



**COIL TECHNOLOGY  
CORPORATION**

## **5W DC/DC CONVERTERS**

<b>SERIES</b>	<b>DESCRIPTION</b>	<b>Page</b>
<b>B5WR</b>	<b>2:1 Input Range 24 pin DIP and SMD packages Single and dual outputs Metal can option</b>	<b>2</b>
<b>B5WR4</b>	<b>4:1 Input Range 24 pin DIP and SMD packages Single and dual outputs Metal can option</b>	<b>6</b>

**Features:**

- 2:1 Wide Input Range.
- 5W DIP-24 Package.
- Input  $\pi$  Filter.
- Internal SMD-design.
- High Power Density in a DIP-24 Package.
- High Efficiency up to 86%.
- UL94V-0 Package Material.
- Continuous Short Circuit Protection, Auto-Restarting.
- I/O-Isolation 1KVdc min.
- Operating Temperature Range From - 40°C ~ +75°C.
- Meet CE EN-60950-1 Certified 、 CE EN-60601-1 Certified



**Note:** Metal case could be selected with “ M “after P/N

**Description:**

The B5WR-xxxx/D series is a wide input voltage range of DC-DC converters offering a single and dual regulated output. 24-pin DIP and high efficiency allows an operating temperature of - 40 to +75°C. The applications include industrial system, communications equipment, battery powered equipments etc....

Selection Guide				
P/N	Input Range	Output Voltage	Output Current	Efficiency Typ.
B5WR-053.3 B5WR-0505 / D B5WR-0509 / D B5WR-0512 / D B5WR-0515 / D	4.5 ~ 9VDC	3.3 5 / $\pm 5$ 9 / $\pm 9$ 12 / $\pm 12$ 15 / $\pm 15$	1000mA 1000mA / $\pm 500$ mA 556mA / $\pm 278$ mA 420mA / $\pm 210$ mA 340mA / $\pm 170$ mA	71% 73% 78% 80% 81%
B5WR-123.3 B5WR-1205 / D B5WR-1209 / D B5WR-1212 / D B5WR-1215 / D	9 ~ 18VDC	3.3 5 / $\pm 5$ 9 / $\pm 9$ 12 / $\pm 12$ 15 / $\pm 15$	1000mA 1000mA / $\pm 500$ mA 556mA / $\pm 278$ mA 420mA / $\pm 210$ mA 340mA / $\pm 170$ mA	75% 79% 82% 84% 85%
B5WR-243.3 B5WR-2405 / D B5WR-2409 / D B5WR-2412 / D B5WR-2415 / D	18 ~ 36VDC	3.3 5 / $\pm 5$ 9 / $\pm 9$ 12 / $\pm 12$ 15 / $\pm 15$	1000mA 1000mA / $\pm 500$ mA 556mA / $\pm 278$ mA 420mA / $\pm 210$ mA 340mA / $\pm 170$ mA	76% 80% 84% 85% 86%

B5WR-483.3 B5WR-4805 / D B5WR-4809 / D B5WR-4812 / D B5WR-4815 / D	36 ~72VDC	3.3 5 / ±5 9 / ±9 12 / ±12 15 / ±15	1000mA 1000mA / ±500mA 556mA / ±278mA 420mA / ±210mA 340mA / ±170mA	77% 81% 83% 84% 85%
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## Electrical Specifications

Input Filter	π type.			
Voltage set accuracy		MIN.	TYP.	MAX.
			±1%	±2%
Line Regulation	Low line to High line @Max. load			0.3%
Load Regulation	20% ~ 100% load			0.6%
Ripple & Noise @ 20MHz BW <small>Note 1</small>	Vin = Nominal Input			50mVp-p
Operating Temperature	Vin = Nominal Input	-40°C		+75°C
Storage Temperature		-50°C		+125°C
Short-Circuit Protection	Continuous , Auto Restart			
Operating Frequency (Pulse Frequency Modulation,PFM)	Vin = Nominal Input	200KHz		
Isolation Test Voltage	Tested for 1 second Min.	MIN.	TYP.	MAX.
		1000Vdc		
Isolation Capacity			60pF	
Isolation Resistance		1GΩ		
Humidity				95%
MTBF ( MIL-HDBK-217F)			9x10 <sup>5</sup> hours	
Case Temperature	Vin = Nominal Input @ Ta=25°C		45°C	

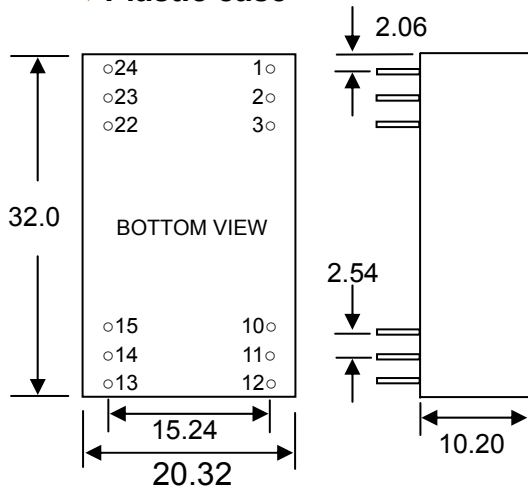
## Physical Specifications

Case Material	Non conductive Black Plastic
Potting Material	Epoxy( UL94V-0 )
Weight	13.0g



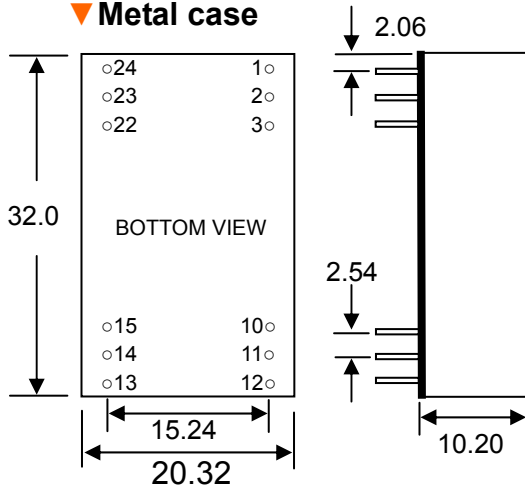
# Utlne Dimensions

## ▼ Plastic case



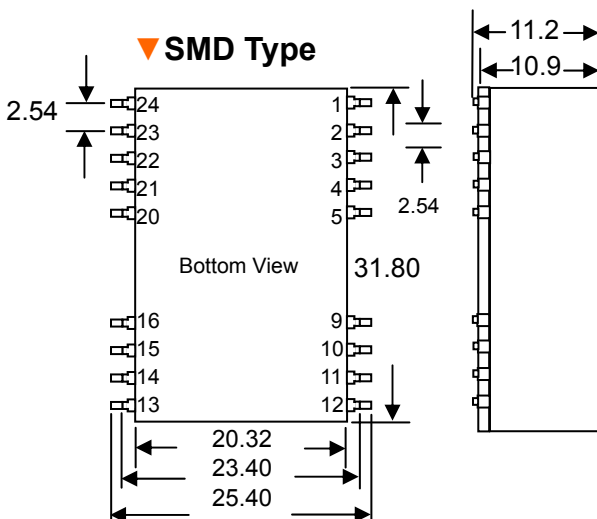
Pin Connections		
Pin #	Single	Dual
1,24	+Vin	+Vin
2,23	No PIN	-Vout
3,22	No PIN	Common
10,15	-Vout	Common
11,14	+Vout	+Vout
12,13	-Vin	-Vin

## ▼ Metal case



Pin Connections		
Pin #	Single	Dual
1,24	+Vin	+Vin
2,23	No PIN	-Vout
3,22	No PIN	Common
10,15	-Vout	Common
11,14	+Vout	+Vout
12,13	-Vin	-Vin

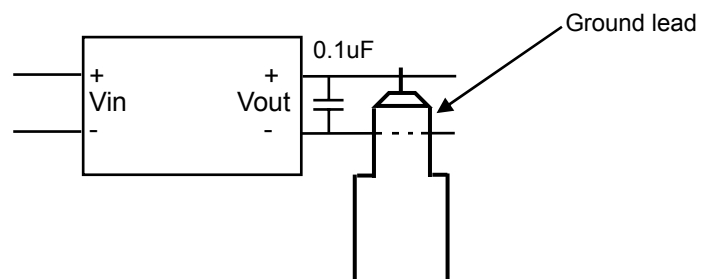
## ▼ SMD Type



SMD Pin Connections		
Pin #	Single	Dual
1,24	+Vin	+Vin
2,23	No PIN	-Vout
3,22	No PIN	Common
10,15	-Vout	Common
11,14	+Vout	+Vout
12,13	-Vin	-Vin
Others	NC	NC

Note:

- To measure the output ripple & noise with short runs by 0.1uF/ 50V @ 20MHz nominal input and full load. Please see as below :

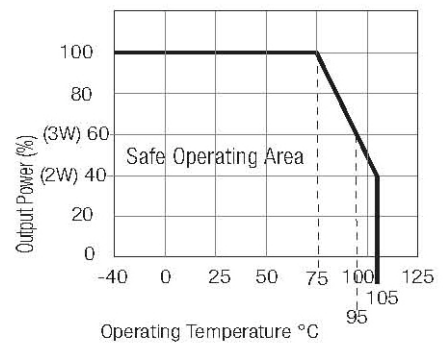


▼ Features

- ◆ 4 : 1 Wide Input Range.
- ◆ 5W DIP-24 Package.
- ◆ Internal SMD-Design.
- ◆ High Efficiency up to 85%.
- ◆ UL94V-0 Package Material.
- ◆ Low Ripple and Noise.
- ◆ Continuous Short Circuit Protection, Auto-Restarting.
- ◆ 1KVDC Isolation min.
- ◆ Input  $\pi$  Filter.
- ◆ Operating Temperature Range From - 40°C to +75°C.
- ◆ Case Temperature 45°C @ Ta = 25°C



▼ Derating-Graph (Ambient Temperature)



Note : Metal case could be selected with “ M “after P/N

▼ Description:

The B5WR4 series is a very wide input voltage range of DC-DC converters offering a single and Dual regulated output. 24-pin DIP and high efficiency allows an operating temperature of -40 to +75°C . The applications include industrial system, communications equipment, battery powered equipments etc....

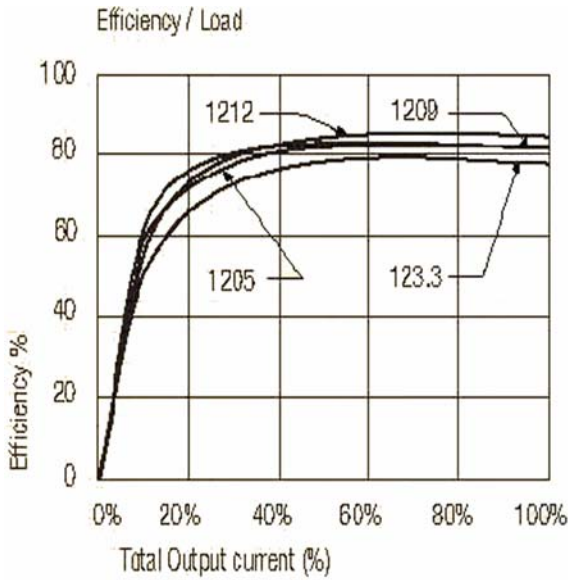
**Selection Guide**

Model Number	Input Range	Output Voltage	Output Current	Efficiency Typ.	Capacitor Load max.
B5WR4-243.3	9 ~ 36VDC	3.3	1200mA	75%	2200 $\mu$ F
B5WR4-2405	9 ~ 36VDC	5	1000mA	81%	1000 $\mu$ F
B5WR4-2409	9 ~ 36VDC	9	560mA	82%	470 $\mu$ F
B5WR4-2412	9 ~ 36VDC	12	420mA	83%	220 $\mu$ F
B5WR4-2415	9 ~ 36VDC	15	340mA	84%	150 $\mu$ F
B5WR4-2405D	9 ~ 36VDC	$\pm$ 5	$\pm$ 500mA	81%	$\pm$ 680 $\mu$ F
B5WR4-2409D	9 ~ 36VDC	$\pm$ 9	$\pm$ 280mA	82%	$\pm$ 220 $\mu$ F
B5WR4-2412D	9 ~ 36VDC	$\pm$ 12	$\pm$ 210mA	83%	$\pm$ 100 $\mu$ F
B5WR4-2415D	9 ~ 36VDC	$\pm$ 15	$\pm$ 170mA	84%	$\pm$ 68 $\mu$ F
B5WR4-483.3	18 ~72VDC	3.3	1200mA	76%	2200 $\mu$ F
B5WR4-4805	18 ~72VDC	5	1000mA	82%	1000 $\mu$ F
B5WR4-4809	18 ~72VDC	9	560mA	83%	470 $\mu$ F
B5WR4-4812	18 ~72VDC	12	420mA	84%	220 $\mu$ F
B5WR4-4815	18 ~72VDC	15	340mA	85%	150 $\mu$ F
B5WR4-4805D	18 ~72VDC	$\pm$ 5	$\pm$ 500mA	82%	$\pm$ 680 $\mu$ F
B5WR4-4809D	18 ~72VDC	$\pm$ 9	$\pm$ 280mA	83%	$\pm$ 220 $\mu$ F
B5WR4-4812D	18 ~72VDC	$\pm$ 12	$\pm$ 210mA	84%	$\pm$ 100 $\mu$ F
B5WR4-4815D	18 ~72VDC	$\pm$ 15	$\pm$ 170mA	85%	$\pm$ 68 $\mu$ F

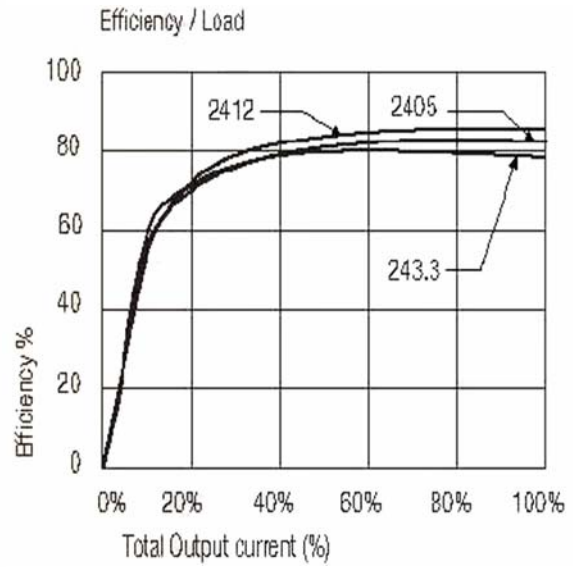
★ : It could be derated while 9Vin : 3.3Vout /1100mA, 5Vout / 900mA

▼ **Typical Characteristics**

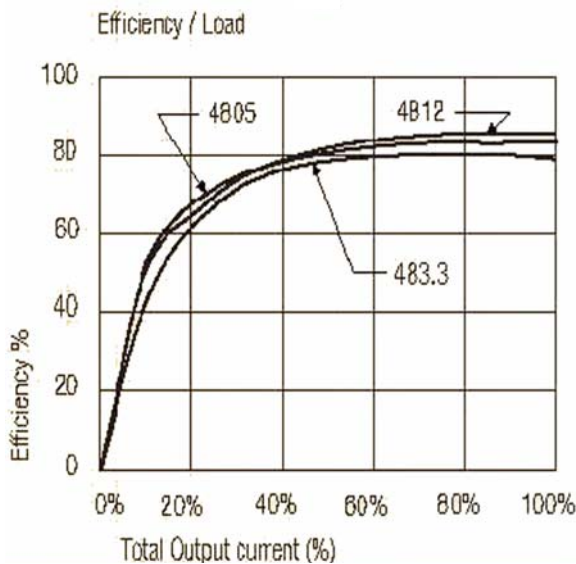
▼ **Single**



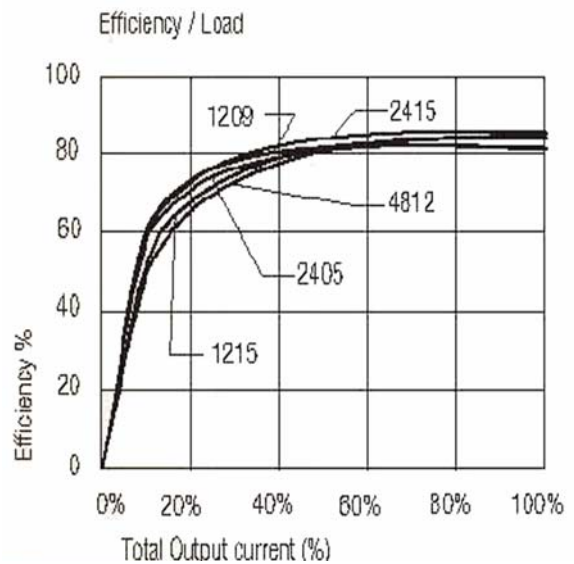
▼ **Single**



▼ **Single**



▼ **Dual**



★All specifications valid at nominal input voltage, full load @ 25°C after warm-up time unless otherwise stated.

## Electrical Specifications

Input Filter	π type.			
		MIN.	TYP.	MAX.
Voltage set accuracy			±1%	±2%
Line Regulation	Low line to High line @Max. load			0.3%
Load Regulation	20% ~ 100% load			0.6%
Ripple & Noise @ 20MHz BW Note 1				50mVp-p
Operating Temperature		-40°C		+75°C
Storage Temperature		-50°C		+125°C
Short-Circuit Protection	Continuous , Auto-Restarting			
Operating Frequency (Pulse Frequency Modulation,PFM)	Vin = Nominal Input Full load		200KHz	
Isolation Test Voltage	Tested for 1 second Min.	MIN.	TYP.	MAX.
		1000Vdc		
Isolation Capacity			60pF	
Isolation Resistance		1GΩ		
Humidity				95%
MTBF ( MIL-HDBK-217F)	Vin = Nominal Input @ Ta=25°C	8.5x10 <sup>5</sup> hours		
Case Temperature	Vin = Nominal Input @ Ta=25°C		45°C	

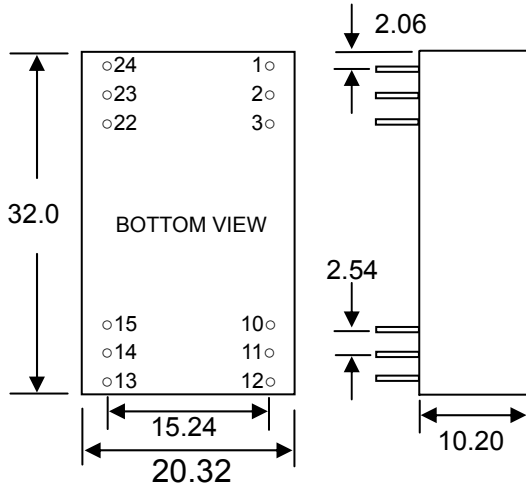
## Physical Specifications

Case Material	Non conductive Black Plastic
Potting Material	Epoxy( UL94V-0 )
Weight	12.0g



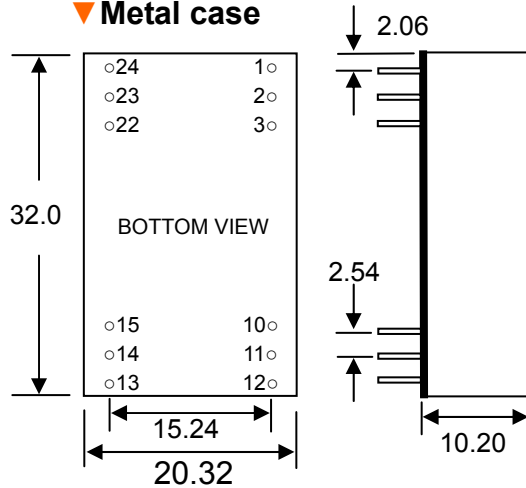
**Utlne Dimensions**

▼ **Plastic case**



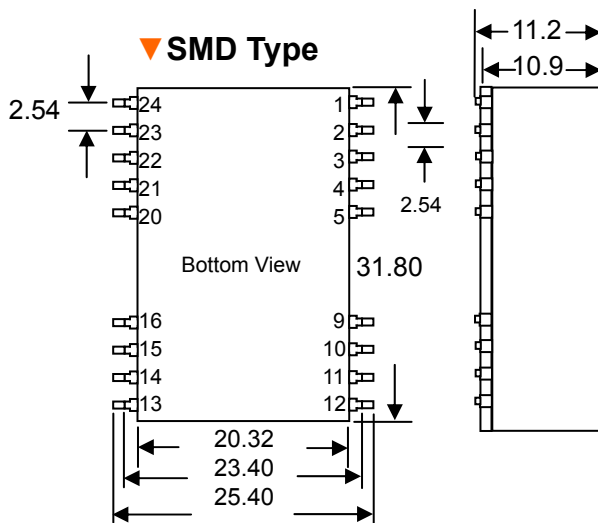
Pin Connections		
Pin #	Single	Dual
1,24	+Vin	+Vin
2,23	No PIN	-Vout
3,22	No PIN	Common
10,15	-Vout	Common
11,14	+Vout	+Vout
12,13	-Vin	-Vin

▼ **Metal case**



Pin Connections		
Pin #	Single	Dual
1,24	+Vin	+Vin
2,23	No PIN	-Vout
3,22	No PIN	Common
10,15	-Vout	Common
11,14	+Vout	+Vout
12,13	-Vin	-Vin

▼ **SMD Type**



SMD Pin Connections		
Pin #	Single	Dual
1,24	+Vin	+Vin
2,23	No PIN	-Vout
3,22	No PIN	Common
10,15	-Vout	Common
11,14	+Vout	+Vout
12,13	-Vin	-Vin
Others	NC	NC

Note:

1. To measure the output ripple & noise with short runs by 0.1uF/ 50V @ 20MHz nominal input and full load. Please see as below :

