

# Make-Ps®

## DC/DC CONVERTER

## Single Output DC/DC Converter

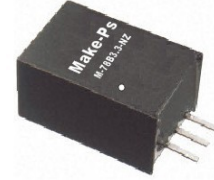
### Series M-78B-NZ

Up to 9.75 Watt | DC-DC Converter



#### FEATURES:

- 3 Pin SIP Package
- Pin-out compatible with LM78XX Linear Regulators
- Continuous Short Circuit Protection
- Non-Isolated Regulated Output
- Operating temperature -40°C to +85°C
- Wide input range
- Very High Efficiency Up To 95%
- Low ripple and noise



#### Models

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (A)	Efficiency Vin Min (%)	Efficiency Vin Max (%)
M-78B2.5-NZ	4.75-18	2.5	1.5	88	85
M-78B3.3-NZ	4.75-18	3.3	1.5	91	88
M-78B5.0-NZ	6.5-18	5	1.5	93	91
M-78B6.5-NZ	8-18	6.5	1.5	95	93

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

#### Input Specifications

Input Specifications	Nominal	Typical	Maximum	Units
Voltage range	See the table above			VDC
Filter	Capacitor			
Quiescent Current	Vin=(LL-HL) at full load	5	10	mA
Short Circuit consumption		0.5	1.8	W

#### Output Specifications

Output Specifications	Conditions	Typical	Maximum	Units
Voltage accuracy	100% load	±3		%
Short Circuit protection		Continuous.		
Short circuit restart		Auto recovery		
Output current limit			5	A
Thermal shutdown	Internal IC junction	150		°C
Dynamic load stability	10-100% load		±100	mV
Line voltage regulation	Vin=(LL-HL) at full load	±0.75		%
Load voltage regulation	10-100% load	±1		%
Temperature coefficient	-40°C to +85°C ambient	±0.02		%/°C
Ripple & Noise	20MHz Bandwidth	45		mV p-p
Maximum Capacitive Load			1000	µF

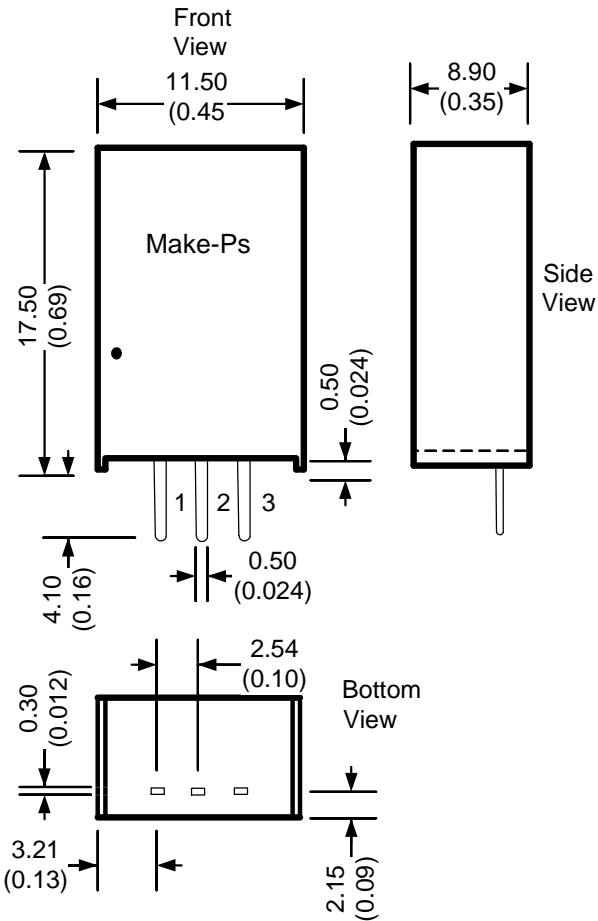
#### General Specifications

Input Specifications	Conditions	Typical	Maximum	Units
Switching frequency	100% load	340		KHz
Operating temperature	With derating above 71°C	-40 to +85		°C
Storage temperature		-55 to +125		°C
Max Case temperature			100	°C
Cooling	Free air convection			
Humidity			95	%
Case material	Non-conductive black plastic (UL94-V0 rated)			
Weight		4		g
Dimensions (L x W x H)		0.45 X 0.35 X 0.69 inch	11.50 X 8.90 X 17.50 mm	
MTBF		> 2 000 000 hrs (MIL-HDBK-217F, Ground Benign, t=+25°C)		
Soldering Temperature	1.5 mm from case for 10 sec		300	°C

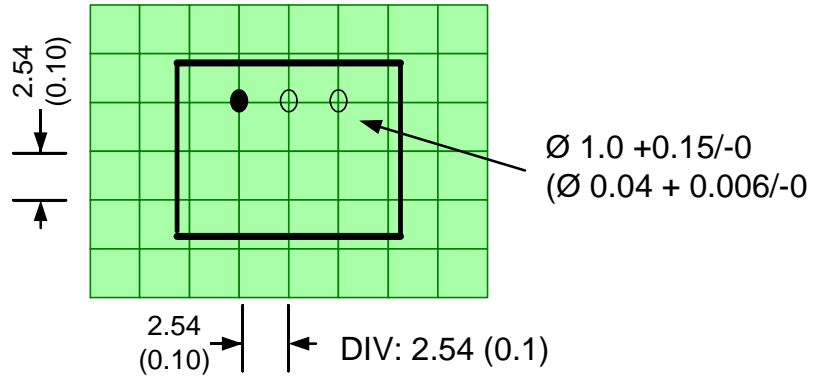
**Pin Out Specifications**

Pin	Single
1	+Vin
2	GND
3	+Vout

**Dimensions**

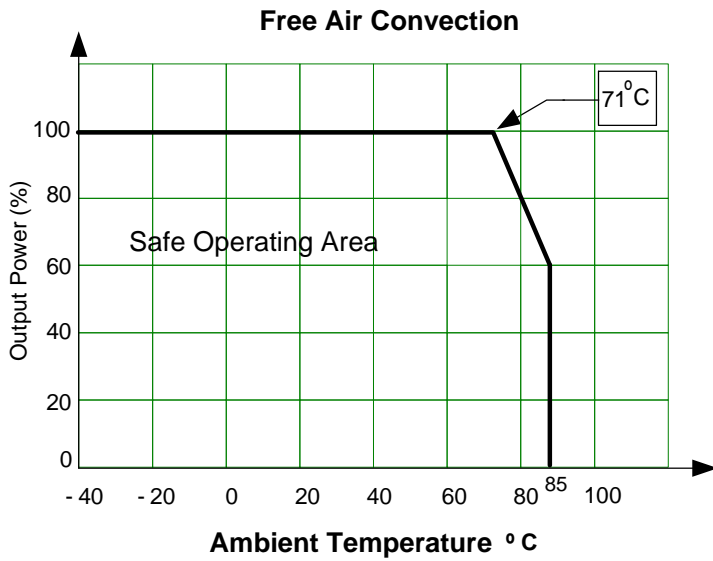


**Footprint**

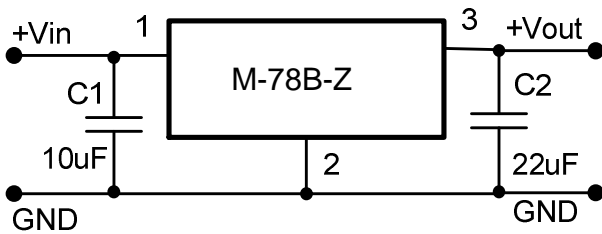


Dimensions are typical values: mm (inch)  
 General Tolerance: ± 0.25 (± 0.01)  
 Pin Tolerance: ± 0.1 (± 0.004)

## Derating



## Typical Application Circuits

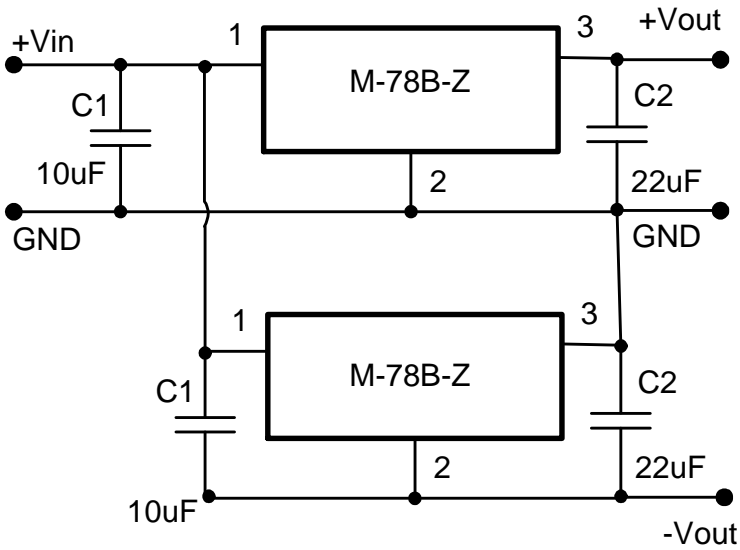


C1: A low ESR capacitor is required to keep the noise of the converter to a minimum. Ceramic capacitors are recommended with typical value is 10µF / 25V.

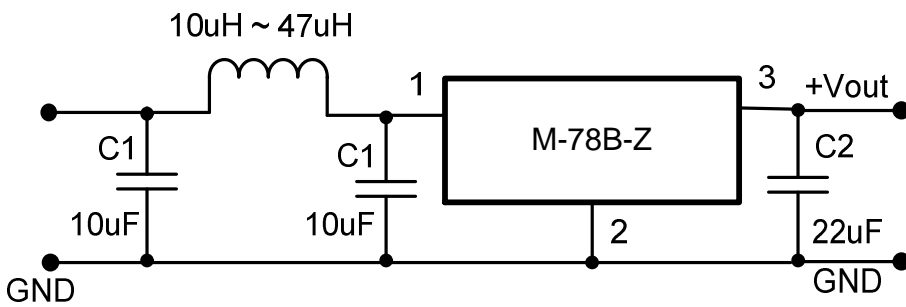
C2: Installation of C2 is recommended with typical value of 22µF / 16V ceramic for 5V and 6.5V output signal and 22µF / 6.3V ceramic for 2.5V and 3.3V output signal.

**NOTE: This part is not designed for parallel operation.**

Dual Output Connection



Input Filter



Output Filter

