

# Features

# Regulated Converters

- 6-Side Shielding
- External ON/OFF control
- 1.6kVDC Isolation
- UL/CSA/EN-60950-1 (Pending)
- 4:1 Input Voltage Range
- Continuous Short Circuit Protection
- Efficiency up to 89.5%
- Fixed Switching Frequency



## REC30-Z

**30 Watt**  
**2" x 1.6"**  
**Single and Dual Output**

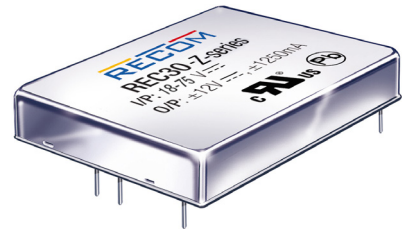


### Description

The REC30-xxxxS\_DZ -series offer single and dual regulated outputs in a 2"x1.6" package with 1.6kVDC isolation and are suitable for higher power industrial applications. Remote on/off control is standard. The higher current outputs have raised output voltages to compensate for track losses as standard. The converter is fully certified to UL/EN/IEC safety standards.

### Selection Guide

Part Number	Input Voltage Range (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	max. Capacitive Load <sup>(1)</sup> (µF)
REC30-243.4SZ	9-36	3.4	6000	86.5	10000
REC30-245.1SZ	9-36	5.1	6000	87.5	6800
REC30-2412SZ	9-36	12	2500	88.5	1800
REC30-2415SZ	9-36	15	2000	89	1000
REC30-2412DZ	9-36	±12	±1250	88.5	±800
REC30-2415DZ	9-36	±15	±1000	89	±500
REC30-483.4SZ	18-75	3.4	6000	87	10000
REC30-485.1SZ	18-75	5.1	6000	88	6800
REC30-4812SZ	18-75	12	2500	89	1800
REC30-4815SZ	18-75	15	2000	89.5	1000
REC30-4812DZ	18-75	±12	±1250	88	±800
REC30-4815DZ	18-75	±15	±1000	88.5	±500



#### Notes:

Note1: Max. capacitive load is tested at nominal input voltage and full load.



IEC/EN60950-1 (Pending)  
 UL60950 (Pending)  
 CSA C22.2 NO. 60950 (Pending)  
 EN55022 Certified

### Model Numbering



#### Notes:

Note2: 24 = 9-36Vin  
 48 = 18-75Vin

#### Examples:

e.g. REC30-1212S, Single Output, 9-18Vin (2:1) and 12Vout  
 e.g. REC30-2412D. Dual Output, 18-36Vin (2:1) and ±12Vout

**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage, full load and after warm up unless otherwise specified)

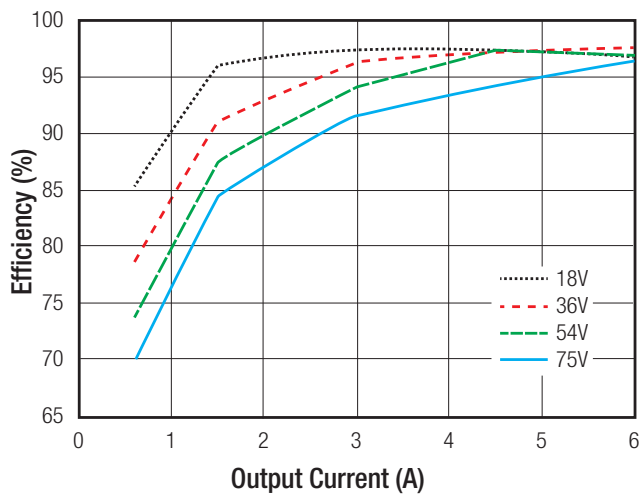
BASIC CHARACTERISTICS					
Parameter	Condition		Min.	Typ.	Max.
Input Voltage Range	24V		9VDC		36VDC
	48V		18VDC		75VDC
Start/up Time				20mS	
	24V	DC-DC ON		8.3VDC	
		DC-DC OFF		7.9VDC	
	48V	DC-DC ON		17.4VDC	
		DC-DC OFF		16.7VDC	
Remot ON/OFF	DC-DC ON DC-DC OFF				Open or $3V < V_r < 12V$ Short or $0V < V_r < 1.2V$
Operating Frequency				350kHz	
Minimum Load				0%	
Output Ripple and Noise <sup>(4)</sup>					100mVp-p

**Notes:**

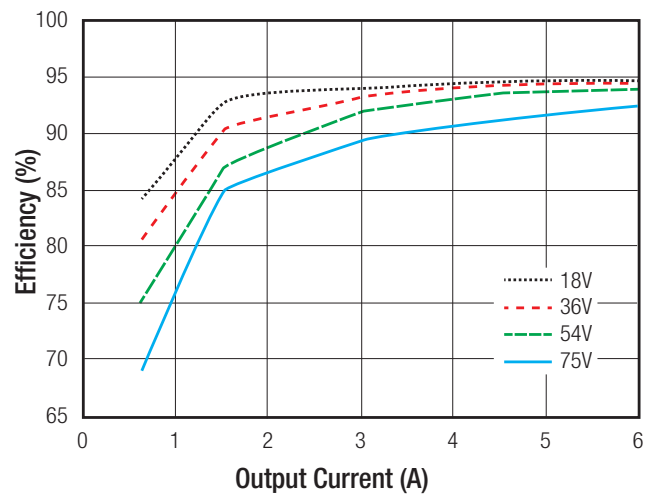
Note4: Ripple and Noise is measured with a 20MHz bandwidth and a 0.1 $\mu$ F ceramic capacitor.

**Efficiency vs. Load**

REC30-485.1SZ



REC30-4815DZ

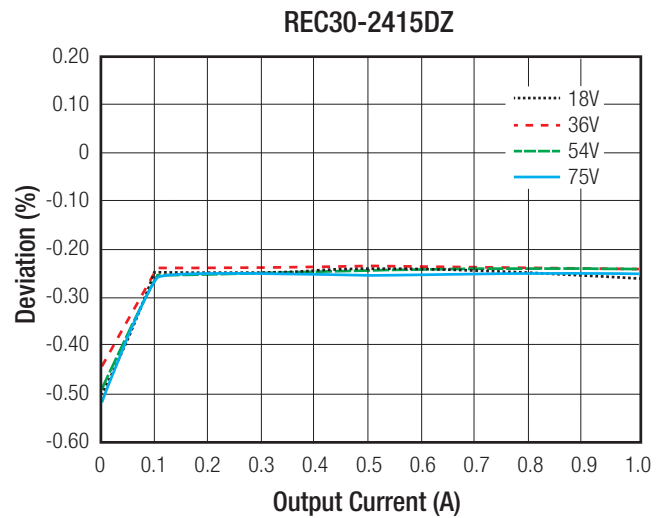
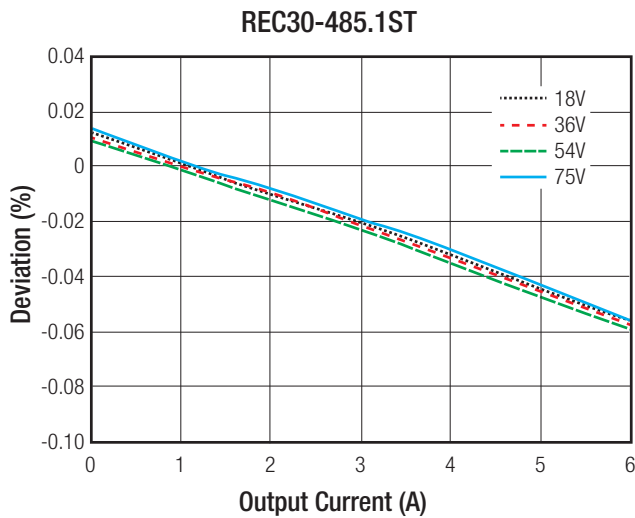


REGULATIONS				
Parameter	Condition	Type	Values	
Output Voltage Accuracy			±1% max.	
Voltage Adjustability			±10% typ.	
Line Voltage Regulation	low line to high line, full load		±0.2% max.	
Load Voltage Regulation	10% to 100% load	single output	±0.5% max.	
		dual output	±1% max.	
Cross Regulation	25% to 100% load	dual output	±5% max.	
Transient Response Recovery Time	25% load step change		250 $\mu$ S typ.	

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**Specifications** (measured at  $T_a=25^\circ\text{C}$ , nominal input voltage, full load and after warm up unless otherwise specified)

Deviation vs. Load



**PROTECTIONS**

Parameter	Condition	Value
Short Circuit Protection (SCP)		continuous, automatic recovery
Over Voltage Protection (OVP)	Zener Diode Clamp	3.4Vout
		5.1Vout
		12Vout
		15Vout
Over Load Protection (OLP)		180% typ.
Isolation Voltage	I/P to O/P	1.6kVDC / 1 minute
Isolation Capacitance		3900pF typ.
Isolation Resistance		1GΩ min.

**ENVIRONMENTAL**

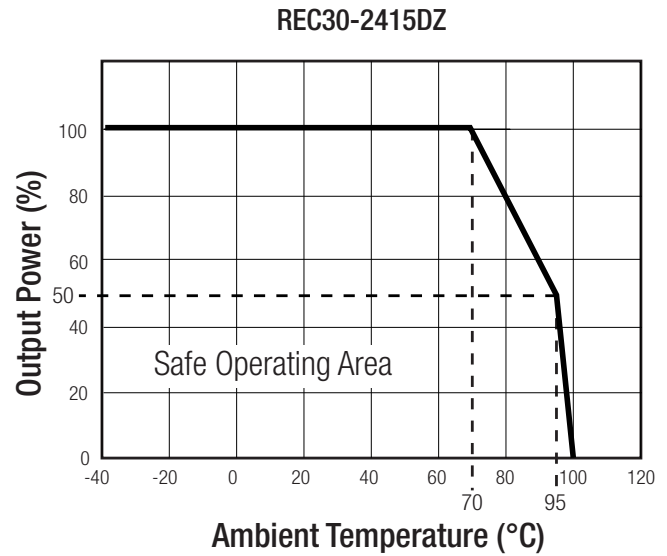
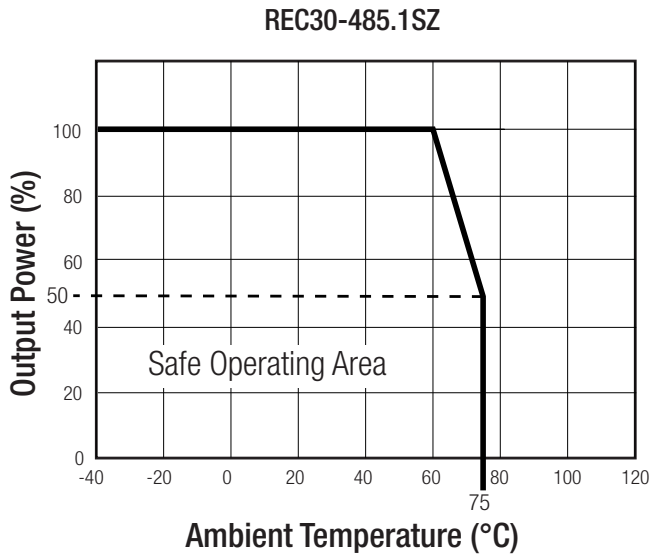
Parameter	Condition	Value
Operating Temperature Range	with derating	-40°C to +85°C
Maximum Case Temperature		+105°C
Temperatur Coefficient		TBD
Operating Humidity	non-condensing	5% - 95% RH max.
Vibration		MIL-STD-202G
MTBF	according to MIL-HDBK-217F, 25°C, referring to REC30-2415DZ	1541 x 10 <sup>3</sup> hours

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**Specifications** (measured at  $T_a=25^{\circ}\text{C}$ , nominal input voltage, full load and after warm up unless otherwise specified)

**Derating Graph**

@ nominal input voltage, full load and natural convection (20LFM)



**Notes:**

Note5: For more details, please contact our technical support service at [TechsupportAT@recom-power.com](mailto:TechsupportAT@recom-power.com)

**SAFETY AND CERTIFICATIONS**

Certificate Type	Report / File Number	Standard
CB General Safety	E224736	IEC60950-1, 2nd Edition, 2013
UL General Safety		UL60950-1, 2nd Edition, 2014
EN General Safety		EN60950-1, 2nd Edition, 2013
CAN/CSA General Safety		C22.2 No. 60950-1-07, 2014

EMC Compliance	Condition	Standard / Criterion
EMI <sup>(6)</sup>	with external filter (see filter suggestions)	EN55022, Class A,B
ESD	Air: $\pm 8\text{kV}$ ; Contact: $4\text{kV}$	EN61000-4-2, Criteria B
Radiated Immunity	$10\text{V/m}$	EN61000-4-3, Criteria A
Fast Transient	$\pm 1\text{kV}$	EN61000-4-4, Criteria B
Surge <sup>(7)</sup>	$\pm 1\text{kV}$	EN61000-4-5, Criteria A
Conducted Immunity	$10\text{Vr.m.s}$	EN61000-4-6, Criteria A
Power Magnetic Field	$50\text{Hz } 1\text{A/m (r.m.s)}$	EN61000-4-8, Criteria A

**Notes:**

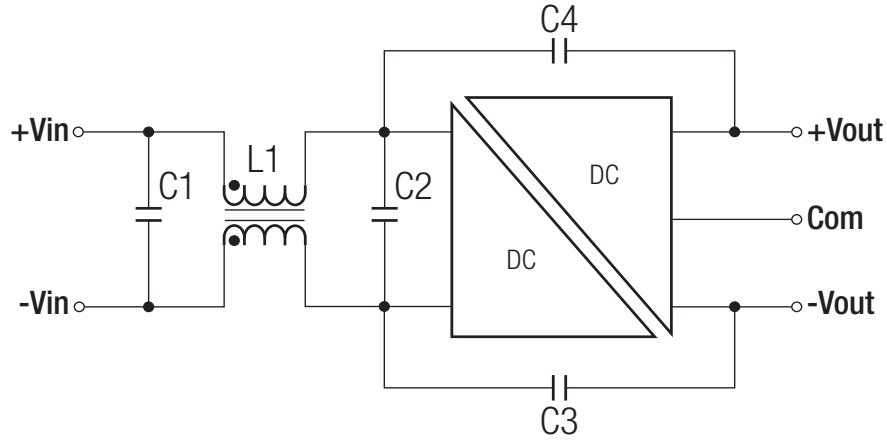
Note6: REC30-Z Series can meet EN55022 Class A without any external filter.

Note7: An external MOV is required if the module has to meet EN61000-4-5. The MOV suggest: NichTek SVI32-380

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**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage, full load and after warm up unless otherwise specified)

EMC Filtering - Suggestions for Class B

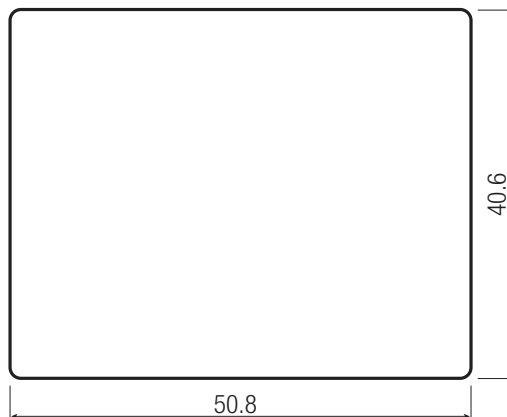


MODEL	C1	C2	L1	C3	C4
REC30-24xxSZ	330 $\mu$ F/50V	10 $\mu$ F/50V	1.3mH ref.:	2200pF/3kV	NA
REC30-48xxSZ	330 $\mu$ F/100V	10 $\mu$ F/100V	1.3m ref.:	2200pF/3kV	NA
REC30-24xxDZ	330 $\mu$ F/50V	10 $\mu$ F/50V	1.3mH ref.:	2200pF/3kV	2200pF/3kV
REC30-48xxDZ	330 $\mu$ F/100V	10 $\mu$ F/100V	1.3mH ref.:	2200pF/3kV	2200pF/3kV

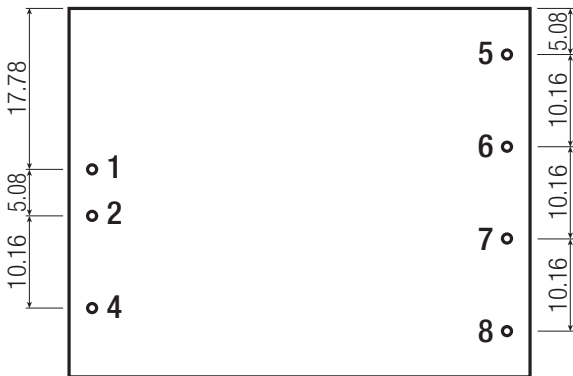
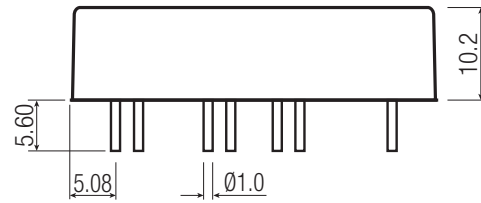
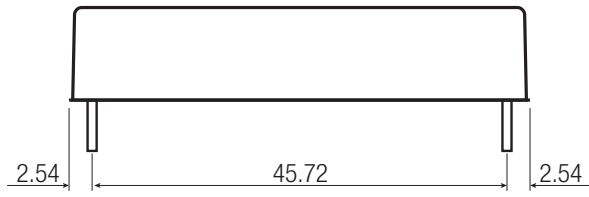
**DIMENSION and PHYSICAL CHARACTERISTICS**

Parameter	Type	Value
Material	Case Base Potting	Nickel plated copper non conductive black plastic (UL94V-0) Epoxy
Package Dimension (LxWxH)		50.8 x 40.6 x 10.2mm
Package Weight		48g

Dimension Drawing (mm)



**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage, full load and after warm up unless otherwise specified)



**Pin Connections**

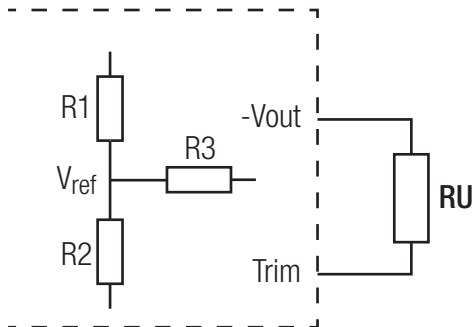
Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	Remote ON/OFF	
5	No Pin	+Vout
6	+Vout	Com
7	-Vout	-Vout
8	Trim	Trim

Tolerance: xx.x= ±0.5mm  
 xx.xx= ±0.35mm  
 Pin: ±0.05mm

**INSTALLATION and APPLICATION**

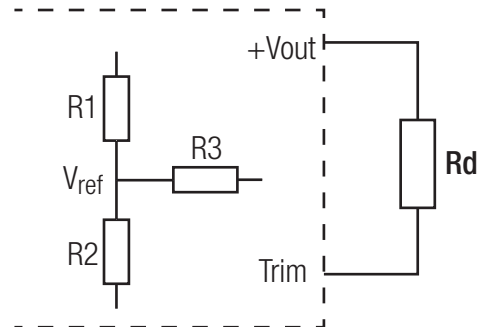
**External Output Voltage Trimming**

Trim up



$$RU = \frac{aR2}{R2-a} - R3 \quad a = \frac{Vref}{V0 - Vref} \times R1$$

Trim down



$$Rd = \frac{bR1}{R1-b} - R3 \quad b = \frac{Vref}{V0 - Vref} \times R2$$

**Notes:**

- Note8: RU and Rd is mean trim resistor, please check the formula.
- Note9: a & b: user define parameter, no actual meanings.
- Note10: V0 is mean trim up/down voltage.
- Notw11: Value for R1, R2, R3 and Vref refer to table.

Output Voltage	3.4V	5.1V	12V	15V
R1	2.1K	2.55K	9.53K	9.09K
R2	1.198561K	2.449341K	2.498617K	1.810845K
R3	6.8K	9.76K	16.9K	13K
Vref	1.240	2.500	2.500	2.500

**Specifications** (measured at  $T_a = 25^\circ\text{C}$ , nominal input voltage, full load and after warm up unless otherwise specified)

**PACKAGING INFORMATION**

Packaging Dimension (LxWxH)	Tube	54.5 x 20.8 x 520.0mm
Packaging Quantity		11pcs
Storage Temperature Range		-55°C to +125°C

**Tube Dimension Drawing (mm)**

