BR78 SERIES 1 A

KEY FEATURES

EN 62368-1

- Wide Input Voltage Range, Non-Isolated & Regulated Single Output
- High Efficiency up to 96%
- No Load Input Current as Low as 0.2mA
- Short Circuit Protection
- Operating Temperature: -40˚C～+85˚C
- Plastic Case, Meet UL94 V-0 Standard

ELECTRICAL SPECIFICATIONS

All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated

Model No.		BR78-3.3S/1000	BR78-5S/1000	BR78-6.5S/1000	BR78-9S/1000
Input Voltage (V.DC.)		24V (6-34V)	24V (8-34V)	24V (10-34V)	24V (13-34V)
Output Voltage (V.DC.)		3.3	5	6.5	9
Current (mA)	Max.	1000	1000	1000	1000
Efficiency (%)	Max.	90	93	93	94
	Min.	80	85	85	89
Capacitor Load (μF)	Max.	680	680	680	680

Model No.		BR78-12S/1000	BR78-15/1000
Input Voltage (V.DC.)		24V (15-34V)	24V (20-34V)
Output Voltage (V.DC.)		12	15
Current (mA)	Max.	1000	1000
Efficiency (%)	Max.	95	96
	Min.	92	93
Capacitor Load (μF)	Max.	680	680

All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated

Model No.		BR78-3.3S /1000	BR78-5S /1000	BR78-6.5S /1000	BR78-12S /1000	BR78-15S /1000	BR78-24S /1000
Max Output Wattage		3.3W	5W	6.5W	12W	15W	24W
Input	Input Voltage	6-34VDC	8-34VDC	10-34VDC	13-34VDC	15-34VDC	20-34VDC
	Nominal Input Voltage	24VDC					
	No Load Input Current	Typ.: 1mA / Max.: 4mA					
	Filter	Capacitor type					

ELECTRICAL SPECIFICATIONS

All specifications valid at normal input voltage, full load and +25°C after warm-up time unless otherwise stated

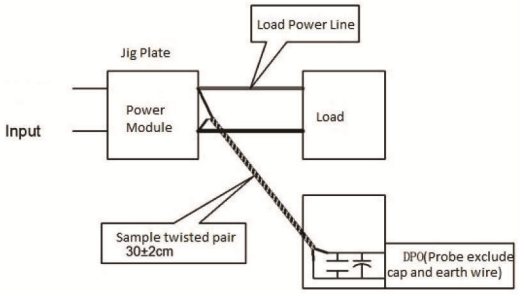
Model No.		BR78-3.3S /1000	BR78-5S /1000	BR78-6.5S /1000	BR78-9S /1000	BR78-12S /1000	BR78-15S /1000
Output	Voltage	3.3VDC	5VDC	6.5VDC	9VDC	12VDC	15VDC
	Voltage Accuracy (Max.)	±3%					
	Quiescent Current (Typ.)	0.2 mA (Vin=Min. to Max. @ 0% Load)					
	Current (Max.)	1000mA					
	Line Regulation (LL-HL) (Max.)	±0.4%					
	Load Regulation (10-100%) (Max.)	±0.8%					
	Capacitor Load	680μF					
	Ripple & Noise (0-100%) (Max.)	75mVp-p					
	Switching Frequency	800KHz					
	Short Circuit Protection (Typ.)	Continuous, Auto-recovery					
Environment	Operating Temperature	-40°C…+85°C (with derating)					
	Storage Temperature	-55°C…+125°C					
	Max Case Temperature	+100°C					
	Relative Humidity	Min.: 5% RH / Max.: 95% RH					
	MTBF (Min.)	2000K Hrs @ 25°C (MIL-HDBK-217F)					
	Temperature Drift Coefficient (Full Load)	±0.03% / °C					
Physical	Dimensions (L x W x H)	0.453 x 0.354 x 0.689 Inches					
	Tolerance ±0.5 mm	11.5 x 9.0 x 17.5 mm					
	Case Material	Black Flame-Retardant Heat-Resistant Plastic (UL94 V-0)					
	Weight (Typ.)	2 g					

NOTE

1. When input voltage exceeds 30Vdc, the input terminal needs to be connected to an external 22μF/50V electrolytic capacitor to prevent module damage caused by voltage spikes.
2. When the ambient temperature is between -40°C and -25°C, an external 22μF/50V electrolytic capacitor is required at the input.
3. This product cannot be used in parallel, and do not support hot-plugging.
4. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual.
5. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual.
6. The products should be used according to the specifications in this manual, otherwise it could be permanently damaged.
7. Please check the derating curve for more details.
8. All values or indicators in this manual had been tested based on ARCH test specifications.

NOTE

9. The specifications are specially for the parts listed in this manual, any other non-standard model performances could be out of the specifications. Please contact our technician for specific requirements.
10. Product specifications are subject to change without prior notice. Please pay attention to the latest manual published on our official website.
11. ARCH can provide customization service.
12. Ripple & Noise Test (Twisted Pair Method)

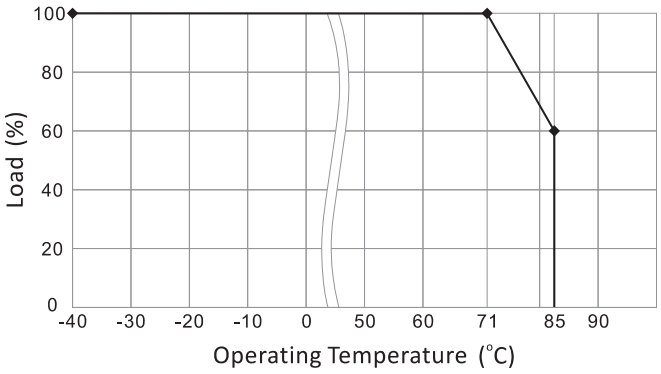


Test Conditions:

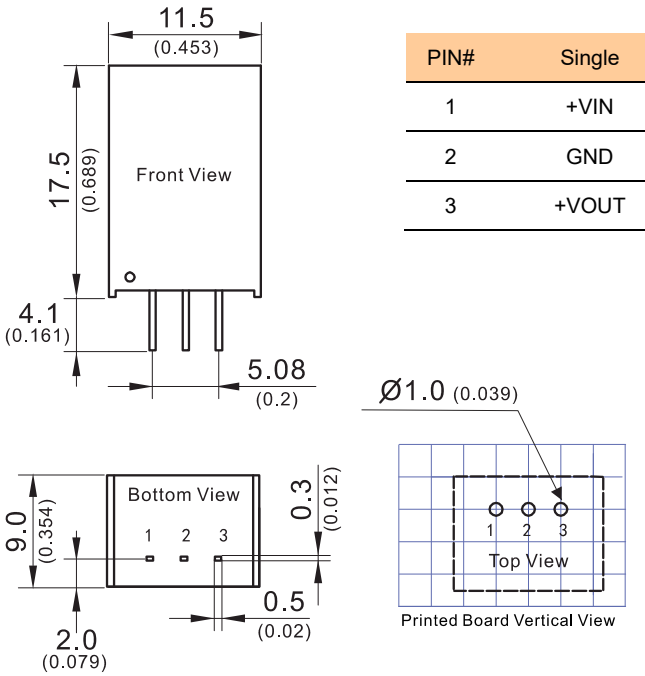
1. 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.
2. Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.

DERATING

Derating Output Load versus Operating Temperature



MECHANICAL DIMENSIONS



PIN#	Single
1	+VIN
2	GND
3	+VOUT

Dimension in mm (inch)

Tolerances: x.x ±0.50 (x.xx ±0.02)

Pin Dimension Tolerance: ±0.10 (±0.004)

DESIGN AND APPLICATION CIRCUIT REFERENCE

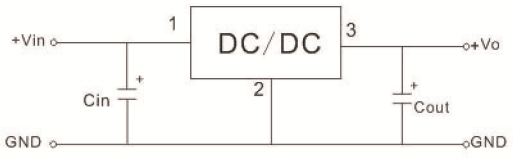
1. Output Load Request

A. To ensure this module operate efficiently and reliably, the minimum load could not be less than 10% of the nominal load. If the actual power is too small, please parallel a resistor at output terminal, the resistance equal to 10% of nominal load.

B. The maximum capacitive load is tested under nominal input voltage with full load, and cannot exceed the maximum capacitive load of output side when using, or it will be difficult to start up and damage the product.

2. Recommended Circuit

To ensure the effective reduction of input and output ripple and noise, a capacitor filter network can be connected to the input and output ends, application circuit refer to Photo 1 below



Positive output application circuit

Photo 1