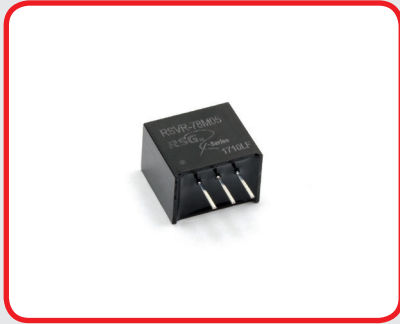


# RSVR-78Mv2

0.5A Non-Isolated, regulated DC/DC Converter



Picture similar



- 3 Pin SIL Package
- Wide Input Range
- Step-down switching
- Full SMD Technology
- Efficiency up to 94%
- Operating Temperature Range -40°C ~ +85°C
- Continuous Short Circuit Protection
- Pin-out compatible with LM78MXX three terminals positive Regulator
- Non Conductive Black Plastic Case

Output Specifications	
Voltage Accuracy	±3% max.
Output Voltage Adjustability (Trim)	–
Maximum Output Current	500mA @ full load, 5mA @ min. load
Line Regulation	±0.5% max.
Load Regulation	from 10% to 100% Load: ±0.8% max. –
Short Circuit Protection	Indefinite (Automatic Recovery)
Ripple & Noise (20 MHz bandwidth)	60mV pk-pk
Temperature Coefficient	±0.02%/°C
Transient Recovery Time	250µs typ.
Transient Response Deviation	±3% max.

Input Specifications	
Voltage Range	See table
Start-up Time	10ms typ.
No-Load/Full-Load Input Current	See table
Input Filter	C/L (see filter details on following pages)
Input Reflected Ripple Current	35mA pk-pk typ.
Remote ON	–
Remote OFF	–
OFF Idle Current	–
Surge Voltage (100 ms) <sup>1)</sup>	–
All Models	30VDC max.

General Specifications	
Switching Frequency	570kHz typ.
Humidity	95% rel H
Reliability Calculated MTBF	>4.0Mhrs (MIL-HDBK-217 f)
Safety Standard(s)	IEC/EN60950-1 (designed to meet)

Environmental Specifications	
Operating Temperature Range	-40°C ~ +85°C (see Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-55°C ~ +125°C
Cooling	Natural Convection
Soldering Profile and Peak Temperature	Wave Flow: 260°C (1.5 mm from case), 10s, max.

Physical Specifications	
Case Material	Non-conductive Black Plastic (UL94V-0 rated) –
Pin Material	C5191R-H Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	2.0g
Case Dimensions	0.46" x 0.29" x 0.40"

EMC Specifications	
Radiated / Conducted Emissions	EN55032 Class B see EMI Filter
ESD	IEC 61000-4-2 Perf.Criteria A
Rad. RF	IEC 61000-4-3 Perf.Criteria A
EFT	IEC 61000-4-4 Perf.Criteria A
Surge	–
Cond. RF	IEC 61000-4-6 Perf.Criteria A
PFMF	IEC 61000-4-8 Perf.Criteria A

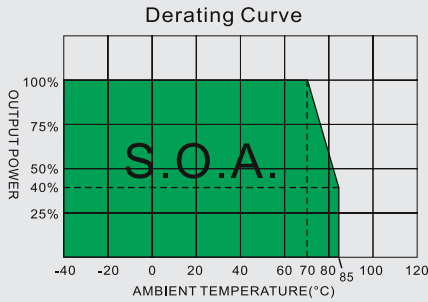
<sup>1)</sup> These are stress ratings; exposure of devices to any of these conditions may adversely affect long-term reliability. All specifications typical at T<sub>A</sub> = 25 °C, nominal input voltage and full load, unless otherwise specified.

The information and specification contained in this data sheet are believed to be correct at time of publication. However RSG accepts no responsibility for consequences arising from printing errors or inaccuracies. **Specifications are subject to change without notice.**

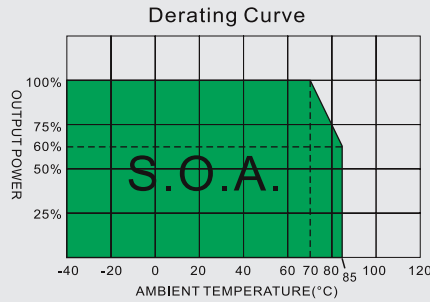
## Number structure RSVR Series

(v2)

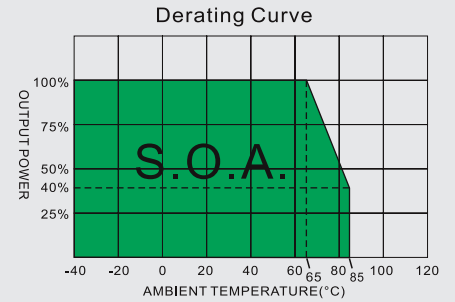
RSVR	78	X	yy
Name / package	Compatibility	Usage / Amps	Voltage out
RSVR = SIL3	78 = LM78xx	M = Mid-Amp (0.5 A) F = Full-Amp (1.0 A) W = Wide-Input (0.5 A)	00 = 1.5 V 01 = 1.8 V 02 = 2.5 V ... 15 = 15 V



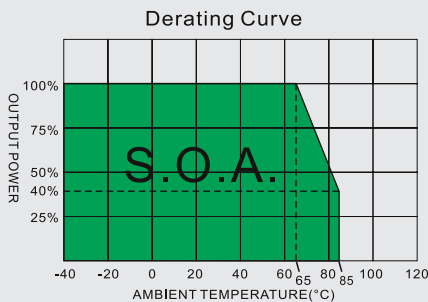
**RSVR-78M03v2**



**RSVR-78M05v2**



**RSVR-78M12v2**



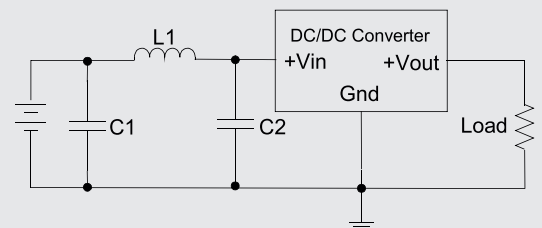
**RSVR-78M15v2**

## Model Selection Guide

Model Number	Input Voltage Range (V DC)	Input Current (mA)		Output		Efficiency		Capacitor Load (µF)
		No-Load (Max)	Full Load Vin (Min)   Vin (Max)	Voltage (V DC)	Current (mA)	Vin (Min) @ FL(%)	Vin (Max) @ FL(%)	
RSVR-78M03v2	4.5-28	1.0	411.99   78.57	3.3	500	89	75	100
RSVR-78M05v2	7-28	1.0	388.20   111.61	5.0	500	92	80	100
RSVR-78M12v2	14-28	1.5	455.93   238.10	12.0	500	94	90	100
RSVR-78M15v2	17-28	2.0	469.33   291.15	15.0	500	94	92	47

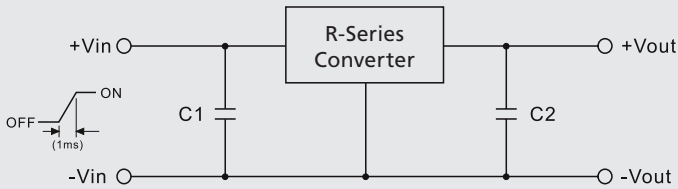
## EMI Countermeasures

Input filter components (C1, C2, L1) are used to help meet EMC requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



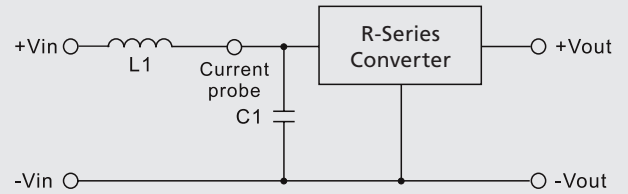
	C1	L1	C2
RSVR-78Myyv2	10 µF, 35 V	6.8 µH	10 µF, 35 V

## Standard Application Circuit



1. To protect the converter during power-up, use soft start Vin and C1 = 22  $\mu$ F
2. C2 = 47  $\mu$ F (Optional)

## Test Configurations

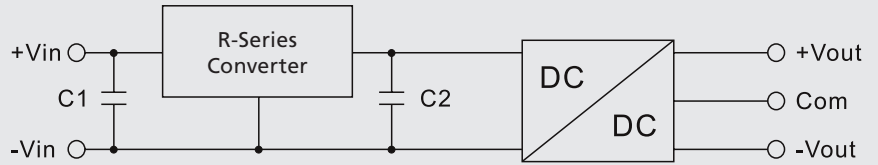


Input reflected ripple current is measured through a source inductor L1 (12  $\mu$ H) and a source capacitor C1 = 47  $\mu$ F at nominal input and full load.

## Application Examples

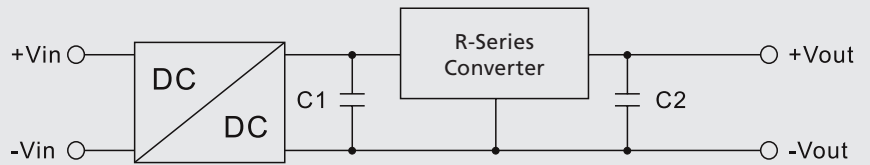
**High efficiency, isolated, dual unregulated outputs, one economic way to build up isolated dual output**

- Isolated dual outputs
- Wide input range
- C1: Optional
- C2: Required (further decoupling filtering may be necessary between the two converters)

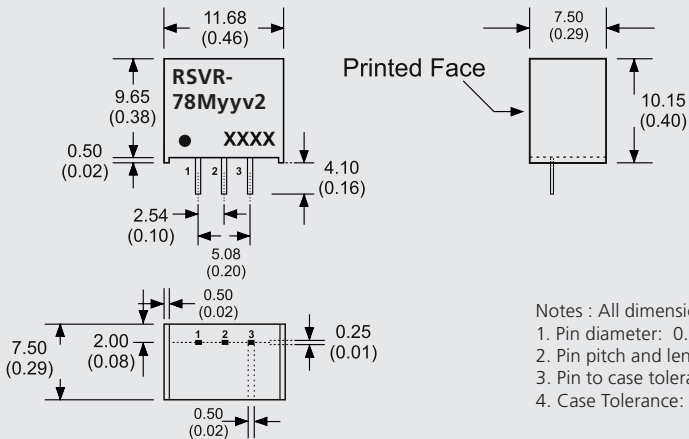


**Isolated (up to 6 KV), wide input range regulated output**

- High isolation voltage
- Improved loading / line regulation
- Wide input voltage range
- Point-of-load Architecture
- C1: Required (further decoupling filtering may be necessary between the two converters)
- C2: Optional



## Mechanical Specifications



Notes : All dimensions are typical in millimeters ( inches ).

1. Pin diameter: 0.5 $\pm$ 0.05 ( 0.02 $\pm$ 0.002 )
2. Pin pitch and length tolerance:  $\pm$ 0.35 (  $\pm$ 0.014 )
3. Pin to case tolerance:  $\pm$ 0.5 (  $\pm$ 0.02 )
4. Case Tolerance:  $\pm$ 0.5 (  $\pm$ 0.02 )

Pin Connections	
Pin Number	Single
1	+V Input
2	GND
3	+V Output

### Notes

Ripple/Noise measured with 20 MHz bandwidth.

Tested by minimal Vin and constant resistive from 2% to 100% load.

Tested by normal Vin and 25 % load step change ( 75 %-50 %-25 % of Io ).

Input reflected ripple current is measured through a source inductor L1(12  $\mu$ H) and a source capacitor C1=47  $\mu$ F at nominal input and Full load.

Do not operate the unit(s) exceeding the absolute maximum rating, over rating causes damage to the units.

Input filter components (C1, C2, L1) are used to help meet EMI & EMS requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.