

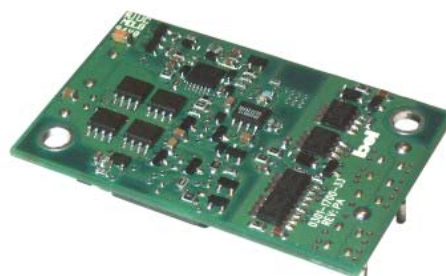
## ISOLATED DC/DC CONVERTERS

48 VDC Input 12 VDC/20 A Output, 1/4 Brick



### ORCM-20S/30S Series RoHS Compliant PRELIMINARY

- Industry standard quarter-brick package
- Up to 240 W at 96% efficiency
- 1500 V isolation
- Remote on/off
- Low cost
- Safety Agency Approvals



### Description

The ORCM-20S/30S "Cimarron" Series are isolated DC/DC converters that operate from a nominal 48 VDC source.

These converters use a full bridge power train to provide isolation and step down. These units will provide up to 240 W of output power from a nominal 48 VDC input. These units are designed to be highly efficient and low cost. Features include remote on/off, over current protection and under voltage lockout. These converters are provided in an industry standard quarter-brick package.

### Part Selection

| Output Voltage | Input Voltage | Max. Output Current | Max. Output Power | Typical Efficiency | Model Number |
|----------------|---------------|---------------------|-------------------|--------------------|--------------|
| 12 V           | 48 V          | 20 A                | 240 W             | 96%                | ORCM-20S12L  |
| 8 V            | 48 V          | 30 A                | 240 W             | 96%                | ORCM-30S08L  |

- Notes:** 1. Change last character in part number from "L" to "H" for Active High On/Off Logic (e.g. ORCM-20S12H).  
2. Add "G" suffix at the end of the model number to indicate Tray Packaging.  
3. All part numbers above indicate RoHS 6. Change the second letter "R" to "7" for RoHS 5 part numbers.

### Input Specifications

| Parameter                       | Min  | Typ  | Max    | Notes                                                                                                     |
|---------------------------------|------|------|--------|-----------------------------------------------------------------------------------------------------------|
| Input Voltage Range             | 36 V | 48 V | 55 V   |                                                                                                           |
| Input Current (no load)         | -    | -    | 80 mA  |                                                                                                           |
| Input Current (full load)       | -    | -    | 5.3 A  |                                                                                                           |
| Reflected Ripple Current(pk-pk) | -    | -    | 100 mA | Reflected ripple current through a 12 uH source inductor at nominal input voltage and rated load current. |
| Reflected Ripple Current(rms)   | -    | -    | 50 mA  |                                                                                                           |

### Output Specifications

| Parameter                                    | Min                                | Typ                                 | Max                                 | Notes                                                                                  |
|----------------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------|
| Output Voltage<br>ORCM-20S12x<br>ORCM-30S08x | $\frac{36 V_{in}}{8.8 V}$<br>5.8 V | $\frac{48 V_{in}}{12.0 V}$<br>8.0 V | $\frac{55 V_{in}}{14.0 V}$<br>9.4 V | Setpoint at no load.                                                                   |
| Output Current<br>ORCM-20S12x<br>ORCM-30S08x | 0 A<br>0 A                         | -<br>-                              | 20 A<br>30 A                        |                                                                                        |
| Load Regulation                              | -                                  | -                                   | 5%                                  |                                                                                        |
| Ripple and Noise (pk-pk)                     | -                                  | -                                   | 100 mV                              | 0 to 20 MHz BW, use 1.0 uF ceramic cap and 15 uF/100 m ohm tantalum cap at the output. |
| Ripple and Noise (rms)                       | -                                  | -                                   | 45 mV                               |                                                                                        |

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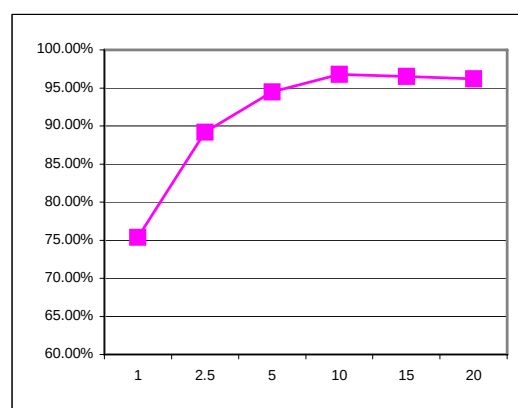
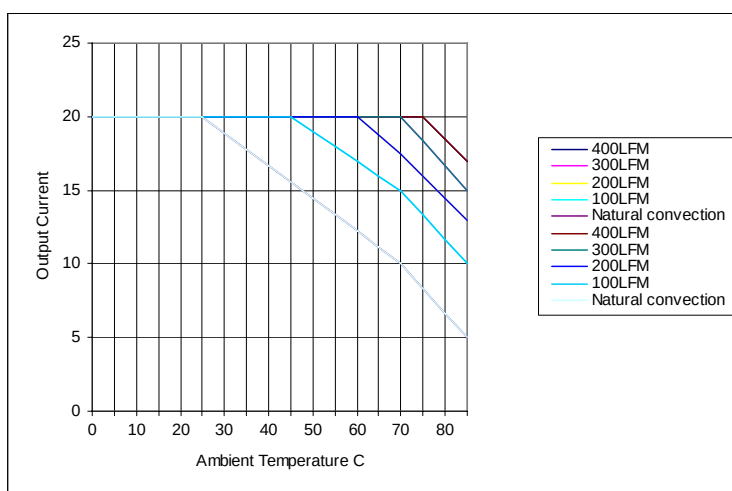


### Output Specifications (continued)

| Parameter                    | Min | Typ              | Max               | Notes                                                |
|------------------------------|-----|------------------|-------------------|------------------------------------------------------|
| Transient Response           |     |                  |                   |                                                      |
| Max deviation                | -   | 200 mV           | 350 mV            | $di/dt = 0.1 \text{ A/uS}$ , $V_{in} = 48 \text{ V}$ |
| Recovery to within $\pm 1\%$ | -   | 50 $\mu\text{S}$ | 100 $\mu\text{S}$ | $T_a = 25^\circ\text{C}$ , 25% load change.          |

### General Specifications

| Parameter                         | Min                                      | Typ           | Max                  | Notes |
|-----------------------------------|------------------------------------------|---------------|----------------------|-------|
| Switching Frequency               | -                                        | 120 kHz       | -                    |       |
| Operating Temperature             | 0 $^\circ\text{C}$                       | -             | 70 $^\circ\text{C}$  |       |
| Non-Operating Temperature         | -55 $^\circ\text{C}$                     | -             | 125 $^\circ\text{C}$ |       |
| Weight                            | -                                        | 42 g (1.5 oz) | -                    |       |
| MTBF (MIL-HDBK-217K)              | >1,000,000 hours                         |               |                      |       |
| Dimensions                        |                                          |               |                      |       |
| Inches (L x W x H)                | 2.28 x 1.45 x 0.50                       |               |                      |       |
| Millimeters (L x W x H)           | 57.9 x 36.8 x 12.7                       |               |                      |       |
| Protection Features               |                                          |               |                      |       |
| Short circuit                     | Continuous                               |               |                      |       |
| Over current                      | 120% to 140% max $I_o$                   |               |                      |       |
| Under-voltage                     | UVLO $V_{in} < 39.0$                     |               |                      |       |
| Remote On/Off                     |                                          |               |                      |       |
| Active Low                        | 0 V                                      | -             | 0.8 V                |       |
| (Optional Active High)            | 2.4 V                                    | -             | 18 V                 |       |
| Safety Agency Approvals (pending) | UL / cUL Recognized Certified to EN60950 |               |                      |       |



Efficiency vs. Output Current (A)

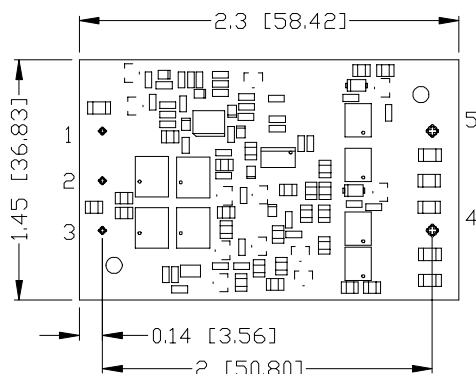
air flowing from input to output (nominal input voltage).

## ISOLATED DC/DC CONVERTERS

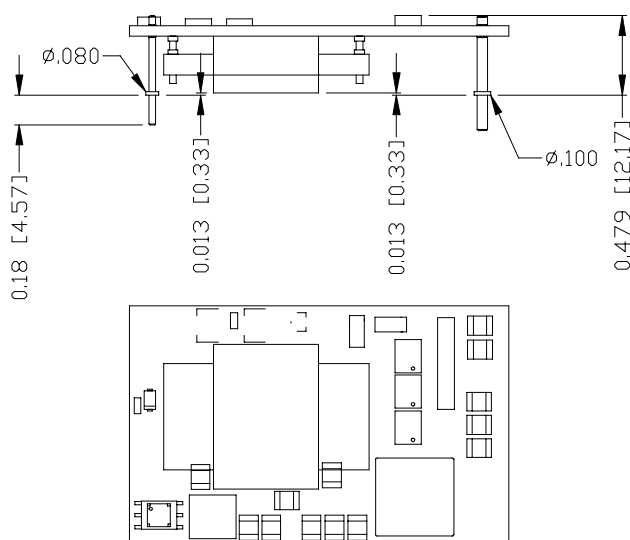
48 VDC Input 12 VDC/20 A Output, 1/4 Brick

**bel**  
POWER PRODUCTS

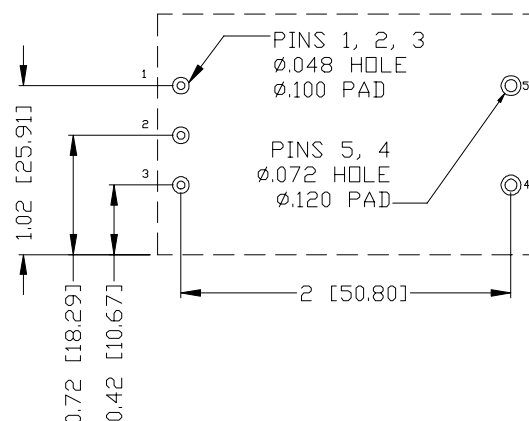
### Mechanical drawing



| PIN ASSIGNMENTS | PIN DIAMETER |
|-----------------|--------------|
| 1 +VIN          | .039         |
| 2 ON/OFF        | .039         |
| 3 -VIN          | .039         |
| 4 -VOUT         | .062         |
| 5 +VOUT         | .062         |



### RECOMMENDED PCB FOOTPRINT



### RoHS Compliance

Complies with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.



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