

Features

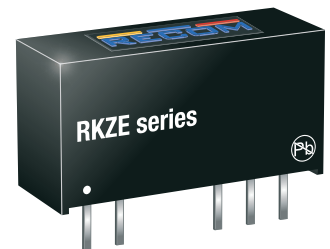
Unregulated Converters

- Low cost 2W converter
- Industry standard SIP7 package
- 3kVDC or 4kVDC isolation options
- Single or dual outputs
- Short circuit protected (/P versions)
- IEC/EN62368-1 certified

RECOM
DC/DC Converter

RKZE

**2 Watt
SIP7
Single and Dual
Output**



IEC/EN62368-1 certified
EN55032 compliant
EN55024 compliant

Description

The RKZE series are low cost 2W DC/DC converters in a standard SIP7 footprint. This makes them suitable for price sensitive industrial, test and measurement and high volume applications. The RKZE converters are pin-compatible with the RK and RH converter series, offering a simple way to upgrade a 1W high isolation supply to 2W. Standard isolation is 3kVDC with a /H version factory tested to 4kVDC. The RKZE is available with single or dual outputs with optional continuous short circuit protection (/P suffix).

Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
RKZE-xx05S ^(3,4)	5, 12, 15, 24	5	400	81-83	1500
RKZE-xx09S ^(3,4)	5, 12, 15, 24	9	222	84-85	680
RKZE-xx12S ^(3,4)	5, 12, 15, 24	12	167	82-88	330
RKZE-xx15S ^(3,4)	5, 12, 15, 24	15	133	84-86	330
RKZE-xx05D ^(3,4)	5, 12, 15, 24	±5	±200	83-85	±680
RKZE-xx12D ^(3,4)	5, 12, 15, 24	±12	±84	84-85	±220
RKZE-xx15D ^(3,4)	5, 12, 15, 24	±15	±66	83-86	±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

Model Numbering



Notes:

Note3: standard part is without suffixes

without suffix, standard isolation voltage (3kVDC/1 second)

add suffix „/H“ for 4kVDC isolation (refer to “Isolation Voltage ⁽⁶⁾”)

Note4: add suffix „/P“ for Continuous Short Circuit Protection (refer to “Short Circuit Protection (SCP)”

or add suffix „/HP“ for 4kVDC Isolation and Continuous Short Circuit Protection

Ordering Examples

RKZE-1205S = 12V Input Voltage, 5V Output Voltage, Single Output with 3kVDC Isolation

RKZE-1509S/H = 15V Input Voltage, 9V Output Voltage, Single Output with 4kVDC Isolation

RKZE-0505D/P = 5V Input Voltage, 5V Output Voltage, Dual Output with 3kVDC Isolation and SCP protection

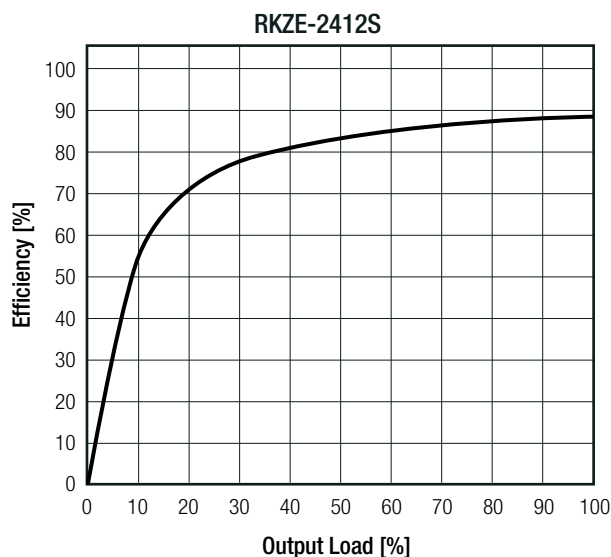
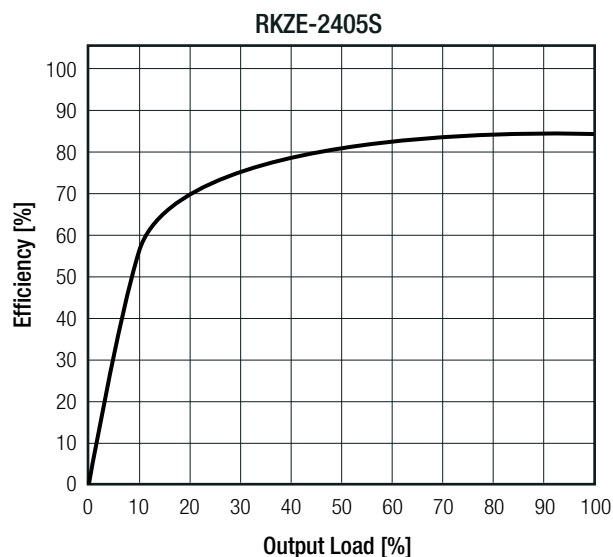
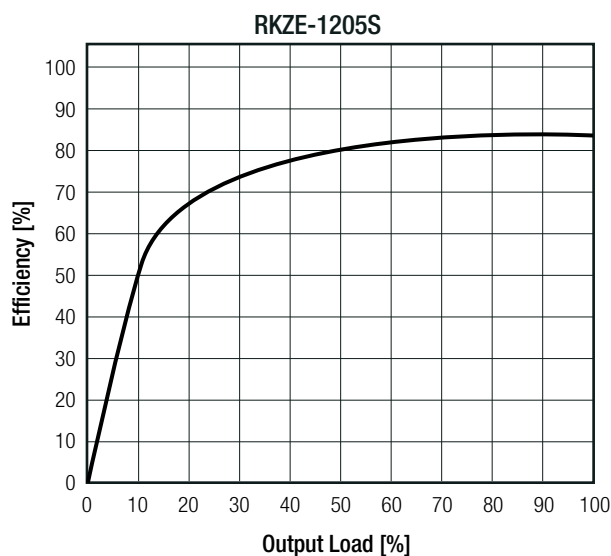
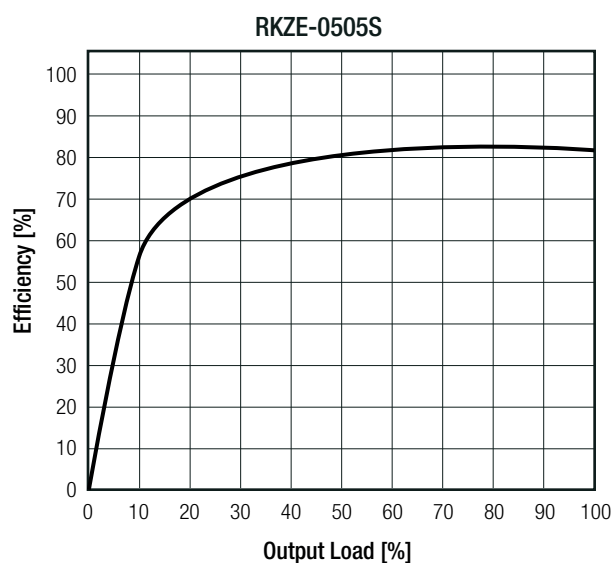
RKZE-2415D/HP = 24V Input Voltage, 15V Output Voltage, Dual Output with 4kVDC Isolation and SCP protection

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 type		
Input Voltage Range			±10%	
Input Current	nom. Vin= 5VDC 12VDC 15VDC 24VDC		500mA 200mA 160mA 100mA	
Quiescent Current	nom. Vin= 5VDC 12VDC 15VDC 24VDC		30mA 15mA 12mA 7mA	
Minimum Load		0%		
Start-up Time			10ms	
Rise Time			2ms	
Internal Operating Frequency		20kHz		
Output Ripple and Noise	20MHz BW		75mVp-p	150mVp-p

Efficiency vs. Load



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

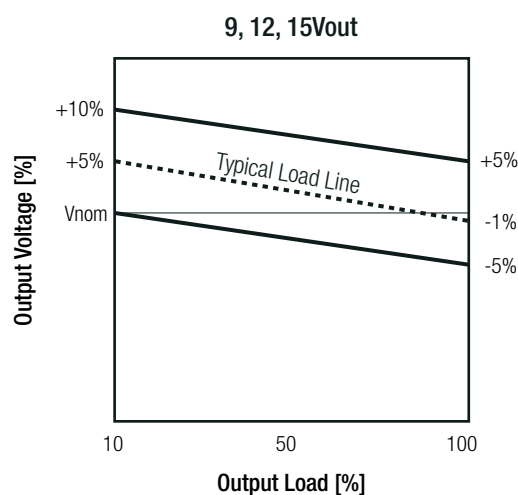
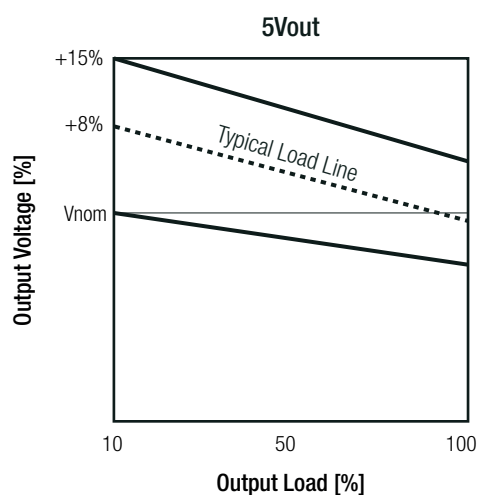
REGULATIONS

Parameter	Condition		Value
Output Accuracy			±5.0% max.
Line Regulation	low line to high line		±1.2% typ. / 1.0% max.
Load Regulation ⁽⁵⁾	10% to 100% load	5Vout	15% max.
		9, 12, 15Vout	10% max.
Cross Regulation	dual output only		±5.0% typ.

Notes:

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

Tolerance Envelope



PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)	below 100mΩ, "/P" suffix		continuous
Isolation Voltage ⁽⁶⁾	I/P to O/P	standard part	tested for 1 second rated for 1 minute 3kVDC 1.5kVAC
		"/H" suffix	tested for 1 second rated for 1 minute 4kVDC 1.8kVAC
Isolation Resistance			10GΩ min.
Isolation Capacitance			120pF max.
Leakage Current			0.3μA max.
Insulation Grade			functional

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

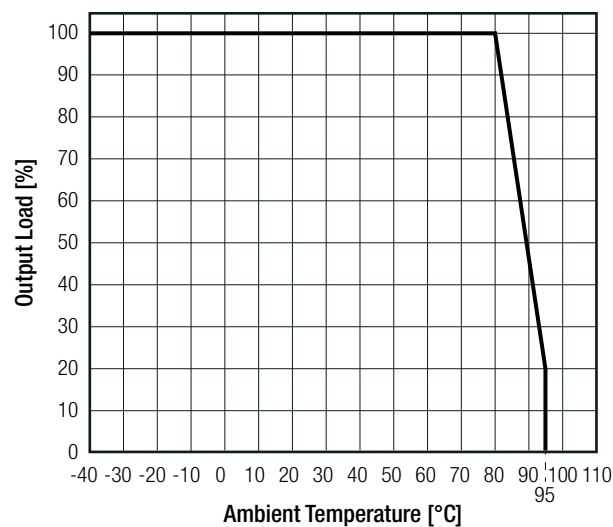
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	full load @ natural convection 0.1m/s		-40°C to +80°C
Maximum Case Temperature			+110°C
Temperature Coefficient			±0.01%/K
Thermal Impedance	0.1m/s, horizontal		46K/W
Operating Altitude			5000m
Operating Humidity	non-condensing		5% - 95% RH
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +80°C	18300 x 10 ³ hours 8070 x 10 ³ hours

Derating Graph

(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

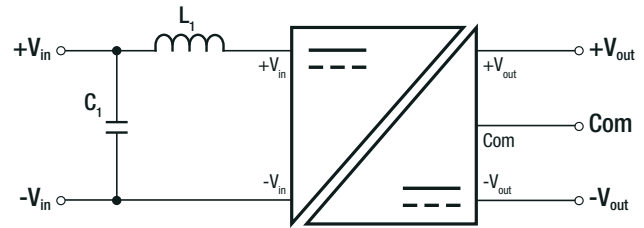
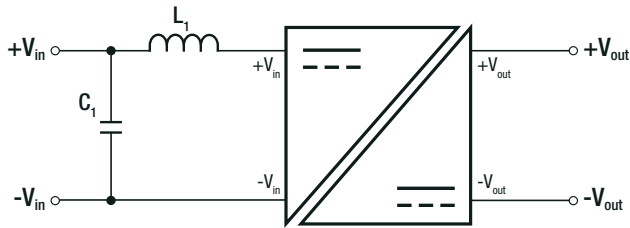
Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements	WD-SE-R-180474-A0	IEC62368-1:2014 2nd Edition EN62368-1:2014 + AC:2015
RoHS2		RoHS 2011/65/EU + AM2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements	with external components	EN55032:2015, Class B
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
ESD Electrostatic discharge immunity test	Air: ±2, 4, 8kV Contact: ±2, 4kV	IEC61000-4-2:2009, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC61000-4-3:2006 + A2:2010, Criteria A
Fast Transient and Burst Immunity	±0.5kV	IEC61000-4-4:2012, Criteria A
Surge Immunity	±0.5kV	IEC61000-4-5:2014 + A1:2017, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	3V	IEC61000-4-6:2013 + Cor1:2015, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	IEC61000-4-8:2010, Criteria A

continued on next page

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

EMC Filter Suggestion according to EN55032



Component List Class A

MODEL	C1
RKZE-2405S, RKZE-1209S	10µF 50V
RKZE-0515S	
RKZE-2405D, RKZE-0515D	

Component List Class B

MODEL	C1	L1
RKZE-2405S, RKZE-1209S	10µF 50V	12µH choke RLS-126
RKZE-0515S		
RKZE-2405D, RKZE-0515D		

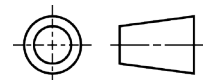
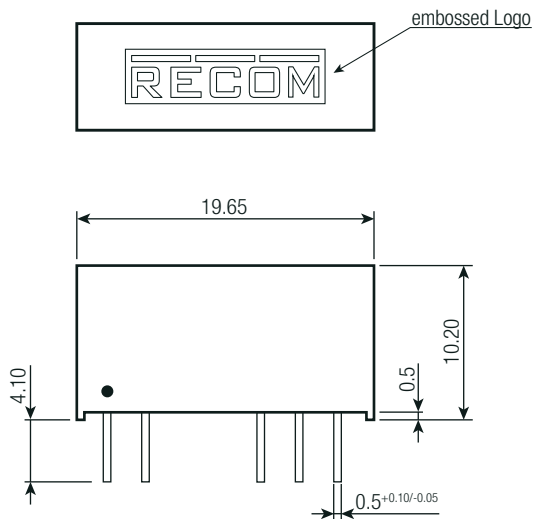
Notes:

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 potting	black plastic, (UL94V-0) epoxy, (UL94V-0)
Dimension (LxWxH)		19.65 x 7.05 x 10.20mm
Weight		2.8g typ.

Dimension Drawing (mm)

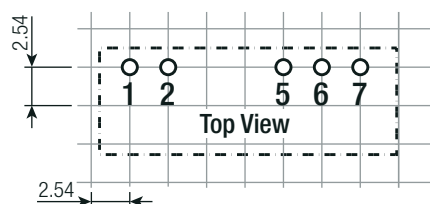
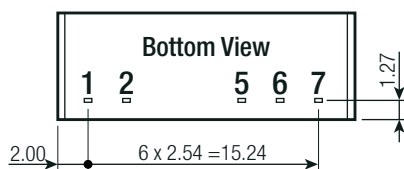


Pin Information

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	No Pin	Com
7	+Vout	+Vout

xx.x ± 0.5mm
xx.xx ± 0.25mm

Recommended Footprint Details



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	520.0 x 16.0 x 9.0mm
Packaging Quantity		25pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity		5% to 95% RH

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.

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