Features

Unregulated Converters

- Industry standard pinout
- 1kVDC/1s or 2kVDC/1s isolation option
- Efficiency up to 85%
- Optional continuous short circuit protection
- Fully encapsulated
- UL94V-0 package material

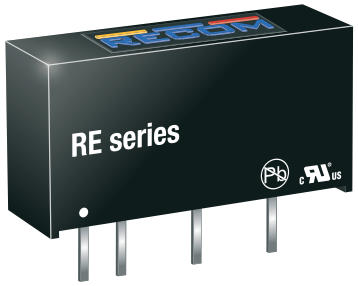
RECOM
DC/DC Converter

RE

1 Watt SIP7 Single Output

Description

The RE DC/DC converters are typically used in general purpose power isolation and voltage matching applications, and feature a full industrial operating temperature range of -40°C to +85°C without derating.



Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
RE-xx3.3S (3,4)	3.3, 5, 12, 15, 24	3.3	303	75	2200
RE-xx05S (3,4)	3.3, 5, 12, 15, 24	5	200	78-80	2200
RE-xx09S (3,4)	3.3, 5, 12, 15, 24	9	111	78-80	1000
RE-xx12S (3,4)	3.3, 5, 12, 15, 24	12	83	80-84	470
RE-xx15S (3,4)	3.3, 5, 12, 15, 24	15	66	80-84	470
RE-xx24S (3,4)	3.3, 5, 12, 15, 24	24	42	78-85	220

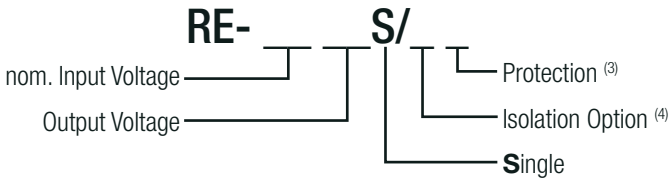
Notes:

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

Note2: Max Cap Load is tested at nominal input and full resistive load and is defined as the capacitive load that will allow start up in under 1s without damage to the converter

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

Model Numbering



Notes:

Note3: standard part is without Continuous Short Circuit Protection
add suffix „/P“ for Continuous Short Circuit Protection

Note4: add suffix „/H“ for 2kVDC/1s Isolation
or add suffix „/HP“ for 2kVDC/1s Isolation and Continuous Short Circuit Protection

Ordering Examples:

RE-123.3S/P: 12V Input Voltage, 3.3V Output Voltage, Single Output with continuous short circuit protection
RE-0509S/HP: 5V Input Voltage, 9V Output Voltage, Single Output with 2kVDC/1s isolation and continuous short circuit protection

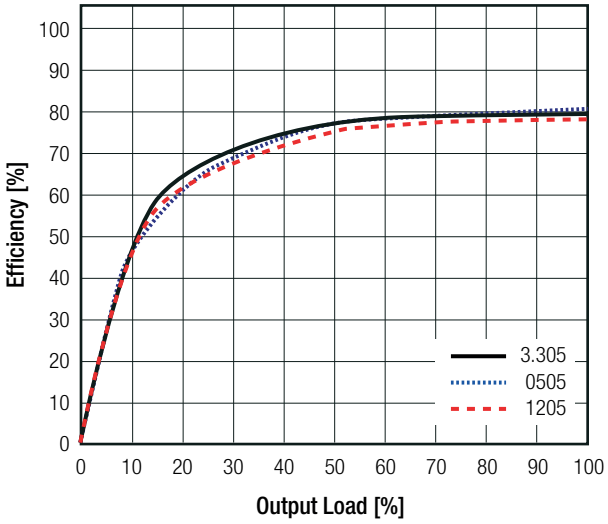
Specifications (measured @ Ta= 25°C, nom. Vin, full load otherwise stated)

BASIC CHARACTERISTICS

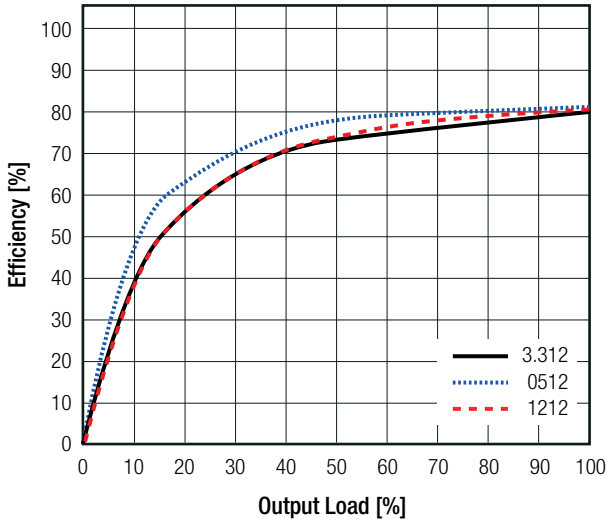
Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				capacitors
Input Voltage Range			±10%	
Minimum Load [5]		0%		
Internal Operating Frequency		50kHz	100kHz	105kHz
Output Ripple and Noise	20MHz BW			100mVp-p

Efficiency vs. Load

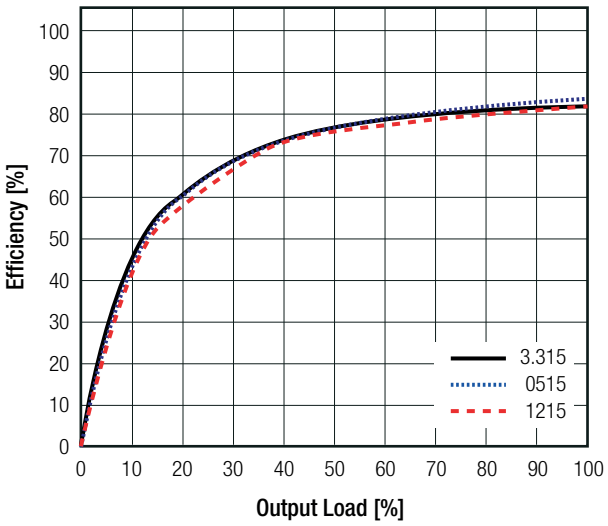
RE-xx05S



RE-xx12S



RE-xx15S



REGULATIONS

Parameter	Condition	Value
Output Accuracy		±5.0% max.
Line Regulation	low line to high line	±1.2% of 1.0% Vin typ.

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Specifications (measured @ Ta= 25°C, nom. Vin, full load otherwise stated)

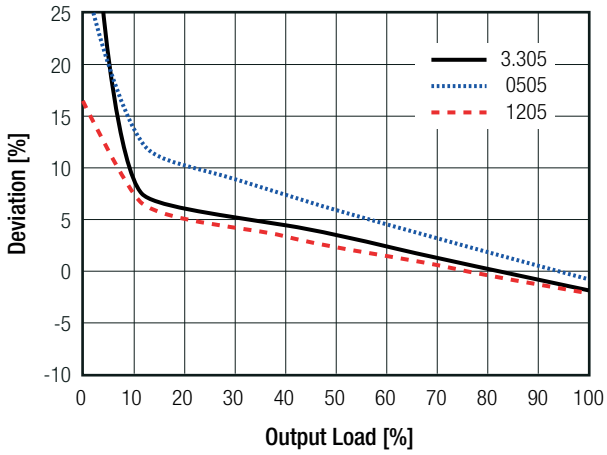
Parameter	Condition		Value
Load Regulation [5]	10% to 100% load	3.3Vout	20.0% max.
		5Vout	15.0% max.
		9, 12, 15, 24Vout	10.0% max.

Notes:

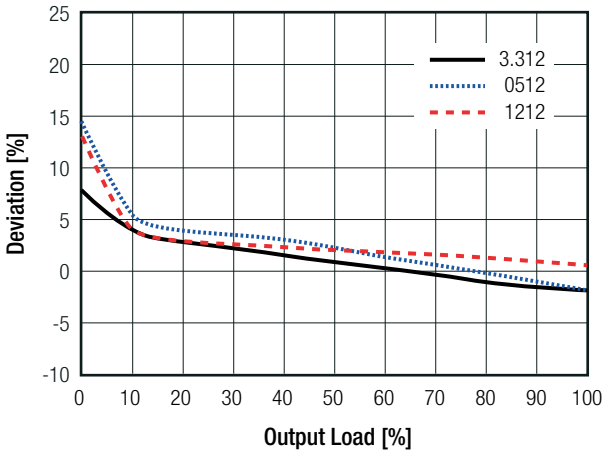
Note5: Operation below 10% load will not harm the converter, but specifications may not be met

Deviation vs. Load

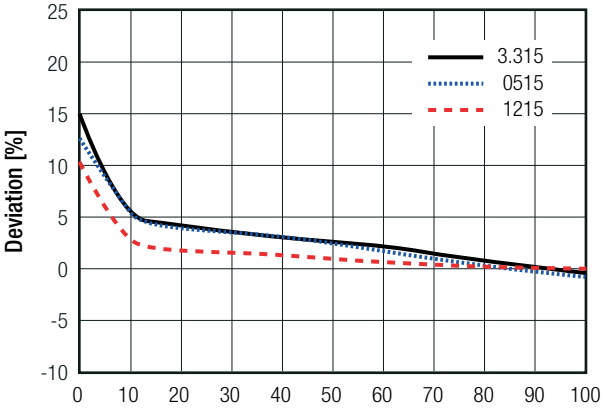
RE-xx05S



RE-xx12S



RE-xx15S



PROTECTIONS

Parameter	Type			Value
Short Circuit Protection (SCP)	without suffix with suffix "/P"			1 second continuous
Isolation Voltage [6]	I/P to O/P	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				20pF min. / 75pF max.
Insulation Grade				basic (IEC/EN60950-1) functional (UL60950-1)

Notes:

Note6: For repeat Hi-Pot testing, reduce the time and/or the test voltage

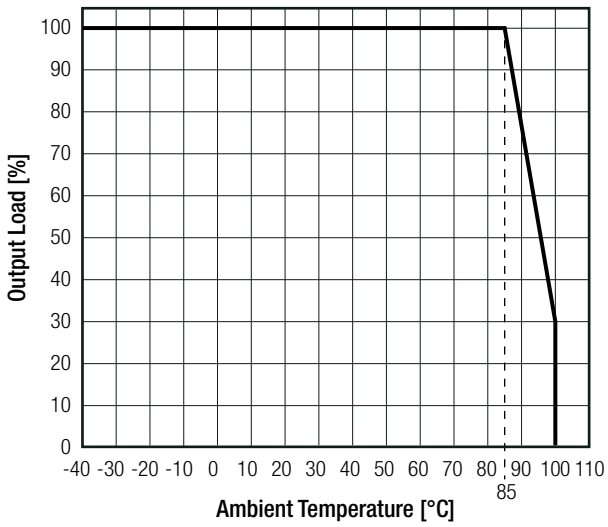
Note7: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Specifications (measured @ Ta= 25°C, nom. Vin, full load otherwise stated)

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	full load @ free air convection (see graph)		-40°C to +85°C
Maximum Case Temperature			+105°C
Temperature Coefficient			±0.03%/K typ.
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	16400 x 10^3 hours 8600 x 10^3 hours

Derating Graph
(@ free air convection)



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	SPCLVD1602031	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
Information Technology Equipment, General Requirements for Safety	E358085-A4-UL	UL60950-1, 2nd Edition:2007 CAN/CSA C22.2 No. 60950-1-03, 2nd Edition:2007
Information Technology Equipment, General Requirements for Safety (CB)	E322406-A4-CB-1	IEC60950-1:2005, 2nd Edition
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS 2+		RoHS-2011/65/EU + AM-2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter (refer to "EMC Filter Suggestion" below)	EN55032, Class A EN55032, Class B

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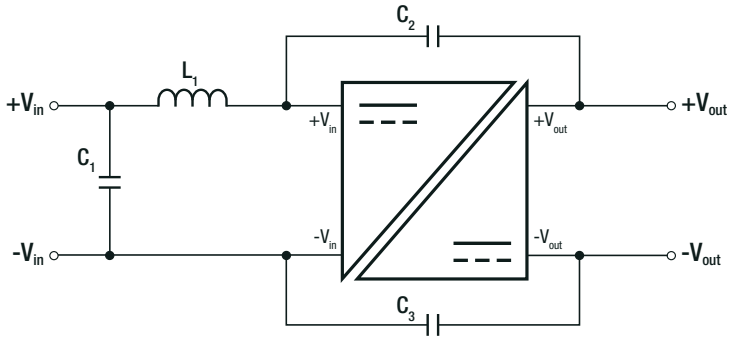
Specifications (measured @ Ta= 25°C, nom. Vin, full load otherwise stated)

EMC Filter Suggestion according to EN55032



Component List Class A

MODEL	C1	L1	C2 (safety)	C3 (safety)
RE-0505S	4.7µF 50V MLCC	N/A	N/A	N/A
RE-0512S				N/A
RE-2405S				N/A
RE-2415S				2.2nF

Component List Class B

MODEL	C1	L1	C2 (safety)	C3 (safety)
RE-0505S	10µF 100V MLCC	22µH choke RLS-226	100pF	330pF
RE-0512S				
RE-2405S				
RE-2415S				

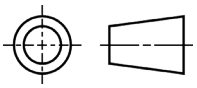
Notes:

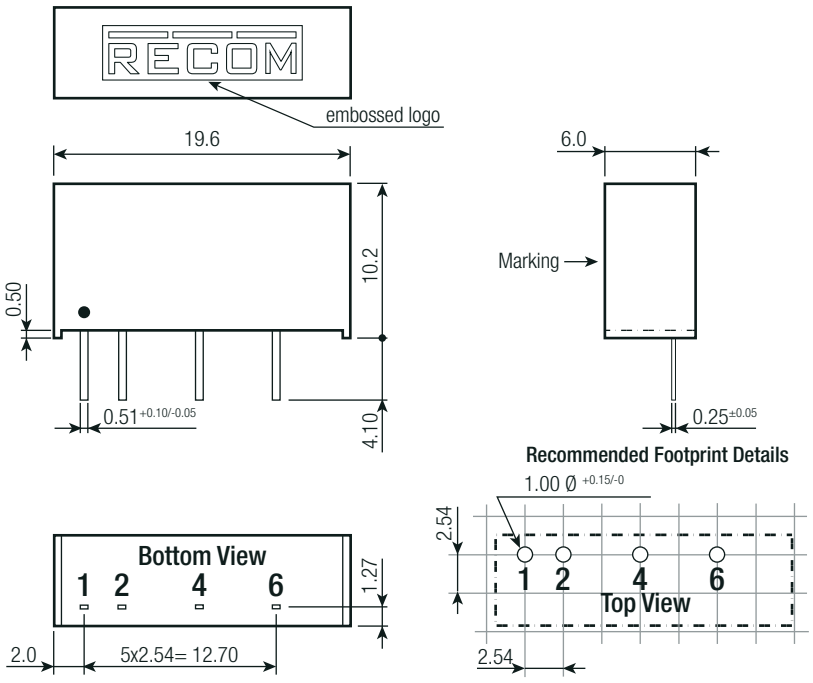
Note8: Filter suggestions are valid for indicated part numbers only. For other part numbers, please contact RECOM tech support for advice

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	non-conductive black plastic, (UL94 V-0)
	potting	epoxy, (UL94 V-0)
	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		19.6 x 6.0 x 10.2mm
Weight		2.2g typ.

Dimension Drawing (mm)





Pinning Information

Pin #	Single
1	+Vin
2	-Vin
4	-Vout
6	+Vout

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

Specifications (measured @ Ta= 25°C, nom. Vin, full load otherwise stated)

PACKAGING INFORMATION		
Parameter	**Type**	**Value**
Packaging Dimension (LxWxH)	tube	520.0 x 16.0 x 9.0mm
Packaging Quantity	tube	25pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity		95% RH max.