

Features

Switching Regulator

- Efficiency up to 97%, no need for heatsinks
- Pin-out compatible with LM78XX linears
- Very low profile
- 4.75V - 32V Wide input range
- Short circuit protection, thermal shutdown
- Low ripple and noise
- IEC/EN60950-1 certified

RECOM

DC/DC Converter

R-78-0.5

0.5 Amp
SIP3
Single Output



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 short circuit, overload and over-temperature protection round off the specifications of this versatile converter series. This R-78xx-0.5 is fully certified to EN55032 EMC Standard and for IEC/EN-60950-1 + AM2 Safety.

Selection Guide

| Part Number | Input Voltage Range [VDC] | Output Voltage [VDC] | Output Current [A] | Efficiency | |
|-------------|---------------------------|----------------------|--------------------|---------------|----------------|
| | | | | @ min Vin [%] | @ max. Vin [%] |
| R-781.5-0.5 | 4.75 - 30 ⁽¹⁾ | 1.5 | 0.5 | 73 | 63 |
| R-781.8-0.5 | 4.75 - 32 | 1.8 | 0.5 | 82 | 71 |
| R-782.5-0.5 | 4.75 - 32 | 2.5 | 0.5 | 87 | 77 |
| R-783.3-0.5 | 4.75 ⁽²⁾ - 32 | 3.3 | 0.5 | 91 | 81 |
| R-785.0-0.5 | 6.5 - 32 | 5.0 | 0.5 | 94 | 86 |
| R-786.5-0.5 | 8.0 - 32 | 6.5 | 0.5 | 95 | 88 |
| R-789.0-0.5 | 11 - 32 | 9.0 | 0.5 | 96 | 92 |
| R-7812-0.5 | 15 - 32 | 12 | 0.5 | 97 | 94 |
| R-7815-0.5 | 18 - 32 | 15 | 0.5 | 97 | 95 |

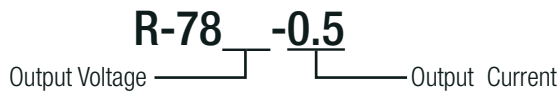
Notes:

- Note1: 1.5V Output can be unstable with Vin>30VDC
 Note2: Refer to Transient Response on page I-3



IEC/EN60950-1 certified
 EN55032 compliant

Model Numbering



Specifications (measured @ Ta= 25°C, 10% minimum load, unless otherwise stated)

BASIC CHARACTERISTICS

| Parameter | Condition | Min. | Typ. | Max. |
|----------------------------------|---|-----------------------------|--------------------|--------------------|
| Absolute Maximum Input Voltage | | | | 34VDC |
| Quiescent Current | nom. Vin= 24VDC | | 5mA | 7mA |
| Internal Power Dissipation | | | | 0.4W |
| Minimum Load ⁽³⁾ | | 0% | | |
| Internal Operating Frequency | | 280kHz | 330kHz | 380kHz |
| Output Ripple and Noise | 20MHz BW, without output capacitor | 1.5 - 6.5VDC 9 - 15.5VDC | 20mVp-p 30mVp-p | 30mVp-p 40mVp-p |
| | 20MHz BW ⁽⁴⁾ | 1.5VDC 1.8 - 15.5VDC | 15mVp-p 25mVp-p | 20mVp-p 35mVp-p |
| Absolute Maximum Capacitive Load | 1 second start up, no external components | | | 220µF |
| | <1 second start up + diode protection circuit | | | 6800µF |

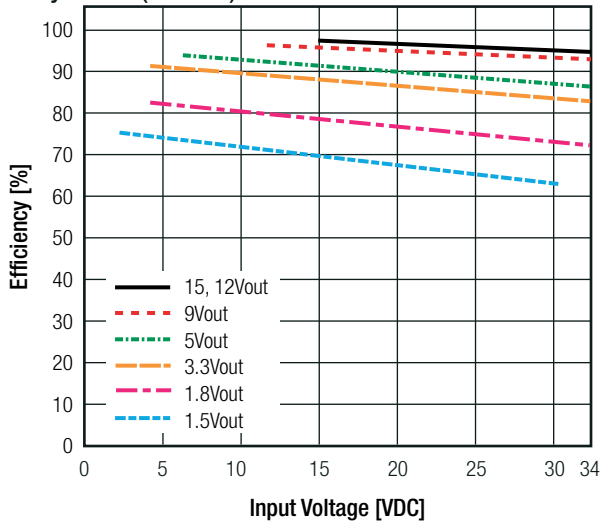
Notes:

Note3: Operation under no load will not harm the converter, but specifications may not be met

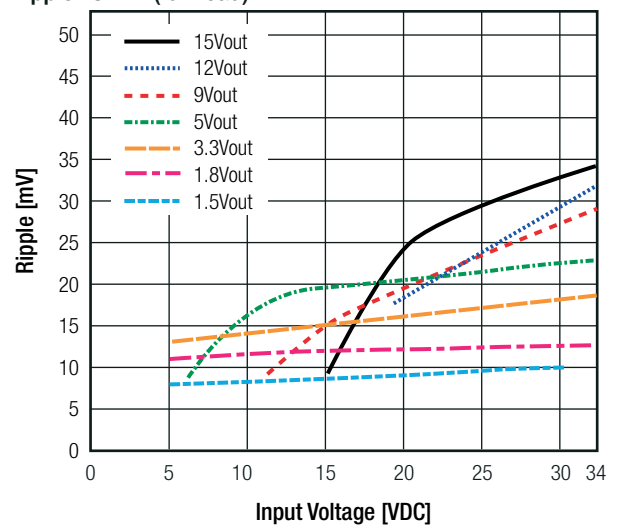
A minimum load of 6mA is recommended

Note4: Measurements are made with a 100nF MLCC across output (low ESR)

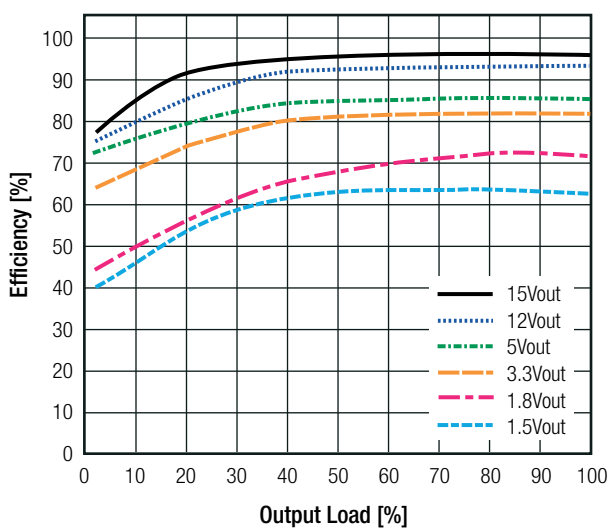
Efficiency vs. Vin (full load)



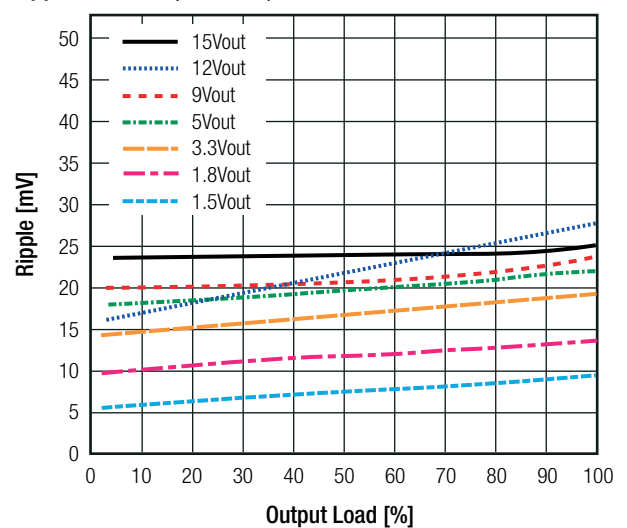
Ripple vs. Vin (full load)



Efficiency vs. Load (max. Vin)



Ripple vs. Load (nom. Vin)



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