

REC6K-RW Series \diamond Regulated DC-DC Converter

6W \diamond Isolated Output \diamond 4:1 Input

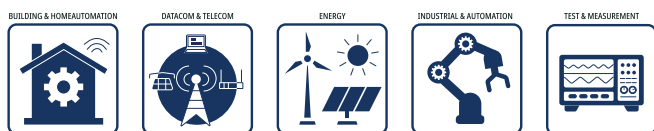
FEATURES

- Industry standard 6W DIP24 package
- Derates to 105°C ambient temperature
- Wide 4:1 input
- UVLO, SCP
- 3 year warranty



Dimensions (LxWxH): 32.1 x 20.6 x 10.2mm (1.26 x 0.81 x 0.40 inch)
15.2g (0.034 lbs)

APPLICATIONS



SAFETY & EMC



DESCRIPTION

The REC6K-RW series are high power density, wide input voltage range 6W DC/DC converters in an industry standard DIP24 case size. Despite their small size, the REC6K-RW converters are fully specified devices with output currents up to 1.5 amps, high efficiency, no minimum load, 4000VDC/1min isolation, tight regulation, and low ripple/noise figures. The outputs are also fully protected against short circuits, overcurrent, and overvoltage. These converters fit well in industrial applications where board space is at a premium.

SELECTION GUIDE

Part Number	Input Voltage Range [VDC]	nom. Output Voltage [VDC]	Output Current [mA]	Efficiency ⁽¹⁾ typ. [%]	max. Capacitive ⁽²⁾ Load [μ F]
REC6K-243.3SRW	9-36	3.3	1500	77	5000
REC6K-2405SRW	9-36	5	1200	81	5000
REC6K-2409SRW	9-36	9	667	84	3000
REC6K-2412SRW	9-36	12	500	87	2000
REC6K-2415SRW	9-36	15	400	87	1500
REC6K-2424SRW	9-36	24	250	87	270
REC6K-2405DRW	9-36	\pm 5	\pm 600	83	\pm 1500
REC6K-2412DRW	9-36	\pm 12	\pm 250	84	\pm 1500
REC6K-2415DRW	9-36	\pm 15	\pm 200	87	\pm 1000
REC6K-483.3SRW	18-75	3.3	1500	75	6000
REC6K-4805SRW	18-75	5	1200	80	6000
REC6K-4809SRW	18-75	9	667	82	3000
REC6K-4812SRW	18-75	12	500	84	1500

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Part Number	Input Voltage Range [VDC]	nom. Output Voltage [VDC]	Output Current [mA]	Efficiency ⁽¹⁾ typ. [%]	max. Capacitive ⁽²⁾ Load [μF]
REC6K-4815SRW	18-75	15	400	84	1500
REC6K-4824SRW	18-75	24	250	84	560
REC6K-4805DRW	18-75	±5	±600	81	±6000
REC6K-4812DRW	18-75	±12	±250	83	±1500
REC6K-4815DRW	18-75	±15	±200	87	±1000

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



BASIC CHARACTERISTICS (measured @ T_{AMB} = 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Parameter	Condition		Min.	Typ.	Max.	
Internal Input Filter			Pi type			
Input Voltage Range	nom. V _{IN} = 24VDC		9VDC		36VDC	
	nom. V _{IN} = 48VDC		18VDC		75VDC	
Input Under Voltage Lockout (UVLO)	nom. V _{IN} = 24VDC	DC-DC ON	8.1VDC		8.6VDC	
		DC-DC OFF	7VDC		8.1VDC	
	nom. V _{IN} = 48VDC	DC-DC ON	16.3VDC		17.3VDC	
		DC-DC OFF	14.1VDC		15.1VDC	
Input Current					320mA	
Quiescent Current					10mA	
Output Power	V _{OUT} = 3.3VDC				5W	
	V _{OUT} = others				6W	
Minimum Load			0%			
Start-up time					50ms	
Rise Time					30ms	
Output Ripple and Noise ⁽³⁾	20MHz BW	nom. V _{IN} = 24VDC	V _{OUT} = 3.3, 5VDC	single output		100mVp-p
			others	single output		50mVp-p
				dual output		100mVp-p
		nom. V _{IN} = 48VDC	single output			50mVp-p
	dual output			100mVp-p		

Note3: Measurements are made with a 0.1 μF MLCC & 10 μF E-cap in parallel across output. (low ESR)
The test setup can have an impact on ripple noise values (placement of scope probe, capacitors, it's specifications, wires, PCB tracks, distances, etc.)

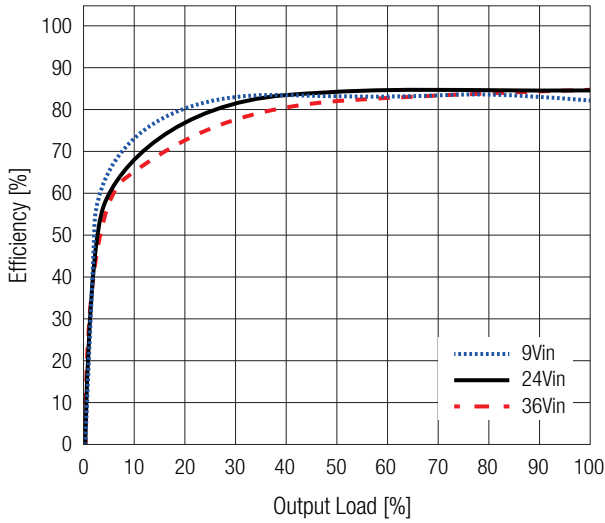
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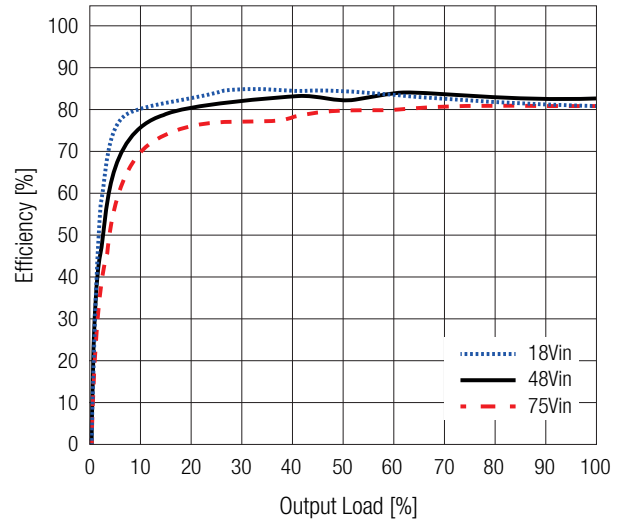
BASIC CHARACTERISTICS (measured @ $T_{AMB}=25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

Efficiency vs. Load

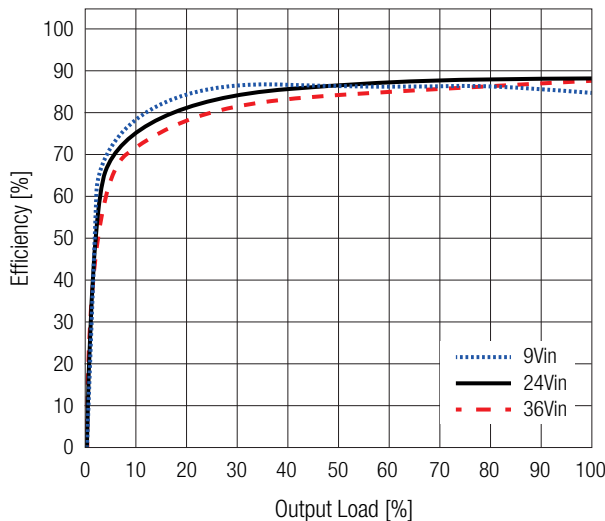
REC6K-2405SRW



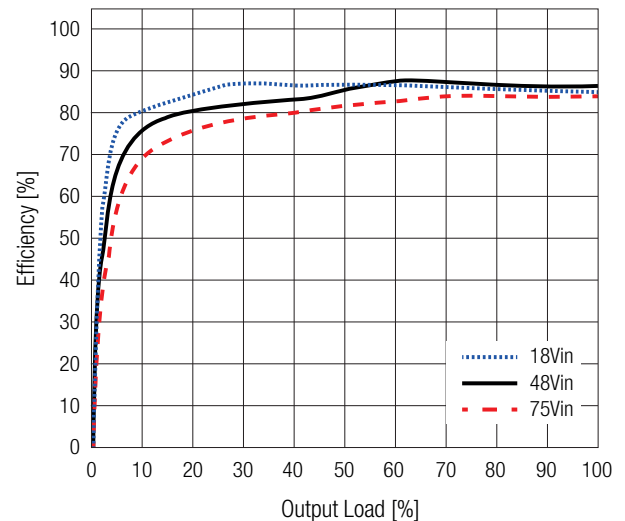
REC6K-4805SRW



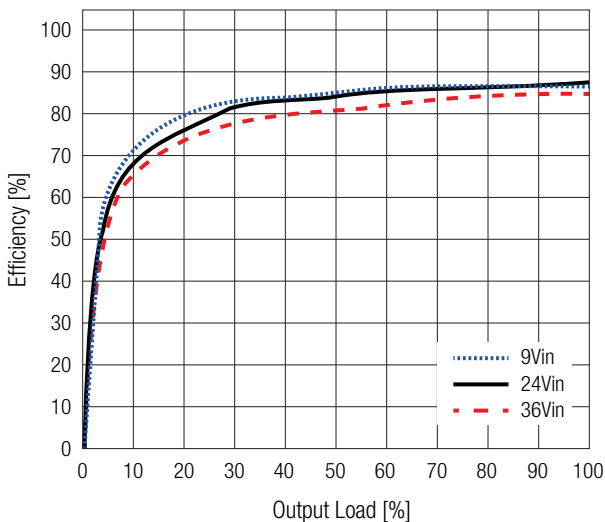
REC6K-2412SRW



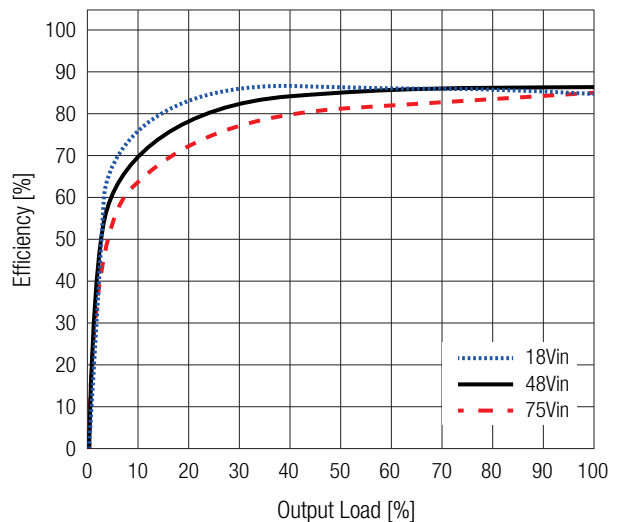
REC6K-4812SRW



REC6K-2424SRW



REC6K-4824SRW

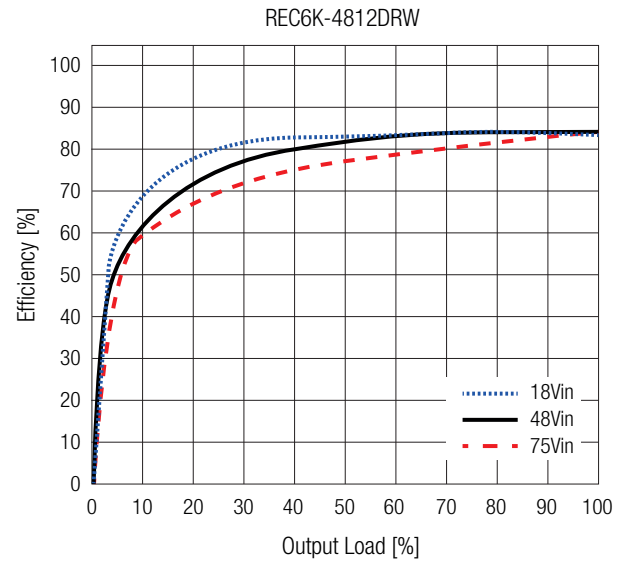
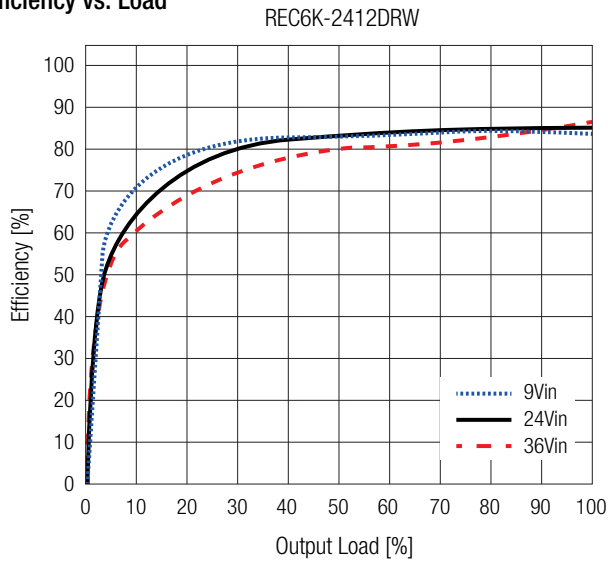


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BASIC CHARACTERISTICS (measured @ $T_{AMB}= 25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

Efficiency vs. Load



REGULATIONS (measured @ $T_{AMB}= 25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

Parameter	Condition		Value
Output Accuracy	@ nom. $V_{IN}=24\text{VDC}$	@ $V_{OUT}= 3.3\text{VDC}$	single $\pm 3.0\%$ max.
	@ nom. $V_{IN}=48\text{VDC}$	@ $V_{OUT}= 05\text{VDC}$	
	others		
Line Regulation	low line to high line, full load		$\pm 1.0\%$ max.
Load Regulation	0% to 100% load		$\pm 1.0\%$ max.
Cross Regulation	10% to 100% load	dual output only	$\pm 5.0\%$ max.
Transient Response	50% load step change (50% - 100%)		500mV typ.
	recovery time		500 μs typ.

PROTECTIONS (measured @ $T_{AMB}= 25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

Parameter	Condition		Value
Short Circuit Protection (SCP)			continuous, automatic recovery
Over Voltage Protection (OVP)	110%-150% of nom. V_{OUT}		zener diode clamping
Over Current Protection (OCP)	250% of rated I_{OUT}		automatic recovery
Isolation Voltage ⁽⁴⁾	I/P and O/P, according to 62368-1	1 minute	4kVDC
Isolation Resistance	I/P to O/P, $V_{ISO}= 500\text{VDC}$		1G Ω min.
Isolation Capacitance	I/P to O/P, 100kHz/0.1V		2500pF max.
Insulation Grade			functional

ENVIRONMENTAL (measured @ $T_{AMB}= 25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

Parameter	Condition		Value
Operating Temperature Range	with derating	refer to „Derating Graph“	-40 $^{\circ}\text{C}$ to +100 $^{\circ}\text{C}$ / +105 $^{\circ}\text{C}$
Maximum Case Temperature			+125 $^{\circ}\text{C}$
Operating Altitude	according to 62368-1		5000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
Shock			according to MIL-STD-810F
Vibration			according to MIL-STD-810F
MTBF	according to MIL-HDBK-217F, G.B.		$T_{AMB}= +25^{\circ}\text{C}$
			$T_{AMB}= +85^{\circ}\text{C}$

Note4: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note5: Refer to local safety regulations if input over-current protections is also required. Recommended fuse: slow blow type

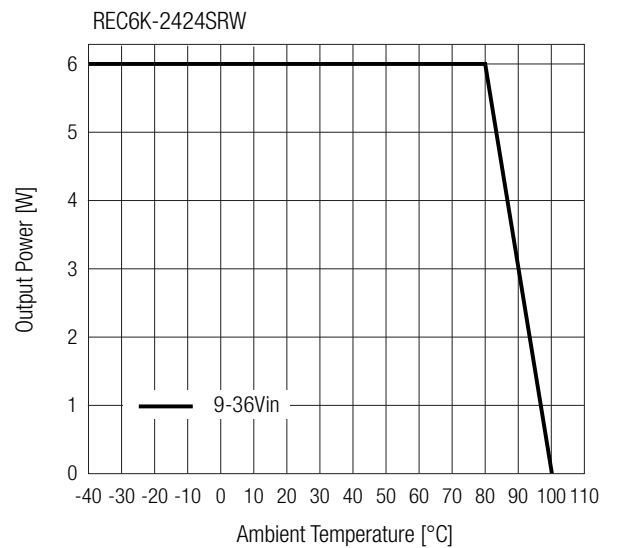
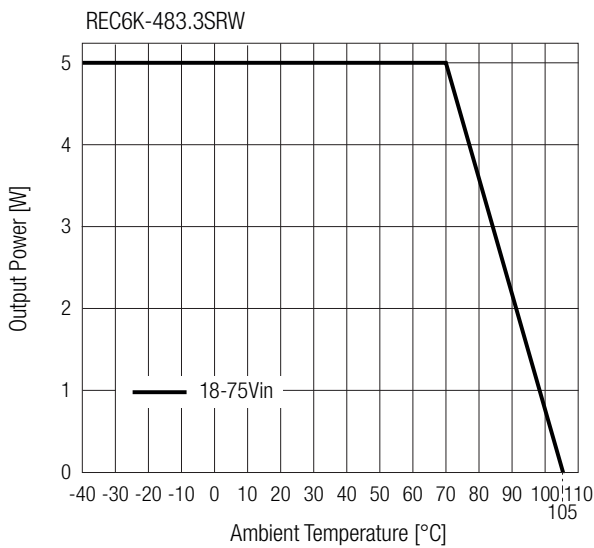
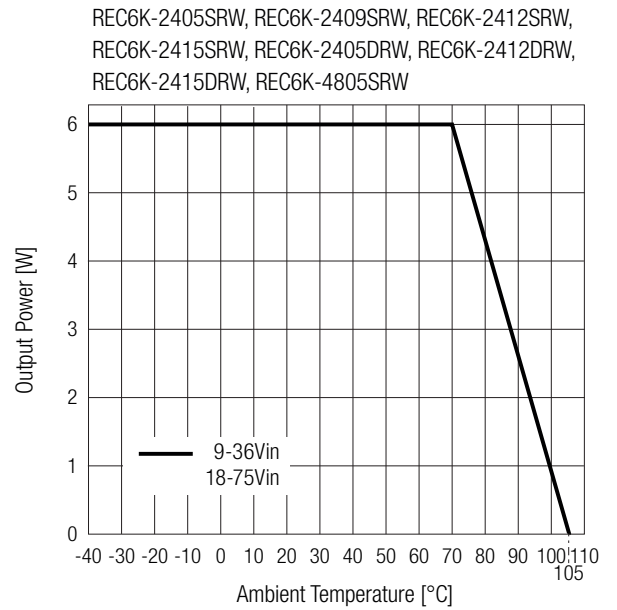
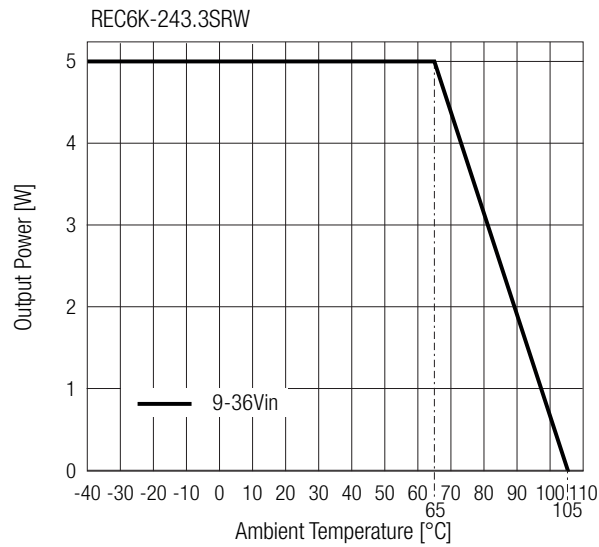
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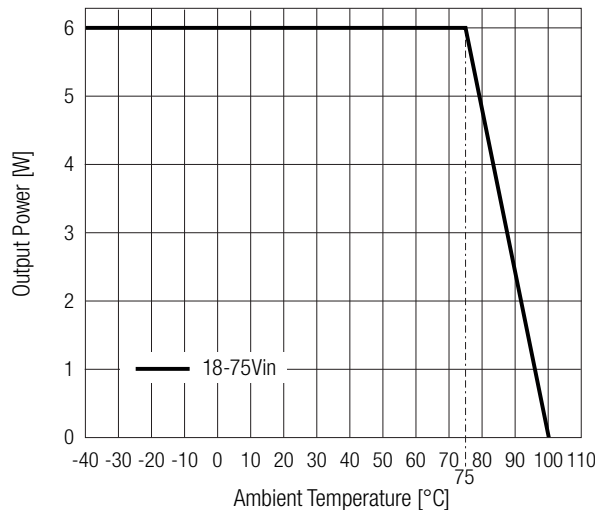
ENVIRONMENTAL (measured @ $T_{AMB} = 25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

Derating Graph

(@ Chamber and natural convection 0.1m/s)



REC6K-4809SRW, REC6K-4812SRW, REC6K-4815SRW,
REC6K-4824SRW, REC6K-4805DRW, REC6K-4812DRW,
REC6K-4815DRW



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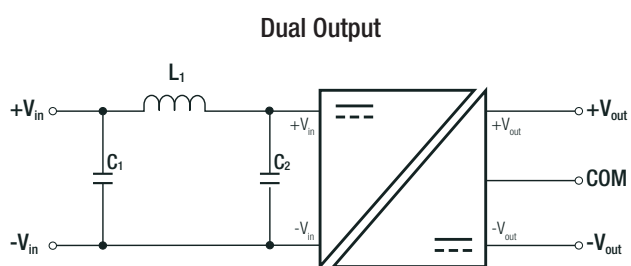
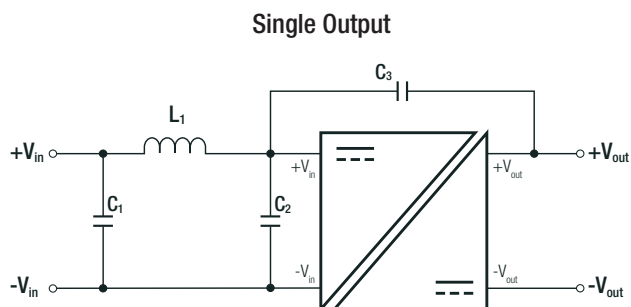
SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E518942-A6005-UL	UL62368-1:2019 3rd Edition CAN/CSA-C22.2 No. 62368-1-19 3rd Edition
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition (CB Scheme)	E518942-A6005-CB-1	IEC62368-1:2018 3rd Edition
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition		EN IEC 62368-1:2020+A11:2020
RoHS2		RoHS 2011/65/EU + AM2015/863

EMC Compliance	Condition	Standard/Criterion
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements	with external filter, refer to below filter suggestions	EN55032, Class B

SAFETY AND CERTIFICATIONS

EMC filter suggestions according to EN55032



Component List Class B				
Model	C1, C2	L1	C3	
REC6K-243.3SRW	10 μ F	RLS 186	-	
REC6K-2409SRW		RLS 567		
REC6K-2412SRW		RLS 126	-	
REC6K-2415SRW				
REC6K-2424SRW				
REC6K-483.3SRW				1nF
REC6K-4809SRW				-
REC6K-4812SRW				470pF
REC6K-4815SRW				-
REC6K-4824SRW				-

Component List Class B		
Model	C1, C2	L1
all dual types	10 μ F	RLS 126

DIMENSION & PHYSICAL CHARACTERISTICS

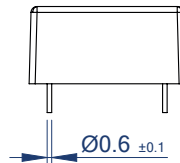
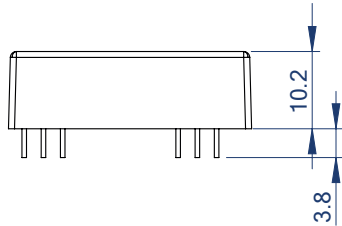
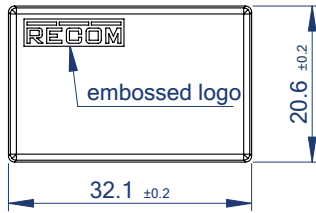
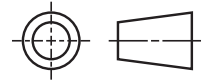
Parameter	Type	Value
Material	case	plastic, (UL94 V-0)
	potting	silicone, (UL94 V-0)
	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		32.1 x 20.6 x 10.2mm 1.26 x 0.81 x 0.40inch
Weight		15.2g typ. 0.034 lbs

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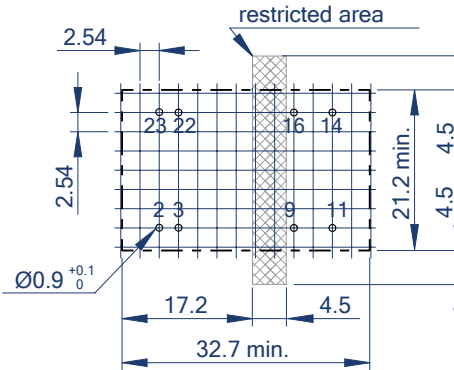
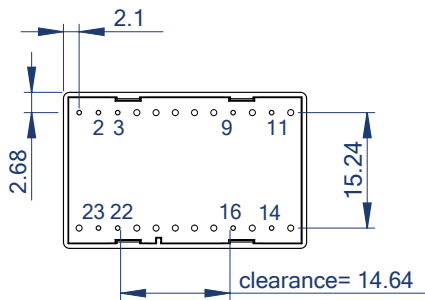
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DIMENSION & PHYSICAL CHARACTERISTICS

Dimension Drawing (mm)



Recommended Footprint Details
Top View



Pin Connections DIP24

Pin #	Single	Dual
2, 3	-Vin	-Vin
9	NC	COM
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	COM
22, 23	+Vin	+Vin

NC= not connected

Tolerances:
x.x= ±0.5mm
x.xx= ±0.25mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	512.9 x 22.2 x 20.9mm
Packaging Quantity		14pcs
Storage Temperature Range		-40°C to +125°C
Storage Humidity	non-condensing	95% RH max.

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.