Features

- Wide 4 : 1 Input Voltage Range (9~36V,18~75V)
- Remote On/Off
- Input / Output Isolation Voltage: 1.5kVDC
- High Efficiency up to 92%
- Output Short Circuit Protection:
  Hiccup & Auto Recovery
- Over Voltage Protection: Clamp Mode
- Over Temperature Protection
- Shielded Metal Case with Insulated Baseplate
- Lead Free Design, RoHS Compliant
- Adjustable Output Voltage
- Synchronous Rectifier Topology
- Customer Design Available
- Meet Safety Standard / Approval: IEC / EN60950-1

Description

The BRA40W Series are isolated 30~40W DC/DC converters. Designed with highly efficiency, allow the operating temperature range of these units to be -40°C to +80°C in a 25.4×25.4×10.2mm shielded metal case. Further features include wide 4 : 1 input voltage range, remote on/off control, short-circuit protection, over voltage protection and over temperature protection.

Applications

These converters are well suitable for battery operated equipment, measurement equipment, telecom, wireless network, Industry control system, everywhere where isolated, tightly regulated voltages and compact size are required.

Technical Specification

All specifications are typical at nominal input, full load and 25°C unless otherwise stated.

Model Number	Input Voltage Range	Output Voltage (V)	Output Current (mA)	Input Current (mA)	Eff .(2) (%)	Capacitive Load, max.(3) (uF)
			Full Load	Full Load		
BRA40-24S1W	9~36V Nominal:24V	5	8000	1938	90	10000
BRA40-24S2W		12	3330	1936	90	4700
BRA40-24S3W		15	2670	1918	91	3300
BRA30-24D1W		±5	±3000	1506	87	4700
BRA30-24D2W		±12	±1250	1471	89	2200
BRA30-24D3W		±15	±1000	1471	88	1500
BRA40-48S1W	18~75V Nominal:48V	5	8000	947	91	10000
BRA40-48S2W		12	3330	946	91	4700
BRA40-48S3W		15	2670	938	92	3300
BRA30-48D1W		±5	±3000	744	88	4700
BRA30-48D2W		±12	±1250	718	90	2200
BRA30-48D3W		±15	±1000	718	89	1500

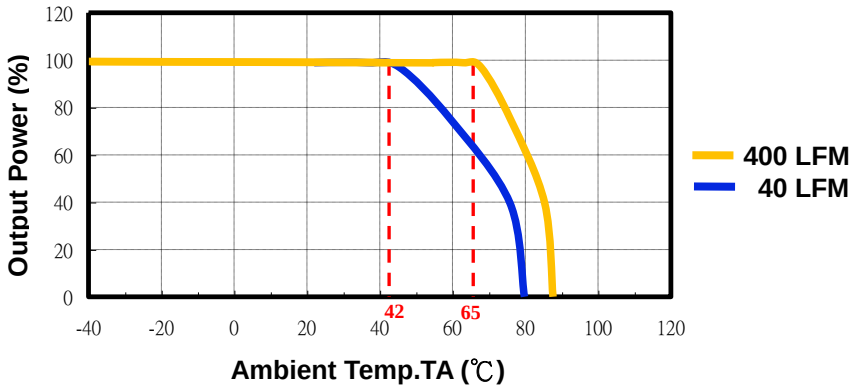
Input Specifications		
Input voltage	24V nominal input	9-36V
	48V nominal input	18-75V
Input filter		Pi type
Start up time	Nominal Vin and constant resistive load	60ms typ.
Remote ON/OFF	Converter: ON	Open or 3V＜Vr＜15V
	Converter: OFF	Short (4) or 0V＜Vr＜0.8V
Sourcing current of remote control pin	Nominal Vin	＜2 mA
Environmental Specifications		
Operating ambient temperature		-40°C to +80°C (with derating)
Maximum case temperature		+105°C
Storage temperature range		-55°C to +125°C
Relative humidity		95% RH max.
Temperature coefficient		±0.03% / °C max.
Output Specifications		
Output power		40 Watts max.
Voltage accuracy	Full load and nominal Vin	±1%
Minimum load		0 mA
Line regulation	Full load	±0.5%
Load Regulation	10% load to full load Single	±1%
	Balanced load Dual	±1%
	Unbalanced load 25% to 100% full load	±5%
Ripple and Noise (20MHz Bandwidth)		75mVp-p max.
Over voltage protection (Zener Diode Clamp)	5Vout models	6.2V
	12Vout models	15V
	15Vout models	18V
Capacitive load		See table
Over load protection	% of full load at nominal input	110% min.
Thermal shutdown	Case	115°C typ.
Short circuit protection		Hiccup, automatic recovery
Transient response settling time	25% load step change	500μs typ.
Transient response over shoot	di/dt=0.8A/μs	≤ ±6% of Vo
General Specifications		
Efficiency	Nominal input	See table
Isolation voltage	Input to output	1500VDC
Isolation resistance	500VDC	10^9 Ohms min.
Isolation capacitance		2000pF max.
Switching frequency (Fixed)	Pulse width modulation (PWM)	450kHz typ.
Reliability, calculated MTBF		5.1×10^5 Hrs

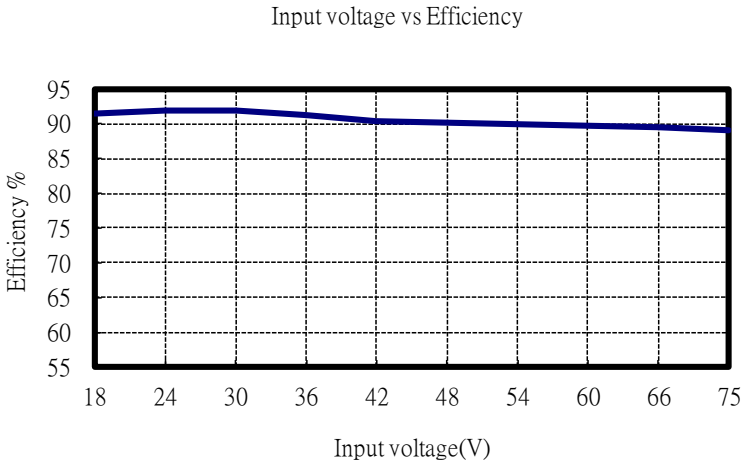
Physical Specifications

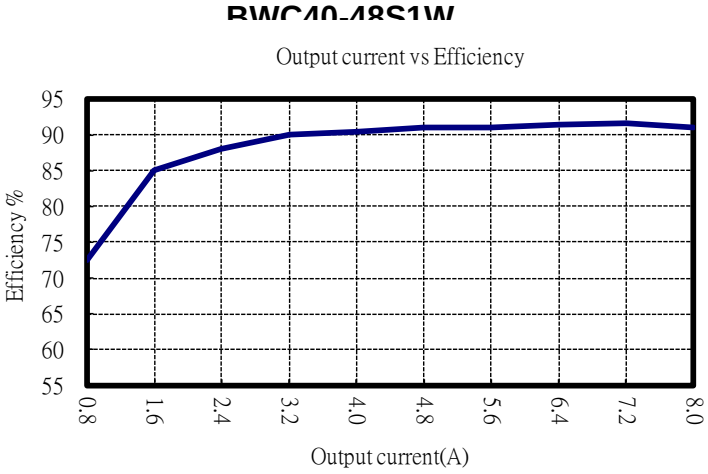
Case material	Anodized aluminum
Base material	Plastic Base (UL94 V-0)
Dimensions	1.0 × 1.0 × 0.4 Inch (25.4 × 25.4 × 10.2 mm)
Weight	16g (0.56oz) typ.

BRA40-48S1W

Power Derating Curve without Heatsink(5)



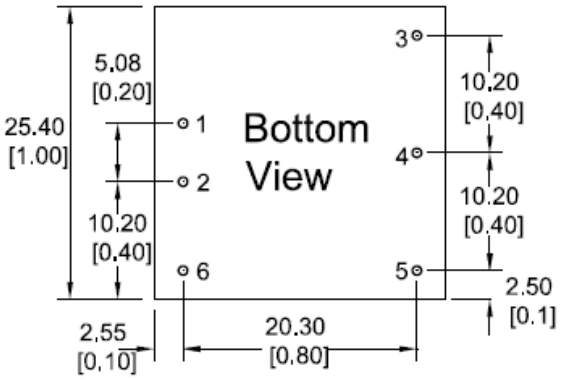


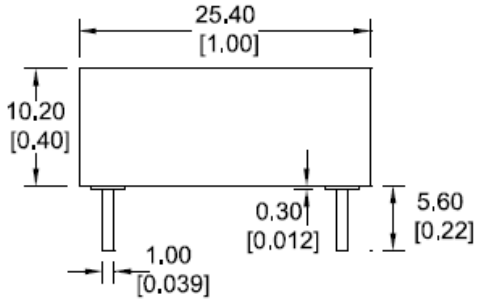


Note

1. Io below this value will not damage these converters, however, they may not meet all listed specifications.
2. Typical value, tested at nominal input and full load.
3. For each output.
4. Short to -Vin (Pin 2).
5. Based on BRA40-48S1W.
6. Specifications subject to change without notice.

Mechanical Dimensions





Pin Assignment		
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

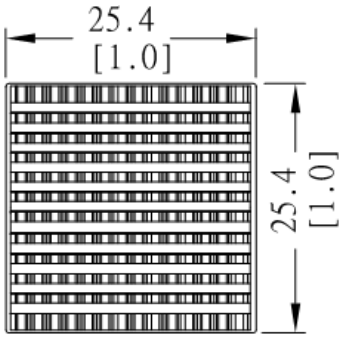
Unit: mm [inch]
Tolerance:±0.5[±0.02]

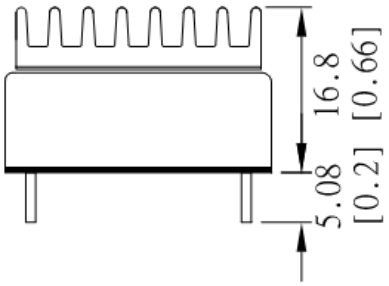
Heat-sink

Material: Aluminum

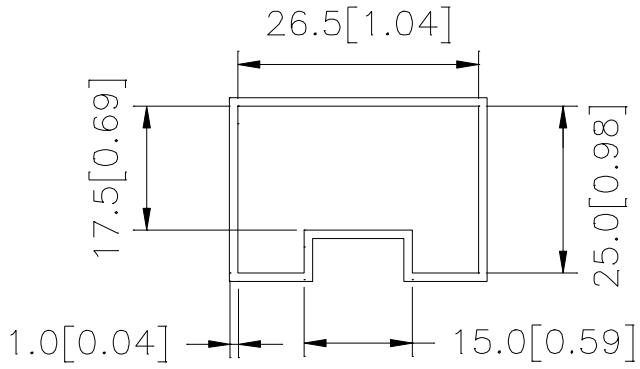
Weight: 4.2g (0.15oz)

Note:
The product label on converter has to be removed before mounting the heat-sink.
For volume orders, converters will be supplied with heat-sink already mounted. Please contact factory for quotation.
Separate heat-sinks are only available for prototypes and small quantity orders.





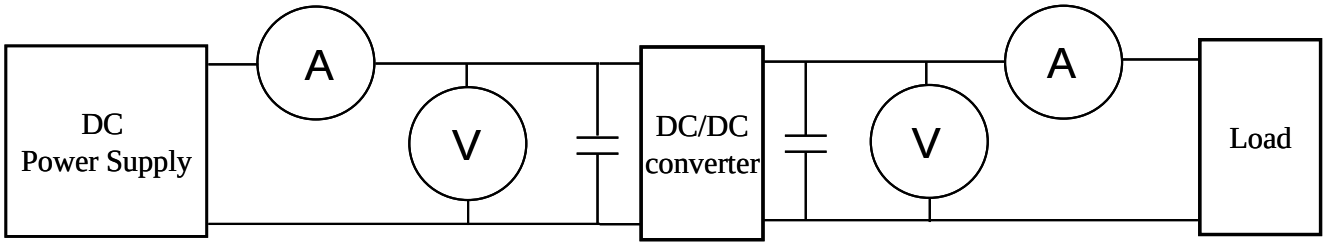
Package Information



PS:
Unit: mm [inch]
L= 280 mm[11.02 inch] ; ONE TUBE = 10 PCS

Test Configurations

All specifications are typical at nominal input, full load and 25°C unless otherwise stated.



◎DC Power Supply: It offers a wide voltage and current range precisely.

◎Current meter (A): Accuracy➔ 200μA ~ 200mA 4 ranges±(0.2% rdg + 2 digits)

2000mA ~ 20A 2 ranges±(0.3% rdg + 2 digits).

◎Voltage meter (V): Accuracy➔ ±(0.03% rdg + 4 digits).

◎Load: At full load.

◎Wires: The resistance of the wires must be small.

1. Input voltage range: Narrow input voltage range（±10%）、wide input voltage range (2:1 and 4:1)。

EX: Narrow input voltage range（±10%）

5V nominal input	➔	4.5~5.5V
12V nominal input	➔	10.8~13.2V
24V nominal input	➔	21.6~26.4V

Wide input voltage range 2:1

5V nominal input	➔	4.5~9V
12V nominal input	➔	9~18V
24V nominal input	➔	18~36V
48V nominal input	➔	36~75V

Wide input voltage range 4:1 (W)

24V nominal input	➔	9~36V
48V nominal input	➔	18~75V

2. Input power :

Pin = Vin x Iin

Vin：Input voltage
Iin：Input current

3. Output power :

Pout = Vout x Iout

Vout：Output voltage
Iout：Output current

4. Efficiency :

$$\text{Efficiency} = \frac{Pout}{Pin} \times 100\%$$

Pout: Output power
Pin: Input power

5. Voltage accuracy:

$$\frac{|Vout-Vout(nominal)|}{Vout} \times 100\%$$

Vout：Output voltage
Vout(nominal)：Nominal output voltage

6. Line regulation: Wide input voltage range and regulated output voltage series.

$$\frac{|Vout(LL)-Vout(HL)|}{Vout(LL)} \times 100\%$$

LL: Low Line input voltage
HL: High Line input voltage

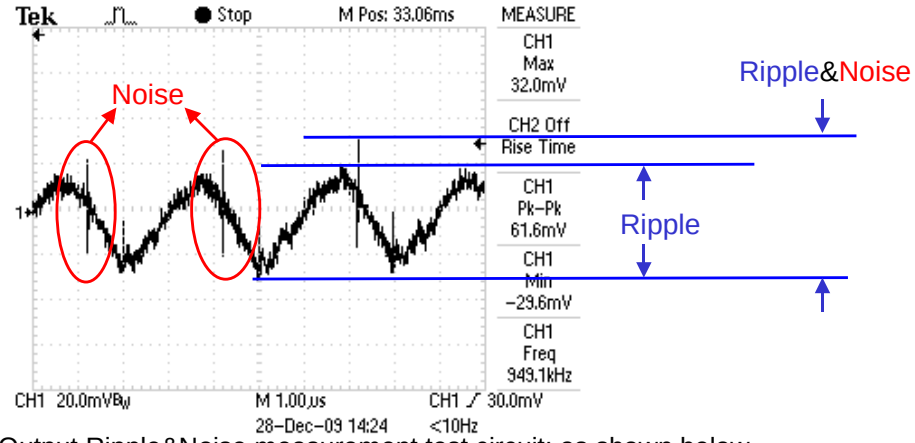
7. Load regulation :

$$\frac{|Vout(FL)-Vout(NL)|}{Vout(FL)} \times 100\%$$

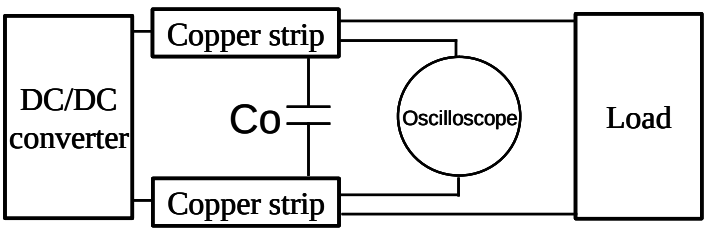
Vout(FL): Output voltage at full load

Vout(NL): Output voltage at 25% full load or 10% full load

8. Ripple and Noise: as shown below. The bandwidth is 0-20MHz.

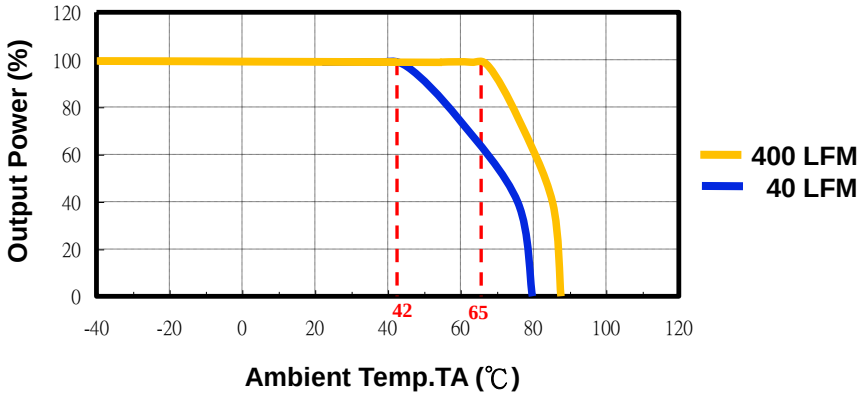


Output Ripple&Noise measurement test circuit: as shown below.



Co: usually 0.47uF.

9. Temperature derating curve: The DC-DC converter will operate over a wider temperature range if less power is drawn from the output and the device is already running. The temperature derating curve shows the operating power-temperature range. As shown below.



10. Switching frequency: The nominal operating frequency of the DC-DC converters.

11. Input to output isolation: The dielectric breakdown strength test between input and output circuits. This is the isolation voltage the device is capable of withstanding for a specified time, usually 1 second or 1 minute.