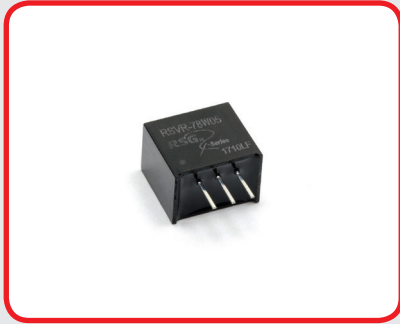


RSVR-78W

0.5A Non-Isolated, regulated DC/DC Converter



Picture similar



- 3 Pin SIL Package
- Ultra-wide Input Range (8:1)
- Extended Input Voltage up to 72V
- Full SMD Technology
- Efficiency up to 95%
- 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	See table
Line Regulation	±1.0% max.
Load Regulation	from 10% to 100% Load: ±1.0% max. –
Short Circuit Protection	Indefinite (Automatic Recovery)
Ripple & Noise (20 MHz bandwidth)	75mV pk-pk
Temperature Coefficient	±0.02%/°C
Transient Recovery Time	–
Transient Response Deviation	–

Input Specifications	
Voltage Range	See table
Start-up Time	–
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) ¹⁾	–
All Models	75VDC max.

General Specifications	
Switching Frequency	120kHz ~ 800kHz typ.
Humidity	95% rel H
Reliability Calculated MTBF	>4.5Mhrs (MIL-HDBK-217 f)
Safety Standard(s)	–

Environmental Specifications	
Operating Temperature Range	-40°C ~ +85°C (see Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-40°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"

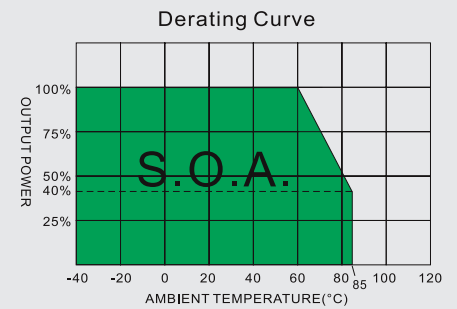
EMC Specifications	
Radiated / Conducted Emissions	EN55032 Class B see EMI Filter
ESD	IEC 61000-4-2 Perf.Criteria A
Rad. RF	IEC 61000-4-3 Perf.Criteria A
EFT	IEC 61000-4-4 Perf.Criteria A
Surge	IEC 61000-4-5 Perf.Criteria A
Cond. RF	IEC 61000-4-6 Perf.Criteria A
PFMF	IEC 61000-4-8 Perf.Criteria A

¹⁾ These are stress ratings; exposure of devices to any of these conditions may adversely affect long-term reliability. All specifications typical at T_A = 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

RSVR	–	78	X	yy	(v2)
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	



Model Selection Guide

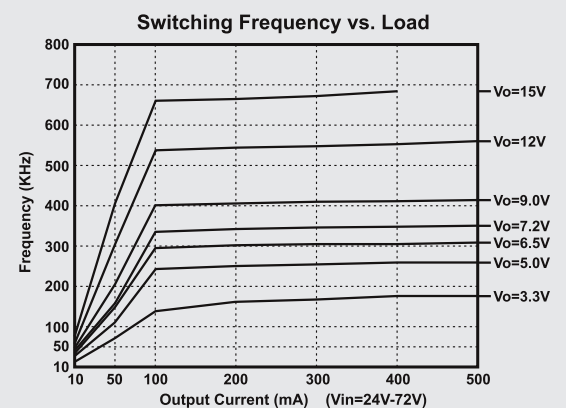
Model Number	Input Voltage Range (V DC)	Input Current (mA)		Output		Efficiency		Capacitor Load @ FL (µF, max.)	
		No-Load (mA, max.)	Full Load (mA, typ.) @ Min. Vin @ Max. Vin		Voltage (V DC)	Current (mA)	Full Load (% , typ.) @ Min. Vin @ Max. Vin		
RSVR-78W03	9 - 72	3	224	31	3.3	500	82	75	100
RSVR-78W05	9 - 72	3	316	44	5	500	88	80	100
RSVR-78W06	9 - 72	3	397	55	6.5	500	91	83	100
RSVR-78W07	14 - 72	3	283	60	7.2	500	91	84	100
RSVR-78W09	14 - 72	3	350	73	9	500	92	86	100
RSVR-78W12	17 - 72	3	376	94	12	500	94	89	100
RSVR-78W15	21 - 72	3	301	94	15	400	95	89	100

Typical Operating Conditions

Switching Frequency

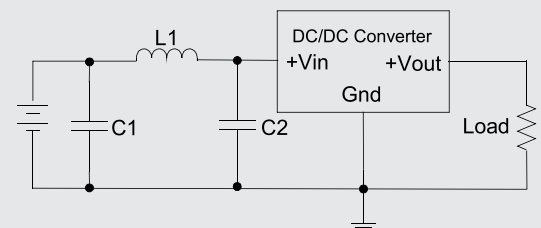
The switching frequency is different according to output voltage models. Operation under no load will not damage these devices, however they may not meet all specifications.

A minimum load of 10mA is recommended.



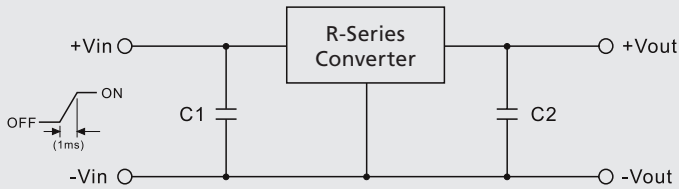
EMI Countermeasures

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.



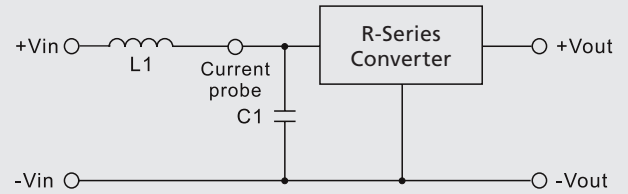
	C1	L1	C2
RSVR-78Wyy	220 µF, 100 V	12 µH	220 µF, 100 V

Standard Application Circuit



1. If $V_{in} > 50\text{ V}$, in order to protect the converter during power-up, add an external capacitor of $C1=3.3\ \mu\text{F}/100\text{ V}$ is required.
2. $C2=100\ \mu\text{F}$ (Optional)

Test Configurations

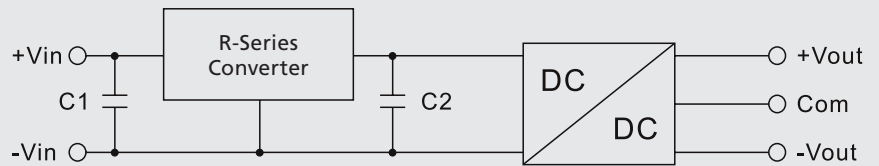


Input reflected ripple current is measured through a source inductor $L1$ ($12\ \mu\text{H}$) and a source capacitor $C1 = 47\ \mu\text{F}$ at nominal input and full load.

Application Examples

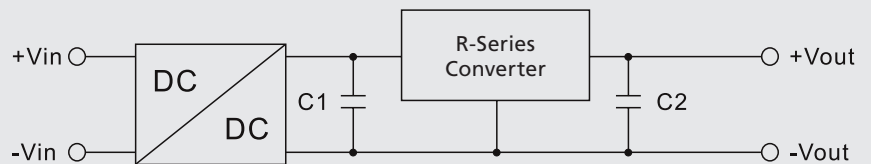
High efficiency, isolated, dual unregulated outputs, one economic way to build up isolated dual output

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

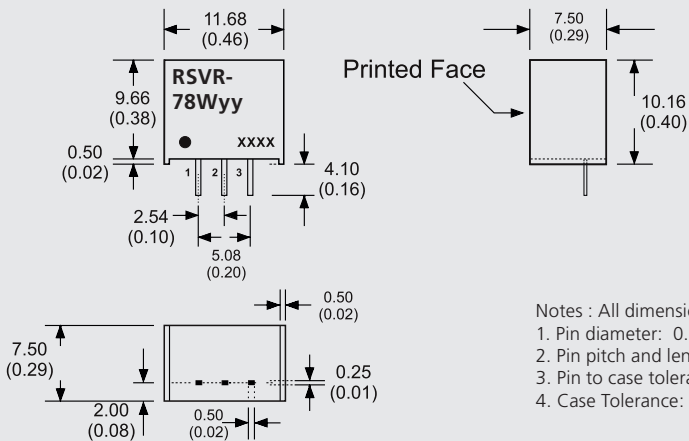


Isolated (up to 6 KV), wide input range regulated output

- 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



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

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

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

Notes

Ripple/Noise measured with 20 MHz bandwidth. Load condition : 10 % ~ 100 %, output noise arise when load is under 10 %.

Tested by minimal V_{in} and constant resistive load.

Measured Input reflected ripple current with a simulated source inductance of $12\ \mu\text{H}$.

The switching frequency is different according to output voltage models.

Input filter components ($C1$, $C2$, L) 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.

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

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