Features

- Efficiency up to 97%,Non isolated, no need for heatsinks
- Pin-out compatible with LM78XX Linears
- Very low profile(L*W*H=11.5*7.5*10.2)
- Wide input range.(4.75V ~ 34V)
- Short circuit protection, Thermal shutdown
- Non standard outputs available as specials between 1.5V ~15.5V
- Low ripple and noise
- EMC Certified

INNOLINE

DC/DC-Converter

R-78xx-0.5 Series

0.5 AMP

SIP3

Single Output

EN-55022 Certified
EN-55034 Certified
EN-60601-1-2 Certified

RECOM

Selection Guide

Part Number SIP3	Input Range (1) (V)	Output Voltage (V)	Output Current (A)	Efficiency Min. Vin (%)	Efficiency Max. Vin (%)
R-781.5-0.5	4.75 – 30	1.5	0.5	73	63
R-781.8-0.5	4.75 – 34	1.8	0.5	82	71
R-782.5-0.5	4.75 – 34	2.5	0.5	87	77
R-783.3-0.5	4.75 – 34	3.3	0.5	91	81
R-785.0-0.5	6.5 – 34	5.0	0.5	94	86
R-786.5-0.5	8.0 – 34	6.5	0.5	95	88
R-789.0-0.5	11 – 34	9.0	0.5	96	92
R-7812-0.5	15 – 34	12	0.5	97	94
R-7815-0.5	18 – 34	15	0.5	97	95

Note 1:1.5V Output can be unstable with Vin>30VDC

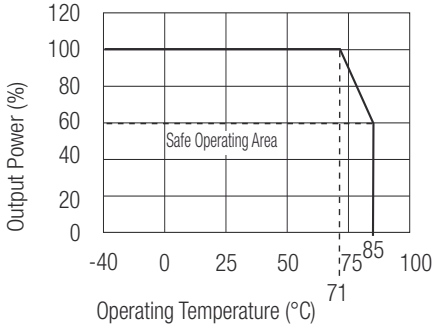
Description

The R-78xx-Series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency of up to 97% 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. Low ripple and noise figures and a short circuit input current of typically only 7mA round off the specifications of this versatile converter series.

This R-78xx-0.5 is fully certified to EN 60601-1-2 (Medical Equipment), EN 55022 (Emissions), and EN55024 (Immunity) EMC Standards.

Derating-Graph

(Ambient Temperature)

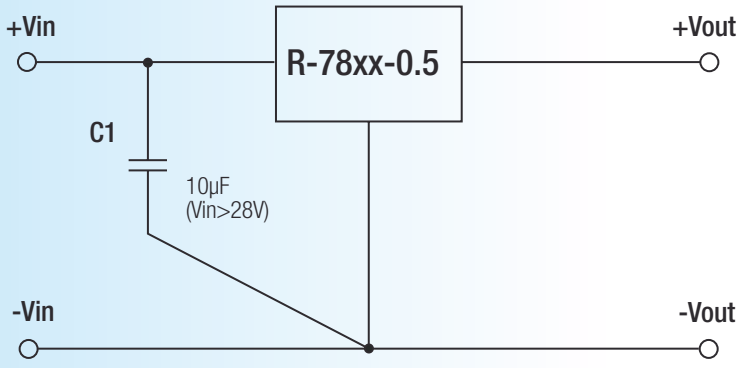


R-78xx-0.5 Series

Specifications (typical at 25°C, 10% minimum load, unless otherwise specified)

Characteristics	Conditions	Min.	Typ.	Max.
Input Voltage Range	1.5V	4.75		30.0V
	1.8V to 15.5V	4.75		34.0V
Output Voltage Range (for customized parts)	All Series	1.25		15.5V
Output Current	All Series	0		500mA
Output Current Limit	All Series			2000mA
Short Circuit Input Current	All Series		10	30mA
Internal Power Dissipation				0.4W
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)	1.5V to 6.5V		0.2	0.4%
	9V to 15.5V		0.1	0.2%
Load Regulation (10 to 100% full load)	1.5V to 6.5V		0.4	0.6%
	9V to 15.5V		0.25	0.4%
Dynamic Load Stability	100% <-> 50% load		±75mV	
	100% <-> 10% load			±100mV
Ripple & Noise (without Output Capacitor)	1.5V to 6.5V		20mVp-p	30mVp-p
	9V to 15.5V		30mVp-p	40mVp-p
Ripple & Noise (with Output Capacitor=100µF)	1.5V to 6.5V		15mVp-p	20mVp-p
	9V to 15.5V		25mVp-p	35mVp-p
Temperature Coefficient	-40°C ~ +85°C ambient			0.015%/°C
Max capacitance Load				220µF
Switching Frequency		280	330	380kHz
Quiescent Current	Vin = min. to max. at 0% load		5	7mA
Operating Temperature Range		-40°C		+85°C
Operating Case Temperature				+100°C
Storage Temperature Range		-55°C		+125°C
Case Thermal Impendance				70°C / W
Thermal Shutdown	Internal IC junction		+160°C	
Package Weiught				1.9g
MTBF (+25°C) *Detailed Information see Application Notes chapter "MTBF"*	using MIL-HDBK 217F			21098 x 10³ hours
. (+71°C)	using MIL-HDBK 217F			4212 x 10³ hours

Standard Application Circuit



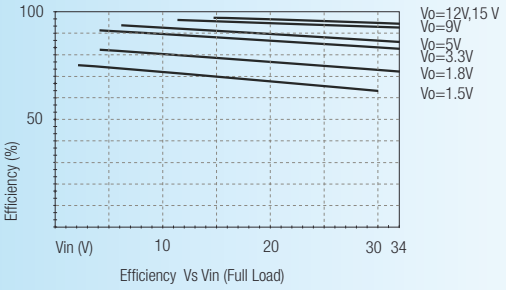
Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter.

Input capacitor needed only if Vin>28VDC.

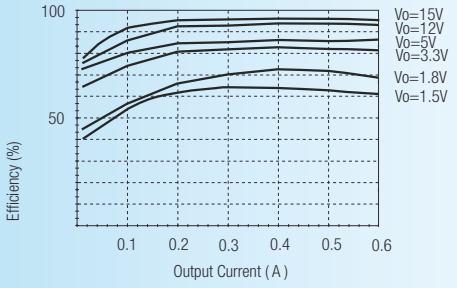
R-78xx-0.5 Series

Characteristics

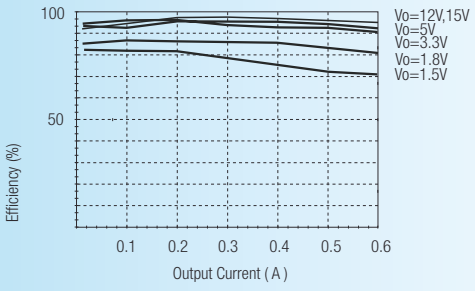
Efficiency



Efficiency Vs Vin (Full Load)

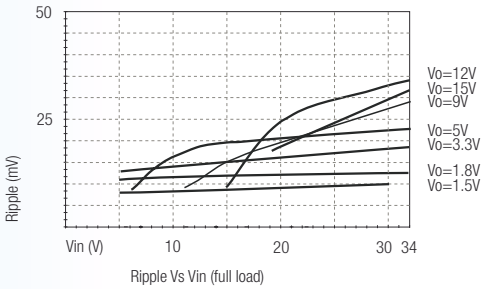


Efficiency Vs Load (Vin=Max)

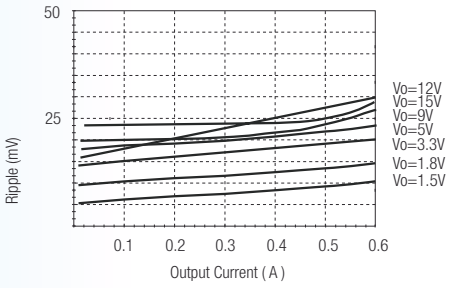


Efficiency Vs Load (Vin=Min)

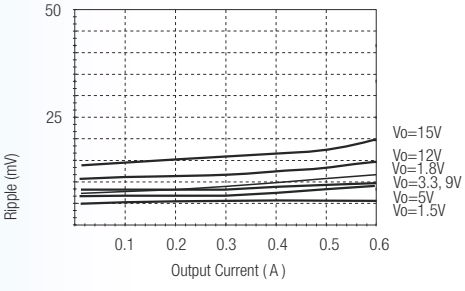
Ripple



Ripple Vs Vin (full load)



Ripple Vs Load (Vin=24V)

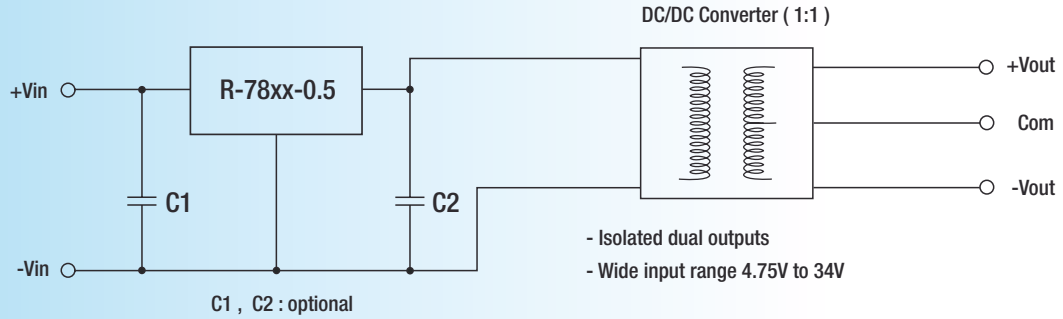


Ripple Vs Load (Vin=Min)

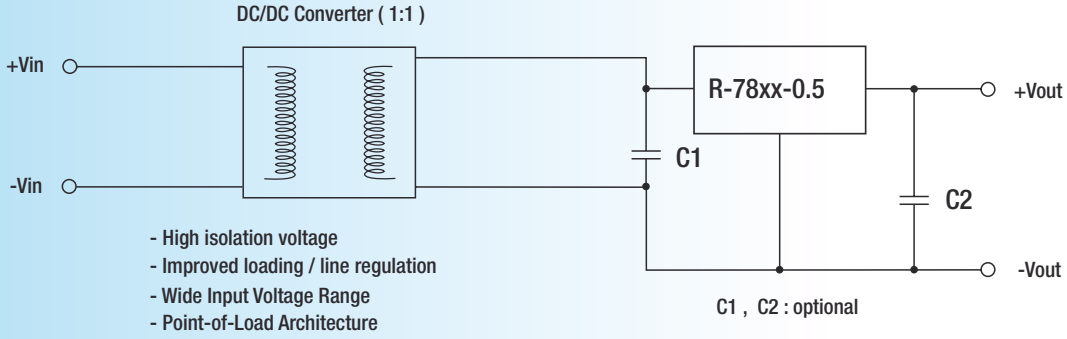
R-78xx-0.5 Series

Application Examples

High efficiency, isolated, dual unregulated outputs



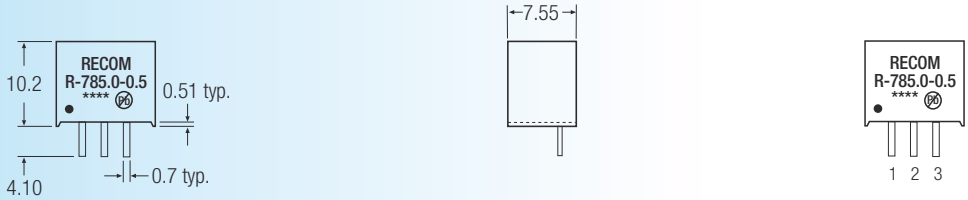
Isolated (up to 6KV), wide Input range regulated output

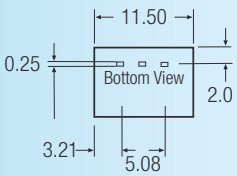


Package Style and Pinning (mm)

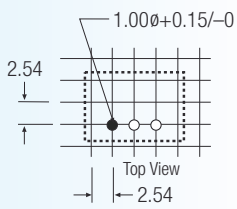
SIP3 PIN Package

3rd angle projection





Recommended Footprint Details



Pin Connections	
Pin #	
1	+Vin
2	GND
3	+Vout

xx.x ±0.5mm
xx.xx ±0.25mm