



## LMO78\_0.5 series

Single Positive Output

### Switching Regulator

- ⊕ SIP3 package type
- ⊕ Operating temperature range: -40°C to +85°C
- ⊕ Up to 93% efficiency
- ⊕ Short circuit protection (SCP)
- ⊕ Ultra-low no-load power consumption
- ⊕ MTBF 2,000,000 hours

Introducing our new LMO78\_0.5 series – a highly efficient SIP3 package power solution designed for exceptional performance in demanding applications. With an impressive efficiency of up to 93% and ultra-low no-load power consumption, it delivers reliable operation while conserving energy. Featuring robust short-circuit protection and a wide operating temperature range from -40°C to +85°C, this series ensures durability and stability in challenging environments. An MTBF of 2,000,000 hours underscores its long service life, making it the perfect choice for dependable, space-saving power conversion.



Common specifications	
Short circuit protection	Nominal input voltage, continuous, self-recovery
Switching frequency	500kHz (typ.)
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-55°C - +125°C
Pin welding resistance temperature	Welding time: 10s (max.), peak temperature Tc ≤300°C.
Relative humidity	5%~95% (non-condensing)
MTBF (MIL-HDBK-217F@25°C)	2,000,000 Hours
Reverse polarity input	Not allowed
Input filter	Capacitor filter
Package dimensions	10.00 x 7.20 x 11.00mm
Weight	1.0g (typ.)
Cooling method	Free air convection

Input specifications					
Item	Operating condition	Min	Typ	Max	Units
Input current (no-load)			0.2	1.5	mA

#### Example:

**LMO78\_05-0.5**

LM = Series; O = Open frame; 78 = Series; 05 = 5Vout; 0.5 = 0.5A

Output specifications					
Item	Operating condition	Min	Typ	Max	Units
Output voltage accuracy (full load, input voltage range)	LMO78_03-0.5 Others		±2 ±2	±4 ±3	%
Linear regulation	Full load, input voltage range		±0.2	±0.4	%
Load regulation (nominal input voltage, 10% to 100% load)	3.3/5VDC outputs Others		±0.6 ±0.3		%
Ripple & noise	20MHz bandwidth, nominal input voltage, 10 to 100% Load		50	100	mVp-p
Instantaneous recovery Time	Nominal input, 25% load step	--	0.2	1	ms
Transient response deviation	Nominal input, 25% load step	--	±50	±200	mv
Temperature drift coefficient	Operating temperature -40 to +85°C	--	--	±0.03	%/°C

1. Maximum capacitive loads are tested in the input voltage range and under full load conditions;
2. Unless otherwise specified, the parameters in this datasheet were measured at 25°C, humidity 40% ~ 75%, input nominal voltage and output pure resistance mode under full load;
3. All index test methods are based on our standards;

EMC specifications					
EMI	CE	CISPR32/EN55032	CLASS B		
EMI	RE	CISPR32/EN55032	CLASS B		
EMS	ESD	IEC/EN61000-4-2	Contact±4kV	Perf. Criteria	B
EMS	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria	A
EMS	EFT	IEC/EN61000-4-4	±1kV	Perf. Criteria	B
EMS	CS	IEC/EN61000-4-6	3 Vr.m.s	Perf. Criteria	A

# LMO78\_0.5 series

Single Positive Output

## Product Selection Guide

Approval	Part number	Input Voltage Nominal & Range (VDC)	Output Voltage (VDC)	Output Current (mA) max./Min	Full Load Efficiency (max. Vin)	Capacitive Load (μF) max.
	LMO78_03-0.5	24 (4.75-36)	3.3	500	86	680
	LMO78_05-0.5	24 (6.5-36)	5	500	90	680
	LMO78_05-0.5	12 (7-31)	-5	-300	80	330
	LMO78_12-0.5	24 (15-36)	12	500	94	680
	LMO78_12-0.5	12 (8-24)	-12	-150	84	330
	LMO78_15-0.5	24 (19-36)	15	500	95	680
	LMO78_15-0.5	12 (8-21)	-15	-150	85	330

## Product characteristic curve

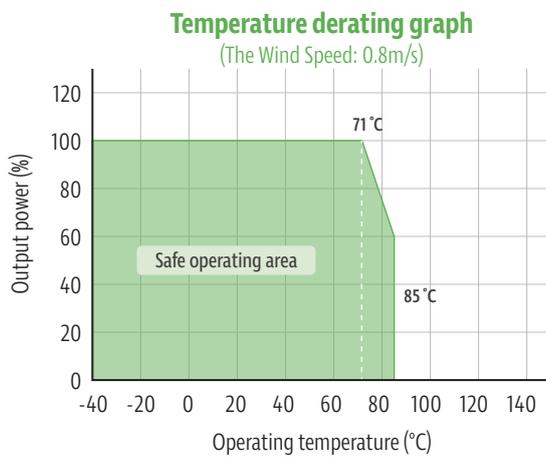
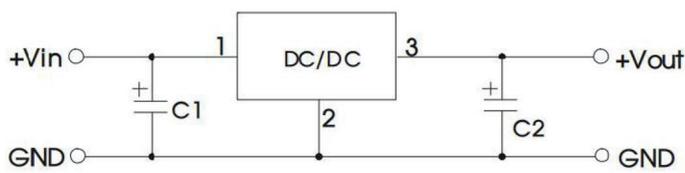
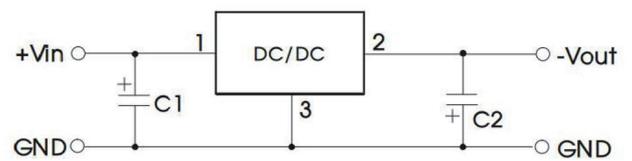


Fig.1

## Design and application circuit reference

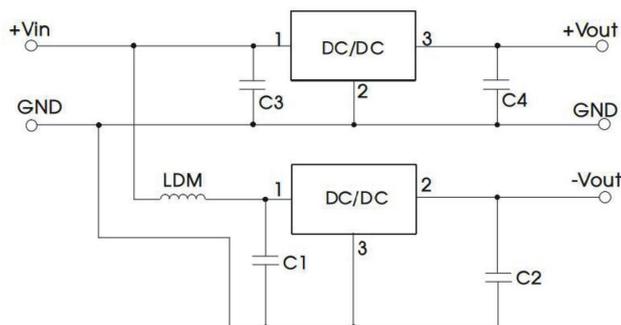


Positive output application circuit



Negative output application circuit

## Design and application circuit reference



Recommended component parameters

Vout (VDC)	Cin (uF)	Cout (uF)
3.3	10uF/50V	22uF/10V
5	10uF/50V	22uF/10V
12	10uF/50V	22uF/25V
15	10uF/50V	22uF/25V

## LMO78\_0.5 series

Single Positive Output

### EMI recommended component parameters

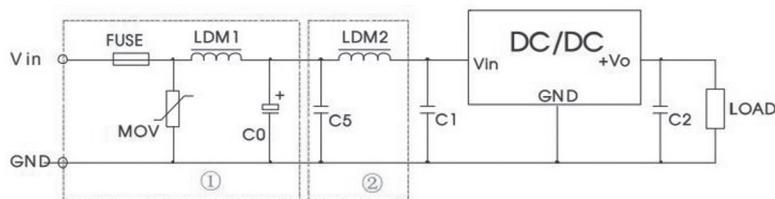


Figure 3

Note: Part (1) in Figure 3 is for EMS testing; Part (2) is for EMI filtering, which can be selected according to your needs

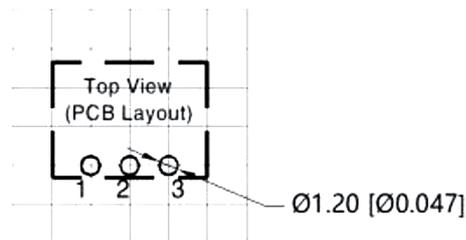
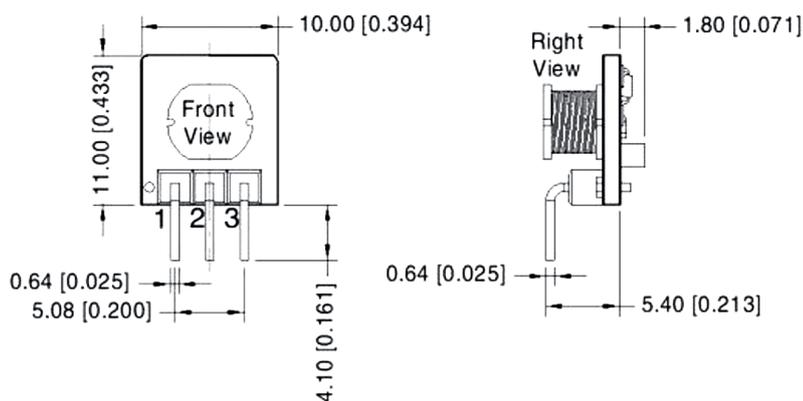
EMI Recommended component parameters

Part No.	Vin: 24V
FUSE	Selected fuse value according to actual input current
MOV	20D470K
LDM1	82uH
C0	680uF/50V
C1/C2	Refer to table 1
C5	4.7uF/50V
LDM2	12uH

Notes:

1. C1 and C2 are required and should be connected close to the pin terminal of the module.
2. Refer to Table 1 for C1 and C2 capacitor values. For certain applications, increased values and/or tantalum or low ESR electrolytic capacitors may also be used instead.
3. Converter cannot be used for hot swap and with output in parallel.
4. Connecting a "LC" filter at the converter output helps to further reduced the output ripple. The recommended inductor value (L) is 10uH-47uH.

### Mechanical dimensions



Note: Grid 2.54\*2.54mm

Note:  
Unit: mm [inch]  
Pin section tolerances:  $\pm 0.10$  [ $\pm 0.004$ ]  
General tolerances:  $\pm 0.50$  [ $\pm 0.020$ ]

Pin definition table

Pin	Positive output	Negative output
1	Vin	Vin
2	GND	-Vo
3	+Vo	GND