

## Features

- 48vin, Isolated, 4:1 Fixed Conversion Ratio (12v Nominal Out)
- 240watt Max Output
- Parallel For Higher Output Power
- $\pm 10\%$  Current Share Accuracy
- Over-Temperature Protection
- 96% Efficiency
- Remote Enable (Primary Side)
- Positive or Negative Enable Logic
- Current Limit
- Industry Standard  $\frac{1}{4}$  Brick Footprint



**This product is not fuse protected. User is responsible for providing system protection. Consult factory for application information.**

Table 1:

| Input Characteristics                                             | Notes and Conditions (1)      | Min  | Typ  | Max  | Units            |
|-------------------------------------------------------------------|-------------------------------|------|------|------|------------------|
| Input Voltage Operating Range                                     |                               | 36   | 48   | 55   | Vdc              |
| Input Voltage Absolute Maximum                                    |                               |      |      | 60   | Vdc              |
| Input Undervoltage Lockout                                        | Turn-on Threshold             | 36.5 |      | 37.6 | Vdc              |
|                                                                   | Turn-off Threshold            | 34.5 |      | 35.5 | Vdc              |
| Maximum Input Current                                             | Steady-State (20Amp output)   |      | 5.1  |      | Adc              |
| No-Load Input Current                                             | Enable state, on Load (48Vin) |      | 72   |      | mA               |
| Disabled Input Current                                            | Disabled State (48V input)    |      | 21   |      | mA               |
| Input Reflected Ripple Current (2)                                |                               |      |      | 50   | mArms            |
| Inrush Current Transient                                          |                               |      | 0.20 |      | A <sup>2</sup> s |
| Enable - Negative Logic Version<br>Internal 10K pull-up to 6.2V   | On State Range                | -0.6 |      | 0.7  | Vdc              |
|                                                                   | Off State Range               | 0.8  |      | 6.2  | Vdc              |
| Enable - Positive Logic Version<br>Internal 100K pull-down to gnd | On State Range                | 0.8  |      | 6.2  | Vdc              |
|                                                                   | Off State Range               | -0.6 |      | 0.7  | Vdc              |

Table 2:

| Output Characteristics             | Notes and Conditions (1)        | Min | Typ  | Max  | Units |
|------------------------------------|---------------------------------|-----|------|------|-------|
| Output Voltage Set Point           | (Vin/4) +1% / -1%               |     | 12   |      | Vdc   |
| Output Load Regulation             | (Vin/4) + 1% / -5%              | -5  | -3   | 1    | %     |
| Output Voltage Total Regulation    |                                 | 8.5 |      | 13.9 | Vdc   |
| Output Ripple Voltage & Noise (3)  | 20 MHz Bandwidth                |     | 90   | 150  | mVp-p |
| Output Current Operating Range (4) |                                 | 0   |      | 20   | A     |
| Efficiency                         | Io=20A, Vin=48V (See curves)    |     | 95.6 |      | %     |
| Turn-on Time                       | Vin present: Enable to 90% Vout |     |      | 10   | mS    |

1150 Eglinton Avenue East  
Toronto, Ontario M3C 1H7  
1-866-740-1232

[www.cd4power.com](http://www.cd4power.com)

4607 S.E. International Way  
Milwaukie, Oregon 97222  
1-971-206-2800

**Table 2:**

| Output Characteristics     | Notes and Conditions (1) | Min | Typ | Max  | Units |
|----------------------------|--------------------------|-----|-----|------|-------|
| Transient Response (5)     | 5A Step 0.1A/μS, ΔVo     |     |     | 150  | mV    |
|                            | Recovery Time            |     |     | 100  | μS    |
| Maximum Output Capacitance | Max                      |     |     | 3000 | μF    |

**Table 3:**

| Protection Characteristics                                 | Notes and Conditions (1) | Min | Typ  | Max | Units |
|------------------------------------------------------------|--------------------------|-----|------|-----|-------|
| Output Overcurrent Inception Limit                         |                          | 20  | 27   | 30  | Adc   |
| Output Overcurrent Shutdown (Latching after second re-try) | Restart Rate             |     | 1700 |     | mS    |
| Short Circuit Current                                      | Peak                     |     |      | 30  | Apk   |
| Overtemperature Shutdown                                   | Non-Latching             |     |      | 125 | °C    |
| Overtemperature Restart Hysteresis                         |                          |     | 10   |     | °C    |

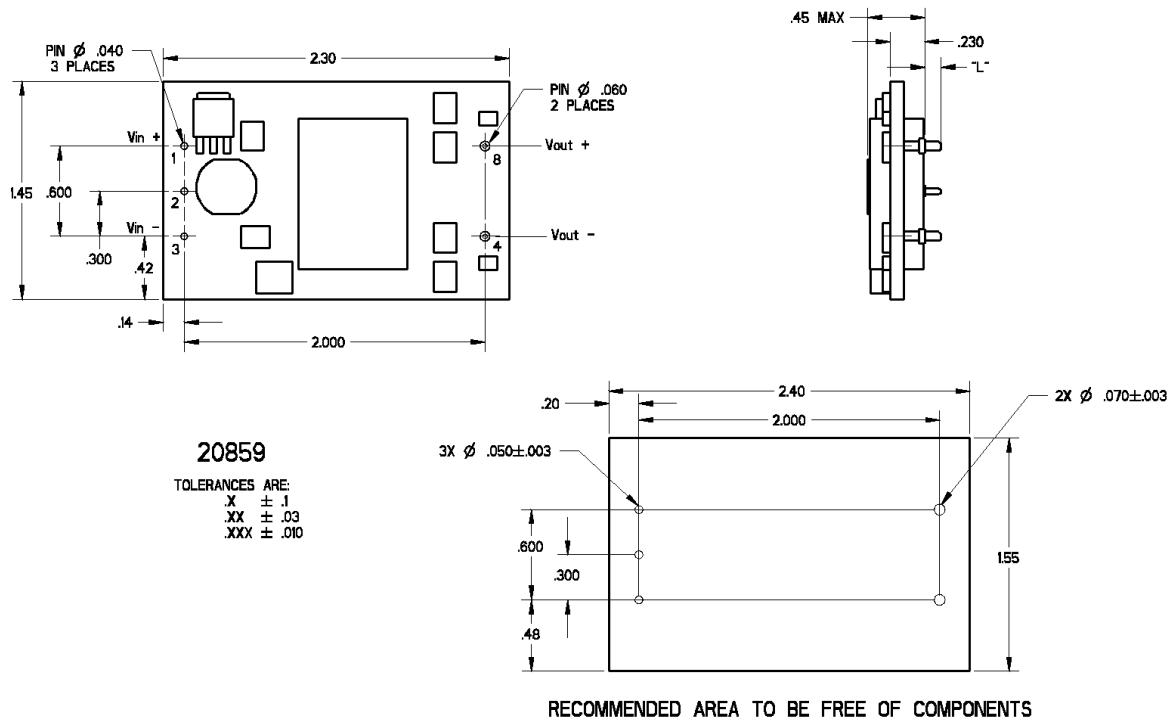
**Table 4:**

| General Characteristics     | Notes and Conditions (1)             | Min                      | Typ  | Max  | Units                |
|-----------------------------|--------------------------------------|--------------------------|------|------|----------------------|
| Isolation Voltage           | Input to Output                      |                          |      | 2000 | Vdc                  |
| Isolation Resistance        | Input to Output                      | 10                       |      |      | Mohm                 |
| Storage Temperature Range   | Non-condensing                       | -40                      |      | 125  | °C                   |
| Operating Temperature Range |                                      | -40                      |      | 85   | °C                   |
| Agency Approvals            | UL 60950-1, IEC 60950-1, TUV 60950-1 |                          |      |      |                      |
| Material Flammability       | UL 94V-0                             |                          |      |      |                      |
| MTBF                        | Calculated (RAC PRISM) 50°C          |                          | 1.56 |      | x10 <sup>6</sup> Hrs |
|                             | Demonstrated                         |                          | 3.0  |      | x10 <sup>6</sup> Hrs |
| Dimensions                  | Horizontal                           | 2.30"L x 1.45"W x 0.45"H |      |      |                      |
| Weight                      |                                      |                          | 35   |      | g                    |

**Notes:**

1. Vin = 48Vdc, Ta = 20°C, Airflow = 200LFM unless otherwise noted.
2. Input Reflected Ripple Current is specified when measured with a 120μF 63V electrolytic capacitor across the input pins.
3. Output Ripple Voltage is specified when measured with a 270μF electrolytic and a 10μF ceramic capacitor at the converter output pins.
4. De-rating curves are conducted in a controlled environment. End application testing is required to ensure the hot spot temperature is below the maximum specified. Recommended airflow direction is input to output or cross-wise. For output to input air-flow subtract 3A from derating curves.
5. Transient response is specified with 270μF electrolytic and 10μF ceramic at the converter output pins.

**Mechanical Information - Horizontal**



**Figure 1**

**Pin Assignment - Horizontal**

**Table 5:**

| Pin # | Pin Name | Function                       | Notes & Conditions |
|-------|----------|--------------------------------|--------------------|
| 1     | VIN+     | Vin 36 to 55 Vdc               |                    |
| 2     | ON/OFF   | Referenced to Vin-             |                    |
| 3     | VIN-     | Primary return                 |                    |
| 4     | VOU-     | Secondary return               |                    |
| 6     | VOU+     | Output, 12V nominal, 20Amp max |                    |

## Efficiency Curves

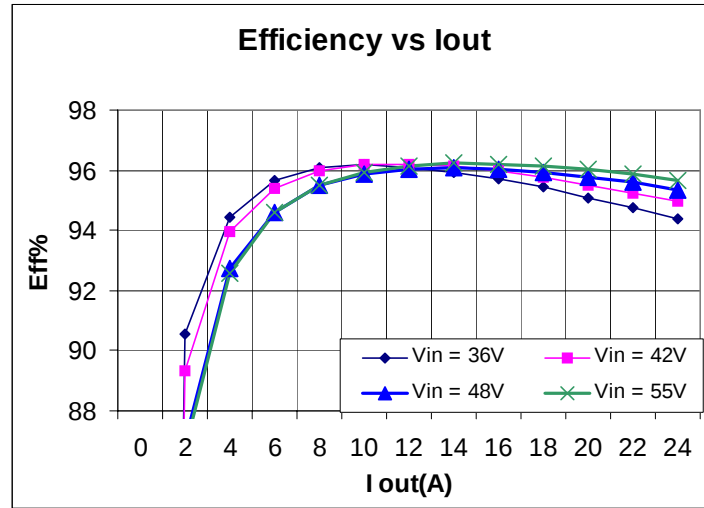


Figure 2

## Vout vs. Load

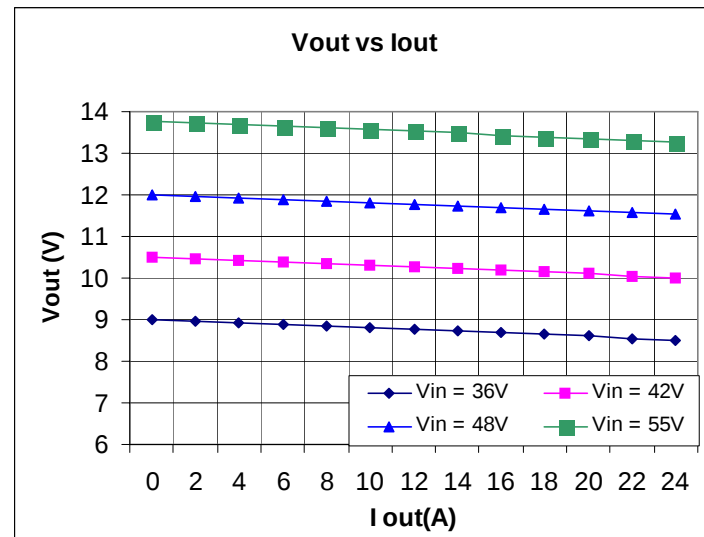
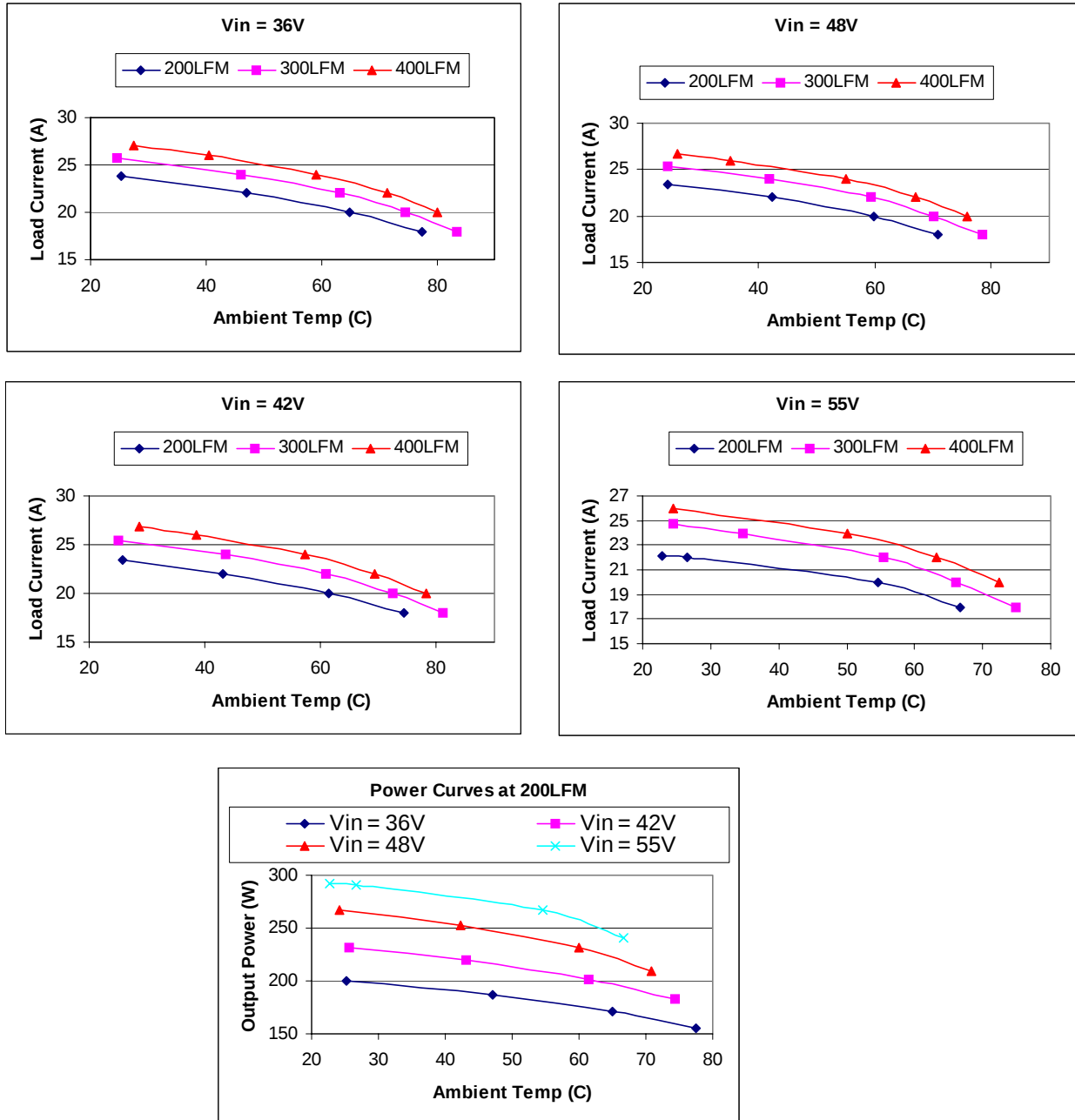


Figure 3

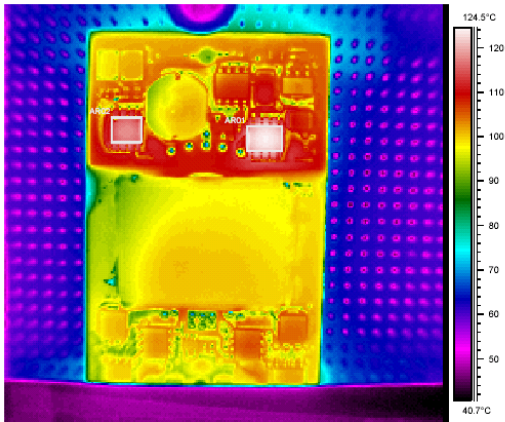
**Derating - Horizontal Mount**



**Figure 4**

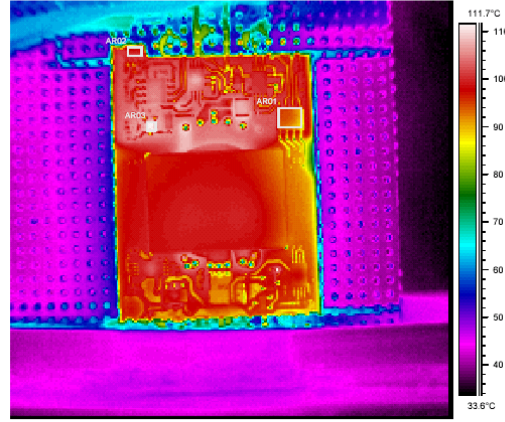
## Thermal Performance - Horizontal Mount

Vin: 48v Vout: 11.458v Iout: 19.542A Airflow: 300Lfm  
Temp: 55c



| Label      | Value   |
|------------|---------|
| AR01 : max | 124.7°C |
| AR02 : max | 119.3°C |

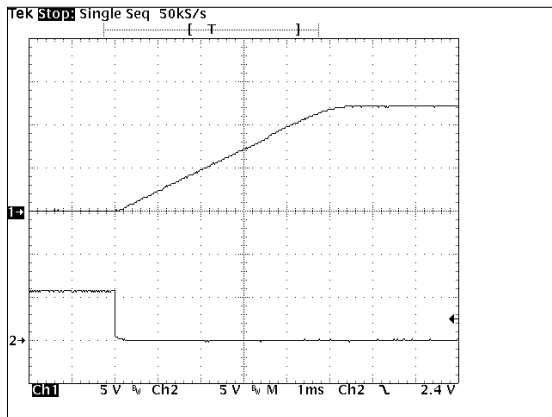
Vin: 48v Vout: 11.458v Iout: 19.542A Airflow: 300Lfm  
Temp: 55c



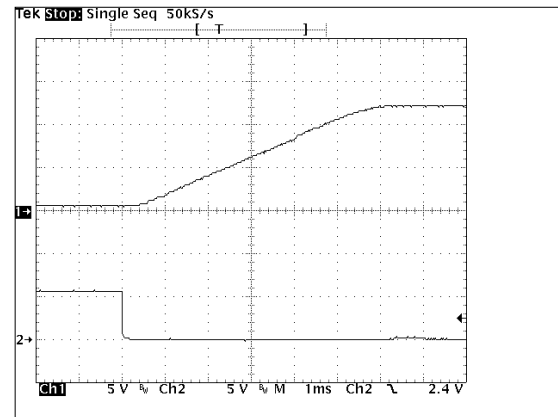
| Label      | Value   |
|------------|---------|
| AR01 : max | 99.2°C  |
| AR02 : max | 101.3°C |
| AR03 : max | 114.2°C |

Figure 5

## Start up from Enable



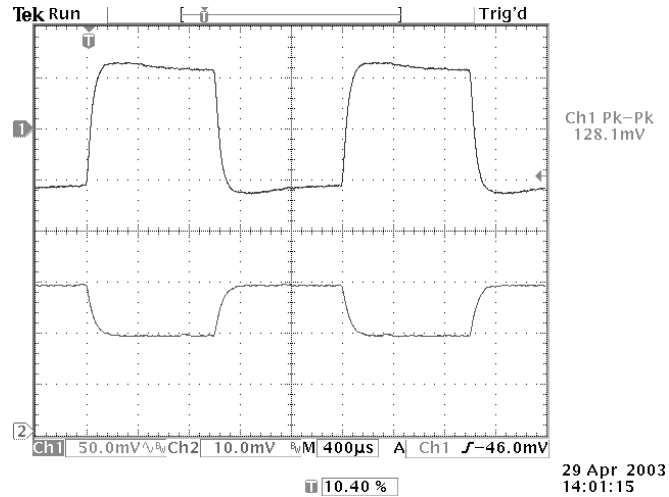
Vin = 48V, Iout = 20A



Vin = 48V, Iout = 0A

Figure 6

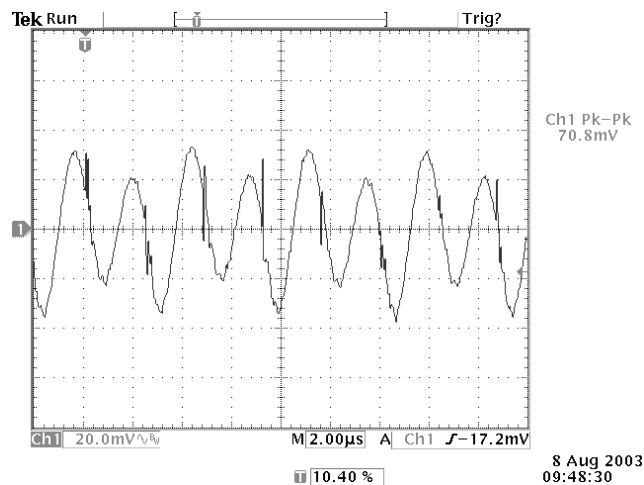
## Transient Response



Iout 10A to 15A at 0.1A/μs  
CH1 Vout 50mV/div, CH2 Iout 5A/div

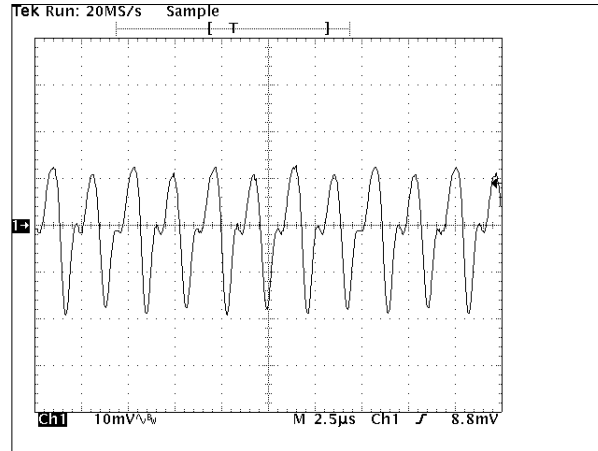
**Figure 7**

## Output Voltage Ripple



Vin = 48V, Iout = 20A; BW = 20MHz

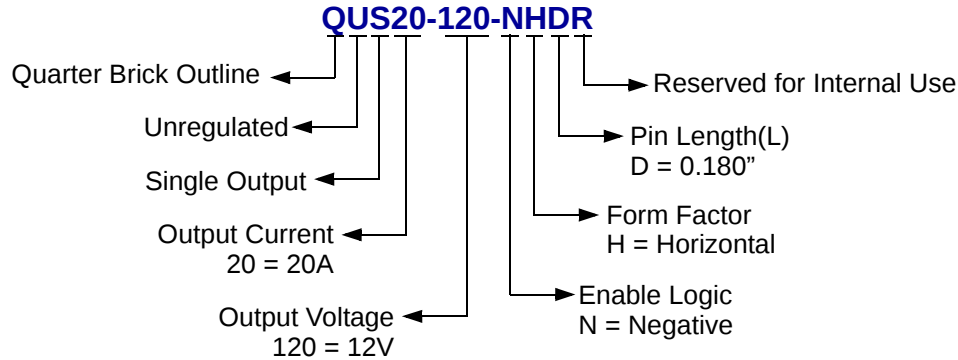
**Figure 8**

**Input Ripple**

Vin = 48V, Iout = 20A; BW = 20MHz 5mA/div

**Figure 9**

## Ordering Information



Manufacturing p/n: 073-20859-40C

The 073-20859-40C Bus Converter is in compliance with the European Union Directive 2002/95/EC (RoHS) with respect to the following substances: lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

## RoHS Process Note

This product is not intended to go through a reflow solder process. Use wave solder, selective solder or hand solder process with a peak temperature of 260°C for 10 seconds.

C&D Technologies, Inc. reserves the right to alter or improve the specification, internal design or manufacturing process at any time, without notice. Please check with your supplier or visit our website to ensure that you have the current and complete specification for your product before use.

© C&D Technologies, Inc. 2004

No part of this publication may be copied, transmitted, or stored in a retrieval system or reproduced in any way including, but not limited to, photography, photocopy, magnetic or other recording means, without prior written permission from C&D Technologies, Inc.

Instructions for use are available from: [www.cd4power.com](http://www.cd4power.com)

4118 14th Avenue, Unit 4  
Markham, Ontario L3R 0J3  
1-905-944-2850

[www.cd4power.com](http://www.cd4power.com)

4607 S.E. International Way  
Milwaukie, Oregon 97222  
1-971-206-2800