

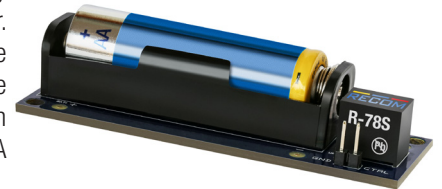
# Features

- 3.3V from a single AA battery (boost converter)
- Efficiency 93%, >80% at 10% load
- Input voltage range down to 0.65V
- 0.100" (2.54mm) pin output
- 3.5mm mounting holes

# Reference Design

## Description

The R-REF02-78S generates 3.3V from a single AA battery and can directly be used in any application. The reference design contains a AA battery holder and an R-78S3.3-0.1 boost converter. Two jumper headers J1 and J2 ensure connectivity to the output voltage and the CTRL pin of the R-78S converter. The jumper header pins are standard 0.100" (2.54mm) pitch for which there are several mating connectors available. Two 3.5mm mounting holes are provided to allow snap-in or screw mounting. An enable pin puts the R-78S into sleep-mode where it draws only 7uA from the battery.



## Selection Guide

Part Number	Input Voltage Range <sup>(3)</sup> [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency <sup>(1)</sup>		Max. Capacitive Load <sup>(2)</sup> [μF]
				@ min Vin [%]	@ typ. Vin [%]	
R-78S3.3-0.1	0.65-3.15	3.3	100	92	93	470

## Specifications (measured @ ta= 25°C, 1.5Vin, full load after warm up unless otherwise stated)

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Under Voltage Lockout	DC-DC OFF		0.4VDC	
Overload Capability <sup>(3)</sup>	peak duty cycle 10%		150%, 10s	
Quiescent Current			160μA	
Start-up Time			2ms	
Rise Time			800μs	
Internal Operating Frequency			1200kHz	
Minimum Load		0%		
Dropout Voltage			150mV	
Output Ripple and Noise			100mVp-p	
ON/OFF CTRL	DC-DC ON DC-DC OFF		Open or $0.7V \leq V_{CTRL} < V_{in}$ Short to GND or $V_{CTRL} < 0.1V$	
Input Current of CTRL Pin			5μA	
Standby Current			7μA	

### Notes:

Note1: Efficiency is tested at full load. Typ. Vin = 1.5V

Note2: Max. capacitive load is tested at nominal input and full resistive load

Note3: For more information, please refer to "Overload Capability Graph" on page P-2

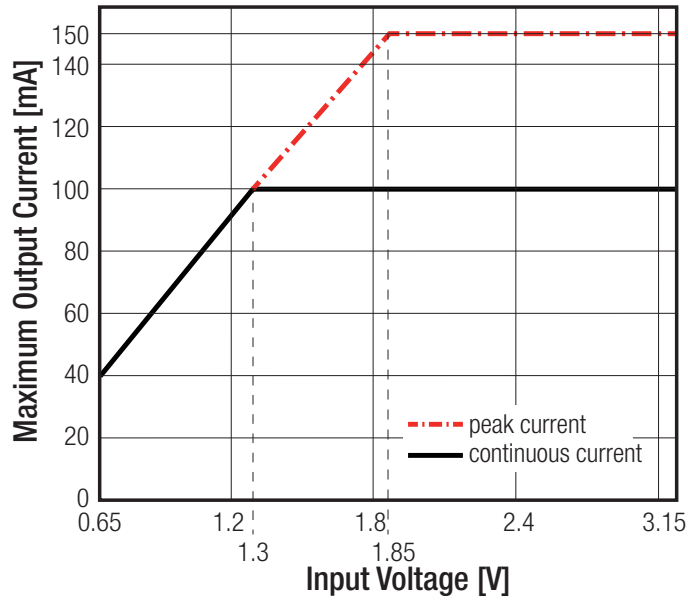


### Caution:

ESD sensitive. Always follow ESD preventative procedures when handling the product!

Specifications (measured @  $t_a = 25^\circ\text{C}$ , 1.5Vin, full load after warm up unless otherwise stated)

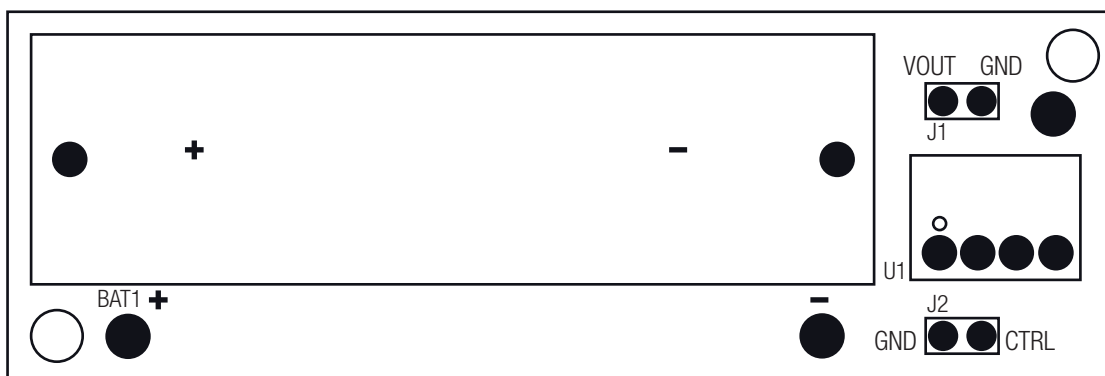
### Overload Capability Graph



### Quick Start Guide

- Insert the AA battery into the battery holder (only one way possible).
- The output voltage is accessed via J1.
- To set the R-78S into sleep mode, short both pins of J2 (CTRL to GND).

### Component Placement

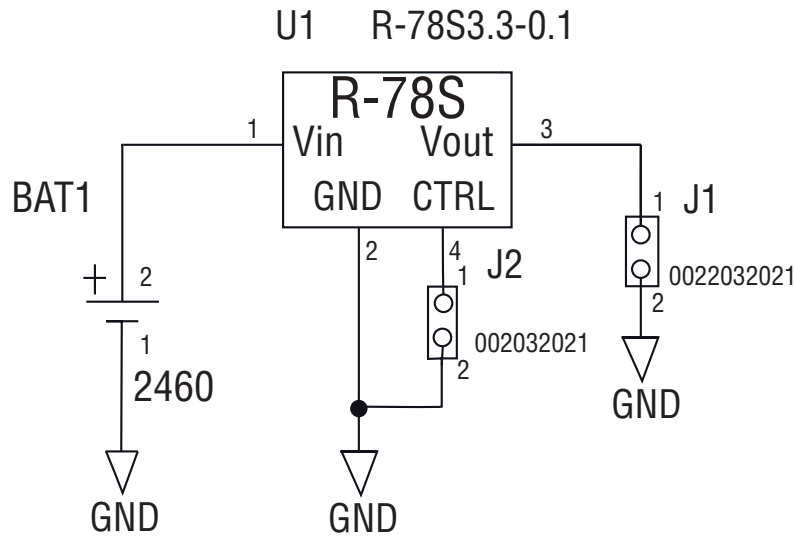


### Component List

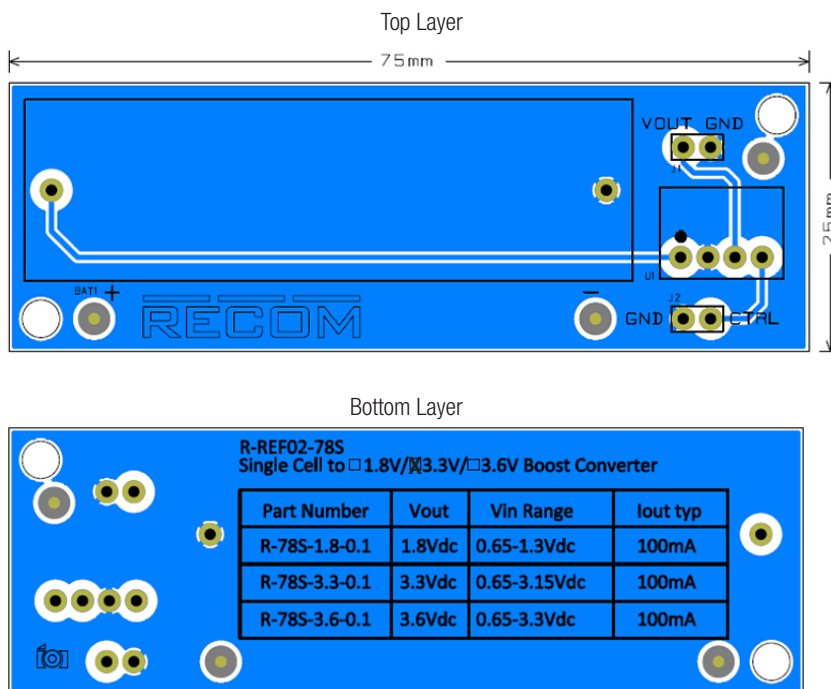
Part	Description
BAT1	AA battery holder
U1	R-78S3.3-0.1
J1	2 pin 0.100" (2.54mm) header for VOUT and GND
J2	2 pin 0.100" (2.54mm) header for CTRL and GND

Specifications (measured @ ta= 25°C, 1.5Vin, full load after warm up unless otherwise stated)

### Schematic



### Layout



### BOM

Part Name/Number	Description	Manufacturer Part Number	Manufacturer	Qty.	Comps.
BATTERY HOLDER_AA	Holder Battery 1Cell AA PCB MNT	2460	Keystone Electronics	1	BAT1
JUMPER_2PINS	2 Position Header Connector 0.100" (2.54mm) Through Hole Tin	0022032021	Molex	2	J1 J2
R-78S3.3-0.1	DC DC Converter 3.3V	R-78S3.3-0.1	RECOM	1	U1

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