

Features

Switching Regulator

- Efficiency up to 95%, no need for heatsinks
- Industry standard pin-out
- 1.5A start-up overload capacity
- Non-isolated regulator, very low standby current
- Wide input range (7V -42VDC)
- Short circuit protection
- Fixed switching frequency (350kHz), shielded magnetics

RECOM
DC/DC Converter

R-78T-1.0

1.0 Amp
SMD
Single Output

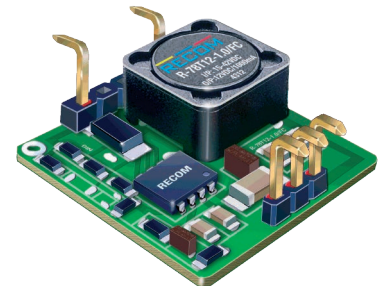
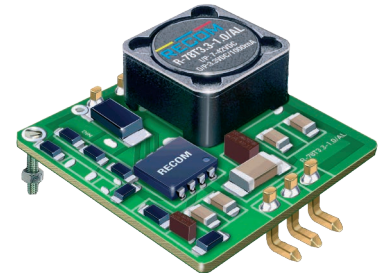
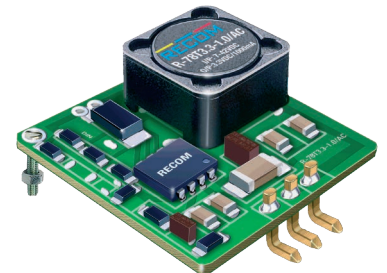


Description

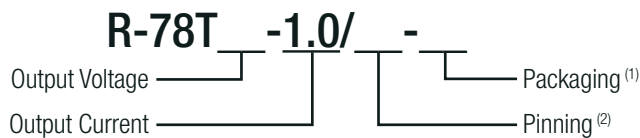
The R-78T is a switching regulator with a wide input voltage range and a low profile SMD package. Three output voltages are available as standard: 3.3V, 5V and 12V. Due to the 1.5A start-up overload capability, the R-78T can be used to replace 1A or 1.5A regulators in many applications. These modules come with three different styles to be pin-compatible with existing solutions, but at a lower cost.

Selection Guide

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency	
				@ min Vin [%]	@ max. Vin [%]
R-78T3.3-1.0	7 - 42	3.3	1000	88	79
R-78T5.0-1.0	8 - 42	5.0	1000	92	85
R-78T12-1.0	15 - 42	12	1000	95	92



Model Numbering



Notes:

Note1: add suffix „-R“ for tape & reel packaging or „-Tray“ for tray packaging

Note2: add suffix „/FC“, „/AC“ or „/AL“ for required pinning option, for more information refer to „***DIMENSION AND PHYSICAL CHARACTERISTICS***“

Ordering Examples:

R-78T3.3-1.0/FC-R = 3.3VDC Output Voltage, 1.0A, FC pinning, tape and reel packaging

R-78T5.0-1.0/AC-Tray = 5.0VDC Output Voltage, 1.0A, AC pinning, tray packaging



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

BASIC CHARACTERISTICS

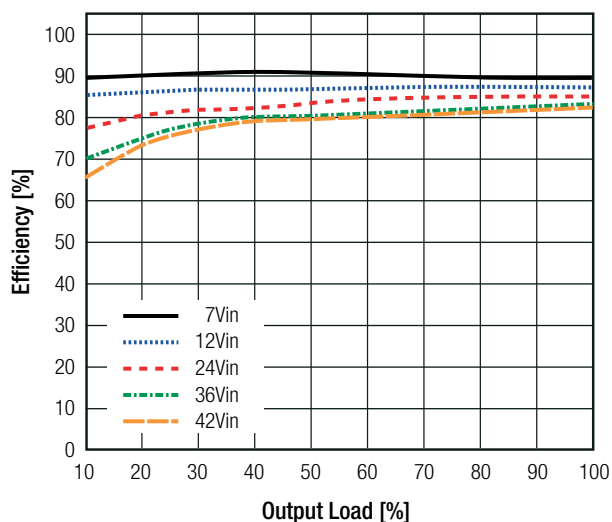
Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter		C filter		
Input Voltage Range	nom. Vin= 3.3VDC nom. Vin= 5.0VDC nom. Vin= 12VDC	7VDC 8VDC 15VDC		42VDC 42VDC 42VDC
Overload Capability ⁽³⁾	peak duty cycle 10%			150%, 10s
Quiescent Current			1mA	
Minimum Load		10%		
Internal Operating Frequency			350kHz	
Output Ripple and Noise	20MHz BW		50mVp-p	100mVp-p

Notes:

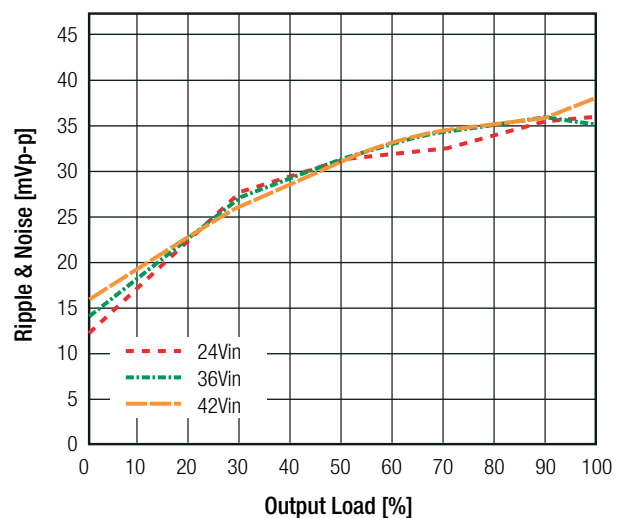
Note3: For more information, please refer to „*Overload Capability Graph*“

R-78T3.3-1.0

Efficiency vs. Load

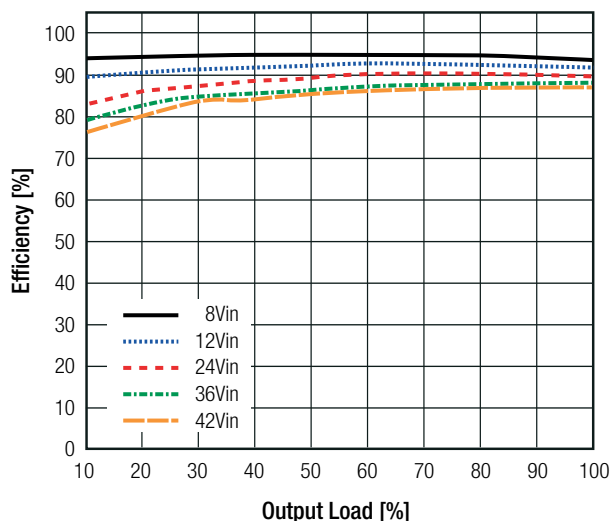


Ripple vs. Load

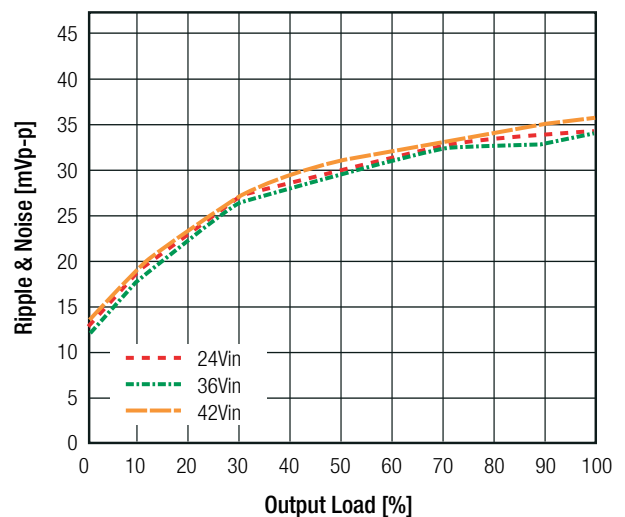


R-78T5.0-1.0

Efficiency vs. Load



Ripple vs. Load

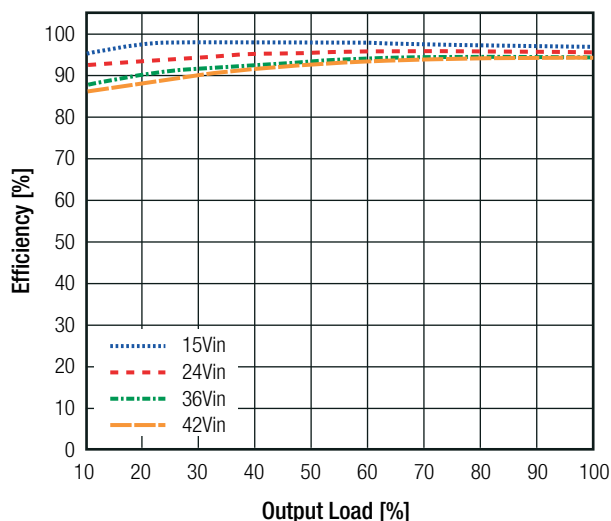


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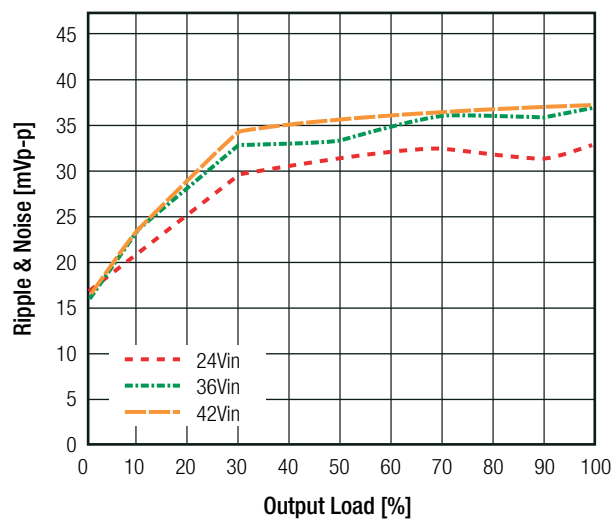
Specifications (measured @ Ta= 25°C, 10% minimum load, unless otherwise stated)

R-78T12-1.0

Efficiency vs. Load



Ripple vs. Load



REGULATIONS

Parameter	Condition		Value
Output Accuracy	full load		±2.0% typ. / ±3.0% max.
Line Regulation	low line to high line, full load		±0.2% typ.
Load Regulation	10% to 100% load		±0.4% typ.
Transient Response	50mA/uS	100% - 50% load	±250mV max.

PROTECTIONS

Parameter	Condition	Value
Short Circuit Protection (SCP)		current limited to 3.5A typ.

ENVIRONMENTAL

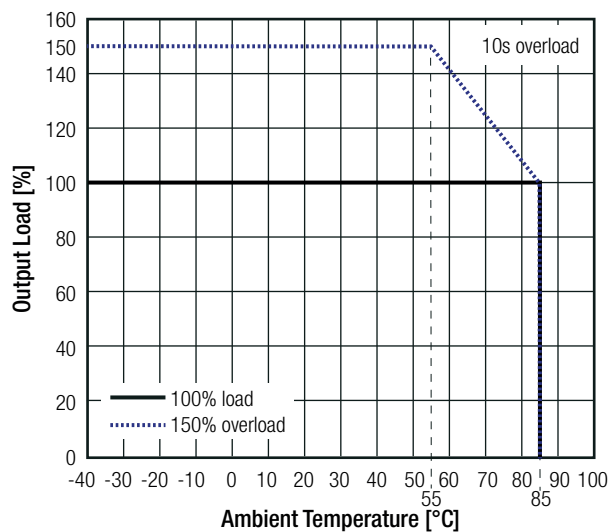
Parameter	Condition		Value
Operating Temperature Range	with derating @ free air convection (refer to <i>"Derating Graph"</i>)		-40°C to +85°C
Operating Humidity	non-condensing		5% - 95% RH max.
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	6318 x 10 ³ hours

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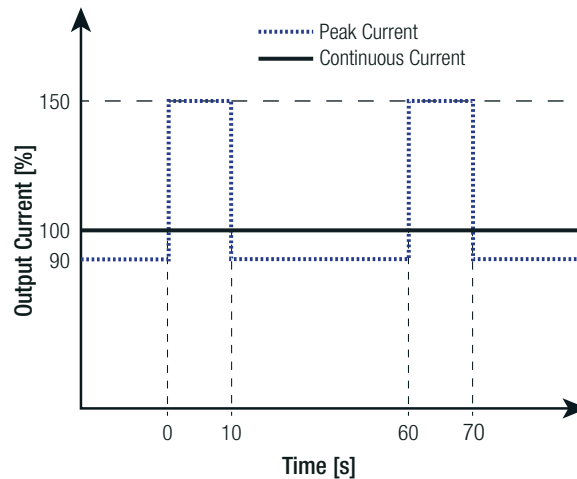
Specifications (measured @ Ta= 25°C, 10% minimum load, unless otherwise stated)

Derating Graph

(@ Free air convection)



Overload Capability Graph



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS2+		RoHS-2011/65/EU + AM-2015/863

DIMENSION AND PHYSICAL CHARACTERISTICS

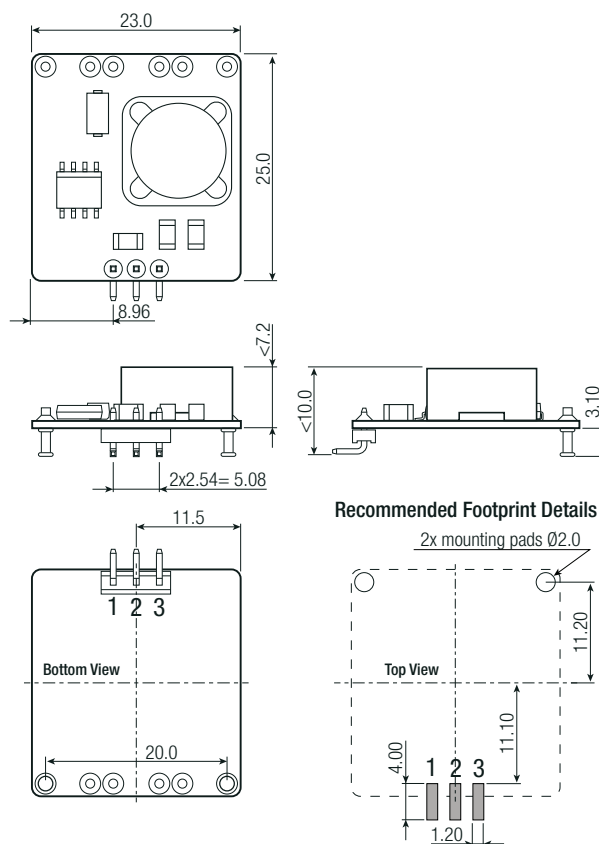
Parameter	Type	Value
Material	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)	"/AC" or "/AL" "/FC"	23.0 x 27.2 x 10.0mm 23.0 x 29.4 x 8.0mm
Weight		4.5g typ.

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

Dimension Drawing (mm)

R-78Txx-1.0/AC

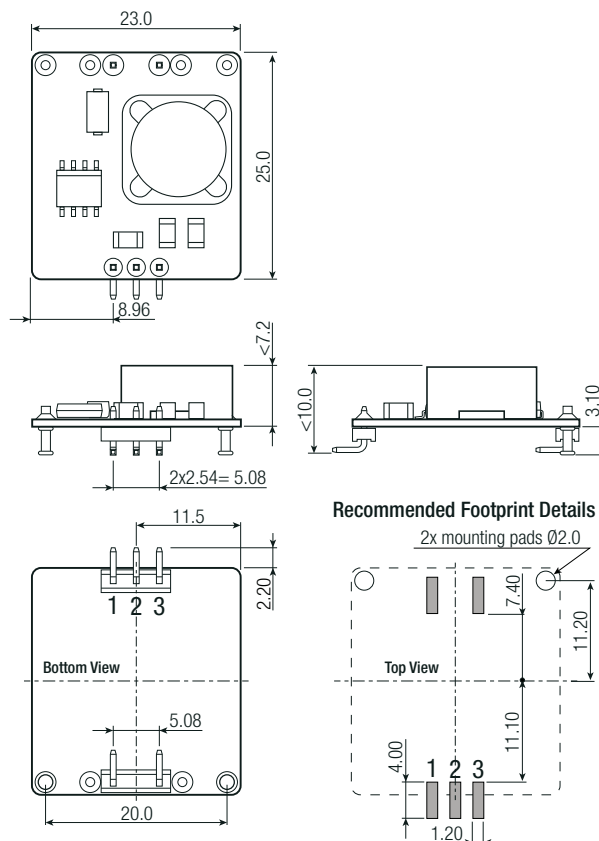


Pinning information

Pin #	Single
1	+Vin
2	GND
3	+Vout

Tolerance:
xx.x = $\pm 0.5\text{mm}$
xx.xx = $\pm 0.25\text{mm}$

R-78Tx-1.0/AL



Pinning information

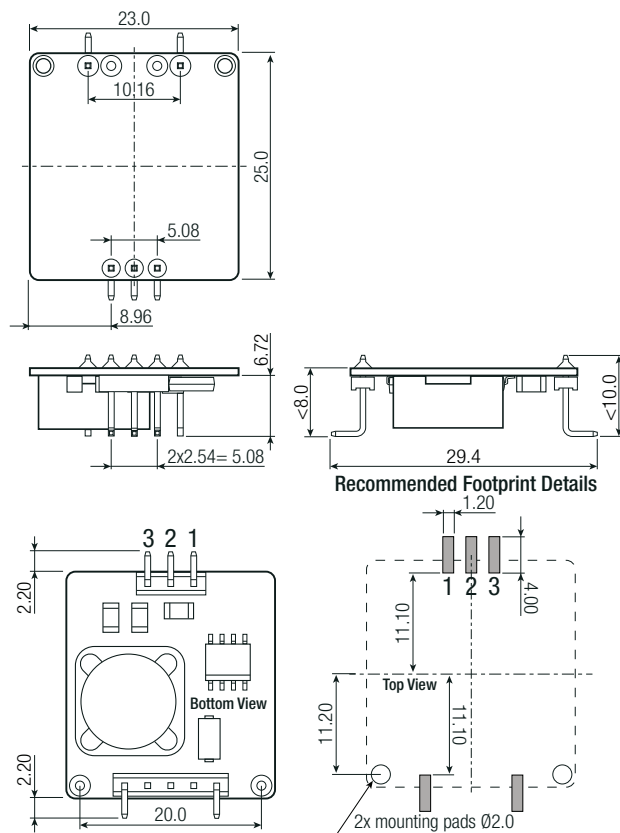
Pin #	Single
1	+Vin
2	GND
3	+Vout

Tolerance:
xx.x = $\pm 0.5\text{mm}$
xx.xx = $\pm 0.25\text{mm}$

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

R-78Txx-1.0/FC



Pinning information

Pin #	Single
1	+Vin
2	GND
3	+Vout

Tolerance:

xx.x = ±0.5mm

xx.xx = ±0.25mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tray	260.0 x 205.0 x 25.0mm
	tape and reel (carton)	385.0 x 375.0 x 70.0mm
Packaging Quantity	tray	25pcs
	tape and reel	150pcs
Tape Width		44mm
Storage Temperature Range		-55°C to +125°C
Storage Humidity		95% RH max.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.