



Features

- Wide 2 : 1 Input Voltage Range(9~18V,18~36V,36~75V)
- Remote On/Off
- Input / Output Isolation Voltage: 1.5K Vdc
- Extended Operating Temperature Range: -40°C to+85°C
- Output Short Circuit Protection:
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
- Customer Design Available

Description

The BUB10 Series are isolated 10W DC/DC converters. Designed with highly efficiency, allow the operating temperature range of these units to be -40°C to +85°C in a 6 pin DIP package with industry-standard footprint. Further features include wide 2 : 1 input voltage range, remote on/off control, 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. ⁽²⁾ (%)	Capacitive Load, max. ⁽³⁾ (uF)
			Min. Load ⁽¹⁾	Full. Load	No Load	Full Load		
BUB10-12S0	9~18V Nominal:12Vdc	3.3	240	2400	7	892	78	17000
BUB10-12S1		5	135	2000	7	1096	80	9400
BUB10-12S2		12	0	830	18	1024	85	880
BUB10-12S3		15	0	670	22	1033	85	430
BUB10-12S5		24	0	415	22	1024	86	169
BUB10-12D1		±5	57	±1000	6	1068	82	2200
BUB10-12D2		±12	0	±415	27	1037	84	430
BUB10-12D3		±15	0	±330	30	1018	85	160
BUB10-24S0	18~36V Nominal:24Vdc	3.3	230	2400	4	440	79	23300
BUB10-24S1		5	100	2000	4	534	82	30000
BUB10-24S2		12	0	830	10	506	86	760
BUB10-24S3		15	0	670	12	504	87	430
BUB10-24S5		24	0	415	11	500	87	194
BUB10-24D1		±5	55	±1000	4	527	83	2000
BUB10-24D2		±12	0	±415	15	506	86	257
BUB10-24D3		±15	0	±330	15	496	87	230
BUB10-48S0	36~75V Nominal:48Vdc	3.3	120	2400	1.6	226	77	13300
BUB10-48S1		5	120	2000	1.7	267	82	5700
BUB10-48S2		12	0	830	6	256	85	550
BUB10-48S3		15	0	670	7	255	86	377
BUB10-48S5		24	0	415	6	250	87	122
BUB10-48D1		±5	60	±1000	22	267	82	2000
BUB10-48D2		±12	0	±415	8	253	86	242
BUB10-48D3		±15	0	±330	8	251	86	157

Input Specifications

Input Voltage	12V nominal input	9-18Vdc
	24V nominal input	18-36Vdc
	48V nominal input	36-75Vdc
Input filter		Pi Type
Input surge voltage (100ms max.)	12V nominal input	25Vdc
	24V nominal input	50Vdc
	48V nominal input	100Vdc
Input reflected ripple current	Nominal Vin and full load	250mA _{p-p} typ.
Start up time	Nominal Vin and constant resistive load	600ms typ.
Remote ON/OFF	Converter: ON	Open or $3.5V < V_r < 12V$
	Converter: OFF	Short ⁽⁴⁾ or $0V < V_r < 1.2V$
Sourcing current of remote control pin	Nominal Vin	< 0.2 mA
Idle input current (at Remote OFF state)	Nominal Vin	< 3 mA
Reverse voltage protection		1.0A max

Environmental Specifications

Operating ambient temperature	-40°C to +85°C (with derating)	
Maximum case temperature	+100°C	
Storage temperature range	-55°C to +105°C	
Relative humidity	5% to 95% RH	
Temperature coefficient	±0.02% / °C max.	

Output Specifications

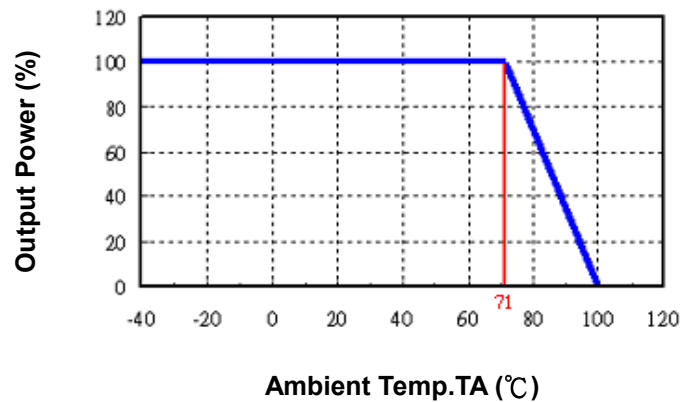
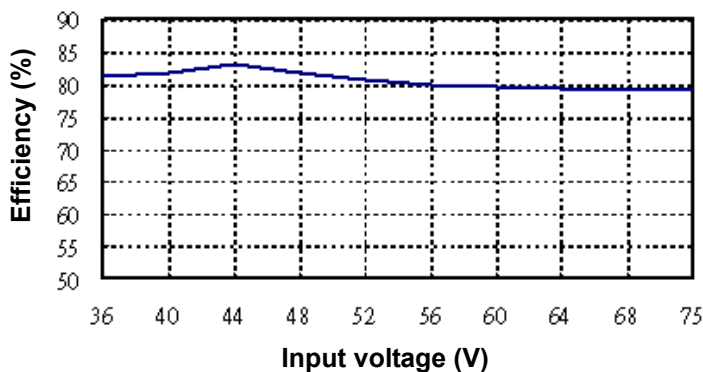
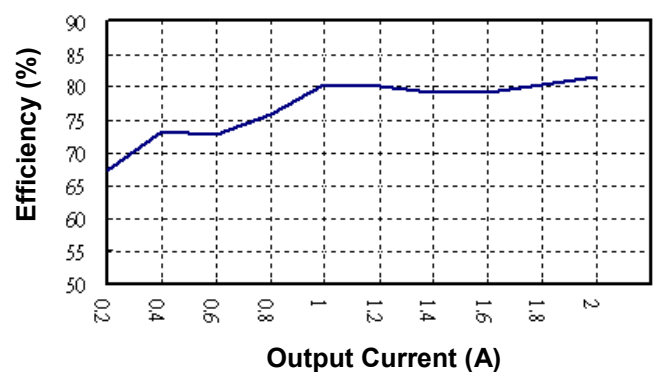
Output power	10 Watts max.	
Voltage accuracy	Full load and nominal Vin	±1%
Minimum load	See table	
Line regulation	LL to HL at full load	±0.5%
	25% load to full load	Single ±0.5%
Load Regulation	Balanced load	Dual ±0.5%
	Unbalanced load 25% to 100% full load	±5%
Ripple and Noise	20MHz bandwidth	80mV _{p-p} max.
Over voltage protection (Zener Diode Clamp)	3.3V _{out} models	3.9V
	5V _{out} models	6.2V
	12V _{out} models	15V
	15V _{out} models	18V
Capacitive load	See table	
Over load protection	% of full load at nominal input	150% typ.
Short circuit protection	Continuous, automatic recovery	
Transient response settling time	50% load step change	1800Us typ.
Transient response over shoot	di/dt=0.8A/μs	≤ ±5% of Vo

General Specifications

Efficiency	Nominal input	See table
Isolation voltage	Input to output	1500Vdc
Isolation resistance	500Vdc	10 ⁹ Ohms min.
Isolation capacitance	12V nominal input	160pF typ.
	24V nominal input	280pF typ.
	48V nominal input	400pF typ.
Switching frequency		300kHz typ.
Reliability, calculated MTBF		1.96× 10 ⁶ Hrs

Physical Specifications

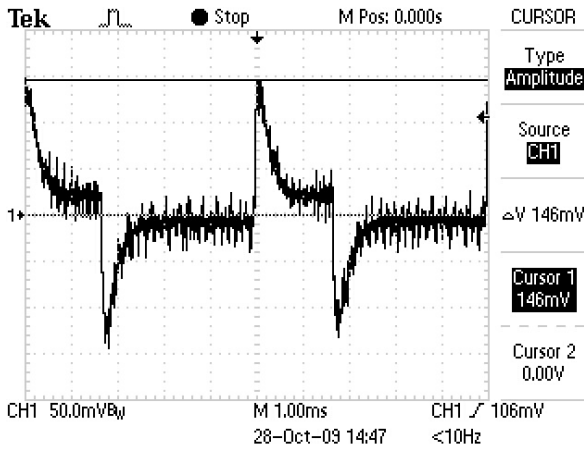
Case material	Nickel-coated copper
Base material	Non-conductive black plastic
Potting material	Silicon rubber (UL94V-0)
Dimensions	2.0 × 1.0 × 0.4 Inch (50.8 × 25.4 × 10.2 mm)
Weight	30g (1.06oz) typ.

**BUB10 Series
Power Derating Curve⁽⁵⁾**

**BUB10-48S1
Input voltage vs. Efficiency**

**BUB10-48S1
Output Current vs. Efficiency**




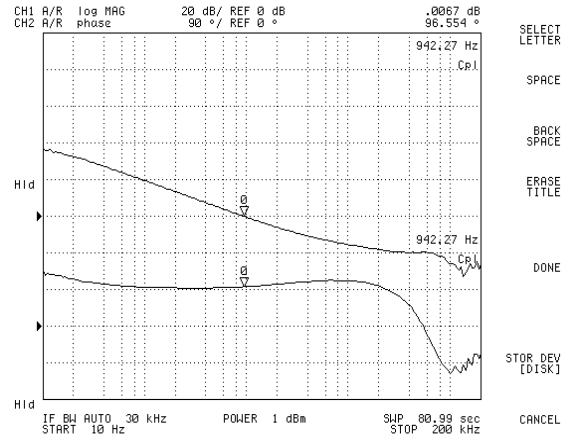
BUB10-48S1

Transient Response at 50%~100% Max Load



BUB10-48S1

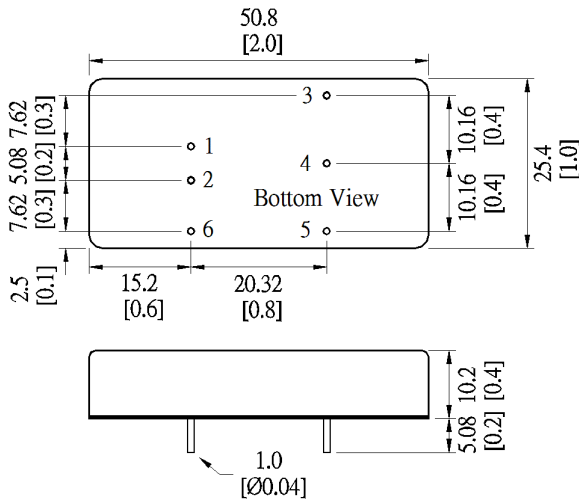
Loop Gain & Phase at Vi=48V, Full Load



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 BUB10-48S1.

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	No pin	Common
5	-Vout	-Vout
6	Remote On/Off (optional)	

Specifications subject to change without noticed.