Features

Switching Regulator

- Efficiency up to 93%, no need for heatsinks
- High voltage input range, up to 72VDC
- Short circuit protection, thermal shutdown
- All-in-one solution, no external components required
- IEC/EN60950-1 + AM:2 certified

RECOM
DC/DC Converter

R-78HB/W

0.5 Amp SIP3 Wired Single Output

3 YEAR warranty

IEC60950-1 certified
EN60950-1 certified
EN55032 compliant

Description

The R-78HBxx/W series high efficiency, high input voltage switching regulators are ideally suited to replace 78xx linear regulators. The efficiency of up to 93% 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. A wide input voltage range allows the full stored energy utilization of standard 12, 24 and 36V batteries as well as COB LED drivers. No external components are required to make a complete regulated, short-circuit protected supply. A built-in protection diode allows high capacitive loads. Typical applications include Auxiliary fan CV power supplies powered from CC LED drivers, industrial, aerospace and battery powered applications.

Selection Guide

Part Number	Input Voltage Range [2] [VDC]	Output Voltage [VDC]	Output Current [A]	Efficiency typ @ min Vin. [%]	Max. Capacitive Load [1] [µF]
R-78HB5.0-0.5/W	9-72	5.0	0.5	86	100/6800
R-78HB12-0.5/W	17-72	12	0.5	93	100/6800

Notes:

Note1: Max. Cap Load is tested at nominal input and full resistive load with 1 second start-up time and no external components = 100µF, with <1s start-up time = 6800µF

Model Numbering

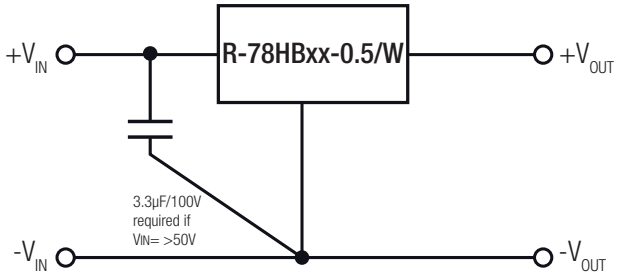
R-78HB__-0.5/W

- __ : Output Voltage
- -0.5 : Output Current
- /W : Wired

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

BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Input Voltage Range [2]	nom. Vin = 48VDC	9VDC	48VDC	72VDC
Quiescent Current	nom. Vin = 48VDC, 10% load	1mA		5mA
Internal Power Dissipation			0.65W	
Internal Operating Frequency	full load	120kHz		800kHz
Minimum Load [3]		10mA		
Output Ripple and Noise	20MHz BW limited		20mVp-p	60mVp-p

Typical Application Circuit



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

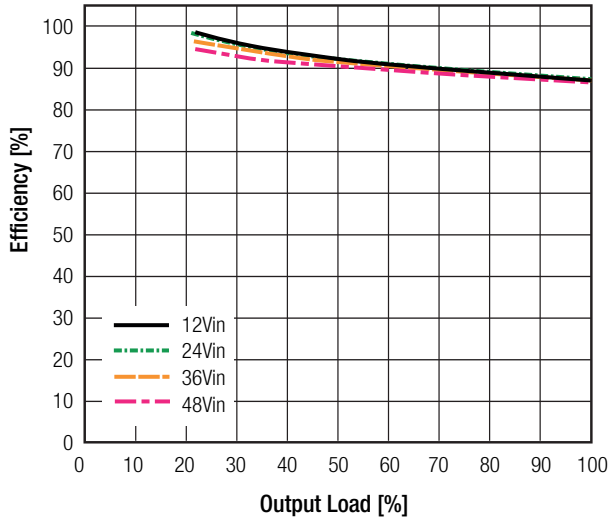
Notes:

Note2: The converter has built in soft start circuit. Rapidly changing the input voltage from $V_{IN_{min}}$ to $V_{IN_{max}}$ can bypass this circuit and damage the converter

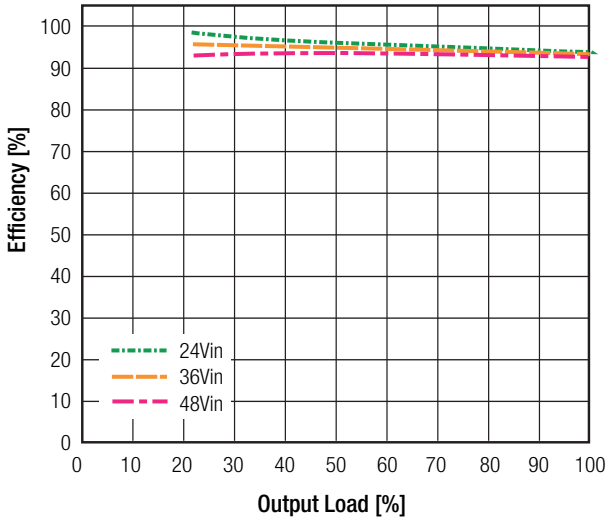
Note3: Operation under no load will not damage the devices, however they may not meet all specifications A minimum load of 10mA is recommended

Efficiency vs. Load

R-78HB5.0-0.5/W



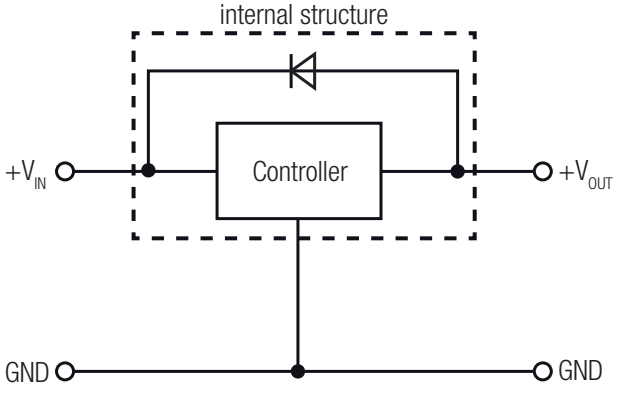
R-78HB12-0.5/W



REGULATIONS		
Parameter	**Condition**	**Value**
Output Voltage Accuracy	100% load	±2.0% typ. / ±3.0% max.
Line Voltage Regulation	Vin= min. to max., full load	0.4% typ. / 1.0% max.
Load Voltage Regulation	10% to 100% load	0.3% typ. / 0.6% max.
Transient Response	with 100µF output capacitor, 100% <-> 50% load	±75mV typ. / ±100mV max.

PROTECTIONS		
Parameter	**Condition**	**Value**
Internal Input Filter		1µF capacitor
Short Circuit Protection (SCP)		continuous, automatic recovery
Short Circuit Input Current		15mA typ. / 25mA max.

Optional Protection Circuit

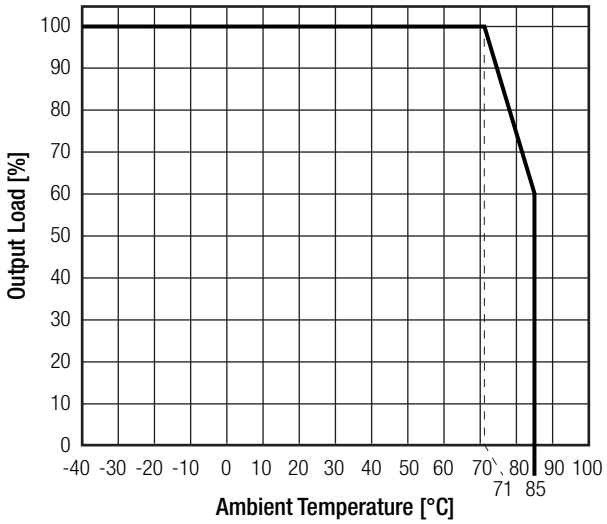


Specifications (measured @ Ta= 25°C, full load, nominal input voltage and after warm-up)

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	with derating @ natural convection 0.1m/s (see graph)		-40°C to +85°C
Maximum Case Temperature			+100°C
Thermal Impedance			55°C/W typ.
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +71°C	7395 x 10^3 hours 1242 x 10^3 hours

Derating Graph



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	1603123	IEC60950-1:2005, 2nd Edition + AM 2:2013 EN60950-1:2006 + AM 2:2013
EAC	RU-AT.49.09571	TP TC 004/2011
RoHs 2+		RoHS 2011/65/EU + AM2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external components	EN55032, Class B
ESD Electrostatic discharge immunity test	Air ±8kV, Contact ±4kV	EN61000-4-2, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	EN61000-4-3, Criteria A

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting	non-conductive black plastic, (UL94 V-0) epoxy, (UL94 V-0)
Package Dimension (LxWxH)		12.1 x 9.7 x 24.0mm
Package Weight		4.5g

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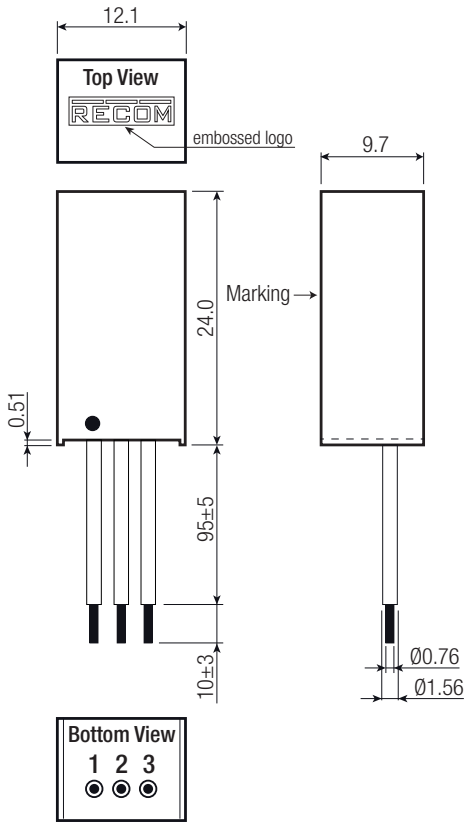
Specifications (measured @ Ta= 25°C, full load, nominal input voltage and after warm-up)

Dimension Drawing (mm)



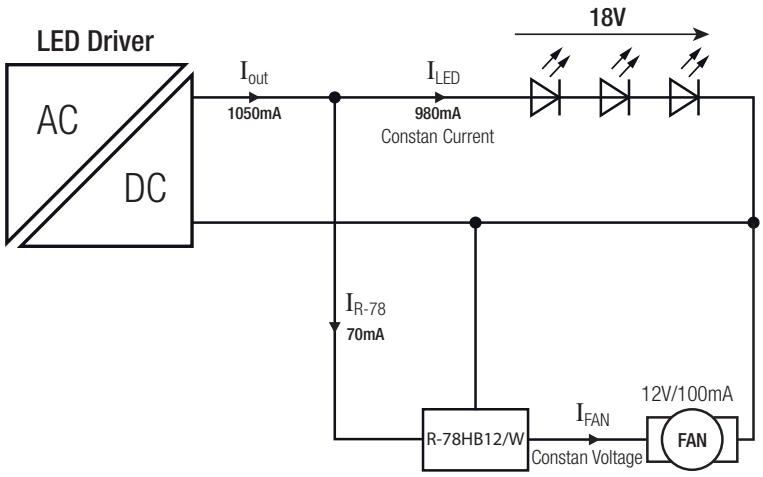
Wire/cable information

#	Function	Wire color	Type	AWG	Strands
1	+Vin	red	UL-1430	22	17/0.16
2	GND	black	UL-1430	22	17/0.16
3	+Vout	brown	UL-1430	22	17/0.16

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

APPLICATION

Standard Application



PACKAGING INFORMATION

Packaging Dimension (LxWxH)	cardboard box	140.0 x 130.0 x 65.0mm
Packaging Quantity		25pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	95% RH max.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

RECOM:

R-78HB5.0-0.5/W R-78HB12-0.5/W