

# Features

- Regulated output with internal linear regulator
- Isolated 0.5W power in SMD package
- Up to 2kVDC isolation
- Industry standard pinout
- -40°C to +100°C operating temperature
- IEC/EN/UL62368-1 certified, CB report

# Regulated Converters



## R0.5ZX

**0.5 Watt  
SMD  
Single Output**



### Description

The R0.5ZX is similar to the R1SX but with the addition of an internal linear regulator to give a precise, load-independent and low noise output. The output is also continuously short circuit protected. In the event of a continuous overload or over-temperature condition, the output will shut down thus protecting the converter from damage. The output will automatically restart once the fault condition has been lifted. Typical applications include isolated 5V supplies for sensor, bus-interface and test and measurement circuits.

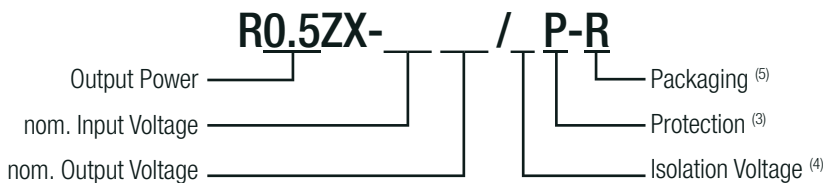
### Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. <sup>(1)</sup> [%]	max. Capacitive Load <sup>(2)</sup> [µF]
R0.5ZX-0505/P <sup>(3)</sup>	5	5	100	71	470

#### 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 with continuous short circuit protection
- Note4: without suffix „/H“, standard isolation voltage (1kVDC/1 second)  
with suffix „/H“, high isolation voltage (2kVDC/1 second)
- Note5: with suffix „-R“, standard packaging tape and reel  
with suffix „-Tray“ for optional tray packaging

#### Ordering Examples:

R0.5ZX-0505/P-R	5Vin	5Vout	Single Output	1kVDC/ 1 minute isolation	with SCP function	tape and reel packaging
R0.5ZX-0505/HP-R	5Vin	5Vout	Single Output	2kVDC/1 minute isolation	with SCP function	tape and reel packaging
R0.5ZX-0505/P-Tray	5Vin	5Vout	Single Output	1kVDC/ 1 minute isolation	with SCP function	tray packaging
R0.5ZX-0505/HP-Tray	5Vin	5Vout	Single Output	2kVDC/1 minute isolation	with SCP function	tray packaging

UL62368-1 certified  
CAN/CSA-C22.2 No. 62368-1-14 certified  
UL60950-1 certified  
CAN/CSA-C22.2 No. 60950-1-07 certified  
IEC/EN62368-1 certified  
IEC/EN60950-1 certified  
CB report  
EN55032 compliant  
EN55024 compliant

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

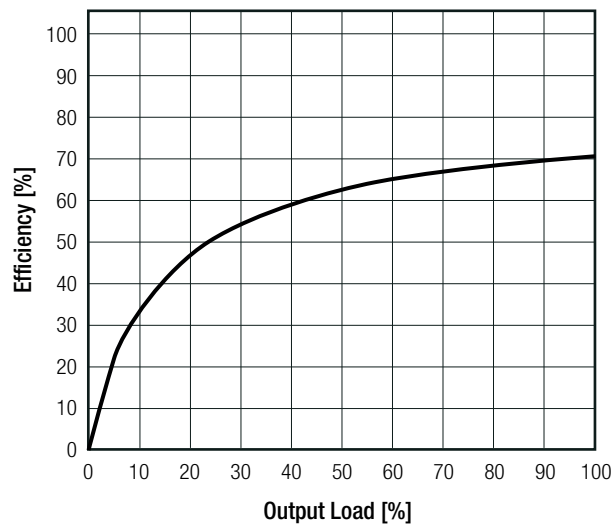
**BASIC CHARACTERISTICS**

Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				capacitor
Input Voltage Range	nom. Vin = 5VDC		±5.0%	
Input Current			200mA	
Quiescent Current	nom. Vin = 5VDC		20mA	
Minimum Load		0%		
Internal Operating Frequency		20kHz		
Output Ripple and Noise <sup>(6)</sup>	20MHz BW		30mVp-p	100mVp-p

**Notes:**

Note6: Measurements are made with a 0.1µF MLCC across output. (low ESR)

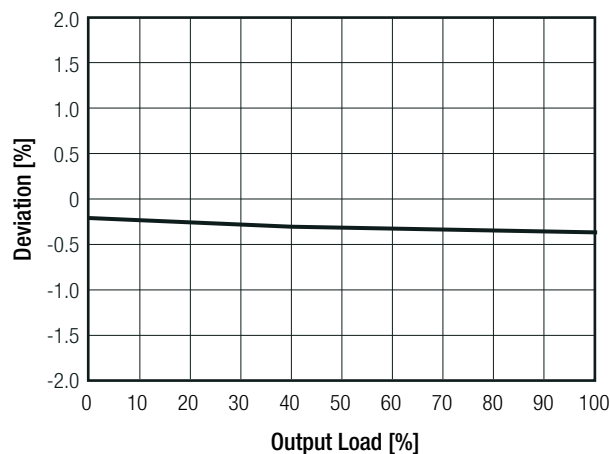
**Efficiency vs. Load**



**REGULATIONS**

Parameter	Condition	Value
Output Accuracy		-0.5 typ. / ±2.0% max.
Line Regulation	low line to high line, full load	±1.0% max.
Load Regulation	0% to 100% load	1.0% max.

**Deviation vs. Load**



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

PROTECTIONS			
Parameter	Type		Value
Short Circuit Protection (SCP)	below 100mΩ		continuous, automatic recovery
Isolation Voltage	I/P to O/P	standard	tested for 1 second rated for 1 minute <sup>(7)</sup> 1kVDC 500VAC
		with suffix "/H"	tested for 1 second rated for 1 minute <sup>(7)</sup> 2kVDC 1kVAC
Isolation Resistance			10GΩ min.
Isolation Capacitance			100pF max.
Leakage Current	standard with suffix "/H"		1μA max. 2μA max.
Insulation Grade			functional

**Notes:**

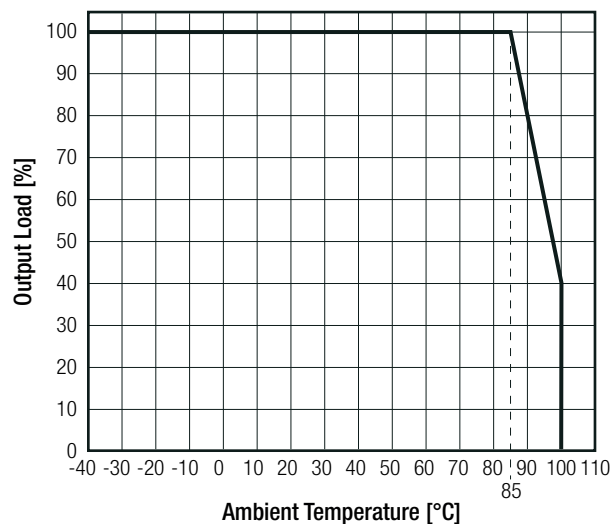
Note7: For repeat Hi-Pot testing, reduce the time and/or the test voltage

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
Operating Altitude			5000m
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 +85°C	23000 x 10 <sup>3</sup> hours 2000 x 10 <sup>3</sup> hours

**Derating Graph**

(@ Chamber and natural convection 0.1m/s)

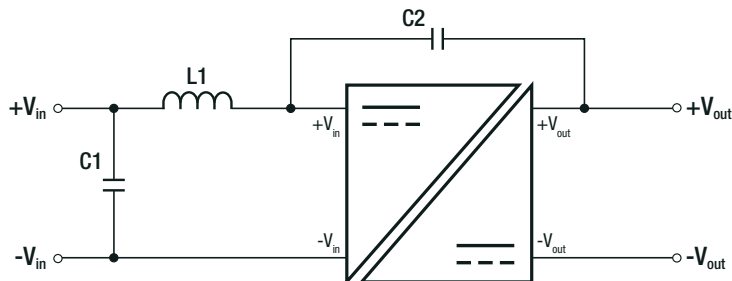


**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

SAFETY AND CERTIFICATIONS		
Certificate Type (Safety)	Report / File Number	Standard
Audio/video, information and communication technology equipment - Safety requirements	E224736	UL62368-1, 2nd Edition, 2014 CAN/CSA -C22.2 No. 62368-1-14, 2nd Edition
Information Technology Equipment, General Requirements for Safety		UL60950-1, 2nd Edition, 2014 CAN/CSA C-22.2 No. 60950-1-07, 2nd Edition
Audio/video, information and communication technology equipment - Safety requirements (CB Scheme)	E224736-4788277362-1	IEC62368-1:2014, 2nd Edition
Audio/video, information and communication technology equipment - Safety requirements		EN62368-1:2014 + A11:2017
Information Technology Equipment, General Requirements for Safety (CB Scheme)	E224736-4788277362-2	IEC60950-1:2005, 2nd Edition + A2:2013
Information Technology Equipment, General Requirements for Safety		EN60950-1:2006 + A2:2013
RoHS2+		RoHS 2011/65/EU + AM2015/863

EMC Compliance	Condition	Standard / Criterion
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements	with external filter (see filter suggestion)	EN55032:2015 + AC:2016, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024:2010 + A1:2015
ESD Electrostatic discharge immunity test	Air: ±6kV ; Contact: ±4kV	EN61000-4-2:2009, Criteria A
Fast Transient and Burst Immunity	±0.5kV	EN61000-4-4:2012, Criteria A
Surge Immunity	±1.0kV	EN61000-4-5:2017, Criteria A

**EMC Filtering Suggestions for EN55032 Class B**



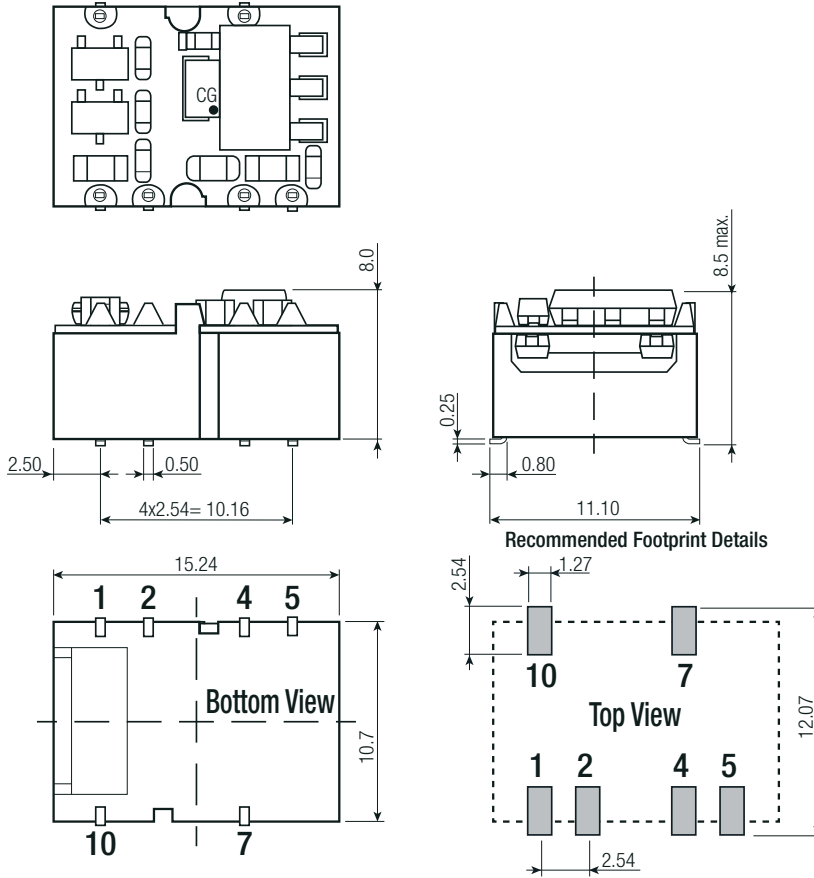
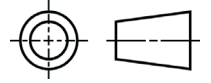
Component List		
C1	C2	L1
10µF MLCC	470pF/3kVDC	10µH SMD Inductor

DIMENSION and PHYSICAL CHARACTERISTICS		
Parameter	Type	Value
Material	base PCB	black plastic (UL94V-0) FR4 (UL94V-0)
Dimension (LxWxH)		15.24 x 11.10 x 8.5mm
Weight		1.6g typ.

continued on next page

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

**Dimension Drawing (mm)**



**Pin Connection**

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

CG= center of gravity

NC= no connection

Tolerance: xx.x= ±0.5mm

xx.xx= ±0.25mm

Pin dimension: ±0.1mm

**PACKAGING INFORMATION**

Packaging Dimension (LxWxH)	tape and reel (carton)	355.0 x 340.0 x 35.0mm
	reel	330.2 x 330.2 x 30.0mm
	tray	260.0 x 205.0 x 27.0mm
Packaging Quantity	tape and reel	250pcs
	tray	30pcs
Tape Width		24.0mm
Storage Temperature Range		-55°C to +125°C
Storage Humidity		5% - 95% RH max.

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