

## Features

- Wide 4 : 1 Input Voltage Range(9~36V,18~75V)
- High Efficiency up to 89%
- Remote On/Off
- Input / Output Isolation Voltage: 1.5K Vdc
- Extended Operating Temperature Range: -40°C to+85°C
- Output Short Circuit Protection:  
Hiccup, continuous & Auto Recovery
- Over Voltage Protection: Clamp Mode
- Shielded Metal Case with Insulated Baseplate
- Lead Free Design, RoHS Compliant
- 6 pin DIP Package with Industry-Standard Footprint
- Standard 2"X1" Package
- Customer Design Available



## Description

The BUB15W Series are isolated 15W DC/DC converters. Designed with highly efficiency, allow the operating temperature range of these units to be -40°C to +85°C (with derating) in a 6 pin DIP package with industry-standard footprint. Further features include wide 4 : 1 input voltage range, remote on/off control, trimmable output, short-circuit protection and over voltage 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 (Vdc)	Output Current (mA)		Input Current (mA)		Eff. (%) <sup>(2)</sup>	Capacitive Load, max. (uF) <sup>(3)</sup>
			Min. Load <sup>(1)</sup>	Full. Load	No Load	Full Load		
BUB15-24S0W	9~36V Nominal:24VDC	3.3	0	4000	21	719	81	25760
BUB15-24S1W		5.1	44	3000	22	819	82	14320
BUB15-24S2W		12	44	1250	24	760	86	3168
BUB15-24S3W		15	24	1000	24	755	87	2000
BUB15-24D1W		±5	0	±1500	27	794	83	8800
BUB15-24D2W		±12	14	±625	24	752	87	1600
BUB15-24D3W		±15	0	±500	29	757	87	1040
BUB15-48S0W	18~75V Nominal:48VDC	3.3	0	4000	6.9	352	82	25760
BUB15-48S1W		5.1	49	3000	9.3	399	84	14320
BUB15-48S2W		12	42	1250	7.3	369	89	3168
BUB15-48S3W		15	24	1000	7.5	372	88	2000
BUB15-48D1W		±5	0	±1500	8.5	381	86	8800
BUB15-48D2W		±12	9	±625	9.2	369	89	1600
BUB15-48D3W		±15	0	±500	10	373	88	1040

**Input Specifications**

Input Voltage	24V nominal input	9-36Vdc
	48V nominal input	18-75Vdc
Input filter		Pi Type
Input surge voltage (100ms max.)	24V nominal input	50Vdc
	48V nominal input	100Vdc
Input reflected ripple current	Nominal Vin and full load	50mA <sub>p-p</sub> max.
Start up time	Nominal Vin and constant resistive load	76ms typ.
Remote ON/OFF	Converter: ON	Open or $3.5V < V_r < 12V$
	Converter: OFF	Short <sup>(4)</sup> or $0V < V_r < 0.7V$
Sourcing current of remote control pin	Nominal Vin	< 0.2 mA
Idle input current (at Remote OFF state)	Nominal Vin	< 12 mA

**Environmental Specifications**

Operating ambient temperature	-40°C to +85°C (with derating)	
Maximum case temperature	+100°C max.	
Storage temperature range	-55°C to +125°C	
Relative humidity	95% RH max.	
Temperature coefficient	±0.02% / °C max.	

**Output Specifications**

Output power	15 Watts max.	
Voltage accuracy	Full load and nominal Vin	±1%
Minimum load	See table	
Line regulation	LL to HL at full load	±1.0%
	25% load to full load	Single ±0.5%
Load Regulation	Balanced load	Dual ±0.5%
	Unbalanced load 25% to 100% full load	±5%
Ripple and Noise	20MHz bandwidth	80mV <sub>p-p</sub> max.
	3.3V <sub>out</sub> models	3.9V
Over voltage protection (Zener Diode Clamp)	5.1V <sub>out</sub> models	6.2V
	12V <sub>out</sub> models	15V
	15V <sub>out</sub> models	18V
Capacitive load	See table	
Over load protection	% of full load at nominal input	110% min.
Short circuit protection	Hiccup, continuous (Auto Recovery)	
Transient response settling time	50% load step change	250µs max.
		(1.2ms for 3.3V <sub>out</sub> )
Transient response over shoot	di/dt=0.8A/µs	≤ ±5% of V <sub>o</sub>
		(≤ ±6% for 3.3V <sub>out</sub> )



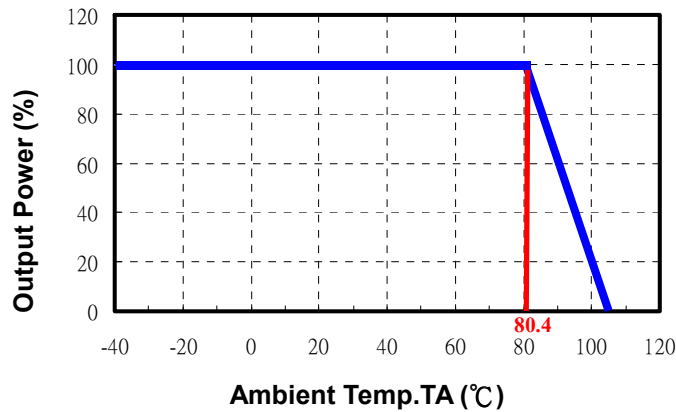
**General Specifications**

Efficiency	Nominal input	See table
Isolation voltage	Input to output	1500Vdc
Isolation resistance	500Vdc	10 <sup>9</sup> Ohms min.
Isolation capacitance		1050pF typ.
Switching frequency		330kHz typ.
Reliability, calculated MTBF		1.85 × 10 <sup>6</sup> Hrs

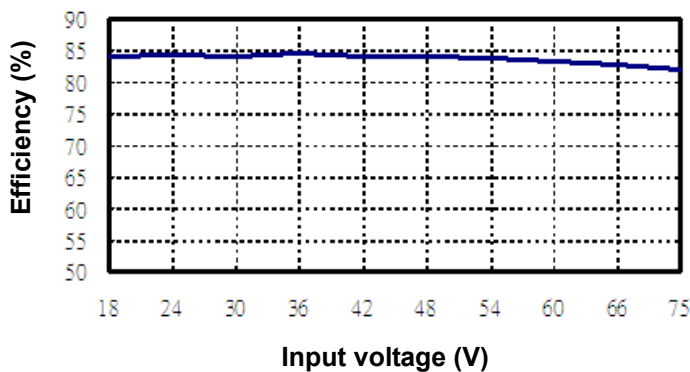
**Physical Specifications**

Case material	Nickel-coated copper
Base material	Non-conductive black plastic
Potting material	Silicon rubber (UL94V-0)
Dimensions	2.0 × 1.0 × 0.4 Inch (50.8 × 25.4 × 10.2 mm)
Weight	32.0g (1.13oz) typ.

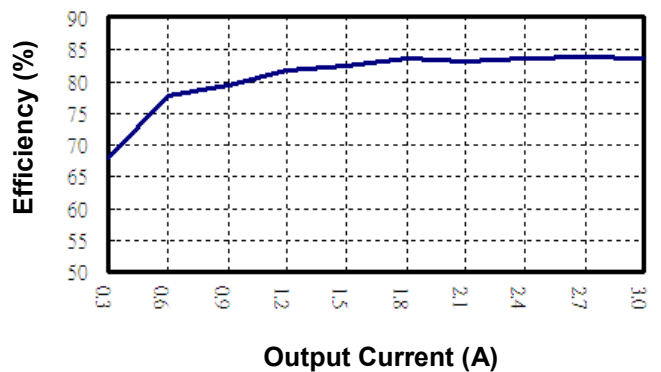
**BUB15W Series  
Power Derating Curve(5)**



**BUB15-48S1W  
Input voltage vs. Efficiency**



**BUB15-48S1W  
Output Current vs. Efficiency**



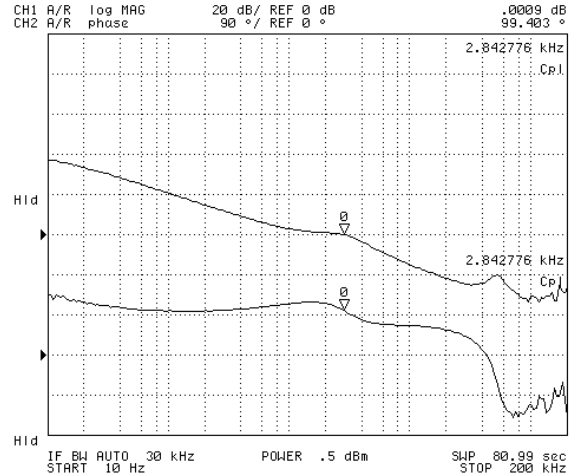
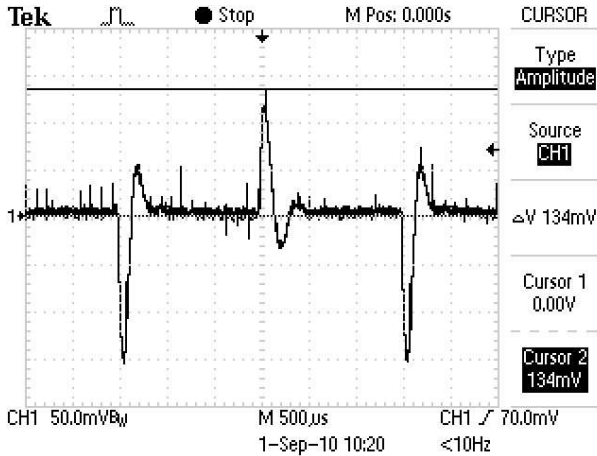


BUB15-48S1W

BUB15-48S1W

Transient Response at 50%~100% Max Load

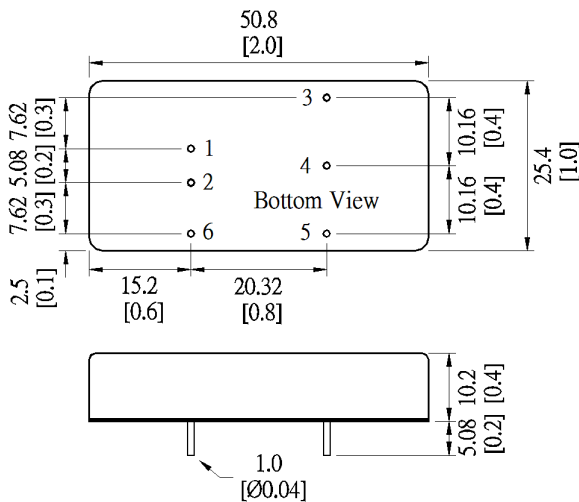
Loop Gain & Phase at Vi=48V, Full Load



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 BUB15-48S1W.

Mechanical Dimensions



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

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

Specifications subject to change without noticed.