

CBQ SERIES

Enclosed Quarter Brick DC/DC Converter

125W / 25A · 36–75V or 18–36V Input · Patented Buck Reset Topology

 > 90% Peak Efficiency · 101 W/in³ · 4.57 × 10⁶ hrs MTBF

OCP

OVP

OTP

Remote ON/OFF

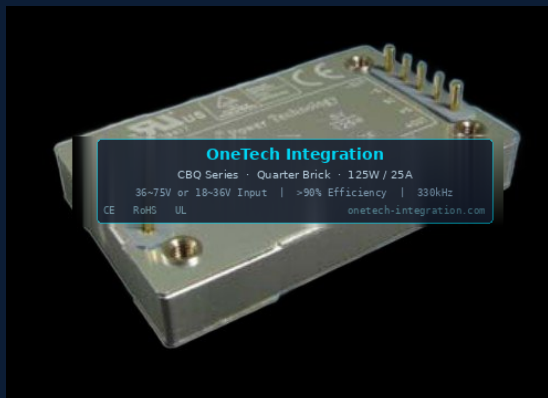
Voltage Trim ±10%

Remote Sense

CE Approved

UL Listed

RoHS



6

125W

Max Output Power

25A

Max Output Current

101 W/in³

Power Density

>90%

Peak Efficiency

4.57M hrs

MTBF (Bellcore)

330 kHz

Switch Frequency

PRODUCT OVERVIEW

The CBQ Series provides up to 125W / 25A output in a six-sided enclosed metal quarter brick package. An efficient synchronous rectification (SR) stage is combined with the patented "Buck Reset" switching topology, reducing power loss to achieve 101 W/in³ power density — one of the highest available in a standard quarter brick.

The multi-layer single-sided circuit board design enhances thermal performance and improves long-term reliability. Modules are designed for Telecom infrastructure, Servers, Networking equipment, and other applications operating from a 24V or 48V input bus. Both positive and negative remote on/off control logic are supported.

PART NUMBER SYSTEM

CBQ100	48S	5V0	-L	a	b	c	XX	X
Series Name	Input Voltage	Output Voltage	Enable Logic	Pin Dim.	Pin Length	Base Plate	Suffix	Version
Input:	48S = 36V–75V 24S = 18V–36V							
Output:	050=5.0V 033=3.3V 025=2.5V 020=2.0V 018=1.8V 015=1.5V							
Enable:	P = Positive Logic (+3V–6.5V=ON) N = Negative Logic (0V–1V=ON)							
Pin dim:	0=0.12" 1=0.16" 2=0.20" 3=0.24" Base plate: E = 1.0mm Metallic enclosure							

TARGET APPLICATIONS

Telecom Base Stations

BTS, RRU, DRAN

Servers & Edge

Rack-mount, PoL

Networking

Switches, Routers, SDN

Industrial Control

DIN-rail, PLC

Defense & UAV

Avionics, Payloads

Energy Systems

48V bus, UPS input

INPUT

48V Operating Range	+36V to +75V DC
24V Operating Range	+18V to +36V DC
48V Transient (100ms)	100V Maximum
24V Transient (100ms)	50V Maximum
48V Power-ON Threshold	+34.0V to +36.0V
24V Power-ON Threshold	+17.0V to +18.0V
48V Power-OFF Threshold	+31.2V to +33.2V
24V Power-OFF Threshold	+15.6V to +16.6V
Off-State Input Current	6 mA Max (at Vnom)
Latch-State Input Current	8 mA Max (at Vnom)
Reflected Ripple Current	20 mA rms / 60 mA p-p
Input Capacitance 48V	10.0 uF Max
Input Capacitance 24V	22.0 uF Max
Ripple Rejection (<1kHz)	-50 dB (Vnom, Full Load)

REMOTE CONTROL

Logic High — Enable	+3.0V to +6.5V
Logic Low — Disable	0V to +1.0V
PC Pin Voltage Range	-0.5V to +12V DC
PC Pin Input Current	-0.5 mA to +1.5 mA
Positive Logic (P)	High = Output ON
Negative Logic (N)	Low = Output ON

ISOLATION VOLTAGE

Input to Output	2.0 kV Minimum
Input to Case	1.0 kV Minimum
Output to Case	1.0 kV Minimum

ABSOLUTE MAXIMUM RATINGS

Input Voltage 24V Models	-0.5V to +40V DC
Input Voltage 48V Models	-0.5V to +80V DC
Remote Control	-0.5V to +12V DC
Operating Temperature	-40°C to +110°C
Storage Temperature	-55°C to +125°C

■ WARNING — Do Not Exceed Absolute Maximum Ratings

Exceeding these limits may permanently damage the device and voids warranty.
 Always protect input with a fuse or other overcurrent protection device.

OUTPUT

Voltage Accuracy	+/-1.0% typical
Line Regulation	+/-0.3% (full input range)
Load Regulation	+/-0.3% (0% to 100% load)
Temperature Drift	+/-0.03%/°C (-40°C to 100°C)
Output Tolerance Band	+/-4% (all conditions)
Ripple & Noise (20 MHz)	3% p-p / 1% RMS of Vo
Over-Voltage Protection	115–130% Vo
Over-Current Limit	108–125% Io (at Vnom)
Voltage Trim Range	+/-10% Vo (Vnom, 10% load)
Step Load (2.5 A/uS)	+/-6% Vo / 500 uS
Start-Up Delay	20 ms (Vnom, full load)

GENERAL PARAMETERS

Switching Frequency	330 kHz typical
Conversion Efficiency	See Model List table
MTBF (Bellcore TR-332 #6)	4.57 x 10 ⁶ hrs @ GB/25°C
OTP Trip Point	110°C (Tc) +/-5°C
Weight — Metallic Enc.	55 g

MECHANICAL

Footprint (L x W)	2.300" x 1.450" (58.42 x 36.83 mm)
Base Plate Material	Aluminum alloy with anode oxide
Mounting Inserts	M3 x 0.5 stainless steel (4 places)
Max Torque on Inserts	3.9 in-lb (0.44 Nm)
Pin Material	Copper alloy or Brass
Pin Plating	Golden over Nickel

✓ Compliance & Approvals

- | | |
|---------------------|-------------------|
| ✓ CE Marking | ✓ RoHS 2002/95/EC |
| ✓ UL Listed (cULus) | ✓ Bellcore MTBF |

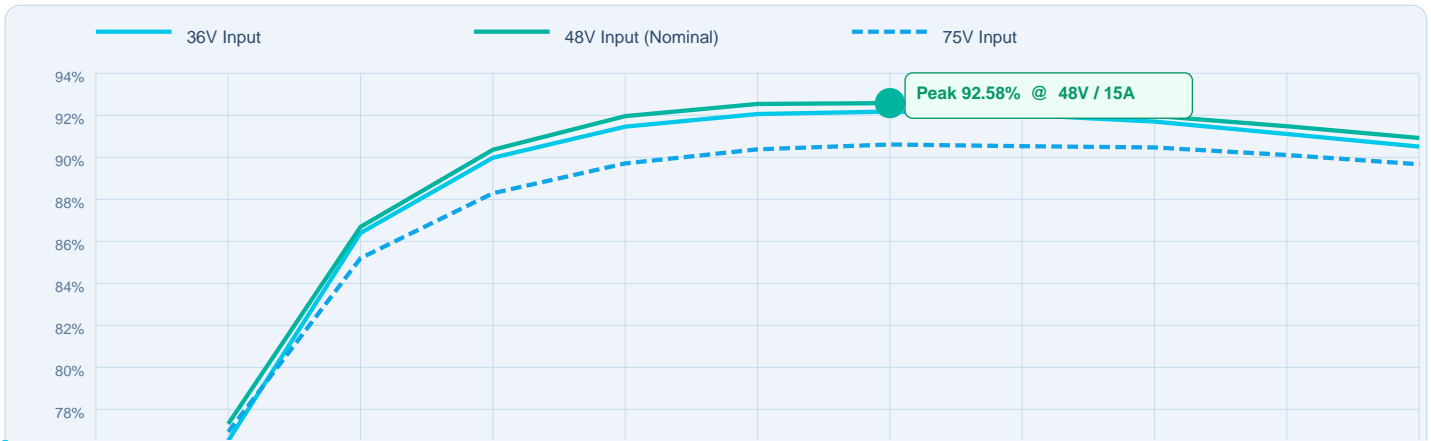
All specifications typical at nominal input, full load, 25°C unless noted.

48V Bus Series (36V ~ 75V Input)

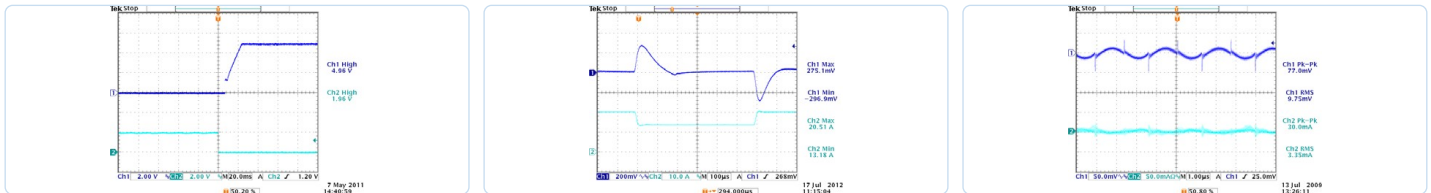
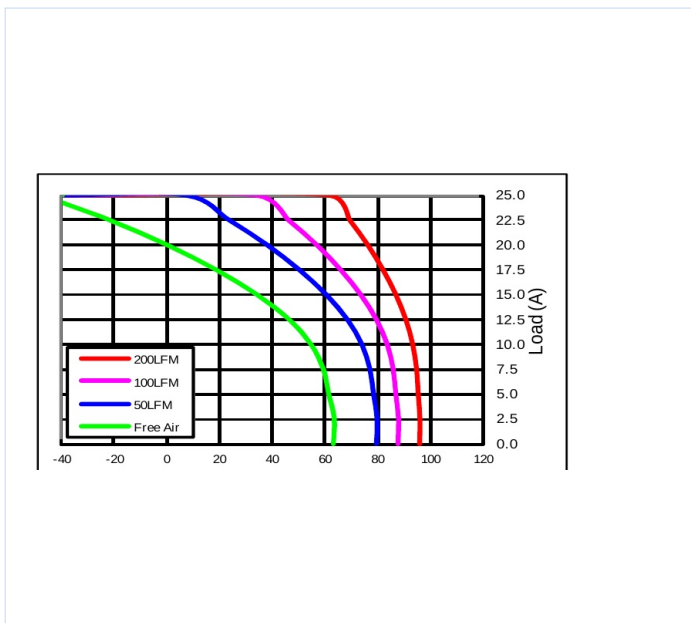
Part Number	Input	Vout	Iout	Pout	Eff.
CBQ10048S5V0-L_	36–75V	5.0V	25A	125W	90%
CBQ10048S3V3-L_	36–75V	3.3V	25A	83W	89%
CBQ10048S2V5-L_	36–75V	2.5V	25A	63W	87%
CBQ10048S2V0-L_	36–75V	2.0V	25A	50W	85%
CBQ10048S1V8-L_	36–75V	1.8V	25A	45W	85%
CBQ10048S1V5-L_	36–75V	1.5V	25A	38W	83%

24V Bus Series (18V ~ 36V Input)

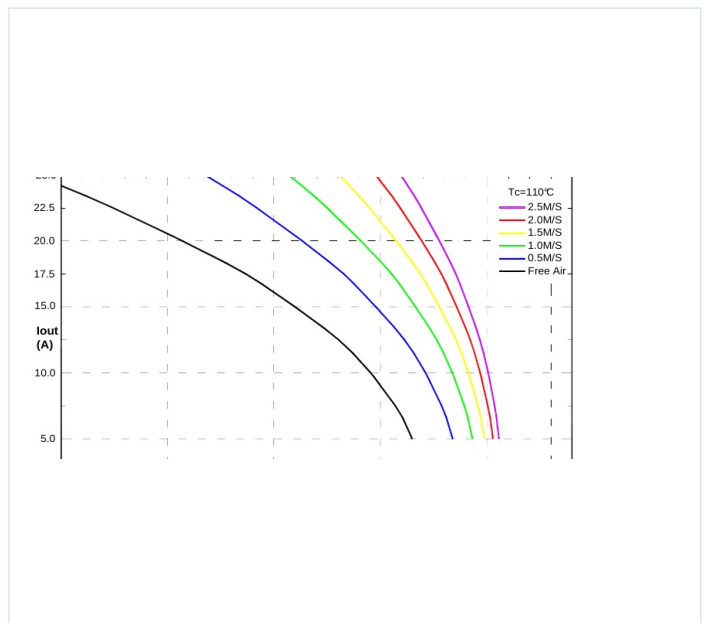
Part Number	Input	Vout	Iout	Pout	Eff.
CBQ10024S5V0-L_	18–36V	5.0V	25A	125W	89%
CBQ10024S3V3-L_	18–36V	3.3V	25A	83W	88%
CBQ10024S2V5-L_	18–36V	2.5V	25A	63W	86%
CBQ10024S2V0-L_	18–36V	2.0V	25A	50W	85%
CBQ10024S1V8-L_	18–36V	1.8V	25A	45W	84%
CBQ10024S1V5-L_	18–36V	1.5V	25A	38W	83%

EFFICIENCY VS. LOAD CURRENT — CBQ10048S5V0 (VIN: 36V / 48V / 75V)

TYPICAL WAVEFORMS — CBQ10048S5V0 (VIN: 48V, LOAD: 25A)

Load (A)

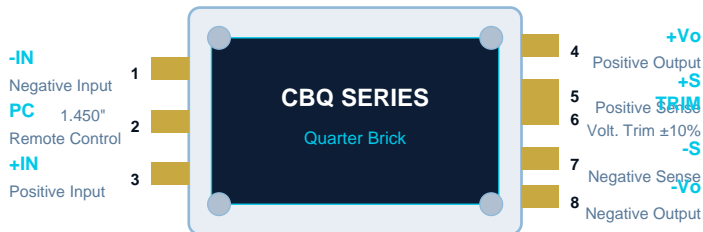

THERMAL DERATING CURVES (IOUT VS AMBIENT TEMPERATURE, TC = 110°C)


CBQ10048S5V0 — 200/100/50 LFM & Free Air



CBQ10024S3V3 — 0.5–2.5 M/S & Free Air

PIN CONNECTIONS & PACKAGE DRAWING



PIN FUNCTION TABLE

Pin	Signal	Function
1	-IN	Negative Input Power
2	PC	Remote On/Off Control
3	+IN	Positive Input Power
4	+Vo	Positive Output
5	+S	Positive Remote Sense
6	TRIM	Output Voltage Trim (±10%)
7	-S	Negative Remote Sense
8	-Vo	Negative Output

Pin Length Options (b-code):

0 0.12"/(3.05mm)	1 0.16"/(4.06mm)	2 0.20"/(5.08mm)	3 0.24"/(6.10mm)
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ORDERING INFORMATION

Field	Code	Description
Input Voltage	48S	36V~75V input (48V bus)
	24S	18V~36V input (24V bus)
	5V0	5.0 V
Output	3V3	3.3 V
	2V5	2.5 V
	2V0	2.0 V
	1V8	1.8 V
	1V5	1.5 V
Enable Logic	-LP	Positive (+3V~6.5V = ON)
	-LN	Negative (0V~1V = ON)
Pin Length	0	0.12" (3.05 mm)
	1	0.16" (4.06 mm)
	2	0.20" (5.08 mm)
	3	0.24" (6.10 mm)
Base Plate	E	Metallic enclosure (1.0 mm Al)

Example:

CBQ10048S5V0-LP0EXXX

48V - 5V out - Pos. Logic - 0.12" pins - Metal enc.

IMPORTANT NOTES

- ! Input **MUST** be protected by fuses or overcurrent protection.
- i All specs at nominal input, full load, 25°C unless noted.
- i Specifications subject to change without notice.
- i Not for life-critical, nuclear, or hazardous systems.
- i Contact OneTech Integration for custom configurations.
- i See application notes for EMC filter and layout guidelines.

OneTech Integration

Taiwan-Engineered · Globally Supported

sales@onetech-integration.com · +886-3-495-3882

www.onetech-integration.com

METAL ENCLOSED PACKAGE — MECHANICAL DRAWING (ALL DIMENSIONS: INCHES [MM])

TOLERANCES

Standard dimensional tolerances apply to all package dimensions unless otherwise specified.

Notation .xx	Notation .xxx	Units	Inserts	Max torque	Weight
±0.02 in (±0.5 mm)	±0.01 in (±0.25 mm)	Inches (millimeters)	M3 x 0.5 S/S 4 plcs	3.9 in-lb (0.44 Nm)	55 g

METAL ENCLOSED PACKAGE

