Features

Unregulated Converters

- High power density 3W converter in SIP7 case
- 3kVDC and 4kVDC Isolation options
- Efficiency up to 90%
- IEC/EN62368 certified

RECOM
DC/DC Converter

RKZ3

3 Watt SIP7 Single Output

IEC/EN62368-1 certified

Description

The RKZ3 series of 3W high isolation DC/DC converters are suitable for demanding industrial applications such as bus isolators, breaking ground loops or separating multi-channel inputs which require more power than currently available in standard SIP7 isolated DC/DC converters. The RKZ3 converters are pin-compatible with the RK and RKZ converter series, offering a simple way to upgrade an existing high isolation design from 1W or 2W up to 3W. The converters are safety certified to IEC/EN62368.

Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
RKZ3-0505S (3)	5	5	600	85	2000
RKZ3-1205S (3)	12	5	600	84	2000
RKZ3-2405S (3)	24	5	600	86	2000
RKZ3-2412S (3)	24	12	250	90	1000

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

Model Numbering

RKZ3-__ __ S/__

- nom. Input Voltage
- Output Voltage
- Isolation (3)

Notes:

Note3: without suffix standard 3kVDC/1second isolation, add suffix "H" for 4kVDC/1second isolation

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

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				capacitor
Input Voltage Range			±10%	

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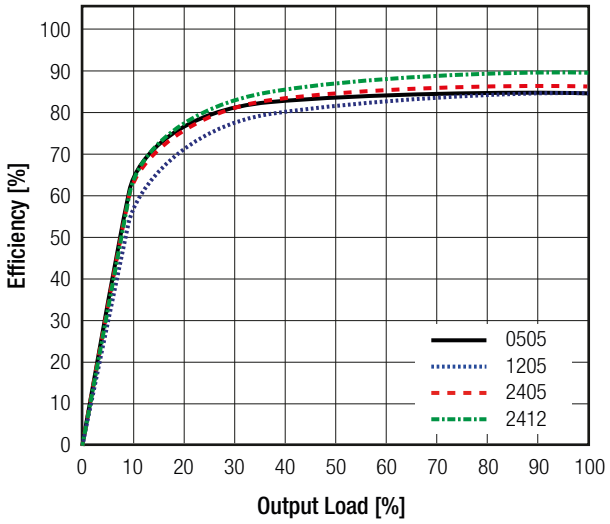
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise specified)

Parameter	Condition	Min.	Typ.	Max.
Start-up time			0.3ms	250ms
Rise time			0.3ms	0.5ms
Internal Operating Frequency		20kHz		
Minimum Load		0%		
Output Ripple and Noise [4]	20MHz BW			100mVp-p

Notes:

Note4: Measurements are made with a 1.0µF MLCC across output (low ESR)

Efficiency vs. Load

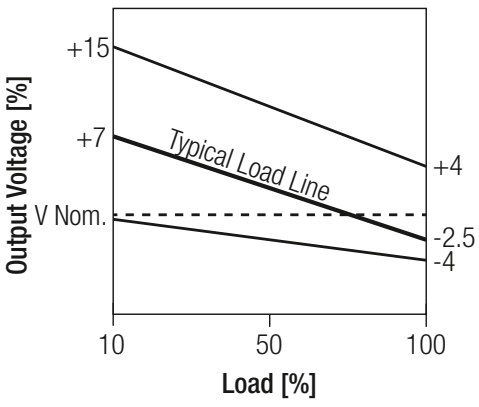


REGULATIONS

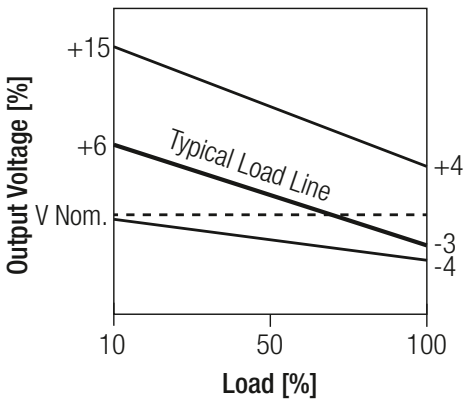
Parameter	Condition		Value
Output Accuracy	5Vout all others		±3.0% typ. / ±4.0% max. ±2.0% typ. / ±3.0% max.
Line Regulation	low line to high line, full load		1.2% typ. @ 1.0% of Vin
Load Regulation	10% to 100% load	5Vout all others	15.0% max. 10.0% max

Tolerance Envelope

RKZ3-0505S



RKZ3-1205S



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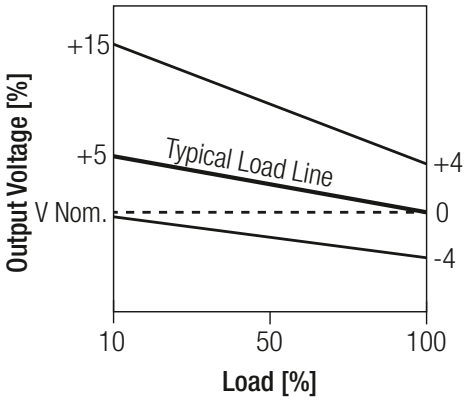
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise specified)

RKZ3-2405S



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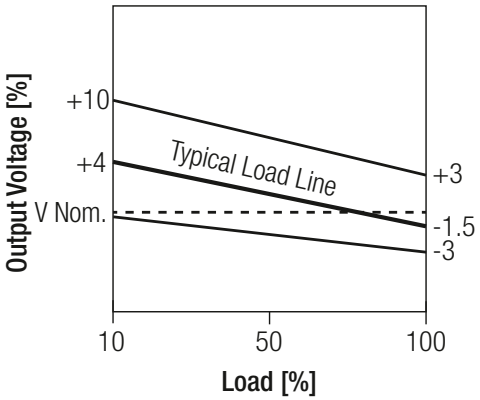
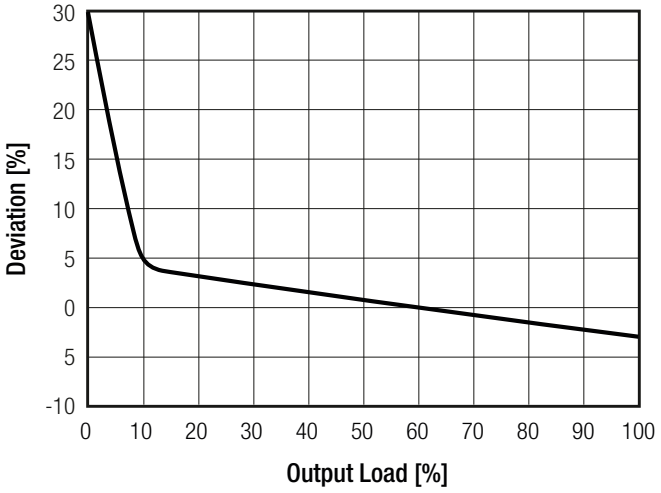
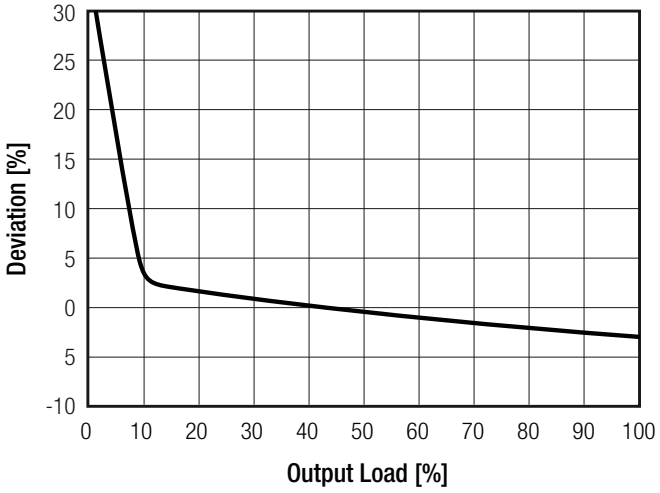


Accuracy vs. Load

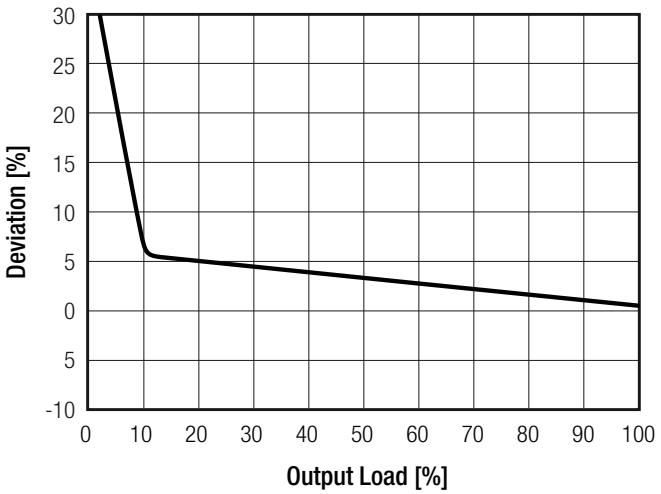
RKZ3-0505S



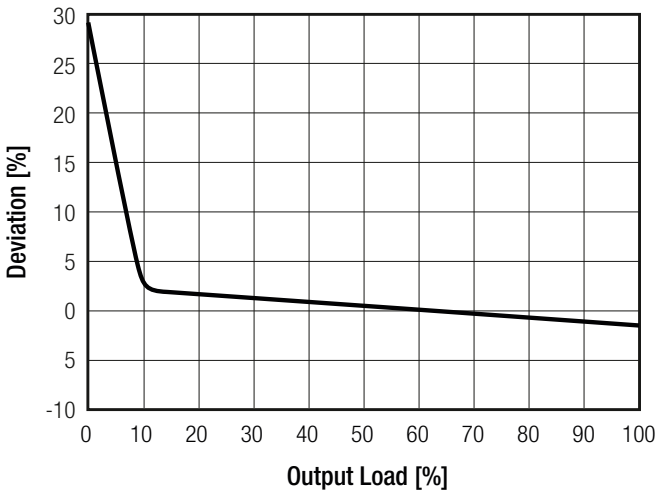
RKZ3-1205S



RKZ3-2405S



RKZ3-2412S



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

PROTECTIONS

Parameter	Type			Value
Isolation Voltage (5)	I/P to O/P	tested for 1 second	standard	3kVDC
			/H suffix	4kVDC
Isolation Resistance				15GΩ min.
Isolation Capacitance				130pF max.

Notes:

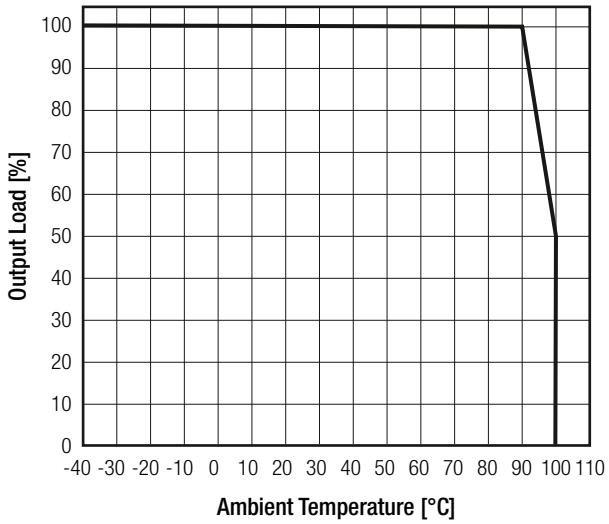
Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note6: An input fuse is required if the mains supply is not over-current protected. Recommended fuse: T2A slow blow type

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	without derating @ natural convection 0.1m/s (see graph)		-40°C to +90°C
Maximum Case Temperature			+115°C
Temperature Coefficient			±0.02%/°C
Operating Humidity	non-condensing		5% - 95% RH max.
Pollution Degree			PD2
Vibration			according to MIL-STD 202G
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	17700 x 10^3 hours
		+85°C	6200 x 10^3 hours

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



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Audio/video, information and communication technology equipment - Safety requirements	AL106047	EN62368-1, 2014 IEC62368-1, 2nd Edition, 2014
RoHs 2+		RoHS 10/10, 2011/65/EU + AM-2015/863
EAC	RU-AT.49.09571	TP TC 004/2011

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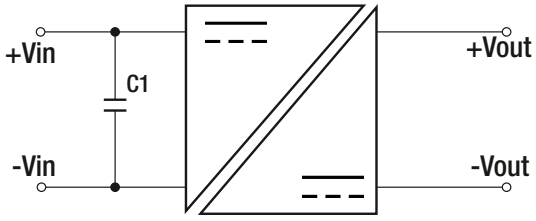
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise specified)

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter	EN55032, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024+A1
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
Fast Transient and Burst Immunity	DC Power Port ±0.5kV	EN61000-4-4, Criteria A
Surge Immunity (7)	DC Power Port ±0.5kV DC Output Port ±0.5kV	EN61000-4-5, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	DC Power Port 3V DC Output Port 3V	EN61000-4-6, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	EN61000-4-8, Criteria A

Notes:

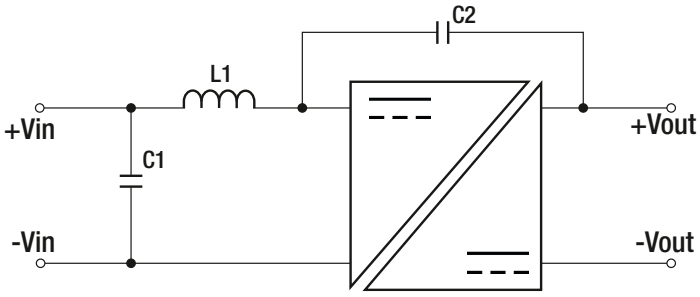
Note7: An external input filter capacitor is required if the model has to meet EN61000-4-5. See below circuit:

Surge Test Circuit



Test Voltage	C1
±0.5kV	100µF E-Cap
±1kV	220µF E-Cap

EMC Filtering according to EN55032 Class B



Component List Class B

Input Voltage	C1	C2	L1
5Vin	4.7µF MLCC	470pF / 5kVDC	10µH Choke
12Vin			
24Vin	2.2µF MLCC		22µH Choke

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting PCB	black plastic, (UL94 V-0) silicone, (UL94 V-0) FR4, (UL94 V-0)
Package Dimension (LxWxH)		19.6 x 7.5 x 12.2mm
Package Weight		2.8g typ.

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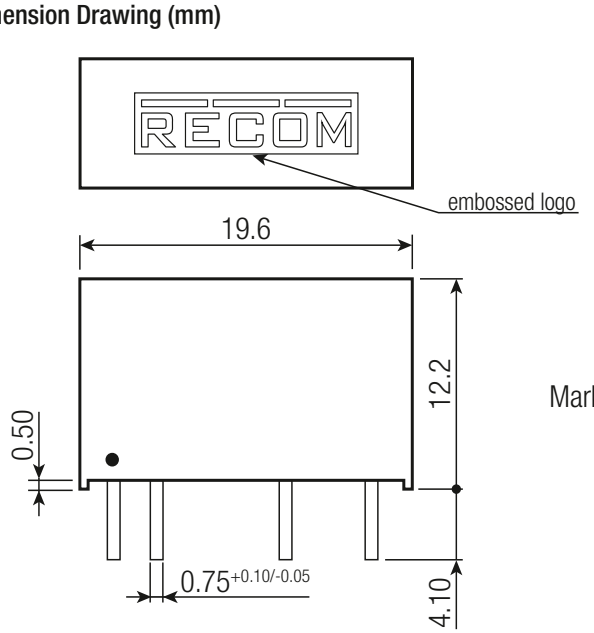
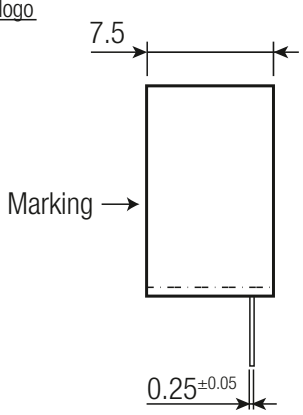
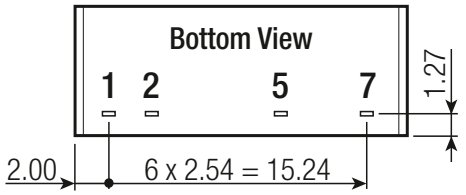
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise specified)

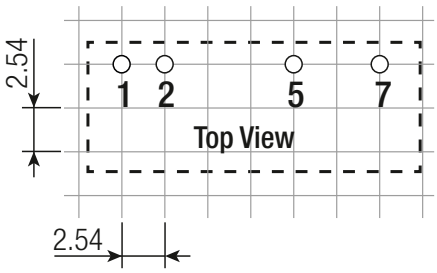
Dimension Drawing (mm)







Recommended Footprint Details



Pin Connection

Pin #	Single
1	+Vin
2	-Vin
5	-Vout
7	+Vout

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

PACKAGING INFORMATION		
Packaging Dimension (LxWxH)	tube	520.0 x 22.1 x 10.2mm
Packaging Quantity		24pcs
Storage Temperature Range		-55°C to +125°C