  |      | V <sub>dc</sub>  |    |
| Maximum Input Current             | V <sub>in</sub> =18V, Full Load.         | All                    |      | 49   |      | A                |    |
| No-Load Input Current             | V <sub>in</sub> =24V, I <sub>o</sub> =0A | See Model Number Table |      |      |      |                  | mA |
| Input Filter                      | Pi Filter.                               | All                    |      |      |      |                  |    |
| Inrush Current (I <sup>2</sup> t) | As per ETS300 132-2                      | All                    |      |      | 1.0  | A <sup>2</sup> s |    |
| Input Reflected Ripple Current    | P-P Thru 12uH Inductor, 5Hz to 20MHz.    | All                    |      | 90   |      | mA               |    |

### OUTPUT CHARACTERISTICS

| PARAMETER  | NOTES and CONDITIONS   | Device                 | Min.                       | Typ. | Max.  | Units |    |
|--|--|------------------------|----------------------------|------|-------|-------|----|
| Voltage Set Point Accuracy                               | V <sub>in</sub> =24V, Full Load, T <sub>c</sub> =25°C  | All                    | -1.0                       |      | +1.0  | %     |    |
| Output Voltage Regulation                                |  |                        |                            |      |       |       |    |
| Load Regulation  | Full Load to No Load   | All                    |                            |      | ±0.5  | %     |    |
| Line Regulation  | V <sub>in</sub> =High Line to Low Line, Full Load  | All                    |                            |      | ±0.2  | %     |    |
| Temperature Coefficient                                  | T <sub>c</sub> =-40°C to 100°C   | All                    |                            |      | ±0.02 | %/°C  |    |
| Output Voltage Ripple and Noise (5Hz to 20MHz Bandwidth) |  |                        |                            |      |       |       |    |
| Peak-to-Peak   | Full Load, 10uF Tantalum Capacitor and 1uF Ceramic Capacitors  | All                    |                            |      | 280   | mV    |    |
| RMS.   |  | All                    |                            |      | 100   | mV    |    |
| Output Current Range                                     | V <sub>in</sub> = 18 to 36V  | See Model Number Table |                            |      |       |       | A  |
| Over Current Protection                                  | Continuous Current. Auto Recovery  | All                    | 105                        | 110  | 120   | %     |    |
| Short Circuit Protection                                 |  | All                    | Continuous, Auto Recovery. |      |       |       |    |
| External Load Capacitance                                | Full Load (Resistive)  | See Model Number Table |                            |      |       |       | uF |
| Output Voltage Trim Range                                | P <sub>o</sub> ≤ max Rated Power, I <sub>o</sub> ≤ I <sub>o,max</sub>                                | All                    | -40                        |      | +10   | %     |    |
| Output Voltage Remote Sense Range                        | P <sub>o</sub> ≤ max Rated Power, I <sub>o</sub> ≤ I <sub>o,max</sub><br>% of nominal V <sub>o</sub> | All                    |                            |      | +10   | %     |    |
| Over Voltage Protection                                  | Limited Voltage, % of Nominal V <sub>o</sub>   | All                    | 115                        | 125  | 140   | %     |    |
| Auxiliary Output Voltage                                 |  | All                    | 7                          | 10   | 13    | V     |    |
| Auxiliary Output Current                                 |  | All                    |                            |      | 20    | mA    |    |
| Power Good Signal (IOG)                                  | V <sub>out</sub> Ready: Low Level, Sink Current  | All                    |                            |      | 20    | mA    |    |
|  | V <sub>out</sub> not Ready: Open Drain Output, Applied Voltage                                       | All                    |                            |      | 50    | V     |    |
| Load Share Accuracy (50%-100% load)                      |  | All                    | -5                         |      | +5    | %     |    |

### EFFICIENCY

| PARAMETER | NOTES and CONDITIONS | Device                 | Min. | Typ. | Max. | Units |   |
|-----------|----------------------|------------------------|------|------|------|-------|---|
| 100% Load | V <sub>in</sub> =24V | See Model Number Table |      |      |      |       | % |



# CFB800 Series

## DYNAMIC CHARACTERISTICS

| PARAMETER                               | NOTES and CONDITIONS  | Device | Min. | Typ.    | Max.    | Units |
|---|---|--------|------|---------|---------|-------|
| Output Voltage Current Transient        |   |        |      |         |         |       |
| Error Band                              | 75% to 100% of $I_{o\_max}$ Step Load Change<br>$d_i/d_t=0.1A/us$ | All    |      | $\pm 3$ | $\pm 5$ | %     |
| Recovery Time                           | (within 1% $V_{out}$ Nominal)                                     | All    |      |         | 500     | us    |
| Turn-On Delay and Rise Time             |   |        |      |         |         |       |
| Full Load (Constant Resistive Load)     |   |        |      |         |         |       |
| Turn-On Delay Time, From On/Off Control | $V_{on/off}$ to 10% $V_{o\_set}$ , Remote On                      | All    |      |         | 75      | ms    |
| Turn-On Delay Time, From Input          | $V_{in\_min}$ to 10% $V_{o\_set}$ , Power Up                      | All    |      |         | 250     | ms    |
| Output Voltage Rise Time                | 10% $V_{o\_set}$ to 90% $V_{o\_set}$                              | All    |      |         | 50      | ms    |

## ISOLATION CHARACTERISTICS

| PARAMETER  | NOTES and CONDITIONS                  | Device | Min. | Typ. | Max. | Units      |
|--|---------------------------------------|--------|------|------|------|------------|
| Isolation Voltage<br>(100% Factory Hi-Pot tested @2sec.) | 1 minute; Input to Output,            | All    |      |      | 1500 | $V_{dc}$   |
|  | 1 minute; Input to Case (Base Plate), | All    |      |      | 1500 | $V_{dc}$   |
|  | 1 minute; Output to Case (Base Plate) | All    |      |      | 1500 | $V_{dc}$   |
| Isolation Resistance                                     | Input to Output                       | All    | 10   |      |      | M $\Omega$ |
| Isolation Capacitance                                    | Input to Output                       | All    |      | 2760 |      | pF         |
|  | Input to Case (Base Plate)            | All    |      | 2000 |      |            |
|  | Output to Case (Base Plate)           | All    |      | 2000 |      |            |

## FEATURE CHARACTERISTICS

| PARAMETER   | NOTES and CONDITIONS                                       | Device | Min. | Typ. | Max. | Units       |
|---|--|--------|------|------|------|-------------|
| Switching Frequency   | Pulse wide Modulation (PWM), Fixed                         | All    | 225  | 250  | 275  | KHz         |
| On/Off Control, Positive Remote On/Off logic, Refer to $-V_{in}$ Pin. |  |        |      |      |      |             |
| Logic Low (Module Off)  | $V_{on/off}$ at $I_{on/off}=1.0mA$                         | All    | 0    |      | 0.01 | mA          |
| Logic High (Module On)  | $V_{on/off}$ at $I_{on/off}=0.0uA$ , Pin open=On           | All    | 1    |      | 10   | mA          |
| On/Off Control, Negative Remote On/Off logic, Refer to $-V_{in}$ Pin  |  |        |      |      |      |             |
| Logic High (Module Off)   | $V_{on/off}$ at $I_{on/off}=0.0uA$ , Pin open=Off          | All    | 1    |      | 10   | mA          |
| Logic Low (Module On)   | $V_{on/off}$ at $I_{on/off}=1.0mA$                         | All    | 0    |      | 0.01 | mA          |
| Off Converter Input Current   | Shutdown Input Idle Current                                | All    |      |      | 50   | mA          |
| Over Temperature Shutdown   | Temperature at the Center Part of Base Plate, Non-Latching | All    |      | 110  |      | $^{\circ}C$ |
| Over Temperature Recovery   |  | All    |      | 90   |      | $^{\circ}C$ |

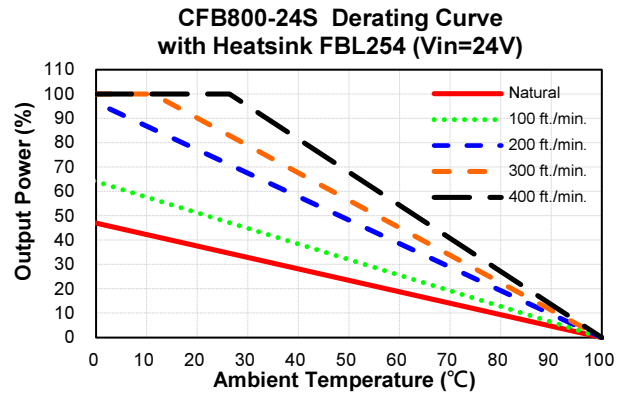
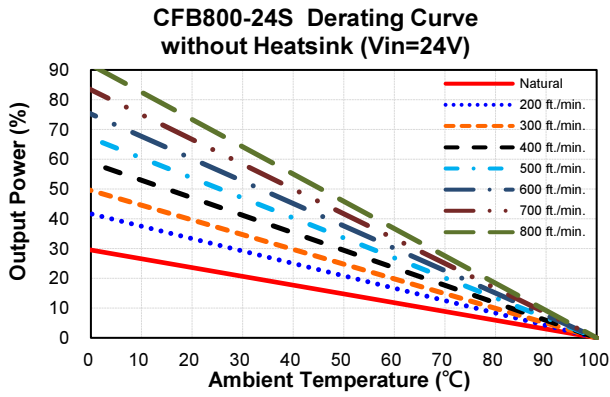
## GENERAL SPECIFICATIONS

| PARAMETER                  | NOTES and CONDITIONS  | Device | Min.                                    | Typ. | Max. | Units   |
|----------------------------|---|--------|---|------|------|---------|
| MTBF                       | $I_o=100\%$ of $I_{o\_max}$ ;<br>MIL-HDBK - 217F_Notice 1, GB, 25 $^{\circ}C$ | All    |   | 410  |      | K hours |
| Weight                     |   | All    |   | 220  |      | grams   |
| Case Material              | Plastic, DAP  |        |   |      |      |         |
| Base plate Material        | Aluminum  |        |   |      |      |         |
| Potting Material           | UL 94V-0  |        |   |      |      |         |
| Pin Material               | Base: Copper<br>Plating: Nickel with Matte Tin                                |        |   |      |      |         |
| Shock/Vibration            | Meet MIL-STD-810F   |        |   |      |      |         |
| Humidity                   | 95% RH max. Non Condensing  |        |   |      |      |         |
| Altitude                   | 2000m Operating Altitude, 12000m Transport Altitude                           |        |   |      |      |         |
| EMI                        | Meet EN55032 with External Filter   |        |   |      |      | Class A |
| Application Note Link      |   |        | <a href="#">CFB800 Series App Notes</a> |      |      |         |
| Packaging Information Link |   |        | <a href="#">Packaging Information</a>   |      |      |         |

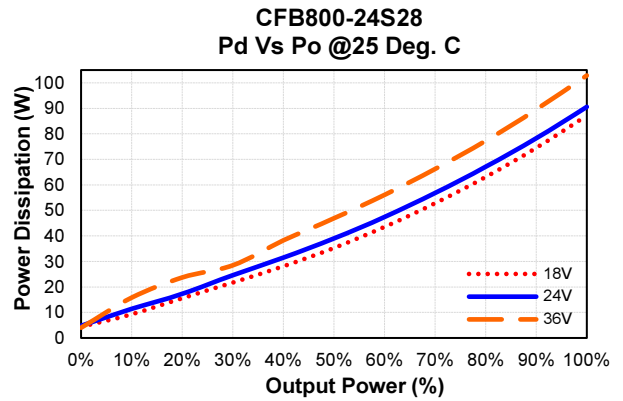
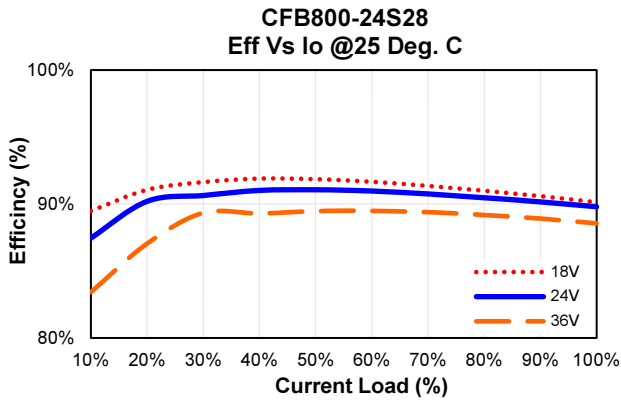


CHARACTERISTIC CURVE

Power Derating Curve



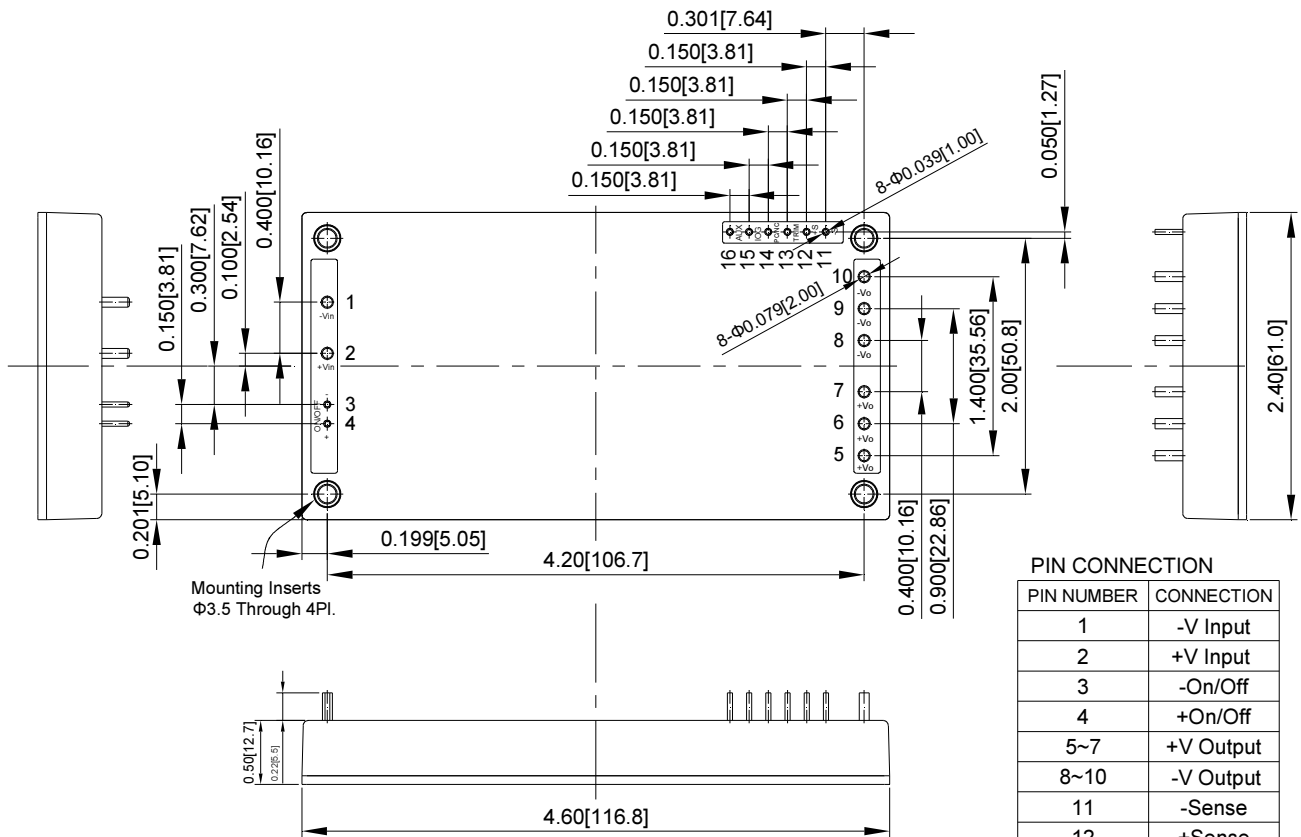
Performance Data





# CFB800 Series

## MECHANICAL SPECIFICATION



### PIN CONNECTION

| PIN NUMBER | CONNECTION |
|------------|------------|
| 1          | -V Input   |
| 2          | +V Input   |
| 3          | -On/Off    |
| 4          | +On/Off    |
| 5~7        | +V Output  |
| 8~10       | -V Output  |
| 11         | -Sense     |
| 12         | +Sense     |
| 13         | TRIM       |
| 14         | PC         |
| 15         | IOG        |
| 16         | AUX        |

All Dimensions in Inches[mm]  
 Tolerance Inches:x.xx=±0.02 , x.xxx=±0.01 ±0.04  
 Millimeters:x.x=±0.5 , x.xx=±0.25 ±0.1

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