Features

Power Module

- Non-isolated buck/boost converter
- Up to 3000W in half brick case
- Adjustable output voltage and current
- Efficiency up to 96%
- Wide operating temperature range from -40°C to +85°C without derating

RECOM
DC/DC Converter

RBBA3000

50 Amp Half Brick Buck/Boost converter

EN55032 compliant

Description

The RBBA3000 is a high efficiency non-isolated buck/boost converter with up to 50A output current in a half-brick case. The input voltage range is from 9-60VDC and the output voltage (0-60V) and current (0-50A) are independently set via fixed trim resistors or an external voltage. The I_{share} pin has two functions: it can be used to monitor the load current in stand-alone applications or it can be used to connect two modules in parallel to double the maximum output current to 100A. Typical applications are 48V to 24V or 12V to 24V battery power conversion, electric vehicles, battery voltage stabilizers or high power laboratory DC power supplies. With appropriate cooling, the full power operating temperature extends from -40°C to +85°C and the RBBA3000-50 comes with RECOM's standard 2 year warranty.

Selection Guide

Part Number	Input Voltage Range [VDC]	Input Current max. [A]	Nom. Output Voltage [VDC]	Output Current max. [A]	Efficiency typ. (1) [%]
RBBA3000-50	9 - 60	55	0 - 60	50	96

Notes:

Note1: Efficiency is tested at nominal input and 24Vout at +25°C ambient

Model Numbering

RBBA3000-50

50 = max. Output Current

Specifications (measured @ Ta= 25°C, 2.5m/s, nom. Vin, 24Vout and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS					
Parameter	**Condition**		**Min.**	**Typ.**	**Max.**
Internal Input Filter					Pi-Type
Input Voltage Range (2)	nom. Vin = 48VDC		9VDC		60VDC
Absolute Maximum Input Voltage	100ms				80VDC
Undervoltage Lockout Threshold	DC-DC ON DC-DC OFF		7VDC 5VDC	8VDC 6VDC	9VDC 7VDC
Undervoltage Lockout Hysteresis				2VDC	
Input Current (3)	low line to high line				55A
Quiescent Current	no load Vin = 24VDC	Vout = 12VDC Vout = 24VDC Vout = 48VDC		100mA 90mA 180mA	
Internal Power Dissipation	refer to *„Power Dissipation vs. Output Current“*				
Output Current Range (2)			0A		50A
Output Voltage Trimming (4)			0VDC		60VDC

Notes:

Note2: For detail information please refer to ***"Safe Operating Area"***

Note3: For detail information please refer to ***"PROTECTIONS"***

Note4: For detail information please refer to ***"Output Voltage Trimming"***

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Preliminary

Specifications (measured @ Ta= 25°C, 2.5m/s, nom. Vin, 24Vout and after warm-up unless otherwise stated)

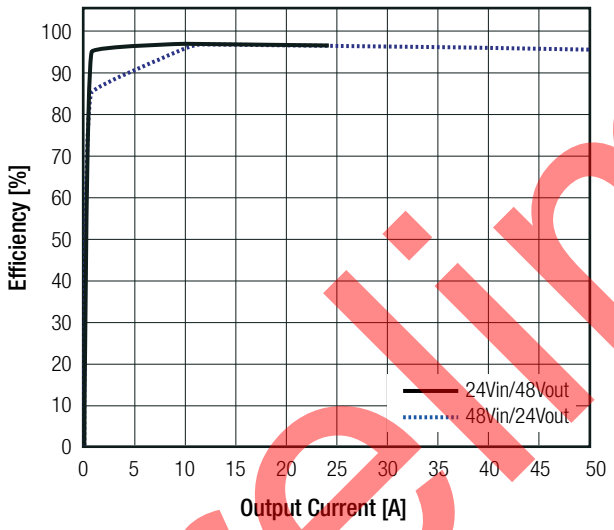
Parameter	Condition		Min.	Typ.	Max.
Minimum Load			0%		
Start-up time	ON/OFF CTRL Power Up			30ms 30ms	
Rise Time				300mV/ms	
ON/OFF CTRL [5]	nom. Vin= 48VDC	DC-DC ON DC-DC OFF			0VDC <V_{CTRL} <0.8VDC 3.5VDC <V_{CTRL} <10VDC
Input Current of CTRL Pin	nom. Vin= 48VDC			1mA	
Standby Current	nom. Vin= 48VDC	DC-DC OFF		2mA	
Current Monitor or Current Share *"Ishare"*	reference voltage at no load reference voltage at full load (50A)			0.2VDC 2.7VDC	
Internal Operating Frequency			100kHz	280kHz	400kHz
Output Ripple and Noise [6]	20MHz BW			100mVp-p	
Absolute Maximum Capacitive Load	<1 second start up				15000µF

Notes:

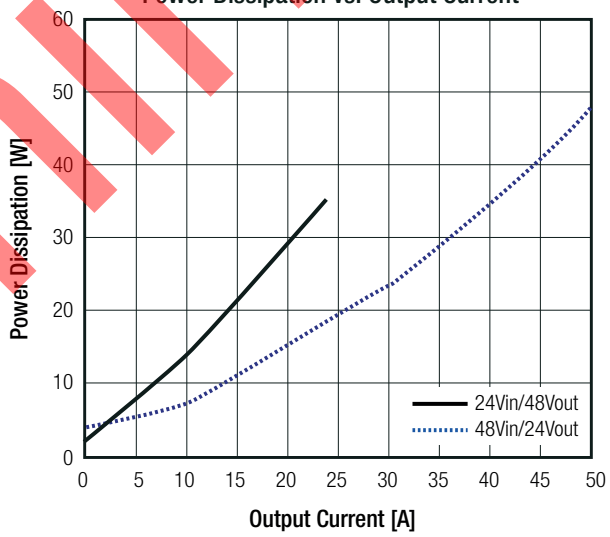
Note5: The ON/OFF CTRL is normally OFF

Note6: Measurements are made with a 100µF E-Cap across output (low ESR)

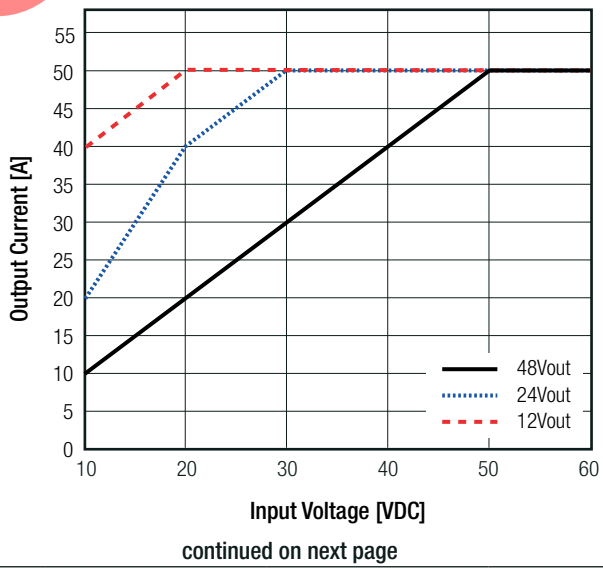
Efficiency vs. Load



Power Dissipation vs. Output Current



Safe Operating Area



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Preliminary