

Features

Switching Regulator

- Efficiency up to 91%, 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 (7V - 28V)
- Short Circuit Protection

RECOM
DC/DC Converter

R-78E-1.0

**1.0 AMP
SIP3
Single
Output**



IEC60950-1 Certified
EN60950-1 Certified

Description

The R-78E series is a switching regulator module that has been designed to offer all the advantages of a switching regulator (high efficiency, wide input range, accurate output voltage regulation) but with a low cost for production quantities. Due to the R-78E's high efficiency of up to 91% at an output voltage of 5V/1A at the output, no heat sink is required. The compact TO- 220 compatible SIP3 package measures only 11.6 x 8.5 x 10.4 mm, so it saves precious board space. The warranty is 3 years.

Selection Guide

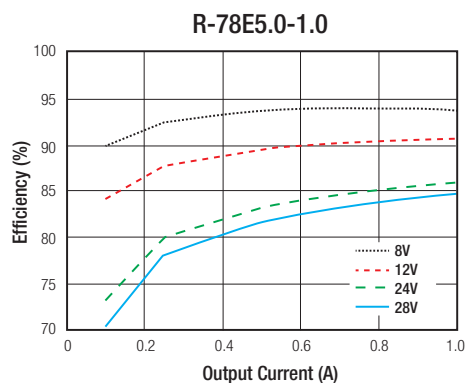
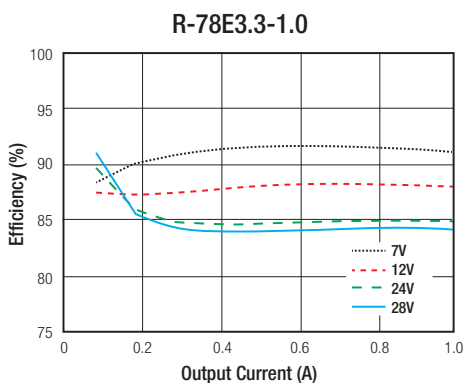
Part Number	Input Voltage Range (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ @ min Vin. (%)	Max. Capacitive Load (μF)
R-78E3.3-1.0	7 - 28	3.3	1000	87	220
R-78E5.0-1.0	8 - 28	5.0	1000	91	220

Specifications (measured at TA= 25°C, full load, nominal input voltage and after warm-up)

BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	3.3V 5.0V	7VDC 8VDC	24VDC	28VDC
Input Current	min. Vin	1.5mA		1000mA
No Load Input Current	typ. Vin		1.5mA	
Operating Frequency	Vin= 12VDC		330kHz	
Output Ripple and Noise	typ. Vin, full load and 20MHz BW limited			120mVp-p

Efficiency vs. Load



Specifications (measured at T_A= 25°C, full load, nominal input voltage and after warm-up)

REGULATIONS

Parameter	Condition	Value
Output Voltage Accuracy		±3% typ. / ±5% max.
Line Voltage Regulation	low line to high line, full load	±1% max.
Load Voltage Regulation	typ Vin. and 10% to 100% load	±1.5% max.

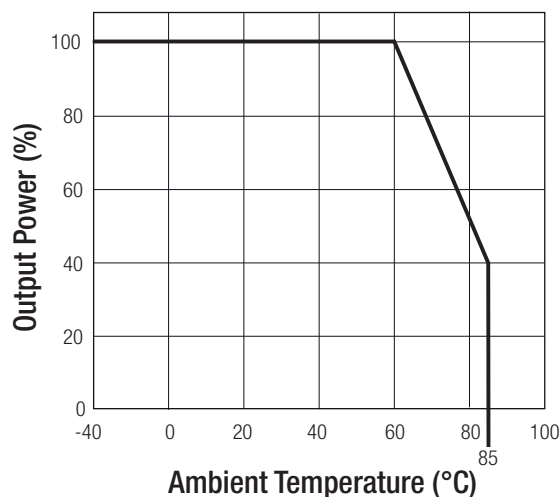
PROTECTIONS

Parameter	Condition	Value
Short Circuit Protection (SCP)		automatic recovery
Over Current Protection (OCP)	100% = 1A	200% Load

ENVIRONMENTAL

Parameter	Condition	Value
Operating Temperature Range	natural convection and with derating (see graph)	-40°C to +85°C
Humidity	non-condensing	95%, RH max.
MTBF	MIL-HDBK 217F, +25°C	3875 x 10 ³ hours

Derating Graph

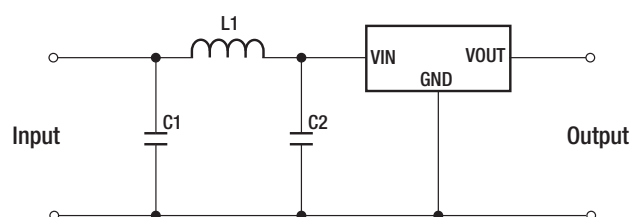


SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
IEC General Safety	SPCLVD 1407030-1	IEC60950-1, 2nd Edition, 2011
EN General Safety	SPCLVD 1407030-1	EN60950-1, 2nd Edition, 2011

EMC Compliance	Condition	Standard / Criterion
EMI electrical conduction and radiation	with external filter	EN55022, Class A or B

EMI Filter suggestion Class A and B



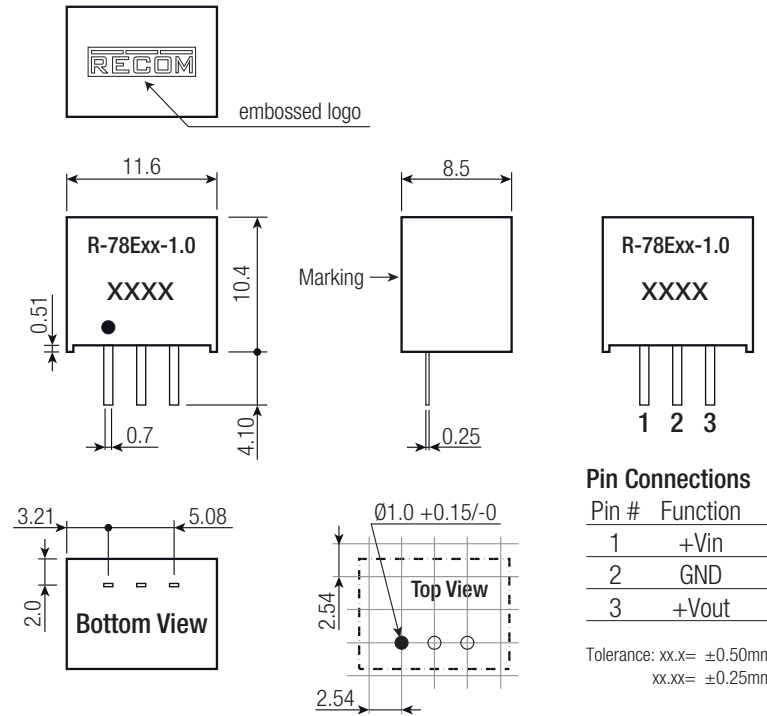
MODEL	C1/C2	L1
Class A	1210 10μF, 50V MLCC	10μH
Class B		33μH

Specifications (measured at $T_A = 25^\circ\text{C}$, full load, nominal input voltage and after warm-up)

DIMENSION and PHYSICAL CHARACTERISTICS

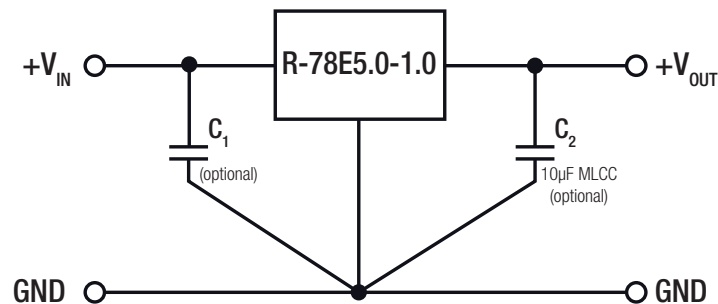
Parameter	Value
Case Material	UL94V-0, non-conductive black plastic
Potting Material	UL94V-0, Epoxy
Package Dimension (LxWxH)	11.6 x 8.5 x 10.4mm
Package Weight	2g typ.

Dimension Drawing (mm)



INSTALLATION AND APPLICATION

Standard Application:



To protect the converter during power-up, use soft start power supply.

Notes:

Note1: The R-78Exx-1.0 can't be used as psotive to negativ converter.

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	Tube	520 x 18.2 x 11.2mm
Packaging Quantity		42pcs.
Storage Temperature Range		-55°C to +125°C

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