Features

- Efficiency up to 96%, no need for heatsinks!
- Pin-out compatible with LM78XX Linear Regs.
- Low profile (L*W*H=11.6*8.5*10.4mm)
- Wide input range (5V ~ 42V)
- Short circuit protection, thermal shutdown
- Non standard outputs available as specials
- Low ripple and noise
- See Innoline App Notes for use as a positive-to-negative inverter (alternative to 79xx regulator)

INNOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

1.0 AMP SIP3 Single Output

RoHS 2011/65/EU 6/6

EN-60950-1 Certified

R-78C-1.0

Description

The R-78Cxx-1.0 series switching regulators are ideally suited to replace 1 Amp 78xx linear regulators and are pin compatible. Efficiencies of up to 96% means that very little energy is wasted as heat and the high input voltage is a useful feature.

Selection Guide

Part Number SIP3	Input Range (V)	Output Voltage (V)	Output Current (A)	Efficiency Min. Vin (%)	Efficiency Max. Vin (%)
R-78C1.8-1.0	5 – 42	1.8	1.0	80	71
R-78C3.3-1.0	7 – 42	3.3	1.0	89	79
R-78C5.0-1.0	8 – 42	5	1.0	93	85
R-78C9.0-1.0	12 – 42	9	1.0	95	90
R-78C12-1.0	15 – 42	12	1.0	96	92
R-78C15-1.0	18 – 42	15	1.0	96	94

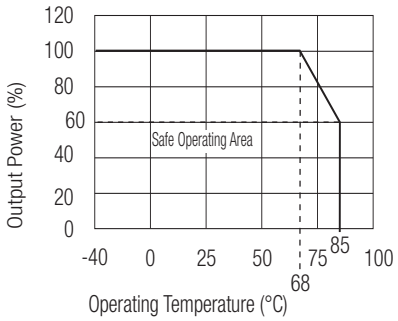
Specifications (typical at 25°C, 10% minimum load, unless otherwise specified)

Characteristics	Conditions	Min.	Typ.	Max.
Input Voltage Range	All Series	Vout+3V		42V
Output Voltage Range	All Series	1.8V		15V
Output Current	All Series	0mA*		1000mA
Output Current Limit	All Series			3000mA
Short Circuit Input Current (Vin =24V)	All Series		65mA	
No Load Input Current			1mA	
Short Circuit Protection			Continuous, automatic recovery	
Output Voltage Accuracy (At 100% Load)	All Series		±2%	±3%
Line Regulation (100% Load, Vin max.)	All Series		0.2%	
Load Regulation (10 to 100% full load)	All Series		0.4%	
Dynamic Load Stability	100% <-> 50% load			±75mV
	100% <-> 10% load			±200mV
Ripple & Noise (20Mhz BW Limited)	Vin = 24V, Vout =1.8V-15V		75mVp-p	100mVp-p
With 10µF MLCC output capacitor	Full Load		30mVp-p	
Temperature Coefficient	-40°C ~ +85°C ambient			0.015%/°C
Max capacitance Load	with normal start-up time, no external components			470µF
	with <1 second start up time + diode protection circuit			6800µF
Switching Frequency		280kHz	350kHz	420kHz
Operating Temperature Range		-40°C		+85°C
Maximum Case Temperature				+100°C
Storage Temperature Range		-55°C		+125°C
Case Thermal Impendance				70°C/W
Thermal Shutdown	Internal IC junction			+160°C
Conducted Emissions (with filter)	EN55022			Class B
Radiated Emissions (with filter)	EN55022			Class B
ESD	EN61000-4-2			Class A
Radiated Immunity	EN61000-4-3			Class A

continued on next page

Derating-Graph

(Ambient Temperature)



R-78Cxx-1.0 Series

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

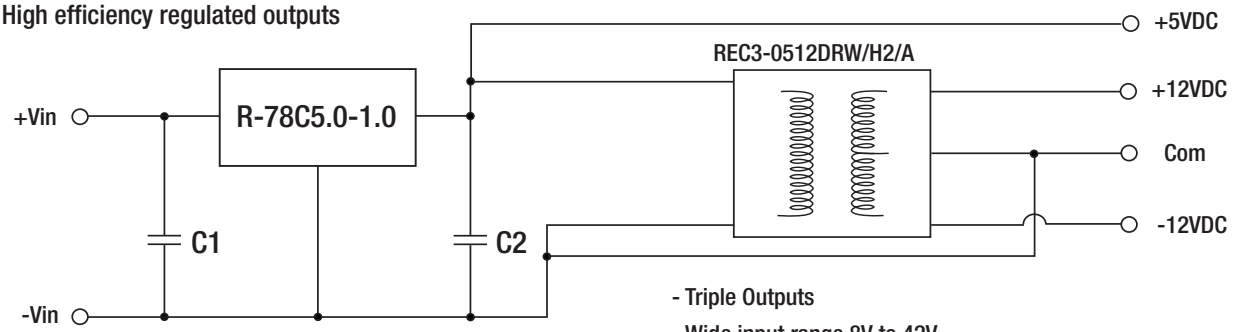
Fast Transient	EN61000-4-4	Class A
Conducted Immunity	EN61000-4-6	Class A
Magnetic Field Immunity	EN61000-4-8	Class A

Package Weight		2g
Packing Quantity		42 pcs per Tube
Case Material		Non-Conductive Black Plastic
Potting Material		Epoxy (UL94V-0)
Certifications		
General Safety	Report: SPCLVD 1301026-1	EN 60950-1:2006 + A12:2011
Standby Power		EN62301:2005
MTBF (+25°C)	using MIL-HDBK 217F	8600 x 10^3 hours.
(+68°C)	using MIL-HDBK 217F	3880 x 10^3 hours.

Note:
No load operation will not damage these devices, however they may not meet all specifications. A minimum load of 10mA is recommended.

Application Examples

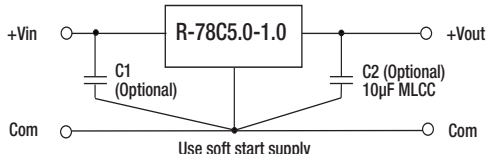
High efficiency regulated outputs



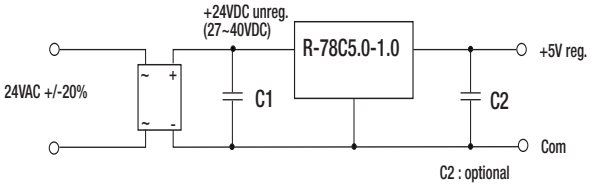
C1: Optional , C2 : Required (further decoupling filtering may be necessary between the two converters)

- Triple Outputs
- Wide input range 8V to 42V
- High System Efficiency, Suitable for 12V, 24V or 36V Battery Powered Devices

Standard Application Circuit with Class B EMC filter



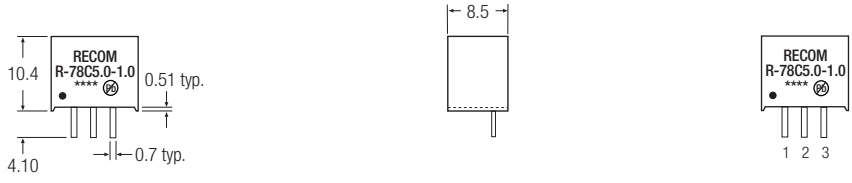
Low Voltage AC input, regulated DC output



- Low Voltage AC Input
- Regulated and Protected DC Output

Package Style and Pinning (mm)

SIP3 PIN Package



Recommended Footprint Details

Pin Connections

Pin #	
1	+Vin
2	GND
3	+Vout

xx.x ±0.5mm
xx.xx ±0.25mm