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

3 YEAR 3 Warranty

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

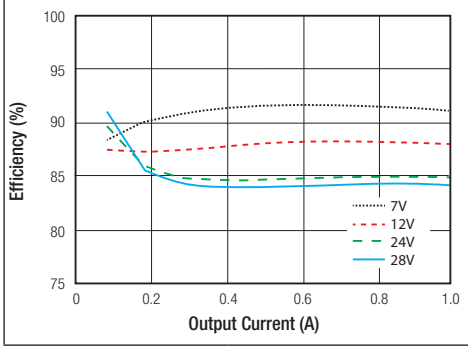
Specifications (measured at T_A= 25°C, full load, nominal input voltage and after warm-up)

BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Input Voltage Range	3.3V 5.0V	7VDC 8VDC	24VDC	28VDC
Maximum Input Current		0mA		1000mA
Current Limit	Vin= 12VDC		2000mA	
No Load Input Current	typ. Vin		1.5mA	
Operating Frequency	Vin= 12VDC		330kHz	
Efficiency				see Selection Guide
Output Ripple and Noise	typ. Vin, full load and 20MHz BW limited			120mVp-p

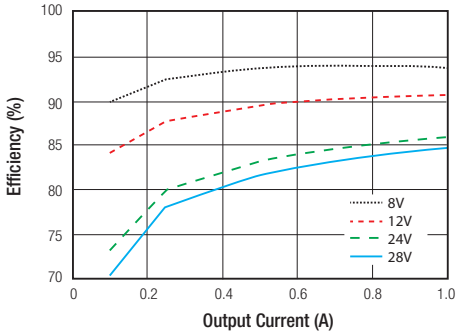
IEC60950-1 Certified
EN60950-1 Certified

Efficiency vs. Load

R-78E3.3-1.0



R-78E5.0-1.0



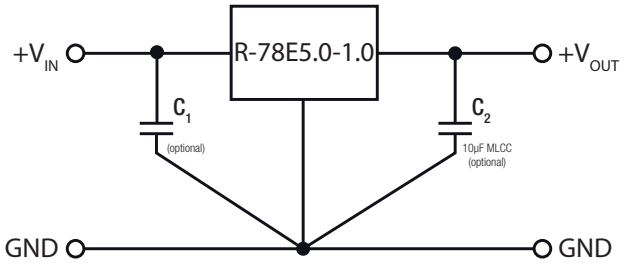
Refer to Applications Notes

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	100% = 1A	200% Load

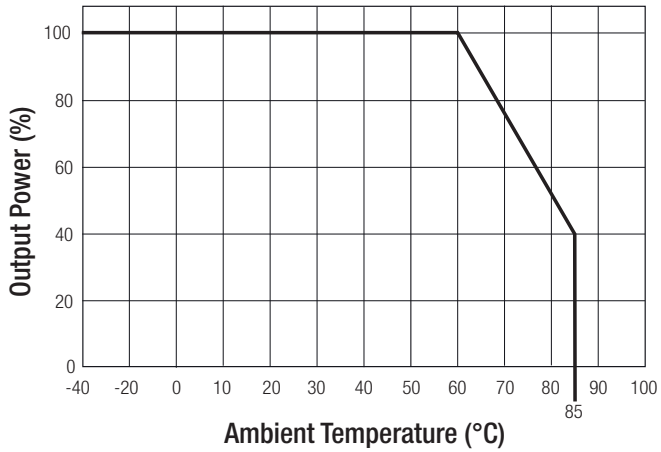
Standard Application:



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

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



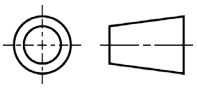
SAFETY AND CERTIFICATIONS		
Certificate Type	**Report / File Number**	**Standard**
IEC General Safety	LVD1407030-1	IEC-60950-1, 2nd Edition, 2009
EN General Safety	LVD1407030-1	EN-60950-1, 2nd Edition, 2011

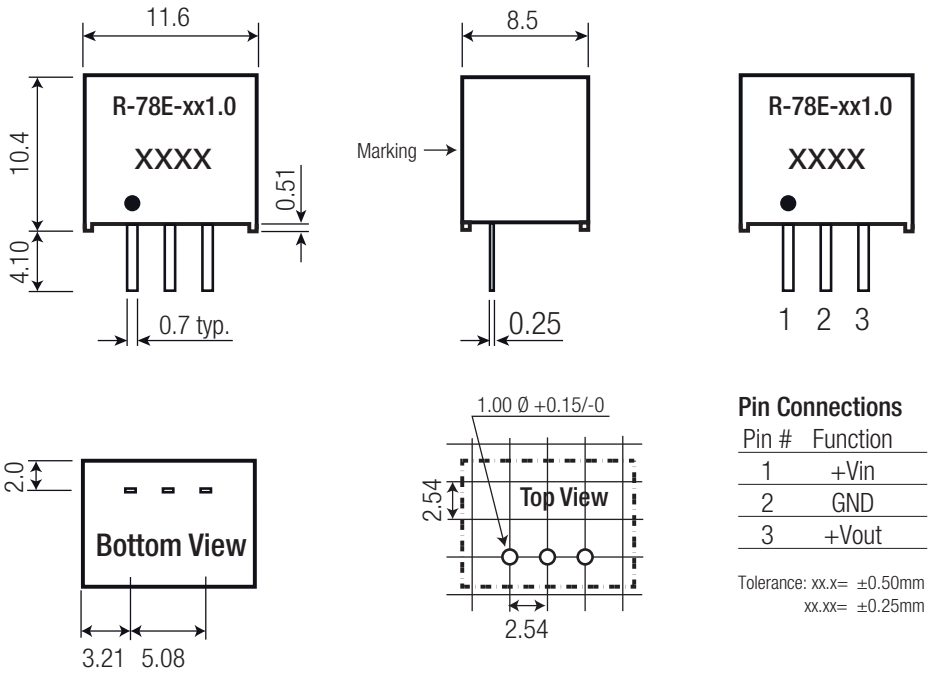
Specifications (measured at T_A= 25°C, full load, nominal input voltage and after warm-up)

DIMENSION and PHYSICAL CHARACTERISTICS

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

Dimension Drawing (mm)





Pin Connections

Pin #	Function
1	+Vin
2	GND
3	+Vout

Tolerance: xx.x= ±0.50mm
xx.xx= ±0.25mm

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

Tube Dimension Drawing (mm)