Features

Regulated Converters

- 1kVDC/1s and 2kVDC/1s isolation option
- SMD package styles
- Isolated single regulated output (internal linear regulator)
- UL94 V-0 package material
- Optional continuous short circuit protection
- Efficiency up to 62%

RECOM
DC/DC Converter

R0.5Z

0.5 Watt SMD Single Output

3 YEAR warranty

Description

The R0.5Z series DC/DC converter has been designed for isolating or converting DC power rails where board space is at a premium. Although no larger than a standard unregulated SMD converter, the R0.5Z series also incorporates an internal linear regulator to deliver a stable output voltage which makes it ideal for powering logic level or supply voltage sensitive circuitry.



Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
R0.5Z-xx05	5, 12, 15, 24	5	100	50	1000
R0.5Z-xx12	5, 12, 15, 24	12	42	60	220
R0.5Z-xx15	5, 12, 15, 24	15	33	62	220

Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

Note2: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter

c UL us E358085

UL60950-1 certified
CAN/CSA-C22.2 No. 60950-1-07 certified
IEC/EN60950-1 certified
IEC/EN60601-1 certified
EN55032 compliant

Model Numbering

R0.5Z- ___ ___ / ___ ___

- nom. Input Voltage
- Output Voltage
- Packaging (5)
- Short Circuit Protection (3)
- Isolation Option (4)

Notes:

Note3: standard part is without continuous short circuit protection
add suffix „/P“ for continuous short circuit protection (refer to **“PROTECTIONS”**)

Note4: add suffix „/H“ for 2kVDC/1s isolation or add suffix „/HP“ for 2kVDC/1s isolation and continuous short circuit protection (refer to **“PROTECTIONS”**)

Note5: add suffix „-R“ for tape and reel packaging (compatible with all other suffixes) (refer to **“PACKAGING INFORMATION”**)

Ordering Examples:

R0.5Z-2405/P	24Vin	1kVDC/1s isolation	continuous short circuit protection
R0.5Z-0505-R 5Vin	5Vout	1kVDC/1s isolation	tape and reel packaging
R0.5Z-0515/HP 5Vin	15Vout	3kVDC/1s isolation	continuous short circuit protection

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

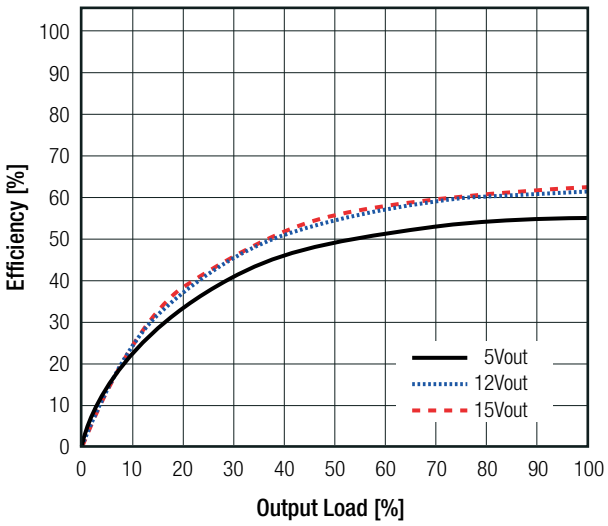
BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Internal Input Filter				capacitor
Input Voltage Range			±5%	
No Load Power Consumption		127mW	155mW	320mW
Minimum Load (6)		10%		
Internal Operating Frequency		20kHz	50kHz	90kHz
Output Ripple and Noise	20MHz BW			100mVp-p

Notes:

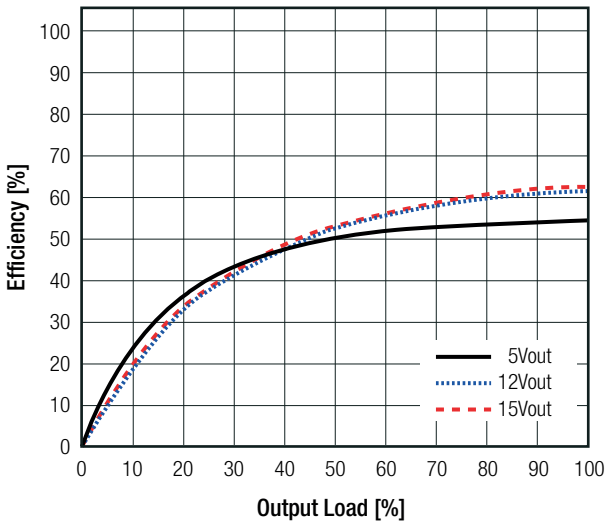
Note6: Operation below 10% load will not harm the converter, but specifications may not be met

Efficiency vs. Load

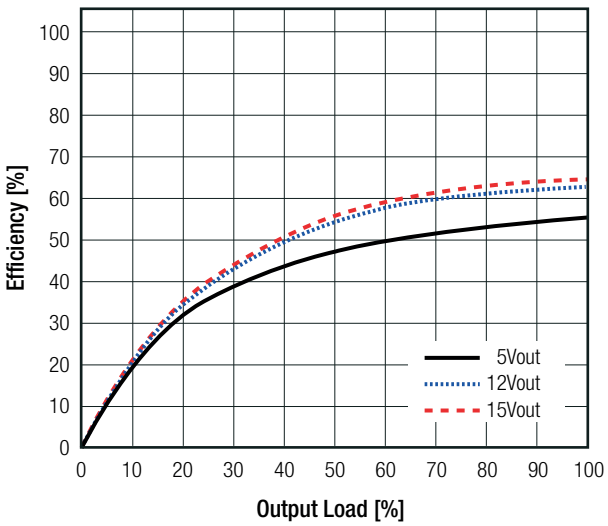
R0.5Z-05xx



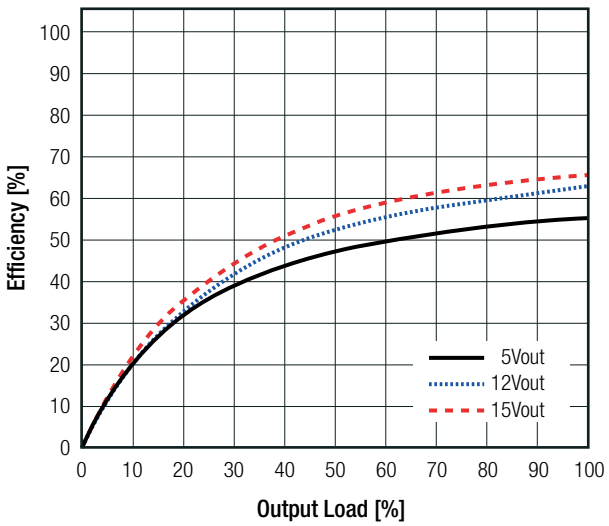
R0.5Z-12xx



R0.5Z-15xx



R0.5Z-24xx



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

REGULATIONS

Parameter	Condition	Value
Output Accuracy		±5.0% max.
Line Regulation	low line to high line, full load	±1.0% max.
Load Regulation (6)	10% to 100% load	1.0% max.

PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)	below 100mΩ	standard part with suffix "/P"	1 second continuous
Isolation Voltage (7)	without suffix	tested for 1 second rated for 1 minute	1kVDC 500VAC/ 60Hz
	with suffix "/H"	tested for 1 second rated for 1 minute	2kVDC 1kVAC/ 60Hz
Isolation Resistance			10GΩ min.
Isolation Capacitance			25pF min./ 75 pF max.
Insulation Grade	according to 60950-1		functional

Notes:

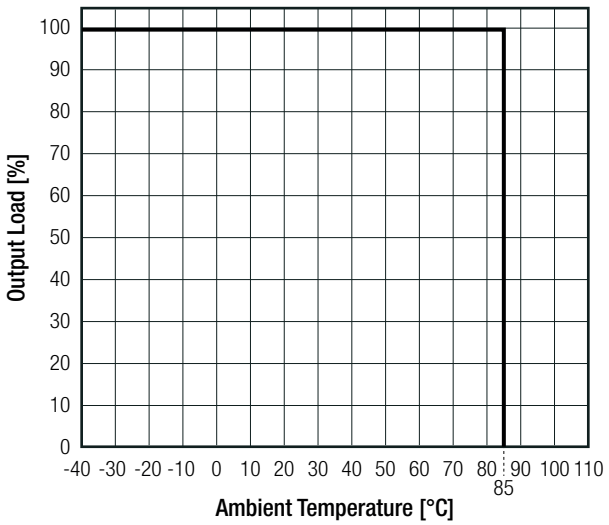
Note7: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note8: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	full load @ natural convection 0.1m/s (see graph)		-40°C to +85°C
Maximum Case Temperature			+105°C
Temperature Coefficient			0.014%/°C
Thermal Impedance	0.1m/s, horizontal (vertical)		37.5°K/W
Operating Altitude	according to 60950-1		2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	3947 x 10^3 hours 841 x 10^3 hours

Derating Graph
(@ Chamber and natural convection 0.1m/s)



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

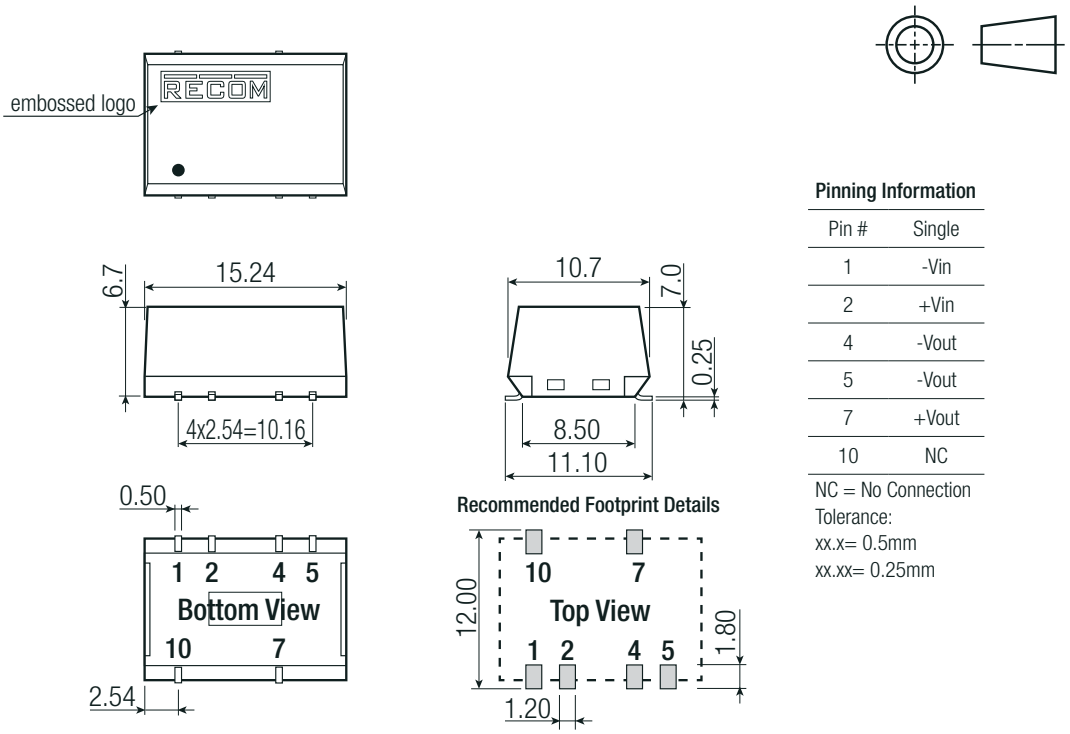
SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety (LVD)	SPCLVD1605077-08	IEC60950-1:2005, 2nd Edition, AM2: 2013 EN60950-1:2006, 2nd Edition, A2:2013
Information Technology Equipment, General Requirements for Safety	E358085-A2-UL	UL60950-1, 2nd Edition:2007 CAN/CSA C22.2 No. 60950-1-07, 2nd Edition:2007
Medical Electrical Equipment Part 1: General Requirements for Basic Safety and Essential Performance	SPC1005061	IEC60601-1:1988 + A2:1995 EN 60601-1:1990 +A13:1996
RoHS2		RoHS-2011/65/EU + AM-2015/863

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	non-conductive black plastic, (UL94 V-0)
Dimension (LxWxH)		15.24 x 10.7 x 7.0mm
Weight		1.2g typ.

Dimension Drawing (mm)



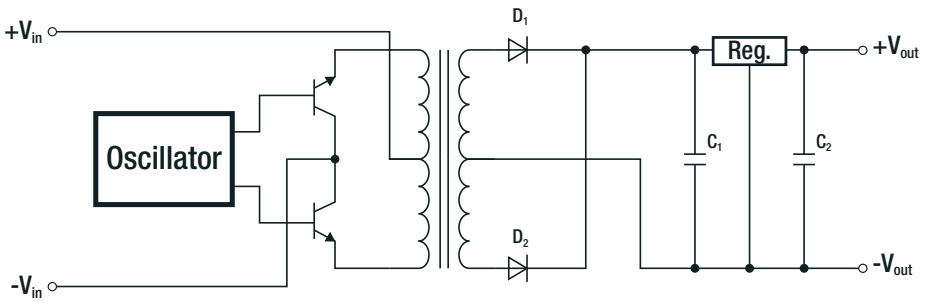
Pinning Information

Pin #	Single
1	-Vin
2	+Vin
4	-Vout
5	-Vout
7	+Vout
10	NC

NC = No Connection
Tolerance:
xx.x= 0.5mm
xx.xx= 0.25mm

INSTALLATION AND APPLICATION

Post-regulated Single Output



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

PACKAGING INFORMATION		
Parameter	**Type**	**Value**
Packaging Dimension (LxWxH)	tube tape and reel (carton)	530.0 x 17.0 x 13.5mm 355.0 x 342.0 x 36.0mm
Packaging Quantity	tube tape and reel	33pcs 500pcs
Tape Width		24mm
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	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.