SERIES: VHB100W | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- up to 100 W isolated output
- industry standard half brick package
- 4:1 input range (9~36 V, 18~75 V)
- single output from 3.3~48 V
- 1,500 V isolation
- over current, over temperature, over voltage, and short circuit protections
- remote on/off
- efficiency up to 89%

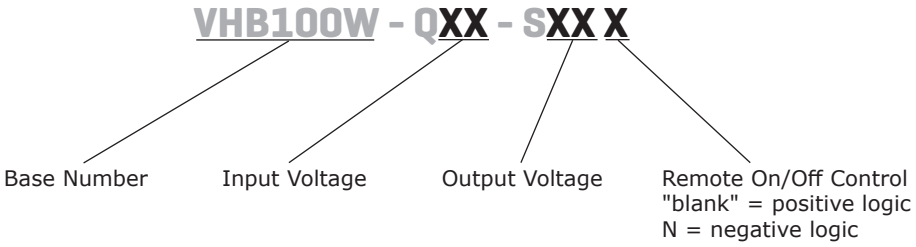


MODEL

MODEL	input voltage range (Vdc)	output voltage (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency typ (%)
VHB100W-Q24-S3R3	9 ~ 36	3.3	20	66	100	81.5
VHB100W-Q24-S5	9 ~ 36	5	20	100	100	83.5
VHB100W-Q24-S12	9 ~ 36	12	8.3	100	150	85
VHB100W-Q24-S15	9 ~ 36	15	6.7	100	150	86.5
VHB100W-Q24-S24	9 ~ 36	24	4.17	100	240	86
VHB100W-Q24-S28	9 ~ 36	28	3.57	100	280	86
VHB100W-Q24-S48	9 ~ 36	48	2.08	100	480	85
VHB100W-Q48-S3R3	18 ~ 75	3.3	20	66	100	80.5
VHB100W-Q48-S5	18 ~ 75	5	20	100	100	86
VHB100W-Q48-S12	18 ~ 75	12	8.3	100	150	86.5
VHB100W-Q48-S15	18 ~ 75	15	6.7	100	150	87.5
VHB100W-Q48-S24	18 ~ 75	24	4.17	100	240	88
VHB100W-Q48-S28	18 ~ 75	28	3.57	100	280	88
VHB100W-Q48-S48	18 ~ 75	48	2.08	100	480	88

Notes: 1. ripple and noise are measured at 20 MHz BW with 10μF tantalum capacitor and 1μF ceramic capacitor across output

PART NUMBER KEY



Please read our datasheet & drawing disclaimer here.

INPUT

parameter	conditions/description		min	typ	max	units
operating input voltage			9 18	24 48	36 75	Vdc Vdc
surge voltage[1]	24 V input 48 V input				50 100	Vdc Vdc
under voltage lockout	power up	24 V input 48 V input		8.8 17		Vdc Vdc
	power down	24 V input 48 V input		8 16		Vdc Vdc
positive logic remote on/off[2]						
filter	PI type					

Notes: 1. 100 ms max
2. logic compatibility, open collector ref to -input
Module ON, >3.5 Vdc or open circuit
Module OFF, <1.8 Vdc

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	measured from high line to low line			±0.2	%
load regulation	measured from full load to zero load			±0.2	%
voltage accuracy				±1.5	%
transient response	25% step load change			500	µs
adjustability[3]			±10		%
switching frequency	100% load, input voltage range		250		kHz
temperature coefficient			±0.03		%/°C

Notes: 3. trim-up: connect a resistor between the trim pin and -Sense
trim-down: connect a resistor between the trim pin and +Sense

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	%Vo	115		140	%
short circuit protection	continuous				
current limit	% nominal output current	110		140	%
thermal shutdown case temp.			105		°C

SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output input to case output to case	1,500 1,500 1,500			Vdc Vdc Vdc
isolation resistance		10			MΩ
isolation capacitance			1,500		pF
safety approvals	UL60950-1				
RoHS compliant	yes				

ENVIRONMENTAL

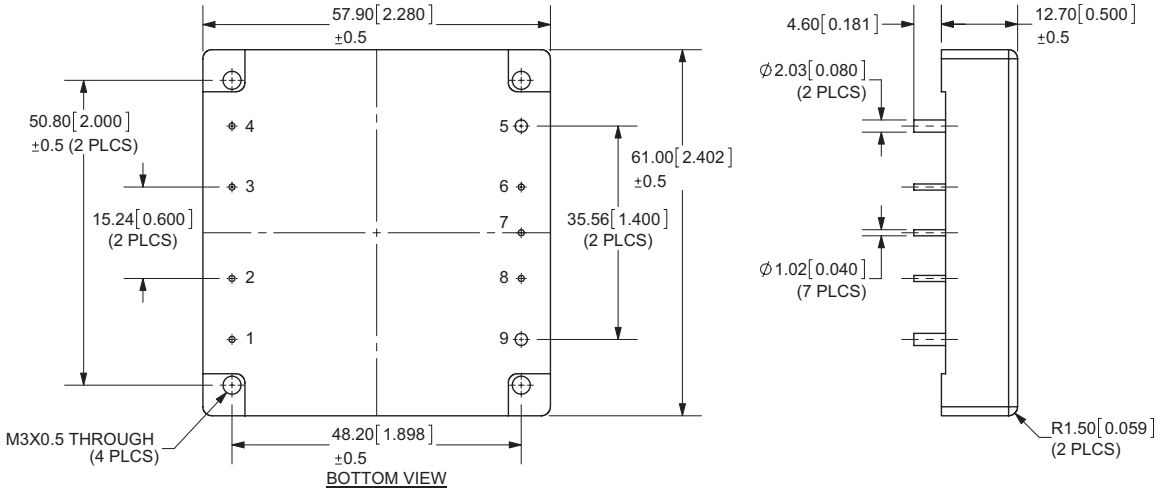
parameter	conditions/description	min	typ	max	units
case operating temperature		-40		100	°C
storage temperature		-55		105	°C
humidity	non-condensing			95	%

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	57.9 x 61.0 x 12.7 (2.28 x 2.40 x 0.5 inch)				mm
case material	aluminum				
weight			95		g

MECHANICAL DRAWING

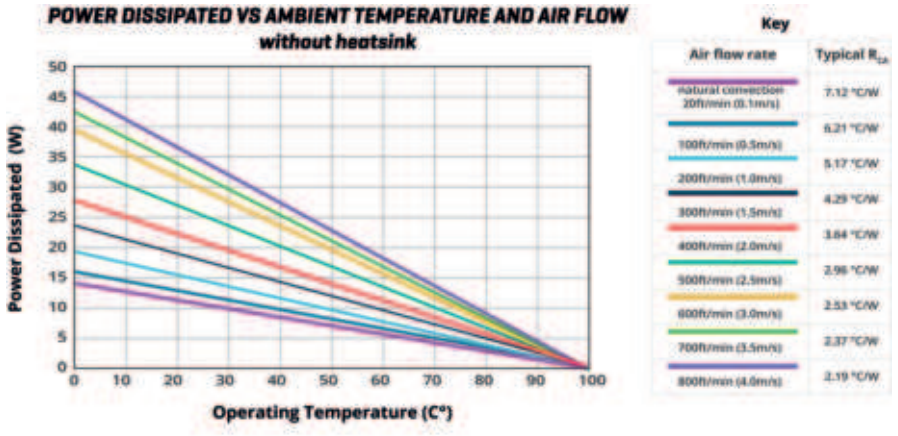
units: mm [inches]
tolerance: ±0.25mm [±0.01 inches]

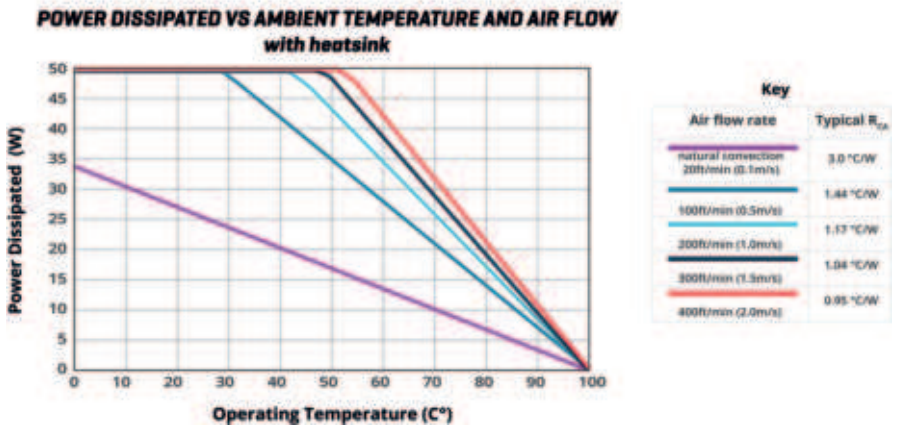


PIN CONNECTIONS	
PIN	FUNCTION
1	+Vin
2	On/Off
3	CASE
4	-Vin
5	-Vo
6	-S
7	TRIM
8	+S
9	+Vo

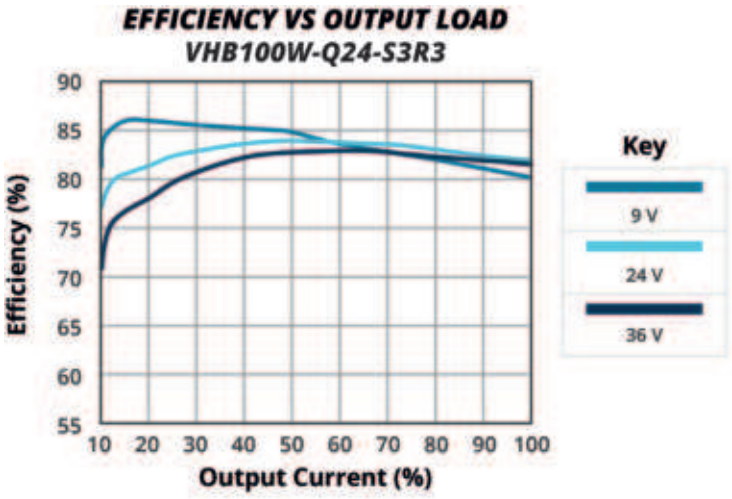
Note: All specifications measured at 25°C, nominal input voltage, and full load unless otherwise noted.

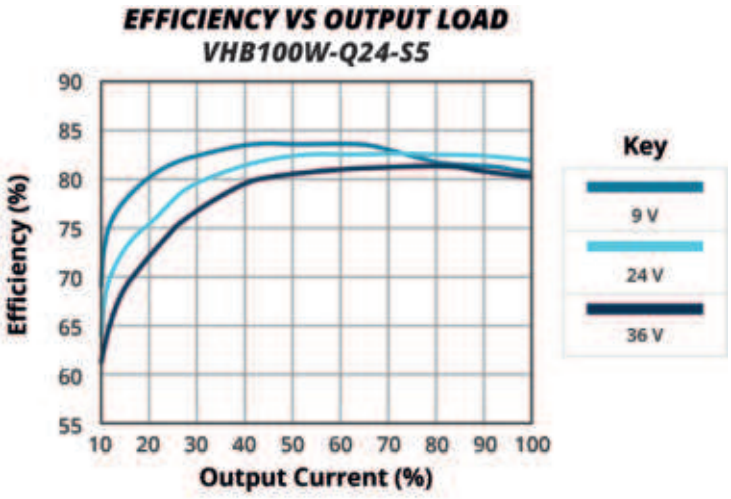
DERATING CURVES



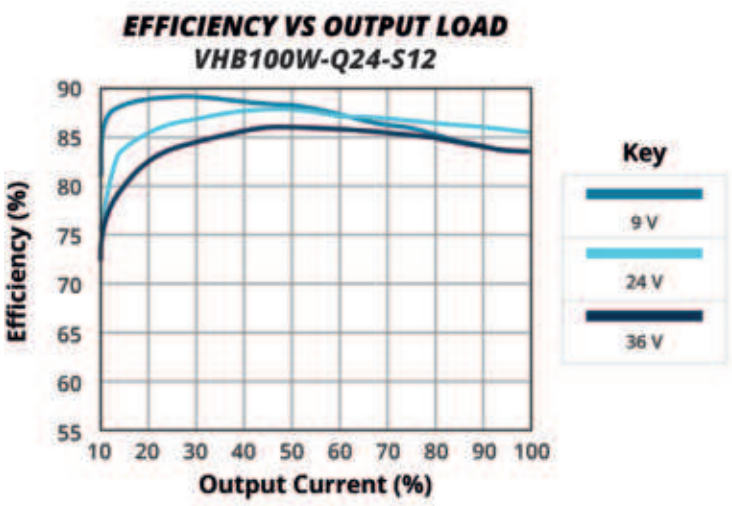


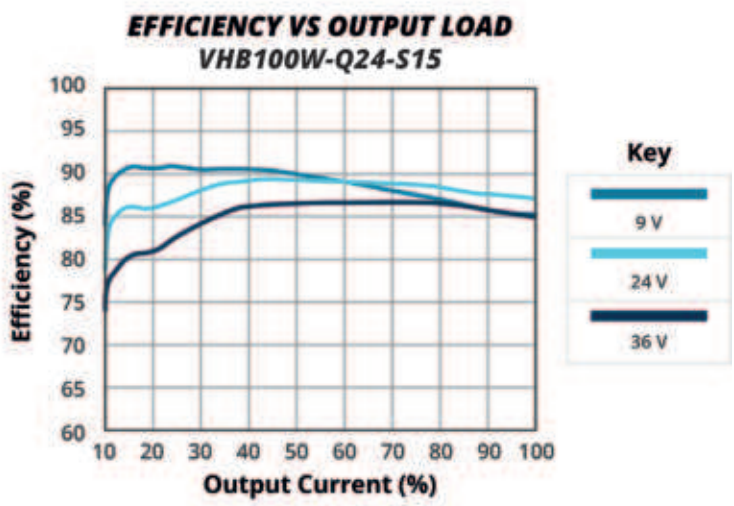
EFFICIENCY CURVES

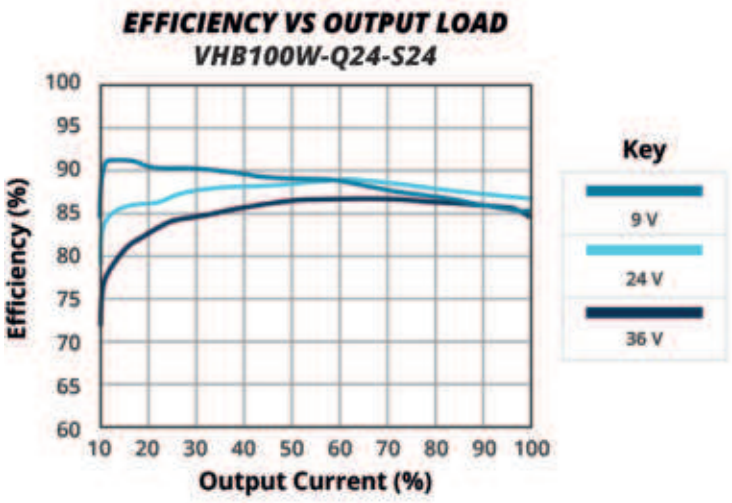


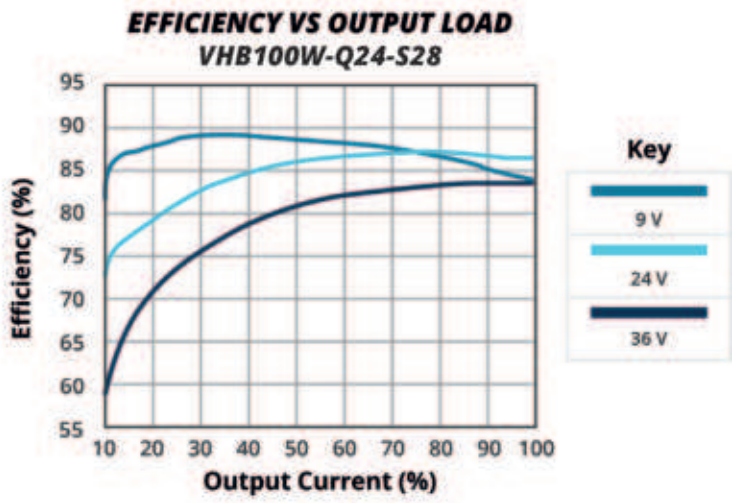


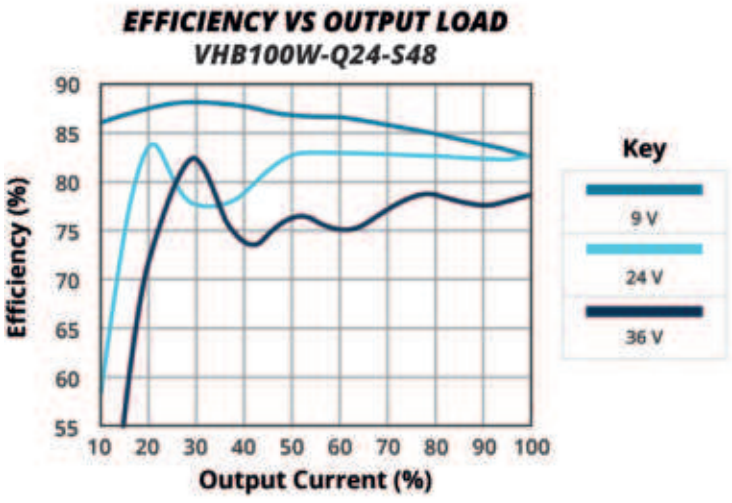
EFFICIENCY CURVES (CONTINUED)

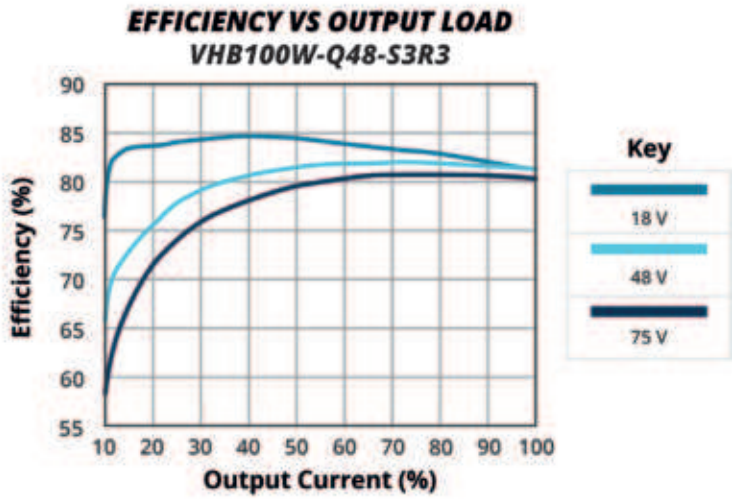




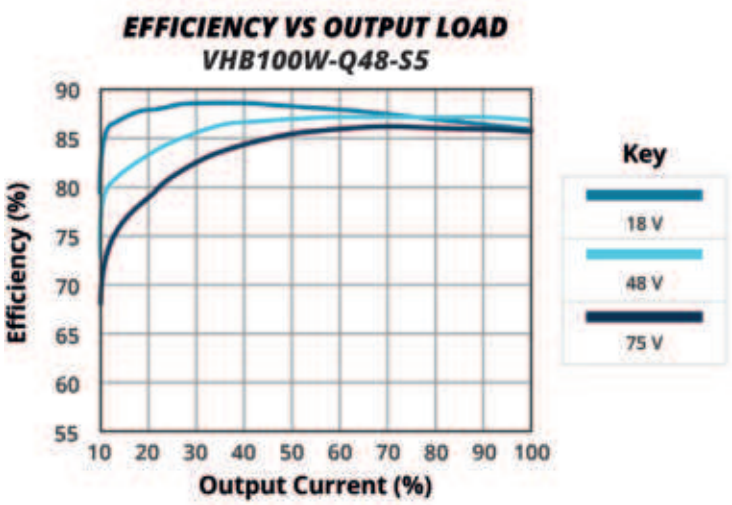


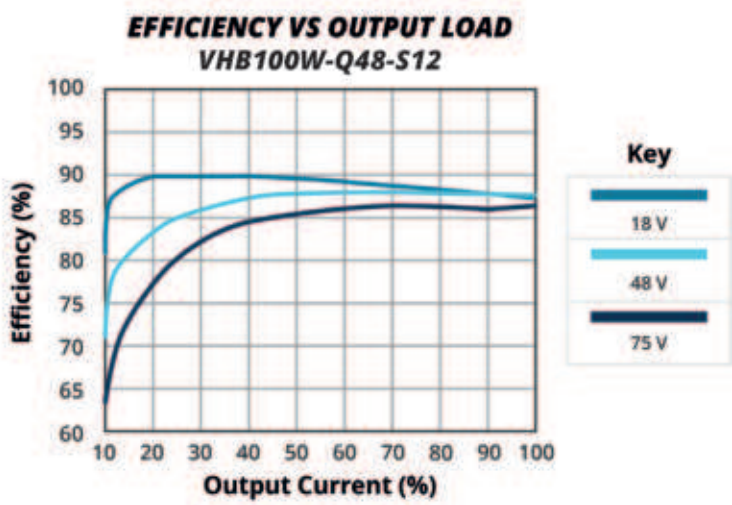


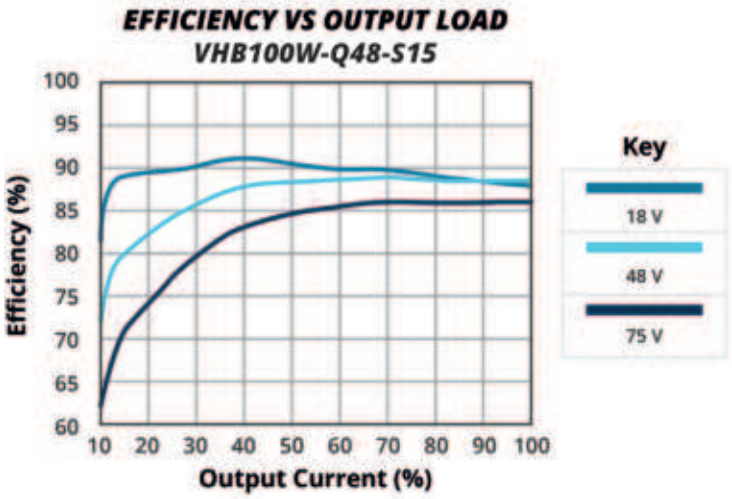


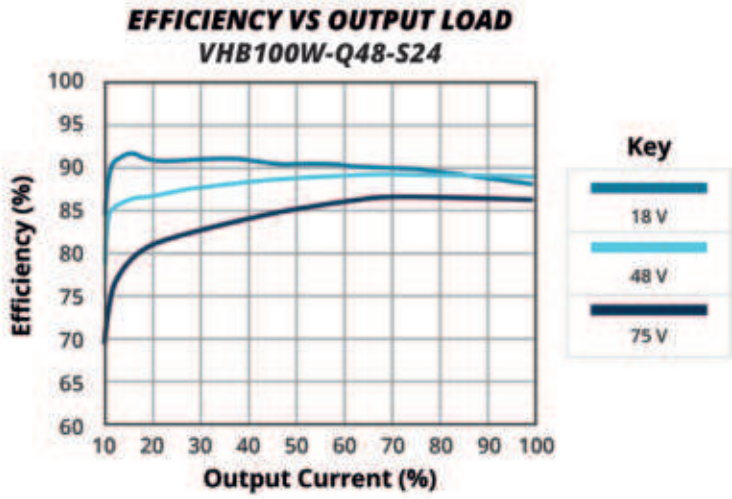


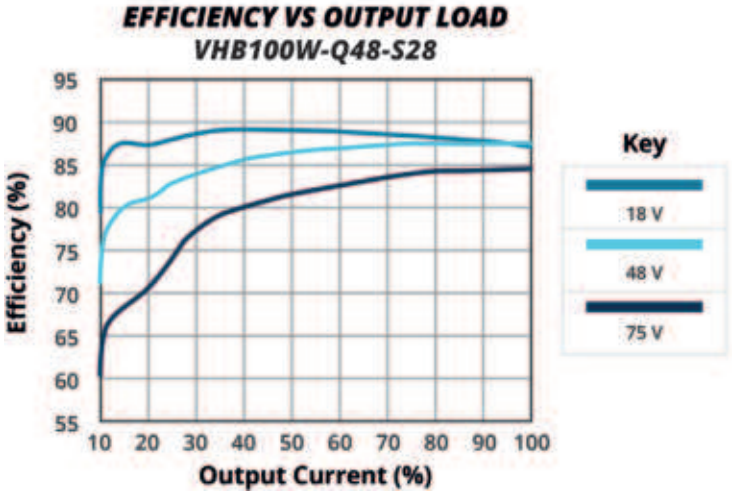
EFFICIENCY CURVES (CONTINUED)

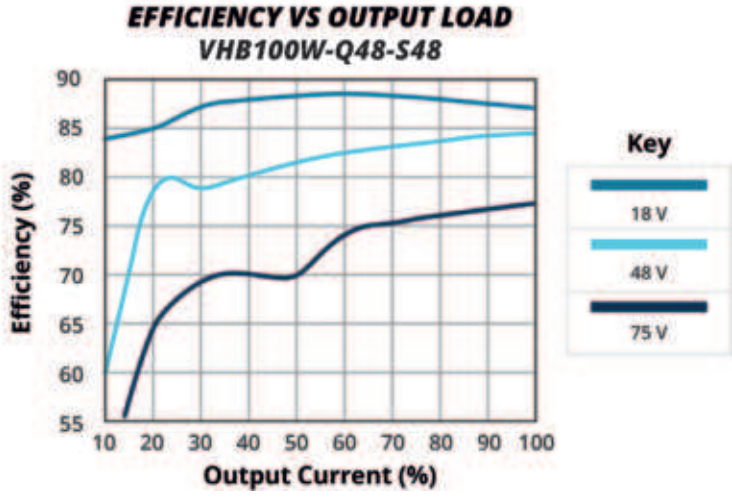












APPLICATION NOTES

Input Capacitance at the Power Module
The converters should be connected to a source with low AC impedance. To prevent loop-stability issues, the source inductance must be kept low. In addition, the input capacitors (Cin) should be placed as close as possible to the converter input pins to decouple the effects of distribution inductance.

External input capacitors should be selected based on their ripple-current handling capability, and low-ESR capacitors are recommended.

The circuit shown below illustrates a typical method for measuring reflected ripple current. C1 and L1 represent a typical DC source impedance. The input reflected ripple current is measured using a current probe and oscilloscope, with L1 providing a simulated source inductance.

Figure 1

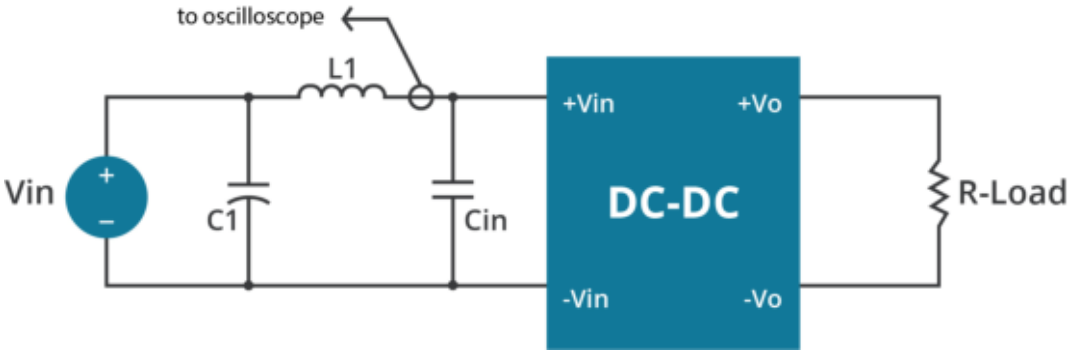


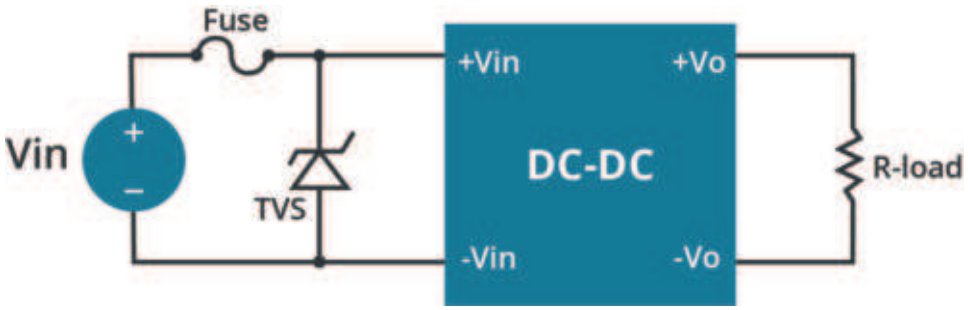
Table 1

External components	
L1	12µH
C1	220µF <0.1Ω (@ 100 kHz)
Cin	33µF <0.7Ω (@ 100 kHz)

The VHB100W series converters do not include an internal fuse. For maximum safety and system protection, an external input line fuse should always be used. We recommend a 20 A time-delay fuse for 24 Vdc input models and a 10 A time-delay fuse for 48 Vdc input models.

In addition, we recommend placing a transient voltage suppressor (TVS) diode across the input terminals to protect the unit from surge/spike events and reverse input voltage (as shown).

Figure 2



EMC RECOMMENDED CIRCUIT

Figure 3
Recommended Circuit for EN55022 Class A

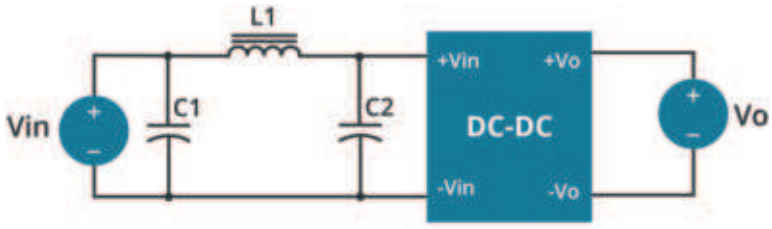


Table 2

Vin	C1	C2	L1
24	47µF / 50V	47µF / 50V	3.4µH
48	47µF / 100V	47µF / 100V	3.4µH

Figure 4
Recommended Circuit for EN55022 Class B

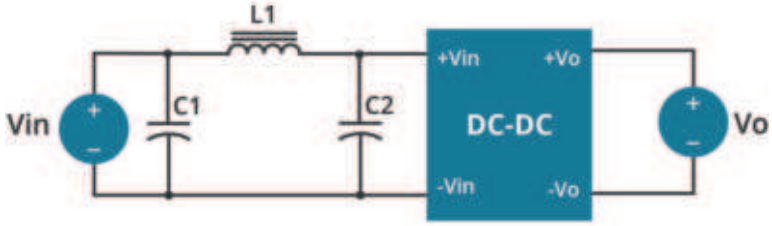


Table 3

Vin	C1	C2	L1
24	220µF / 50V	220µF / 50V	3.4µH
48	47µF / 100V	47µF / 100V	3.4µH

Figure 5
Recommended Circuit for EN55022 Class B for 48 Vout models

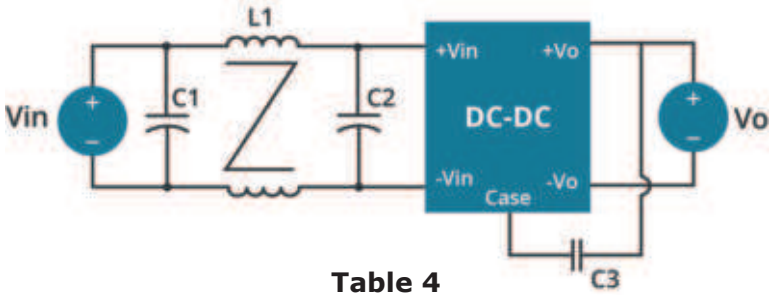


Table 4

Model	C1	C2	C3	L1
VHB100W-Q24-S48	100µF / 50V	100µF / 50V	2200pF / 2kV	0.53µH
VHB100W-Q48-S48	47µF / 100V	47µF / 100V	2200pF / 2kV	0.53µH

REVISION HISTORY

rev.	description	date
1.0	initial release	10/01/2008
1.01	new template applied	08/17/2011
1.02	add remote on/off control to the part number key	11/23/2011
1.03	features updated	12/20/2011
1.04	updated trim note, updated pin references	04/23/2012
1.05	updated spec	04/01/2013
1.06	company logo updated	02/09/2021
1.07	derating curves, efficiency curves, input capacitance & emc circuit diagrams added	06/09/2026

The revision history provided is for informational purposes only and is believed to be accurate.

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