

Features

- Efficiency up to 95%, Non isolated, no need for heatsinks
- Pin-out compatible with LM78XX Linear
- Low profile (L*W*H=11.5*8.5*17.5mm)
- Wide input range (4.75V ~ 18V)
- Short circuit protection, Thermal shutdown
- Non standard outputs available as specials between 1.5V ~ 6.5V
- Low ripple and noise
- "L" Version with 90° pins

Rev.0

Description

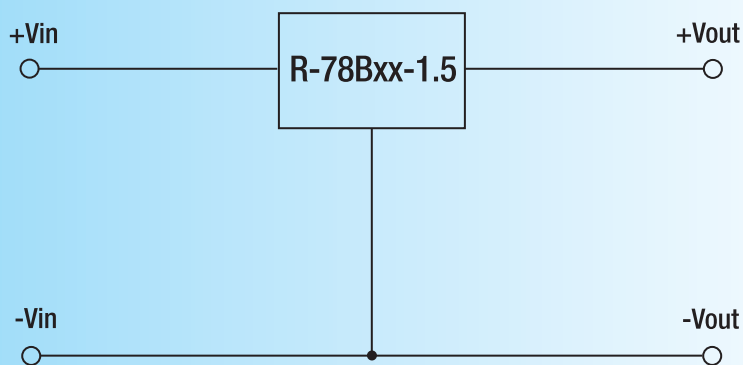
The R-78Bxx-1.5 Series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 95% means that very little energy is wasted as heat so there is no need for any heat sinks with their additional space and mounting costs. The L-Version with 90° pins allows direct replacement for laid-flat regulators where component height is at a premium. Low ripple and noise figures and a short circuit input current of typically only 10mA round off the specifications of this versatile converter series.

Selection Guide

Part Number* SIP3	Input Range (1) (V)	Output Voltage (V)	Output Current (A)	Efficiency	
				Min. Vin (%)	Max. Vin (%)
R-78B1.5-1.5	4.75 – 18	1.5	1.5	83	78
R-78B1.8-1.5	4.75 – 18	1.8	1.5	85	81
R-78B2.5-1.5	4.75 – 18	2.5	1.5	88	84
R-78B3.3-1.5	4.75 – 18	3.3	1.5	91	88
R-78B5.0-1.5	6.5 – 18	5.0	1.5	94	92
R-78B6.5-1.5	8.0 – 18	6.5	1.5	95	93

* add Suffix "L" for 90° bent pins, e.g. R-78B5.0-1.5L

Typical Application Circuit



INNOLINE

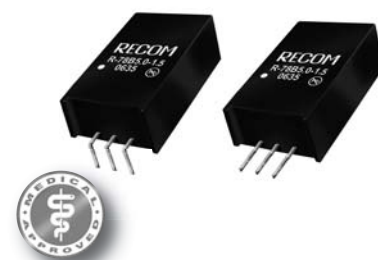
DC/DC-Converter

R-78Bxx-1.5(L) Series

1.5 AMP

SIP3

Single Output

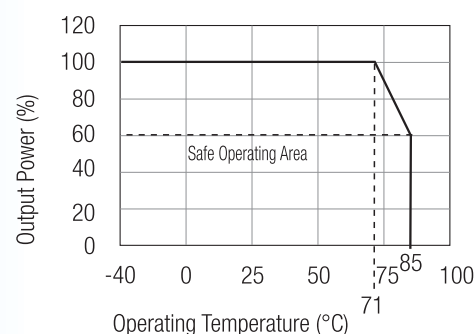


EN-55022 Certified
EN-55024 Certified
EN-60601-1-2 Certified
EN-60950-1 Certified

RECOM

Derating-Graph

(Ambient Temperature)



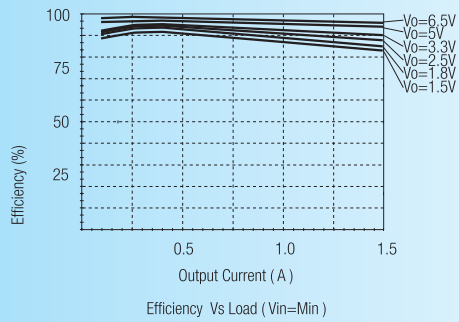
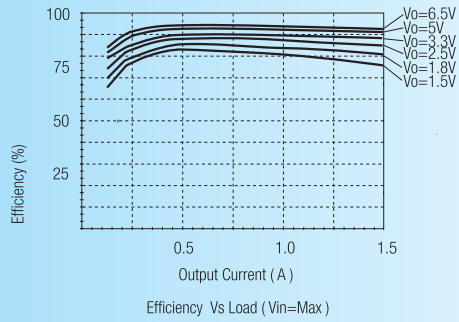
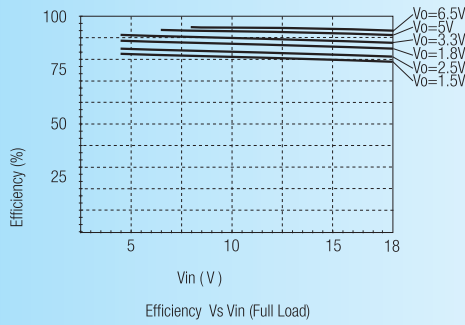
Specifications (refer to the standard application circuit, Ta: 25°C, minimum load = 10%)

Characteristics	Conditions	Min.	Typ.	Max.
Input Voltage Range	All Series, see Selection Guide	4.75		18.0V
Output Voltage Range (for customized parts)	All Series	1.5		6.5V
Output Current	All Series	0*		1500mA
Output Current Limit	All Series			5000mA
Short Circuit Input Current (Vin = 12V)	All Series			100mA
Internal Power Dissipation				0.65W
Short Circuit Protection			Continuous, automatic recovery	
Output Voltage Accuracy (At 100% Load)	All Series		±2	±3%
Line Voltage Regulation (Vin = min. to max. at full load)	All Series		0.2	0.4%
Load Regulation (10% to 100% full load)	All Series		20	25mV
Dynamic Load Stability (with Output Capacitor=100µF)	100% <-> 50% load		±80	±120mV
	Transient Recovery Time		1.0	1.5ms
Ripple & Noise (10% to 100% full load)	All Series		15	30mVp-p
Temperature Coefficient	-40°C ~ +85°C ambient			0.015%/°C
Max capacitance Load				1000µF
Switching Frequency		300	340	380kHz
Quiescent Current	Vin = min. to max. at 0% load		7	9mA
Input Reflected Ripple Current	All Series		150	200mAp-p
Operating Temperature Range		-40°C		+85°C
Operating Case Temperature				+100°C
Storage Temperature Range		-55°C		+125°C
Case Thermal Impedance				60°C / W
Thermal Shutdown	Internal IC junction			+160°C
Relative Humidity				95% RH
Case Material			Epoxy with Non-Conductive Plastic Case (UL94V-0)	
Package Weight				4g
Conducted Emissions	EN55022			Class B
Radiated Emissions	EN55022			Class B
ESD	EN61000-4-2			Class A
CE Certified				EN-60950-1
MTBF (+25°C) (+71°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F		3250 x 10 ³ hours
		using MIL-HDBK 217F		1059 x 10 ³ hours

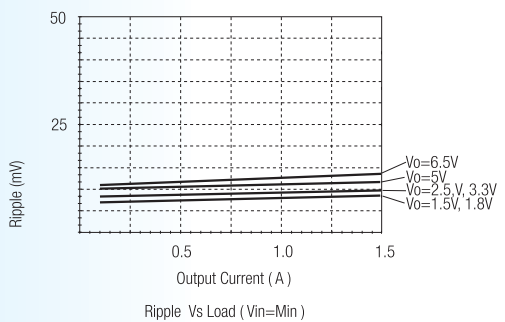
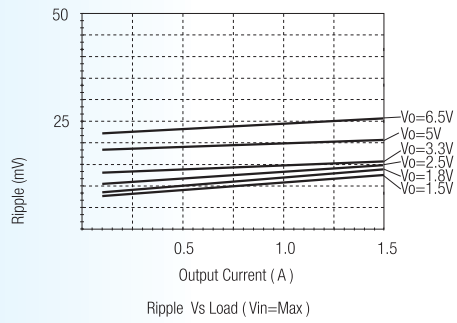
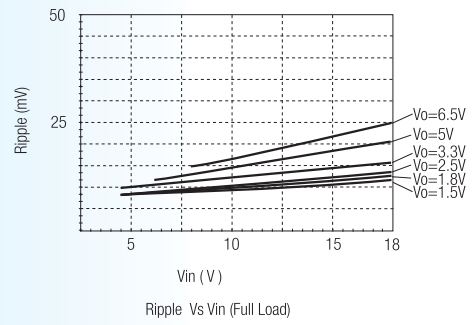
*Note: Operation under no load will not damage these devices, however they may not meet all specifications. A minimum load of 10mA is recommended

Characteristics

Efficiency

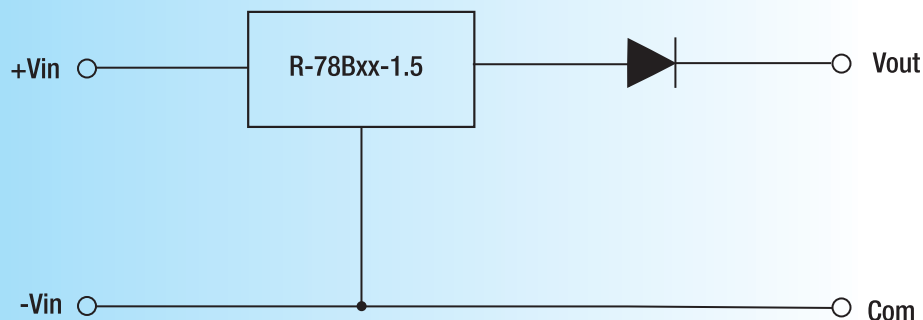


Ripple



Typical Application Circuit

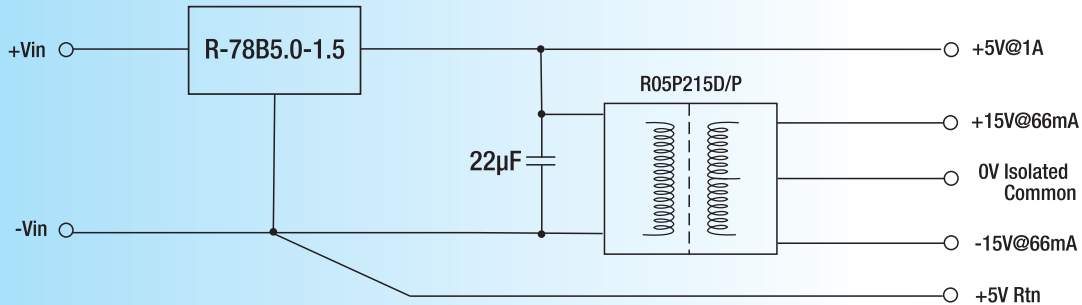
Output protection from external voltage



Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter when it is powered down.

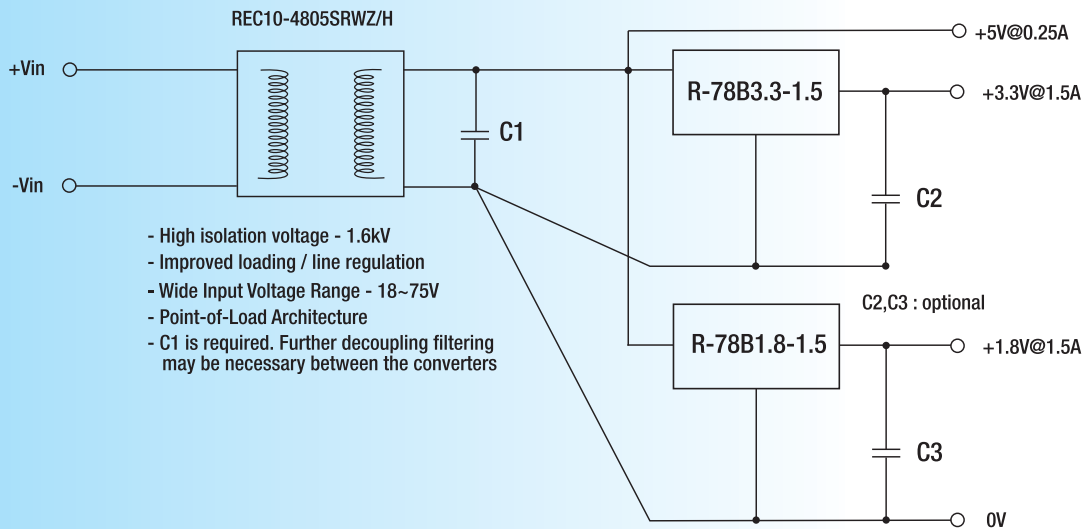
Application Examples

High efficiency multiple output



- Wide input range suits both 12V and 7.2V battery packs
- 5.2kV isolated short circuit protected outputs for analogue circuits, e.g. medical grade interface
- High efficiency +5V/1A protected output for digital circuits
- Further decoupling filtering may be necessary between the converters

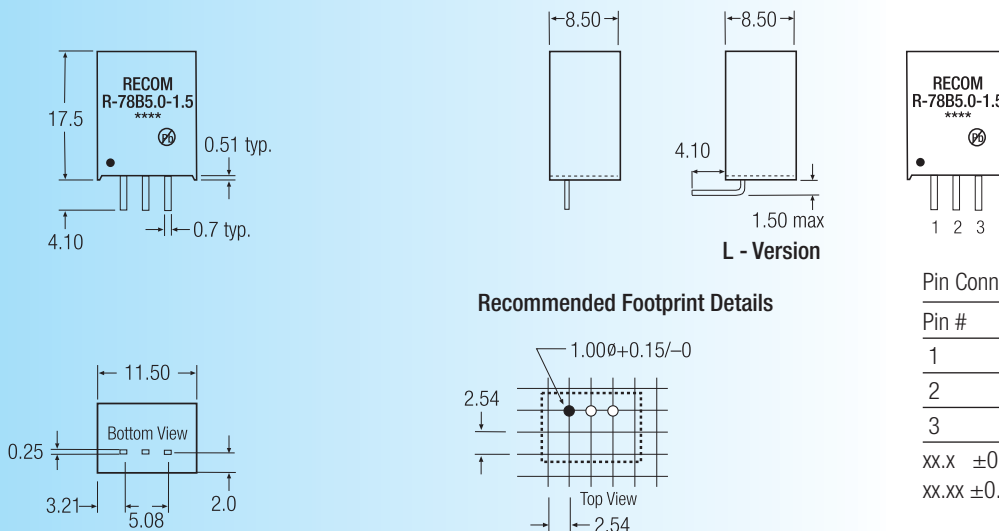
Isolated, wide Input range, Distributed Power Architecture (Point of Load)



- High isolation voltage - 1.6kV
- Improved loading / line regulation
- Wide Input Voltage Range - 18~75V
- Point-of-Load Architecture
- C1 is required. Further decoupling filtering may be necessary between the converters

Package Style and Pinning (mm)

SIP3 PIN Package



Recommended Footprint Details

Pin Connections

Pin #	Connection
1	+Vin
2	GND
3	+Vout
xx.x	±0.5mm
xx.xx	±0.25mm