

# Features

# Regulated Converters

- DIP16, Mini DIP16 or SMD package style
- 1kVDC, 2kVDC or 3kVDC isolation
- Continuous short circuit protected
- Low ripple and noise
- IEC/EN60950-1 certified
- Efficiency up to 83%



## RW2

# 2 Watt MINI DIP16, DIP16 or SMD Single & Dual Output



IEC/EN60950-1 certified

### PREFERRED ALTERNATIVES

For new medical applications:

**REM3.5E**



## Description

High power-density, 2:1 input voltage range and a wide temperature range of -40°C to +85°C are just some of the characteristics of this versatile DIP16 converter, ideal for highly sophisticated industrial designs where a regulated converter is required but space is at a premium. Three different case styles and isolation options are available.

## Selection Guide

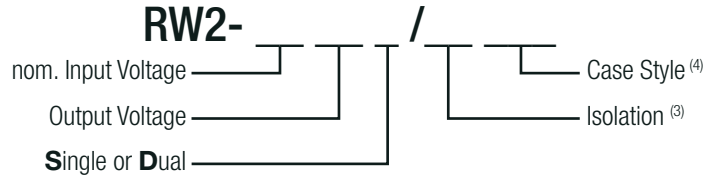
Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. <sup>(1)</sup> [%]	max. Capacitive Load <sup>(2)</sup> [µF]
RW2-053.3S	4.5-9	3.3	500	68	4700
RW2-0505S	4.5-9	5	400	73	1000
RW2-0512S	4.5-9	12	166	75	1000
RW2-0515S	4.5-9	15	134	75	1000
RW2-123.3S	9-18	3.3	500	69	4700
RW2-1205S	9-18	5	400	75	1000
RW2-1212S	9-18	12	166	80	1000
RW2-1215S	9-18	15	134	80	1000
RW2-243.3S	18-36	3.3	500	70	4700
RW2-2405S	18-36	5	400	78	1000
RW2-2412S	18-36	12	166	83	1000
RW2-2415S	18-36	15	134	83	1000
RW2-483.3S	36-72	3.3	500	73	4700
RW2-4805S	36-72	5	400	76	1000
RW2-4812S	36-72	12	166	81	1000
RW2-4815S	36-72	15	134	81	1000
RW2-0505D	4.5-9	±5	±200	73	±680
RW2-0509D	4.5-9	±9	±111	74	±680
RW2-0512D	4.5-9	±12	±83	75	±680
RW2-0515D	4.5-9	±15	±67	75	±680
RW2-1205D	9-18	±5	±200	75	±680
RW2-1209D	9-18	±9	±111	78	±680
RW2-1212D	9-18	±12	±83	80	±680
RW2-1215D	9-18	±15	±67	80	±680
RW2-2405D	18-36	±5	±200	78	±680
RW2-2409D	18-36	±9	±111	81	±680
RW2-2412D	18-36	±12	±83	83	±680
RW2-2415D	18-36	±15	±67	83	±680
RW2-4805D	36-72	±5	±200	78	±680
RW2-4809D	36-72	±9	±111	81	±680
RW2-4812D	36-72	±12	±83	83	±680
RW2-4815D	36-72	±15	±67	83	±680

### 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 on the converter

**Model Numbering**



**Notes:**

Note3: „/H2“ = 2kVDC isolation; „/H3“ = 3kVDC isolation; without suffix standard 1kVDC isolation

Note4: add suffix „/SMD“ for SMD package or „/B“ for Mini DIP16 THT package;  
without suffix = standard DIP16 package (refer to “DIP16”)

**Ordering Examples:**

RW2-2405S/B:	18-36Vin	5Vout	Single	1kVDC Isolation	Mini DIP16 Package
RW2-1212D/H2:	9-18Vin	±12Vout	Dual	2kVDC Isolation	DIP16 Package
RW2-0515D/H3/SMD:	4.5-9Vin	±15Vout	Dual	3kVDC Isolation	SMD Package
RW2-4812S/H2/B	36-72Vin	12Vout	Single	2kVDC Isolation	Mini DIP16 Package

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

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	5VDC	4.5VDC		9VDC
	nom. Vin= 12VDC	9VDC		18VDC
	24VDC	18VDC		36VDC
	48VDC	36VDC		72VDC
Minimum Load (5)		10%		
Internal Operating Frequency		100KHz		700kHz
Output Ripple and Noise	20MHz BW			50mVp-p

**Notes:**  
Note5: Operation below 10% load won't harm the converter, but specifications may not be met.

REGULATIONS		
Parameter	Condition	Value
Output Accuracy		±2.0% typ.
Line Regulation		±0.5% max.
Load Regulation	20% to 100% load	0.5% typ.

PROTECTION		
Parameter	Type	Value
Short Circuit Protection (SCP)		continuous
Isolation Voltage (6)	standard without suffix	tested for 1 second rated for 1 minute 1kVDC 500VAC/60Hz
	/H2 version	tested for 1 second rated for 1 minute 2kVDC 1kVAC/60Hz
	/H3 version	tested for 1 second rated for 1 minute 3kVDC 1.5kVAC/60Hz
Isolation Resistance		1GΩ min.
Isolation Capacitance		30pF 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

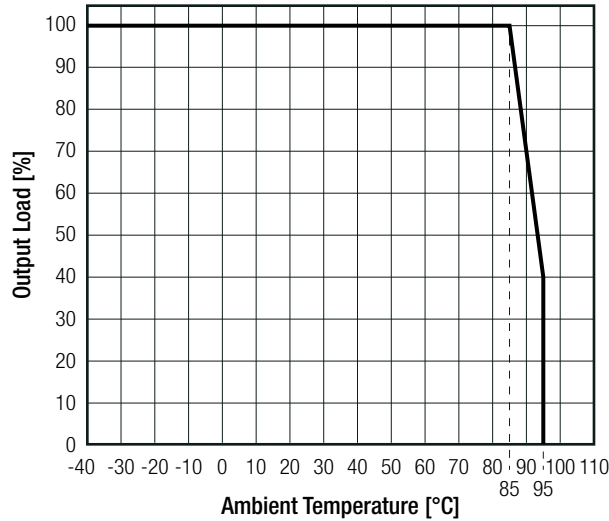
**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

**ENVIRONMENTAL**

Parameter	Condition		Value
Operating Temperature Range	full load @ free air convection (see graph)		-40°C to +85°C
Maximum Case Temperature			+100°C
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	4366 x 10 <sup>3</sup> hours 658 x 10 <sup>3</sup> hours

**Derating Graph**

(@ Chamber and free air convection)

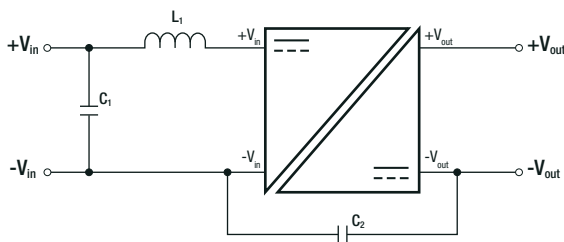


**SAFETY AND CERTIFICATIONS**

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	SPCLVD1605077-10	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
Medical Electric Equipment, General Requirements for Safety and Essential Performance	SPC1006048	IEC60601-1:1988 + A2:1995 EN60601-1:1990 + A13:1996
EAC	RU-AT.AB49.B.09571	TP TC 004/2011
RoHS2+	TWNC00635328	RoHS-2011/65/EU

EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment - Emission requirements <sup>(8)</sup>	with external filter (see filter suggestion below)	EN55032, Class A EN55032, Class B

**EMC Filtering Suggestions according to EN55032**



**Notes:**

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

**Component List Class A**

Models	C1	C2	L1
RW2-1212S/H2/SMD	10µF/100V MLCC	330pF	<a href="#">5.6µH choke RLS-567</a>
RW2-2405S/H2			

**Component List Class B**

Models	C1	C2	L1
RW2-1212S/H2/SMD	10µF/100V MLCC	330pF	<a href="#">22µH choke RLS-226</a>
RW2-2405S/H2			

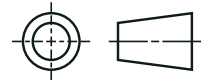
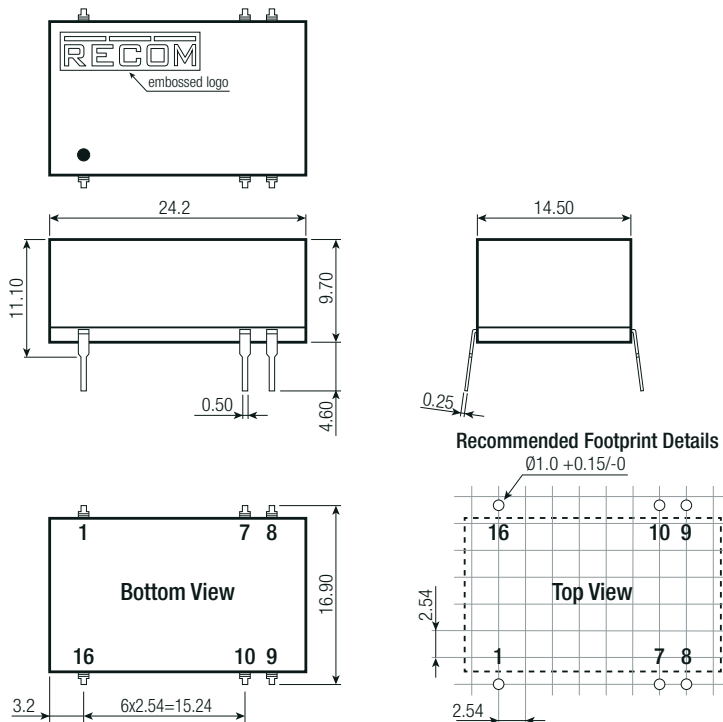
**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

### 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)	Mini DIP16	22.1 x 12.55 x 8.50mm
	DIP16	24.2 x 14.50 x 9.70mm
	SMD	24.2 x 14.50 x 10.20mm
Weight		6.4g typ.

#### Dimension Drawing (mm)

##### DIP16

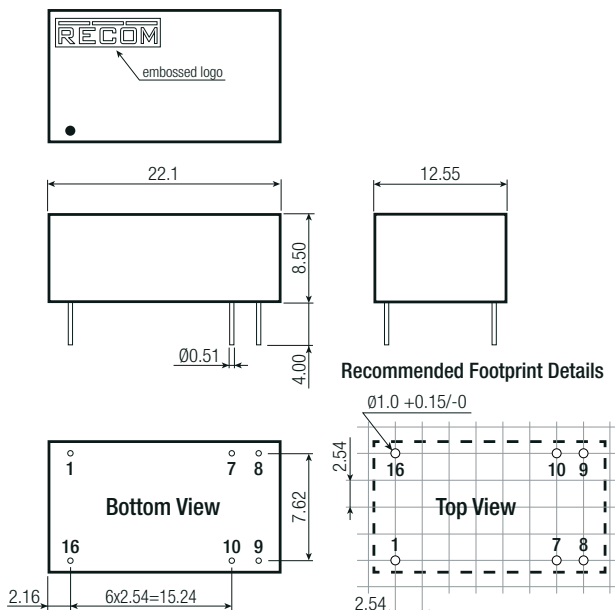


#### Pinning information

Pin #	Single	Dual
1	-Vin	-Vin
7	NC	NC
8	NC	Com
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

Tolerance: xx.x= ±0.5mm  
xx.xx= ±0.35mm

##### Mini DIP16 (/B)



#### Pinning information

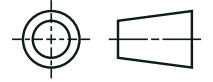
Pin #	Single	Dual
1	-Vin	-Vin
7	NC	NC
8	NC	Com
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

Tolerance: xx.x= ±0.5mm  
xx.xx= ±0.35mm

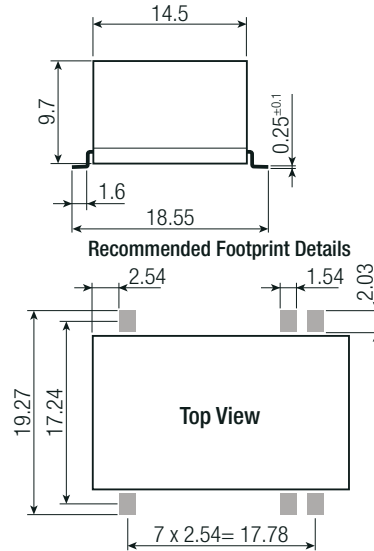
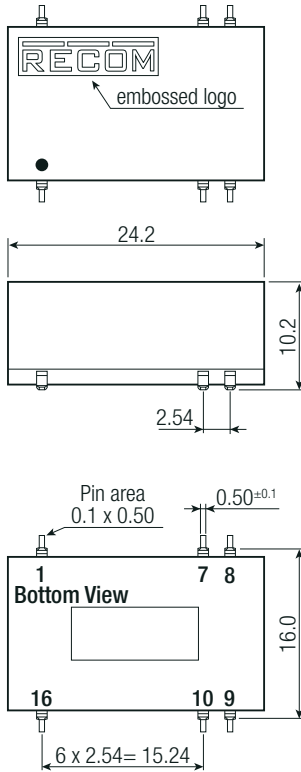
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**Specifications** (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

**Dimension Drawing SMD (mm)**



SMD (/SMD)



**Pinning information**

Pin #	Single	Dual
1	-Vin	-Vin
7	NC	NC
8	NC	Com
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

Tolerance: xx.x=±0.5mm  
xx.xx=±0.35mm

PACKAGING INFORMATION		
Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	530.0 x 21.0 x 18.0mm
Packaging Quantity	DIP16 and SMD Mini DIP16	20pcs 22pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	95% RH max.

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