



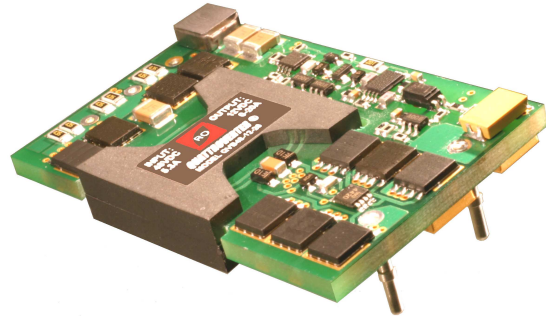
QUATTROVERTER[®]

12V, 20A DC-DC BUS CONVERTER
MODEL: QVB48-12-20
ADVANCE DATA SHEET

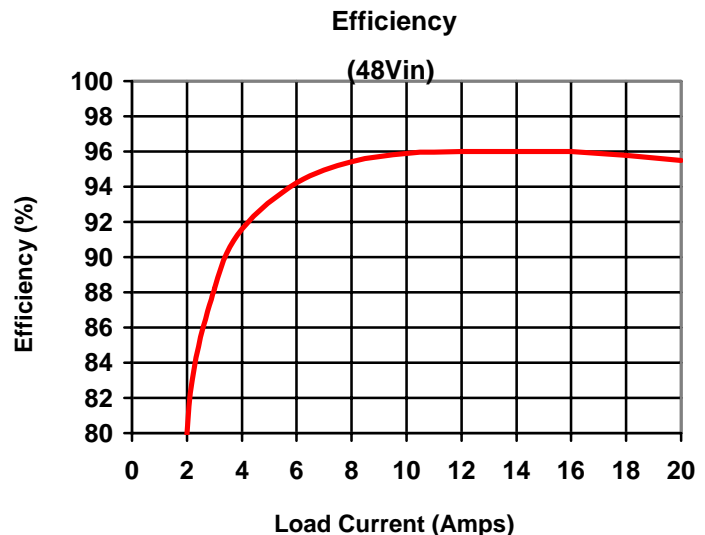
- INPUT: 42 – 53VDC
- OUTPUT: 12VDC @ 20A

FEATURES

- 20A Output Current
- Standard Quarter Brick Package
- Ultra-High Efficiency: 96%
- Extended Thermal Performance – No Heat Sink Required
- Fully Protected Against:
 - Input Under-Voltage
 - Input Over-Voltage
 - Output Over-Voltage
 - Output Over-Load
 - Output Short Circuit
 - Over Temperature
- Recovers Automatically from all Protection Modes
- Constant Frequency
- Remote Logic On/Off Control
- 2000V Input-to-Output Isolation
- Meets Basic Insulation Requirements of EN60950/ UL1950



An Evaluation Board is Available



[See Last Page for Available Options](#)

DESCRIPTION

The QUATTROVERTER QVB48-12-20 is a high efficiency DC-DC converter designed to provide an isolated 12V rail from a 48V line. Synchronous rectification, proprietary magnetic geometries and advanced thermal management techniques are used to produce a 12V, 20A output with an ultra high conversion efficiency of 96%. The minimal power loss and packaging make reliable operation possible without the use of a heat sink. Operating essentially as a DC transformer with $V_{out} = \frac{1}{4} V_{in}$, the QuattroVerter QVB is the ideal choice for converting 48V to an intermediate 12V bus for use with multiple, low cost, point of load converters.

QUATTROVERTER® DC-DC Bus Converter

MODEL: QVB48-12-20

ABSOLUTE MAXIMUM RATINGS

Exceeding absolute maximum ratings may cause permanent damage and may reduce reliability

PARAMETER	MIN	MAX	UNITS	CONDITIONS
Continuous Input Voltage (+In to -In)	-0.3	60	Vdc	
Transient Input Voltage (+In to -In)	-0.3	80	Vdc	Up to 100ms
On/Off Voltage (On/Off to -In)	-0.3	40	Vdc	
Storage Temperature	-40	+125	°C	
Operating Temperature	-40	+85	°C	Ambient
Soldering Temperature (Wave Solder)		+260	°C	< 5 sec.

SPECIFICATIONS

Specifications apply with 48V_{in}, full load, 25°C unless indicated otherwise.

INPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input Voltage	42	48	53	Vdc	
Startup Voltage		42		Vdc	
Shut Down Voltage		39		Vdc	
Maximum Input Current			5.3	A	V _{in} = 42V

OUTPUT PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Voltage Set Point		12.0		Vdc	48V _{in} , Half Load
Load Regulation		5		%	0 A to Full Load
Line Regulation		20		%	Over V _{in} range
Voltage Drift w/Temperature		2		%	-40 to +100 °C
Ripple		120		mV p-p	5Hz to 20 MHz, at any V _{in} within range, C _{ext} = 10µF tantalum + 1µF ceramic
Rated Current	0		20	A	
Current Limit Inception		120		% F.L.	V _{out} = 95% V _{out} nominal
Short Circuit Current			170	% F.L.	V _{out} = 250mV
Transient Response Peak Deviation Settling Time		250 100		mV µsec	Load change from 50% to 75% full load Slew rate = 0.1A/µsec V _{out} within 1% V _{out} nominal
External Load Capacitance	0		3,000	µF	
Efficiency (See Curve)		96		%	48V _{in} , 3/4 Load

ISOLATION PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Input/Output Isolation			2000	Vdc	
Input-to-Output Capacitance		TBD		pF	
Input-to-Output Resistance	10			M Ohms	

QUATTROVERTER[®] DC-DC Bus Converter

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SPECIFICATIONS (continued)

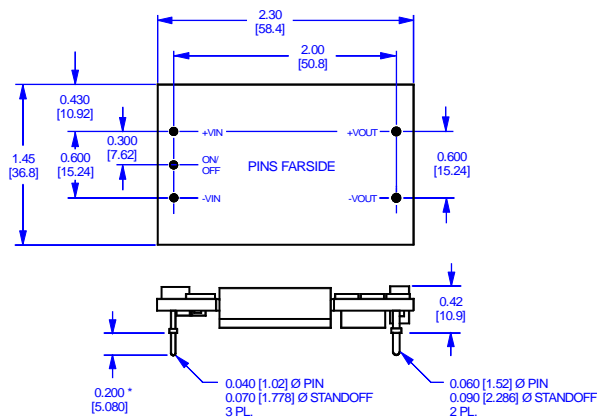
MECHANICAL PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Weight		35 (1.24)		g (oz.)	
Size		2.3 x 1.45 x 0.42		Inches	

FEATURE PARAMETERS	MIN	TYP	MAX	UNITS	CONDITIONS
Over Voltage Protection		13.75		V	
Over Temperature Shut-down (Automatic Recovery)		120		°C	PCB temperature
Turn-On Time		TBD	TBD	msec	80% F.L., V_{out} within 1%
Logic On/Off					
Logic Low	0.5			V	$V_{out} = 0$
On/Off Source Current		2		mA	@ $V_{on/off} < 0.5V$
Logic High			15	V	
On/Off Sink Current			50	μA	@ $V_{on/off} = 15V$
Logic Turn-On Time		2		msec	80% F.L., V_{out} settled within 1%

Part Numbering Scheme

Converter Family	V_{in} (nom)	V_{out} (nom)	I_o (rated)	Logic options	Pin options
QVB	48	12	20		
QuattroVerter Series	48V nom. 42V - 53V	12V output	20A rating	blank = pos. logic (std.) 1 = neg. logic	Blank = 0.200 PTH (std.) 6 = 0.145 PTH 8 = 0.110 PTH SMT = SMT Option

Outline Drawing



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]
 * OTHER PIN LENGTHS AVAILABLE
 TOLERANCES UNLESS SPECIFIED OTHERWISE:
 x.xx in. ± 0.02 in. [x.x mm. ± 0.5 mm.]
 x.xxx in. ± 0.010 in. [x.xx mm. ± 0.25 mm.]

Available Options

- Positive Logic** – The On/Off pin must be high to enable the module's output. If it's left floating, the output is enabled. This is the standard logic configuration.
- Negative Logic** – The On/Off pin must be low to enable the module's output. If it's left floating, the output is disabled.
- Alternate Pin Lengths** – In addition to the 0.200" standard thru-hole pins, RO offers 0.145", and 0.110" thru-hole pin lengths.
- SMT Mounting** – The module is mounted to the target PCB using a surface-mount interface. Contact the factory for further information.

(minimum quantities and extended lead-times may apply to orders of non-standard options)

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