

FEATURES

- ▶ Industrial Standard SIP-4 Package
- ▶ Unregulated Output Voltage
- ▶ I/O Isolation 1000 VDC
- ▶ Operating Ambient Temp. Range -40°C to +85°C


PRODUCT OVERVIEW

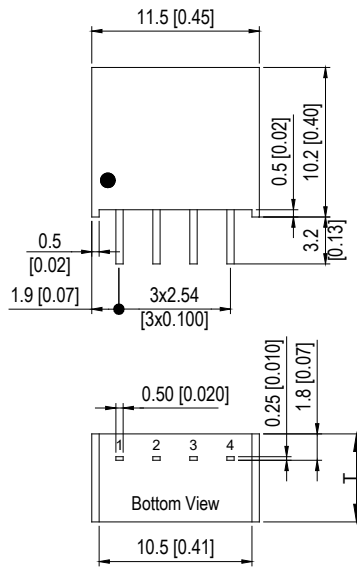
The MINMAX MBU100 series is a range of 1W DC-DC converters in a miniature SIP Package featuring I/O isolation of 1000VDC. A high efficiency allows an operating temperature range of -40°C to +85°C. These converters offer an economical solution for many space critical applications where a voltage has to be isolated i.e for noise reduction, ground loop elimination, digital interfaces or for board level power distribution.

Model Selection Guide

Model Number	Input Voltage (Range)	Output Voltage	Output Current	Input Current		Load Regulation	Max. capacitive Load	Efficiency (typ.)
				Max.	@No Load			@Max. Load
	VDC	VDC	mA	mA(typ.)	mA(typ.)	% (max.)	µF	%
MBU135	3.3	3.3	260	351	35	14	33	74
MBU131	(2.97 ~ 3.63)	5	200	394		14		77
MBU105	5 (4.5 ~ 5.5)	3.3	260	238	30	11	33	72
MBU101		5	200	290		11		69
MBU102		9	110	260		8		76
MBU103		12	84	262		7		77
MBU104		15	67	258		6		78
MBU111	12 (10.8 ~ 13.2)	5	200	117	13	9	33	71
MBU112		9	110	107		5		77
MBU113		12	84	106		5		79
MBU114		15	67	105		4		80
MBU121	24 (21.6 ~ 26.4)	5	200	60	7	8	33	70
MBU122		9	110	54		5		76
MBU123		12	84	53		4		79
MBU124		15	67	53		4		79

Input Specifications

Parameter	Model	Min.	Typ.	Max.	Unit
Input Voltage Range	3.3V Input Models	2.97	3.3	3.63	VDC
	5V Input Models	4.5	5	5.5	
	12V Input Models	10.8	12	13.2	
	24V Input Models	21.6	24	26.4	
Input Surge Voltage (1 sec. max.)	3.3V Input Models	-0.7	---	6	
	5V Input Models	-0.7	---	9	
	12V Input Models	-0.7	---	18	
	24V Input Models	-0.7	---	30	
Input Filter	All Models	Internal Capacitor			

Package Specifications
Mechanical Dimensions

Pin Connections

Pin	Function
1	-Vin
2	+Vin
3	-Vout
4	+Vout

T: 6.1mm(0.24 inch) for 3.3V&5V&12V Input Models

T: 7.1mm(0.28 inch) for 24V Input Models

- ▶ All dimensions in mm (inches)
- ▶ Tolerance: X.X±0.25 (X.XX±0.01)
X.XX±0.13 (X.XXX±0.005)
- ▶ Pins ±0.05(±0.002)

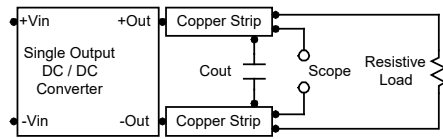
Physical Characteristics

Case Size(3.3V, 5V, 12V Input)	: 11.5x6.1x10.2mm (0.45x0.24x0.40 inches)
Case Size(24V Input)	: 11.5x7.1x10.2mm (0.45x0.28x0.40 inches)
Case Material	: Plastic resin (flammability to UL 94V-0 rated)
Pin Material	: Alloy 42
Weight(3.3V, 5V, 12V Input)	: 1.3g
Weight(24V Input)	: 1.7g

Test Setup

Peak-to-Peak Output Noise Measurement Test

Use a C_{out} 0.33 μ F ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20 MHz. Position the load between 50 mm and 75 mm from the DC-DC Converter.



Technical Notes

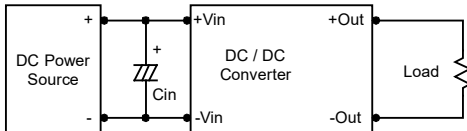
Maximum Capacitive Load

The MBU100 series has limitation of maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time. For optimum performance we recommend 33 μ F maximum capacitive load for devices. The maximum capacitance can be found in the data sheet.

Input Source Impedance

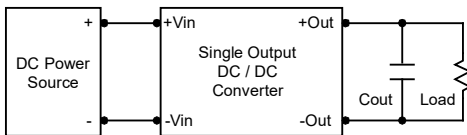
The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup.

Capacitor mounted close to the power module helps ensure stability of the unit, it is comended to use a good quality low Equivalent Series Resistance (ESR < 1.0 Ω at 100 kHz) capacitor of a 2.2 μ F for the 3.3V, 5V input devices, a 1.0 μ F for the 12V input devices and a 0.47 μ F for the 24V devices.



Output Ripple Reduction

A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 1 μ F capacitors at the output.



Thermal Considerations

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 105°C. The derating curves are determined from measurements obtained in a test setup.

