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)

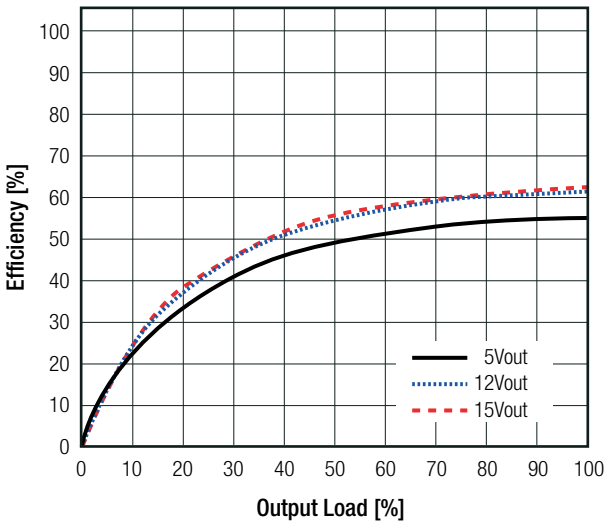
BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Internal Input Filter				capacitor
Input Voltage Range			±5%	
No Load Power Consumption		127mW	155mW	320mW
Minimum Load (6)		10%		
Internal Operating Frequency		20kHz	50kHz	90kHz
Output Ripple and Noise	20MHz BW			100mVp-p

Notes:

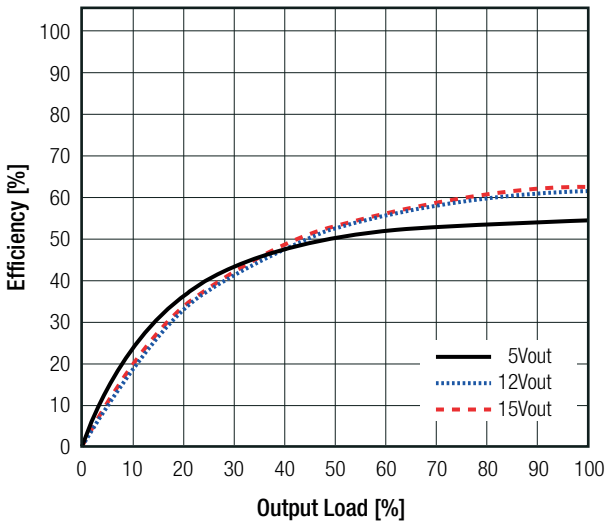
Note6: Operation below 10% load will not harm the converter, but specifications may not be met

Efficiency vs. Load

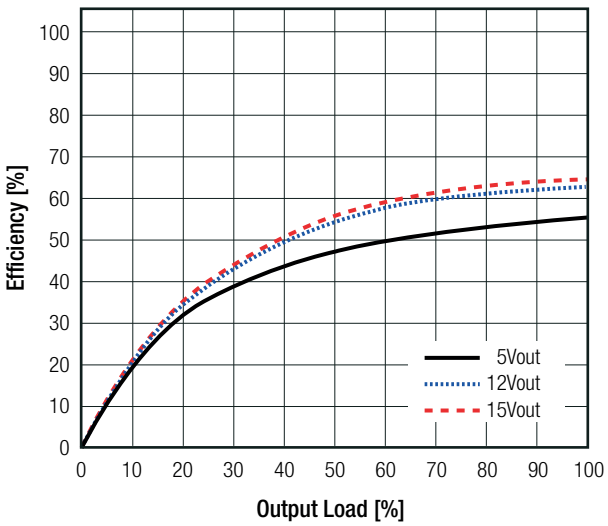
R0.5Z-05xx



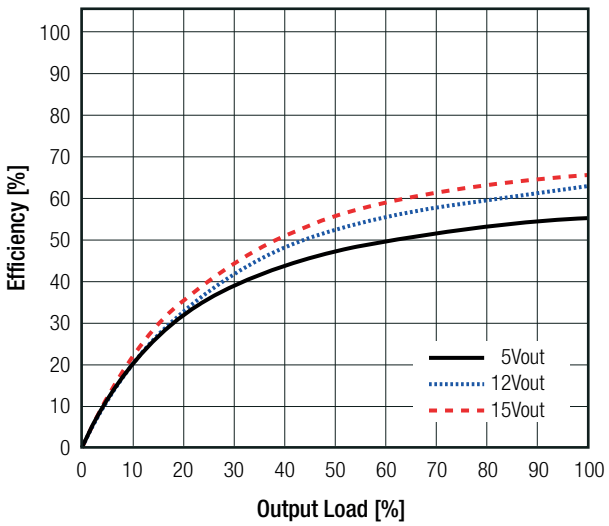
R0.5Z-12xx



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:

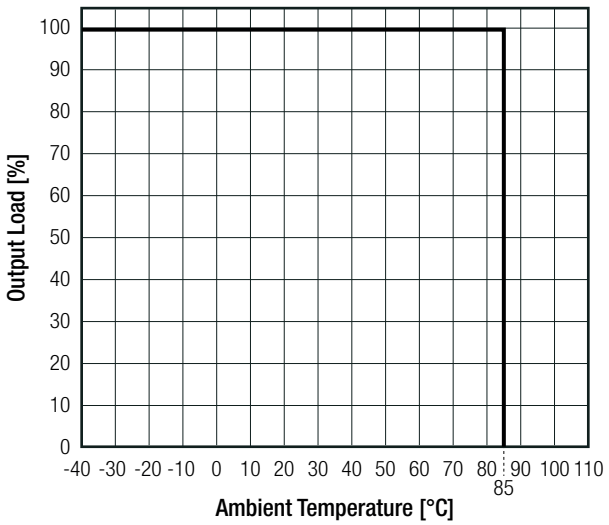
Note7: For repeat Hi-Pot testing, reduce the time and/or the test voltage

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)

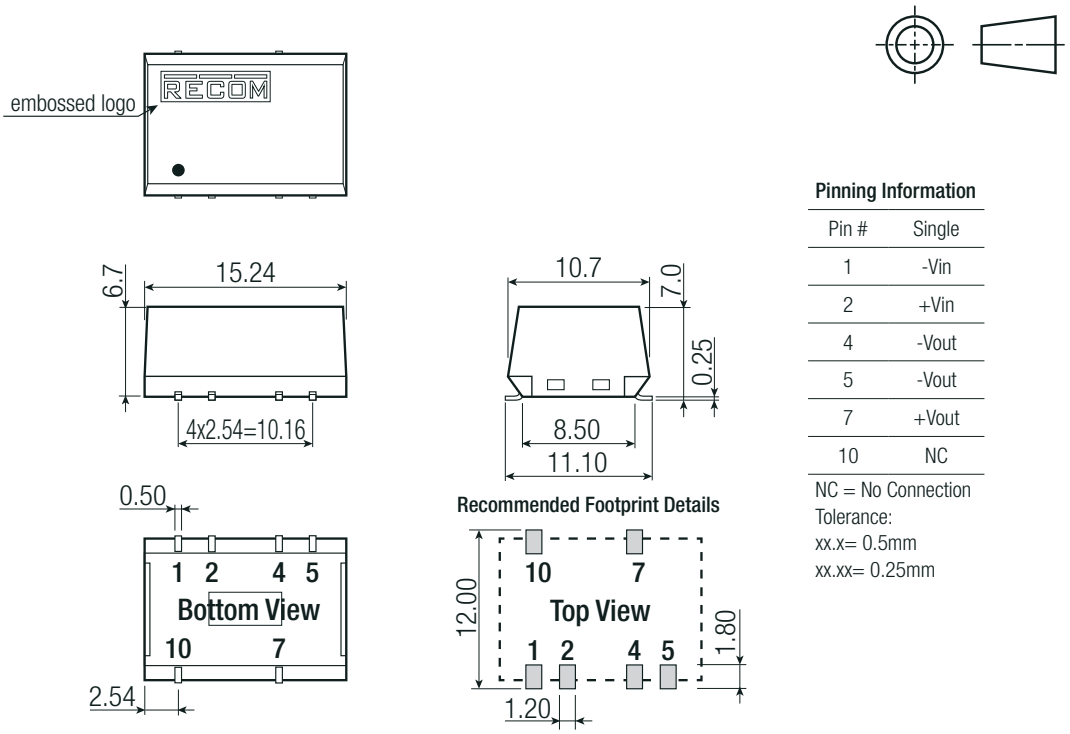
SAFETY AND CERTIFICATIONS

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)



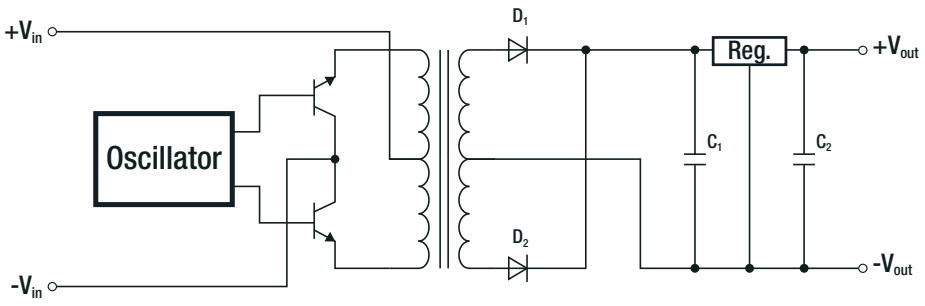
Pinning Information

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.