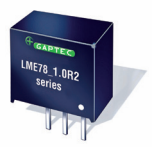
LME78_1.0R2 series

Wide Input - Non-Isolated & Regulated - Single Output



Switching Regulator

- Wide input voltage spectrum
- Non-isolated, regulated single output
- High efficiency, up to 96%
- Ultra-low no-load input current (as low as 0.2mA)
- Integrated short circuit protection
- Supports negative output
- Operating temperature range: -40°C to +85°C
- Plastic enclosure meeting UL94 V-0 standard

Introducing our advanced power LME78_1.0R2 series: Our product features a wide input voltage spectrum and a non-isolated, regulated single output. With high efficiency reaching up to 96%, it ensures optimal performance for your applications. The ultra-low no-load input current, as low as 0.2mA, makes it highly energy-efficient even in idle mode.

Additionally, it includes integrated short circuit protection and supports negative output, providing versatility and safety. The operating temperature range spans from -40°C to +85°C, making it suitable for various environmental conditions. The plastic enclosure meets the UL94 V-0 standard, ensuring durability and safety compliance.

Common specifications

Short circuit protection	Continuous, self-recovery
Switching frequency	800 kHz (typ.)
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-55°C - +125°C
Shell temperature rise during work	100°C (max.)
Pin withstand soldering temperature	Time, 10s (max.) 260°C
Relative humidity	5~95% RH (non condensing)
MTBF (MIL-HDBK-217F@25°C)	20 x 10^5 Hours
Case material	Black flame-retardant heat-resistant Plastic (UL94 V-0)
Weight	2.0g (typ.)

Input specifications

Item	Operating condition	Min	Typ	Max	Units
No load input current	Positive output Negative output		0.2 1	1 4	mA
Reverse polarity at input	Not allowed				
Input filter	Capacitor filter				

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Output voltage accuracy	Full load		±2	±3	%
Ripple & noise*	Nominal input, full load, 20MHz bandwidth		35	75	mVp-p
Load regulation	Nominal input voltage, 10%~100% load • Positive output • Negative output		 ±0.4 ±0.4	 ±0.6 ±0.8	%
Line regulation	Input Voltage Change		±0.2	±0.4	%
Temperature drift coefficient	100% Load			±0.03	%/°C

Note: *Ripple & noise tested by twisted-pair method.

Example:
LME78_05-1.0R2
LM = Series; E = Cost effective; 05 = 5Vout; 1.0 = 1.0A; R2 = Revised

1. This product is not suitable for parallel usage and does not support hot-swapping. All index testing methods mentioned in this datasheet adhere to our company's corporate standards. Product specifications are subject to change without prior notice.

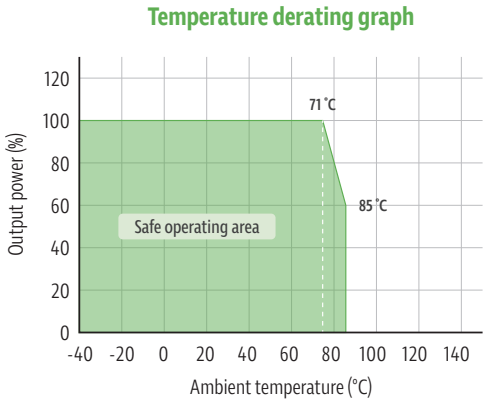
Product Selection Guide

Series	Input voltage range (VDC)	Output voltage (VDC)	Output current (mA)	Quiescent current (mA) typ.	Max. capacitive load (uF)	Ripple & Noise max. (mVp-p)	Efficiency (%) (typ.) Vin (max.)
LME78_03-1.0R2	(6 – 34)	3.3	1000	0.2	680	35	91
LME78_05-1.0R2	(8 – 34) (8 – 27)	5 -5	1000 -500	0.2 1	680 330	35 35	92 82
LME78_06-1.0R2	(10 – 34)	6.5	1000	0.2	680	35	93
LME78_09-1.0R2	(13 – 34)	9	1000	0.2	680	35	93
LME78_12-1.0R2	(15 – 34) (8 – 20)	12 -12	1000 -300	0.2 1	680 330	35 35	94 87
LME78_15-1.0R2	(20 – 34) (8 – 18)	15 -15	1000 -300	0.2 1	680 330	35 35	96 87

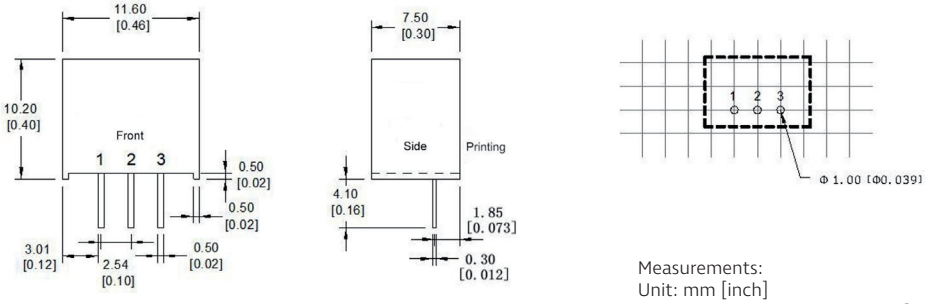
Note:

If the input voltage exceeds 30VDC, connect the input terminal to an external 22μF/50V electrolytic capacitor to prevent potential module damage from voltage spikes.

Product characteristic curve



Standard packing dimensions



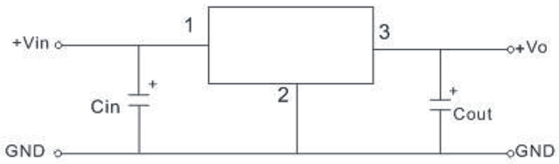
Measurements:
Unit: mm [inch]
Pin section tolerances: ±0.10mm[±0.004 inch]
General tolerances: ±0.50mm[±0.020 inch]

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

Note: If the definition of pin is not in accordance with the datasheet, please refer to the actual item.

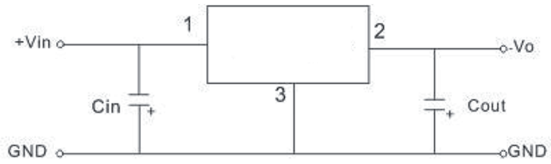
Typical application circuit

Application circuit for positive output



Drawing 1

Application circuit for negative output



Drawing 2

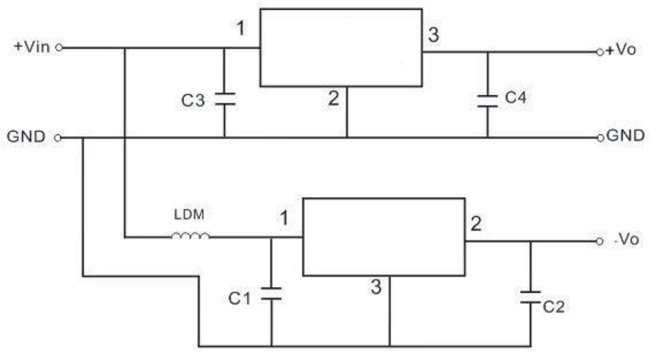
1. **Output Load Requirements**

a. To ensure efficient and reliable operation of this module, the minimum load must not be less than 10% of the nominal load. If the actual power consumption is too low, please connect a resistor in parallel at the output terminal, with the resistance equal to 10% of the nominal load.
b. The maximum capacitive load is tested under nominal input voltage with a full load. The capacitive load on the output side must not exceed this maximum value, as doing so may cause startup issues and damage the product.

2. **Recommended Circuit**

To effectively reduce input and output ripple and noise, a capacitor filter network can be connected to the input and output terminals. The application circuit is shown in drawing 1; the negative output application circuit is shown in drawing 2, and the positive and negative output parallel application circuit is shown in drawing 3 (next page). The recommended value for LDM is 10μH). However, a suitable filter capacitor should be selected. If the capacitor is too large, it may affect the product's startup. To ensure that each output operates safely and reliably, the recommended capacitive load values are detailed in Table 1 below. Refer to the external capacitance table for the capacitance values of C1 and C2. You may increase the capacitance as needed and use low-ESR tantalum capacitors and electrolytic capacitors.

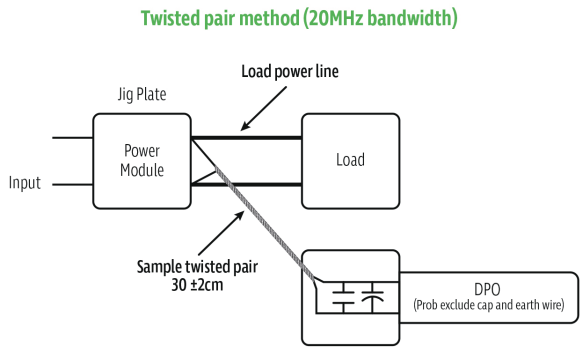
Typical application circuit



Drawing 3

Part No	C1 and C3 ceramic capacitor	C2 and C4 ceramic capacitor
LME78_03-1.0R2	10µF/50V	22µF/10V
LME78_05-1.0R2	10µF/50V	22µF/10V
LME78_06-1.0R2	10µF/50V	22µF/10V
LME78_09-1.0R2	10µF/50V	22µF/10V
LME78_12-1.0R2	10µF/50V	22µF/10V
LME78_15-1.0R2	10µF/50V	22µF/10V

Ripple & noise test: (twisted pair method 20MHz bandwidth)



Test Method:

1. Connect the twisted pair, set the oscilloscope bandwidth to 20MHz, use a 100M bandwidth probe, and terminate with a 0.1uF polypropylene capacitor and a 10uF high-frequency low-resistance electrolytic capacitor in parallel. Configure the oscilloscope to sample mode.

2. Connect the input terminal to the power supply and the output terminal to the electronic load using a jig plate. Use a 30cm (±2 cm) sampling line, and select the power line from appropriately insulated wires of the corresponding diameter according to the output current flow.