

## ISOLATED DC/DC CONVERTERS

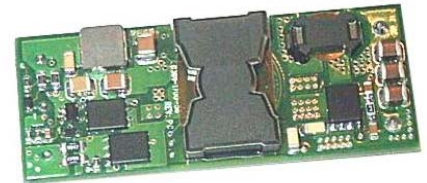
48 VDC Input 8 VDC/18 A Output, 1/8 Brick

**bel**  
POWER PRODUCTS

### 0RCR-18S "Cimarron" Series

RoHS Compliant

- Industry Standard Eighth-Brick Package
- Up to 140 W at 95% Efficiency
- 1500 V Isolation
- Remote On/Off
- Low Cost
- UL/cUL Recognized (Certified to EN60950-1)



### Description

The 0RCR "Cimarron" Series are isolated DC/DC converters that operate from a nominal 48 VDC source. These converters use a half bridge power train to provide isolation and step down. These units will provide up to 140 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 eighth-brick package.

### Part Selection

Output Voltage	Input Voltage	Max. Output Current	Max. Output Power	Typical Efficiency	Model Number Active Low
Vin / 6	48 Vdc	18 A	140 W	95%	0RCR-18S08L

**Notes:** 1. Add "G" suffix at the end of the model number to indicate Tray Packaging.

2. All part numbers above indicate RoHS 6. Change the second letter "R" to "7" for RoHS 5 part numbers.

### Absolute Maximum Ratings

Parameter	Min	Typ	Max	Notes
Input Voltage (continuous)	-0.3 V	-	80 V	
Remote On/Off	-0.3 V	-	80 V	
Ambient Temperature	-40 °C	-	85 °C	
Storage Temperature	-40 °C	-	125 °C	

### Input Specifications

Parameter	Min	Typ	Max	Notes
Input Voltage	36 V	-	60 V	
Input Current (full load)	-	-	3 A	
Input Current (no load)	-	-	45 mA	
Input Current (disabled)	-	-	3 mA	
Input Reflected Ripple Current (pk-pk)	-	-	10 mA	Tested with simulated source impedance of 10 uH, 5 Hz to 20 MHz; use a 47 uF/100 V electrolytic capacitor with ESR = 1 ohm max. at 200 kHz at 25 °C.
Input Reflected Ripple Current (rms)	-	-	5 mA	
I <sup>2</sup> t Inrush Current Transient	-	0.039 A <sup>2</sup> s	0.062 A <sup>2</sup> s	
Turn On Voltage Threshold	-	34.5 V	-	
Turn Off Voltage Threshold	-	32.5 V	-	

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## Output Specifications

Parameter		Min	Typ	Max	Notes	
Output Voltage Set Point	Vin=36 V	-	6 V	-		
	Vin=48 V	-	8 V	-		
	Vin=60 V	-	10 V	-		
Line Regulation		-	4 V	-		
Load Regulation	Vin=36 V	-	0.5 V	-		
	Vin=48 V	-	0.5 V	-		
	Vin=60 V	-	0.5 V	-		
Regulation Over Temperature (-40 °C to +85 °C)		-	30 mV	-		
Output Current		0 A	-	18 A		
Current Limit Threshold		120%Io,max	-	140%Io,max		
Short Circuit Surge Transient		-	1.3 A <sup>2</sup> s	2.1 A <sup>2</sup> s		
Ripple and Noise (rms)		-	15 mV	20 mV	Test conditions: 0-20 MHz BW, with a 1 uF ceramic capacitor and a 15 uF Tantalum capacitor at the output; Vin=48 V.	
Ripple and Noise (pk-pk)		-	90 mV	110 mV		
Turn on Time		-	10 mS	-		
Overshoot at Turn on		-	0%	3%		
Output Capacitance		0 uF	-	3000 uF		
<b>Transient Response</b>						
25% ~ 50% Max Load	Overshoot	Vin=48 V	-	100 mV	-	Test conditions: di/dt = 0.5 A/uS, Vin=48 V, with a 500 uF electrolytic capacitor at the output.
	Settling Time		-	120 uS	150 uS	
50% ~ 25% Max Load	Overshoot		-	100 mV	-	
	Settling Time		-	120 uS	150 uS	

**Note:** All specifications are typical at 25 °C unless otherwise stated.

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## General Specifications

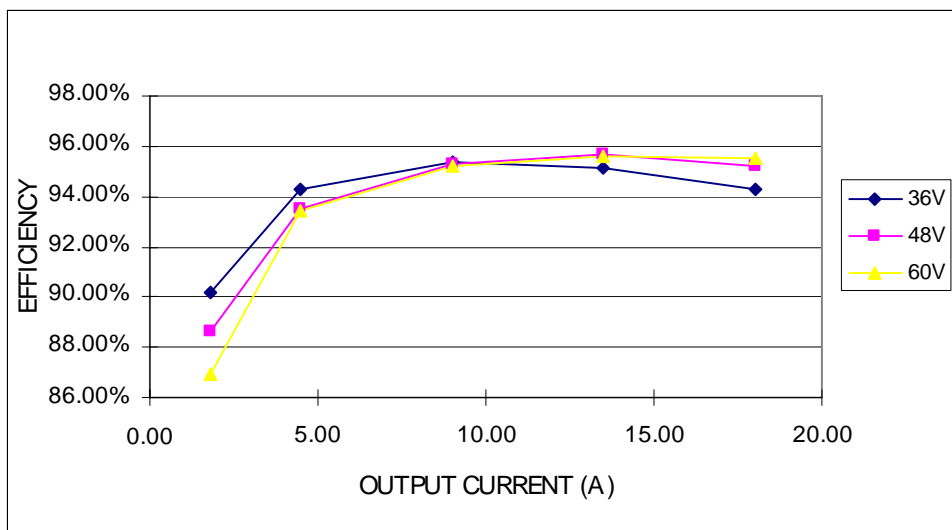
Parameter	Min	Typ	Max	Notes
Efficiency	93%	95%	-	Vin=48 V, Io=Io max
Switching Frequency	200 kHz	220 kHz	240 kHz	
Isolation capacitance	-	500 pF	-	
Over Temperature Protection	-	115 °C	-	Average PCB temperature will not exceed 115 °C.
MTBF	2.4X10 <sup>6</sup> hours			Calculated Per Bell Core SR-332 (Io = 80% load; Ta = 25 °C)
Dimensions				
Inches (L x W x H)	2.30 x 0.9 x 0.41			
Millimeters (L x W x H)	58.4 x 22.8 x 10.41			
Weight	-	23 g	-	

**Note:** All specifications are typical at 25 °C unless otherwise stated.

## Control Specifications

Parameter	Min	Typ	Max	Notes
<b>Remote On/Off</b>				
Signal Low (Unit On)	Active Low	-0.3 V	-	0.8 V
Signal High (Unit Off)		2.5 V	-	
Current Sink	-	0	-	Back bias diode

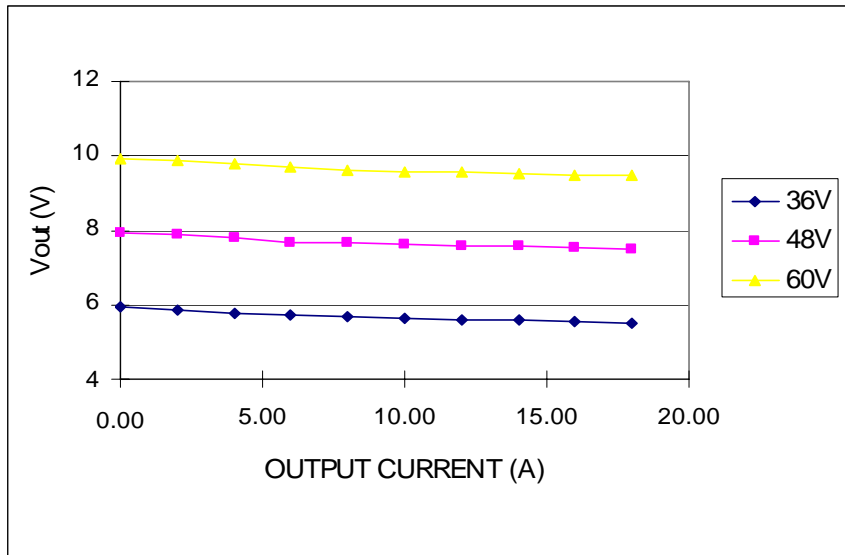
## Efficiency Data:



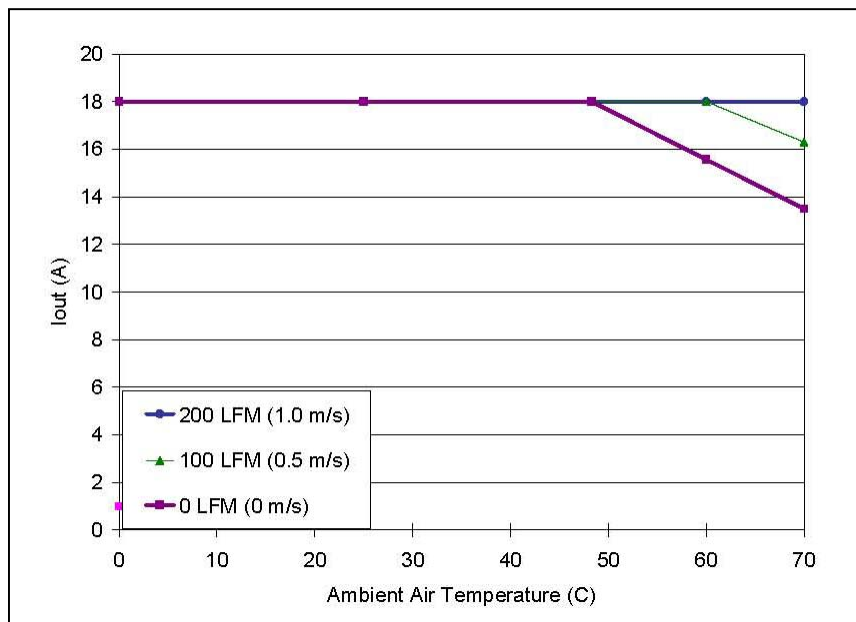
**ISOLATED DC/DC CONVERTERS**  
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**Output Voltage vs. Current**



**Thermal Derating Curve**



# ISOLATED DC/DC CONVERTERS

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## Thermal Images

### Test conditions:

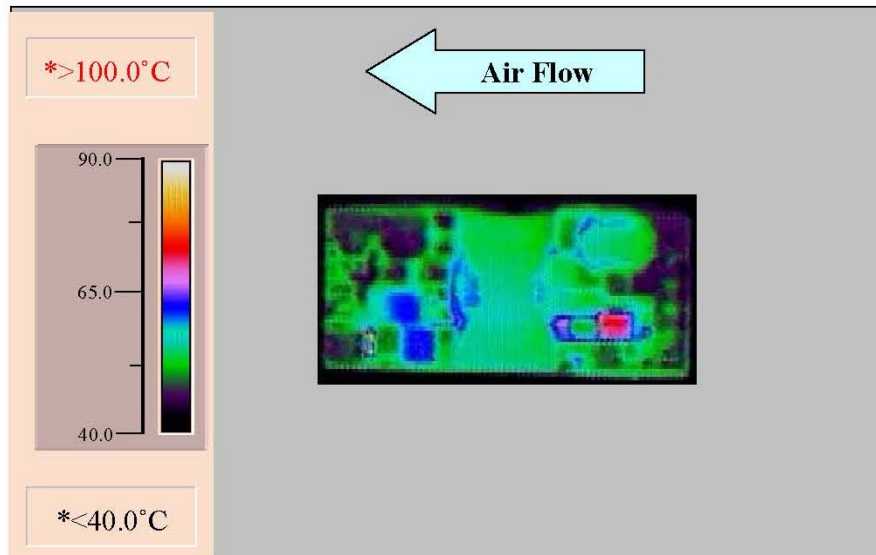
Input voltage: 48 Vdc

Output current: 18 A

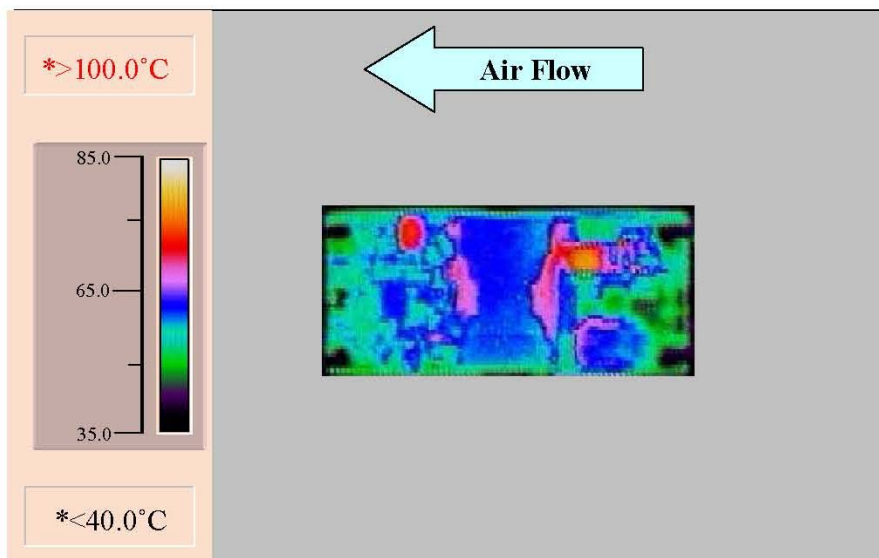
Output power: 140 W

Airflow: 200 LFM

Ambient: 25 °C



Thermal Image: Top of Unit



Thermal Image: Bottom of Unit

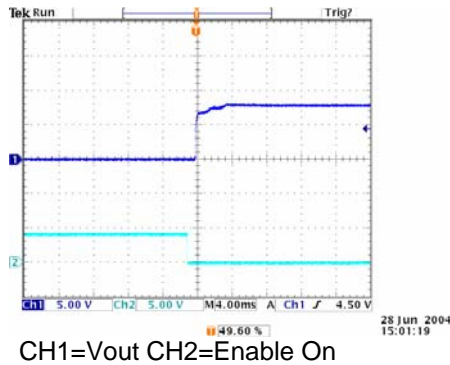
# ISOLATED DC/DC CONVERTERS

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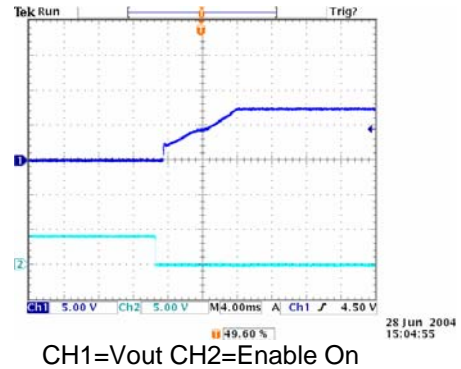


## Turn-On (Enable)

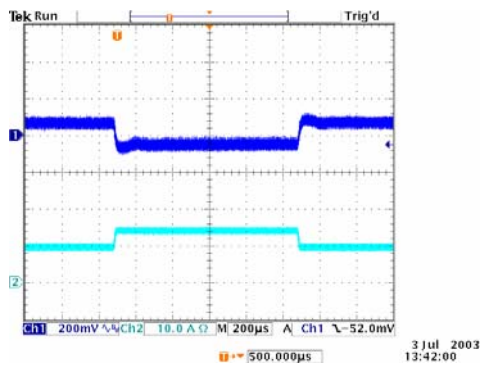
Waveform: 0 A Load @ Vin=48 Vdc



Waveform: 18 A Load (resistive load) @ Vin=48 Vdc

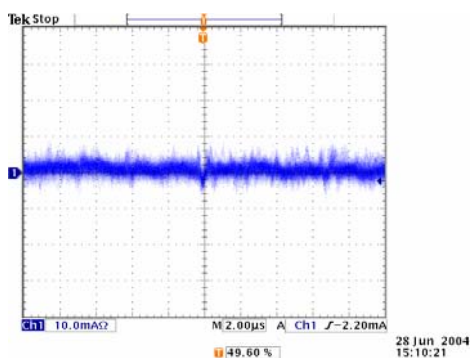


## Transient Response



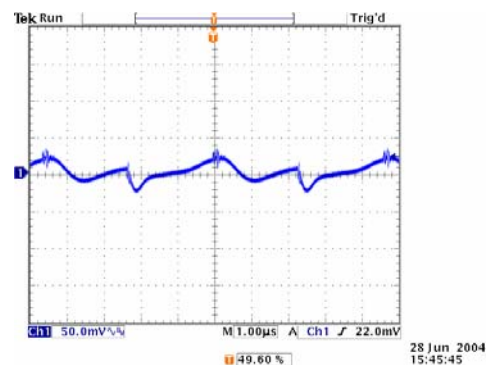
50% to 75% and 75% to 50% load Transient at 48 Vdc input and Ta=25 deg C  
External Load Capacitance: 1 µF ceramic capacitor and 15 µF tantalum capacitor

## Input Reflected Ripple



Input reflected ripple @ Vin=48 Vdc, full load

## Output Ripple/Noise



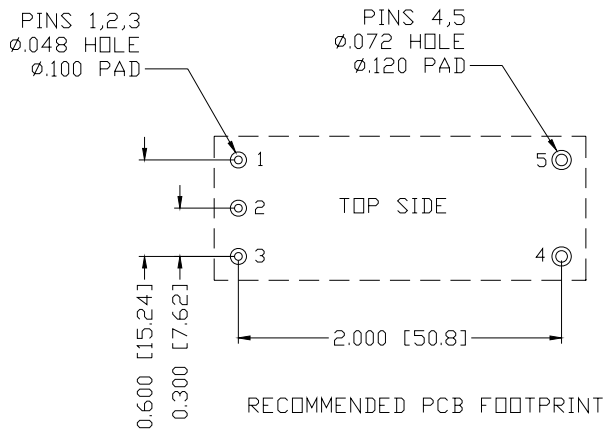
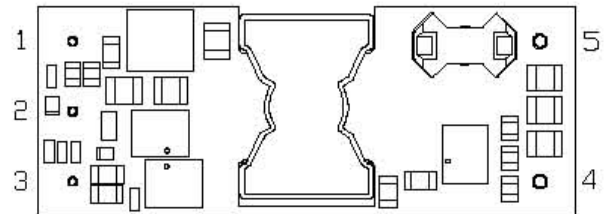
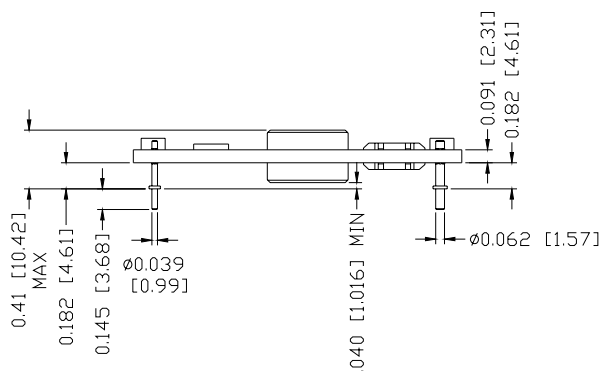
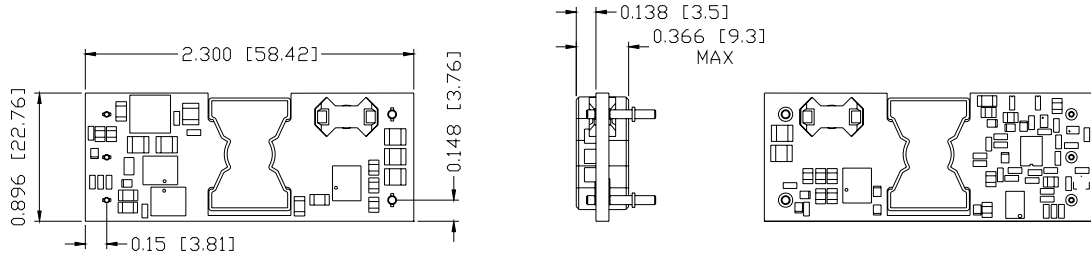
Ripple and noise at full load, 48 Vdc input  
Ta=25 deg C, and with a 1 µF ceramic capacitor  
and a 15 µF tantalum capacitor on output.

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## Mechanical Outline



## Pin Connections

Pin	Function
1	Vin+
2	Remote On/Off
3	Vin-
4	Vout-
5	Vout+

## 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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