

ISOLATED DC/DC CONVERTERS

48 Vdc Input 96 Vdc /1 A Output

bel
POWER PRODUCTS

0RXW-C0T96L

RoHS Compliant

Rev.B

- Fixed Frequency (200 kHz)
- Isolated
- High Efficiency
- Output Voltage Trim
- Input Under/Over Voltage Lockout
- TUV certified to EN 60950-1
- Output Over Voltage Shut Down
- Over Temperature Protection
- SCP/OCV
- Low Cost
- Remote On/Off
- Excellent Thermal Performance
- Basic Insulation



Description

The 0RXW-C0T96L is an isolated dc/dc converter that operates from a nominal 48 Vdc source. This unit provides up to 96 W of output power from a nominal 48 Vdc input. This unit is designed to be highly efficient and low cost. The converter is provided in an industry standard quarter brick package. Target applications include computer, networking and telecommunication industries.

Part Selection

Output Voltage	Input Voltage	Max. Output Current	Max. Output Power	Typical Efficiency	Model Number
96 Vdc	36 Vdc - 75 Vdc	1 A	96 W	91%	0RXW-C0T96L

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	-	15 V	
I/O Isolation Voltage	-	-	1500 V	
Ambient Temperature	-40 °C	-	80 °C	
Storage Temperature	-55 °C	-	125 °C	

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

Input Specifications

Parameter	Min	Typ	Max	Notes
Input Voltage	36 V	48 V	75 V	
Input Current (no load)	-	40 mA	100 mA	
Input Current (full load)	-	-	3 A	
Remote Off Input Current	-	10 mA	20 mA	
Input Reflected Ripple Current (pk-pk)	-	15 mA	30 mA	With simulated source impedance of 10 uH, 5 Hz to 20 MHz; use a 100uF/100 V electrolytic capacitor with ESR = 1 ohm max at 200 kHz
Input Reflected Ripple Current (rms)	-	5 mA	10 mA	
Turn-on Voltage Threshold	34 V	35 V	36 V	
Under Voltage Threshold	33 V	34 V	35 V	
Over Voltage Threshold	76 V	77 V	78 V	

Notes: 1. Should place at least 100uF/100V electrolytic capacitor directly adjacent to the input pin of the module.
2. All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.

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Output Specifications

Parameter	Min	Typ	Max	Notes		
Output Voltage Set Point	94.6 V	96.0 V	97.4 V	V _{in} =48 V, I _o =50%Load		
Line Regulation	-	0.25%V _o	0.5%V _o			
Load Regulation	-	0.25%V _o	0.5%V _o			
Regulation Over Temperature (-40 °C to 85 °C)	-	-	0.02%V _o /C			
Output Current	0 A	-	1 A			
Current Limit Threshold (V _o = 90% V _{o, nom})	1.1 A	1.2 A	1.4 A			
Output Ripple and Noise(pk-pk)	-	-	2.2 V	Test condition under all temperature and all input.		
Ripple and Noise (rms)	-	300 mV	500 mV	0 - 20 MHz BW, with a 1µF ceramic capacitor and a 10µF Tantalum cap at output.		
Ripple and Noise (pk-pk)	-	1.5 V	2 V			
Turn on Time	-	-	500 mS			
Rise Time	-	50 mS	80 mS			
Overshoot at Turn on	-	0%	5%			
Output Capacitance	0 uF	-	1500 uF			
Transient Response						
50% ~ 75% Max Load	Overshoot	V _o =96 V	-	1.2 V	2.5 V	di/dt=0.1 A/us, V _{in} =48 Vdc, T _a =25 °C, and 1 uF ceramic capacitor and a 10 uF Aluminum capacitor at output.
	Settling Time		-	300 uS	500 uS	
75% ~ 50% Max Load	Overshoot		-	1.2 V	2.5 V	
	Settling Time		-	300 uS	500 uS	

Note: All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.

General Specifications

Parameter	Min	Typ	Max	Notes
Efficiency	89%	91%	-	V _{in} =48 V, full load
Switching Frequency	170 kHz	200 kHz	230 kHz	
Isolation Capacitance	-	3900 pF	-	
Output Voltage Trim Range	90%	-	110%	
Over Temperature Protection	-	120 °C	-	
Over Voltage Protection	105 V	-	109 V	V _{in} =48 V, I _o =full load
MTBF	2,963,522 hours			Calculated Per Bell Core SR-332 (V _{in} =48 V, V _o =96 V, I _o =0.8 A, T _a = 25 °C)
Dimensions				
Inches (L × W × H)	2.28 x 1.45 x 0.539			
Millimeters (L × W × H)	57.91 x 36.83 x 13.70			
Weight	-	52 g	-	

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

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Control Specifications

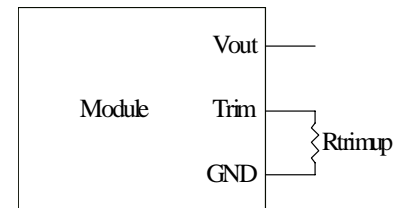
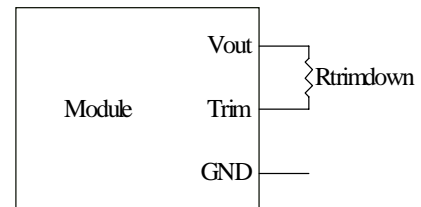
Parameter	Min	Typ	Max	Notes
Remote On/Off				
Signal Low (Unit On)	Active Low	-0.3 V	-	The remote on/off pin open, Unit Off.
Signal High (Unit Off)		3 V	-	
Current Source/Sink		0 mA	-	2 mA

Output Trim Equations

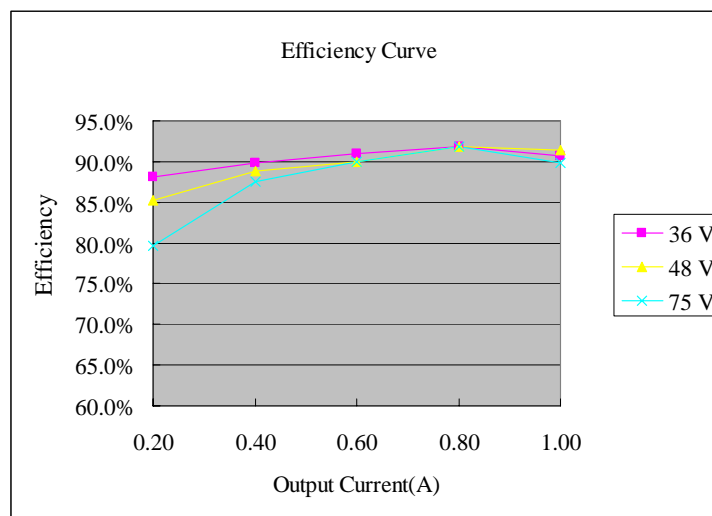
Equations for calculating the trim resistor are shown below. The Trim Down resistor should be connected between the Trim pin and Vout pin. The Trim Up resistor should be connected between the Trim pin and the GND pin. Only one of the resistors should be used for any given application.

$$R_{adj-down} = \frac{93.5 * 93.5}{\Delta U} - 103.5(K\Omega)$$

$$R_{adj-up} = \frac{233.75}{\Delta U} - 10(K\Omega)$$



Efficiency Data

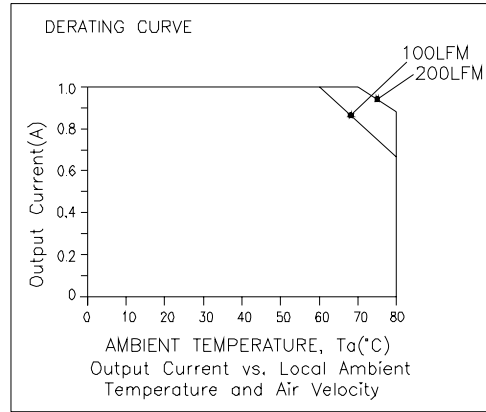


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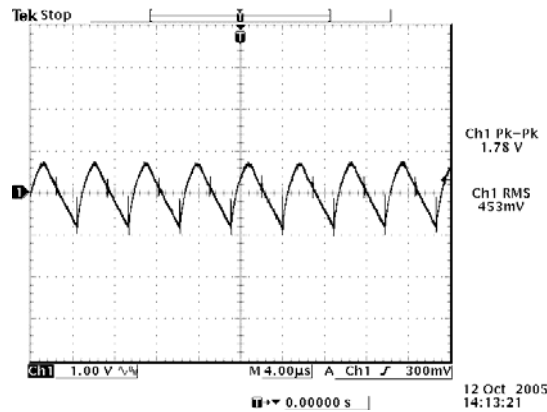
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Thermal Derating Curve

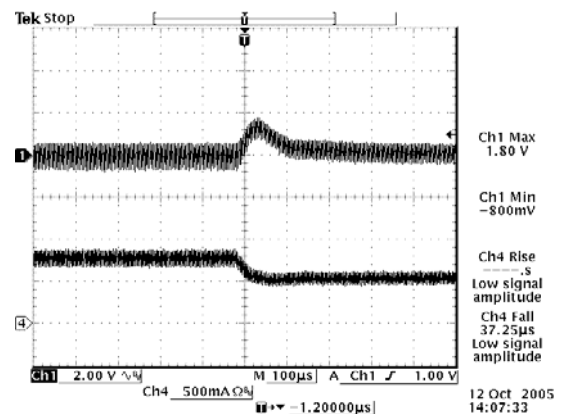
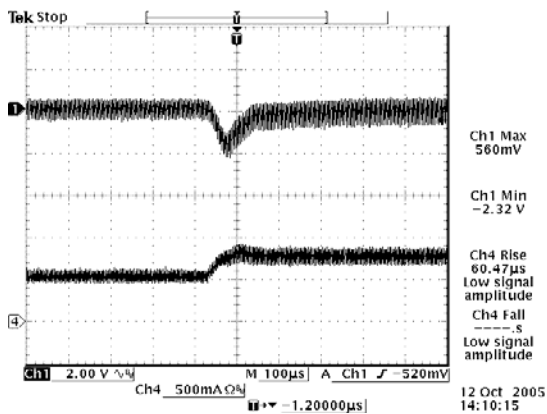


Ripple and Noise Waveform



Note: Ripple and noise at full load, 48 V input, 96 V/1 A output, and $T_a=25$ deg C.

Transient Response Waveforms



50%-75% Load Transients at $V_{in}=48V$, $V_o=96V$, $T_a=25^\circ C$

75%-50% Load Transients at $V_{in}=48 V$, $T_a=25^\circ C$, $V_o=96V$

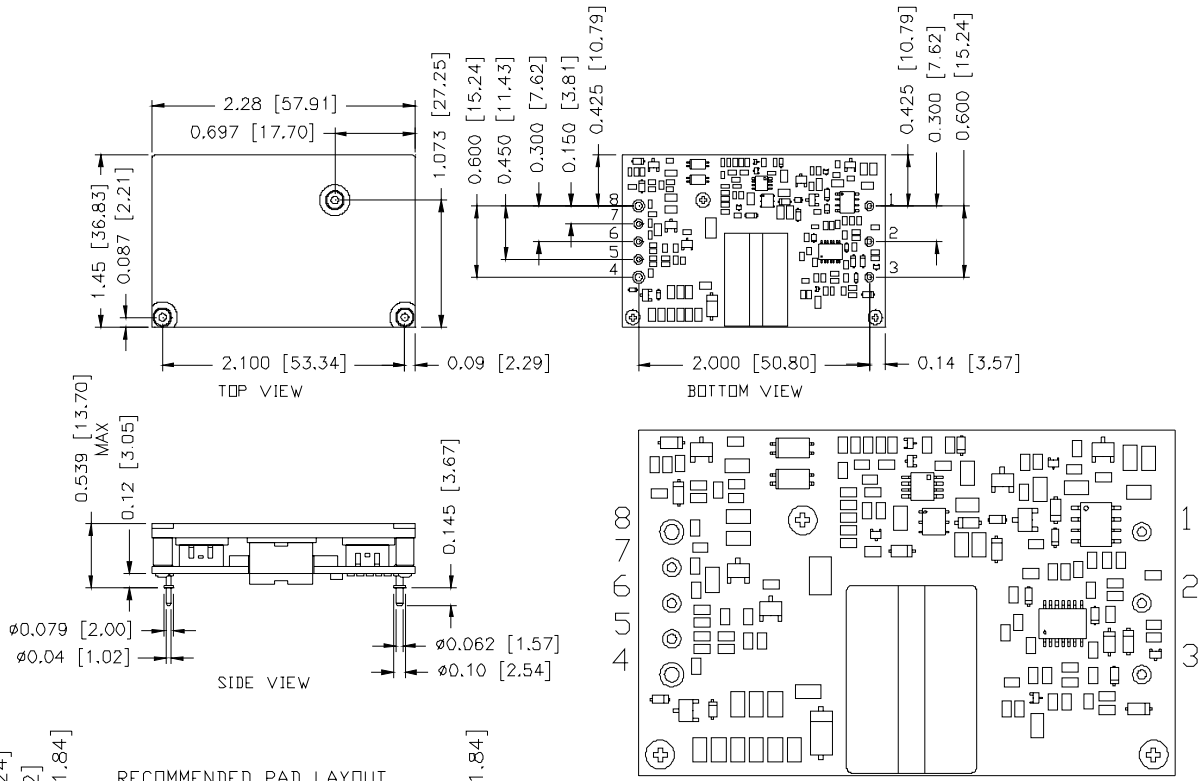
Note: Transients at $di/dt=0.1 A/\mu s$, with 1 μF ceramic capacitor and a 10 μF Aluminum capacitor at the output.

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Mechanical Outline



Pin Connections

Pin	Function	Pin Size
1	Vin(+)	0.040"
2	On/OFF	0.040"
3	Vin(-)	0.040"
4	Vo(-)	0.062"
5	Sense(-)	0.040"
6	Trim	0.040"
7	Sense(+)	0.040"
8	Vo(+)	0.062"

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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