Technical Data Sheet

REC6K-RW Series ◊ Regulated DC-DC Converter

6W ◊ Isolated Output ◊ 4:1 Input

RECOM DC/DC Converter

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

RoHS² compliant 10 from 10 | Reach compliant | cULus E224736 | IECEE CB SCHEME

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 [µF]
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	±5	±600	83	±1500
REC6K-2412DRW	9-36	±12	±250	84	±1500
REC6K-2415DRW	9-36	±15	±200	87	±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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SELECTION GUIDE

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

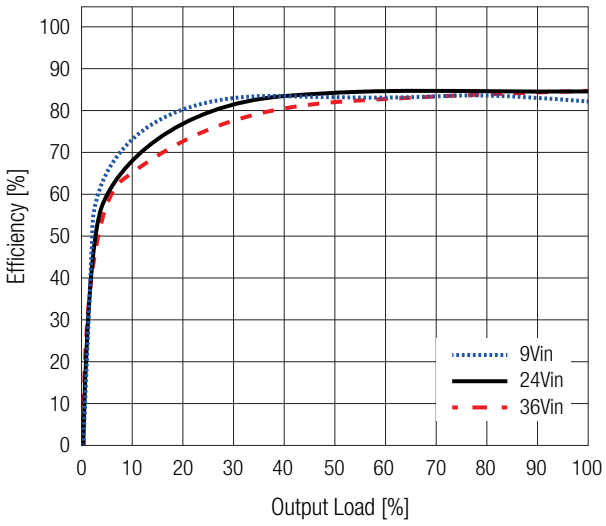
Note3: Measurements are made with a 0.1µF MLCC & 10µF E-cap in parallel across output. (low ESR)
The test setup can have an impact on ripple noise values (placement of scope probe, capacitors, it's specifications, wires, PCB tracks, distances, etc.)

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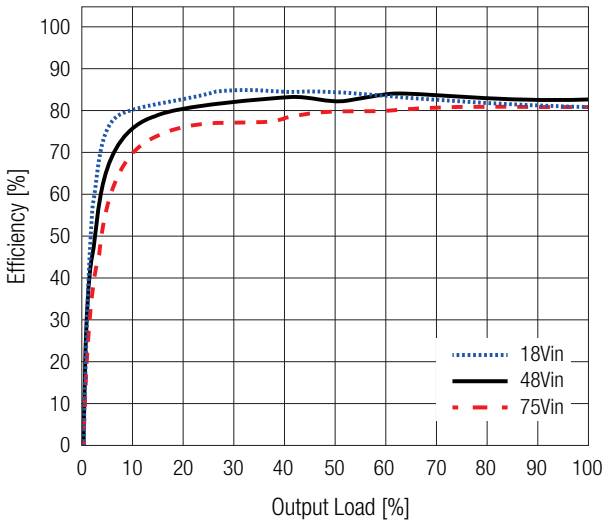
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Efficiency vs. Load

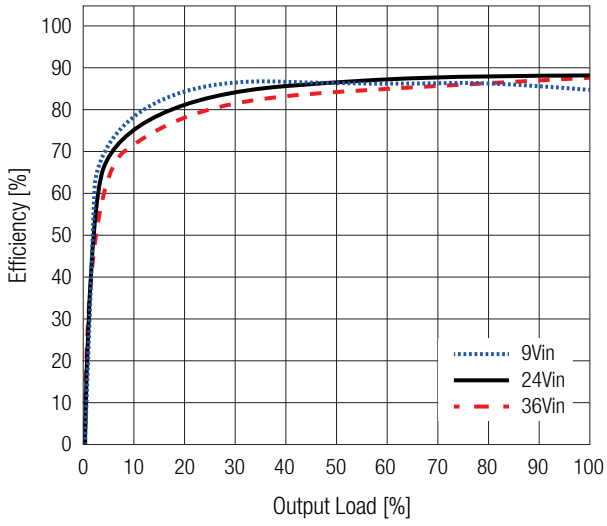
REC6K-2405SRW



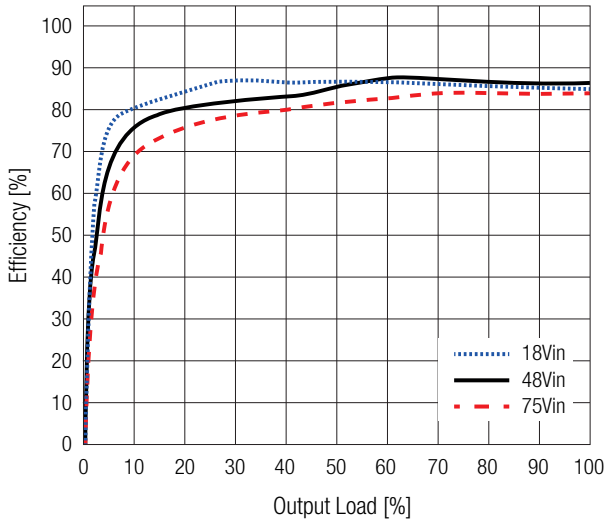
REC6K-4805SRW



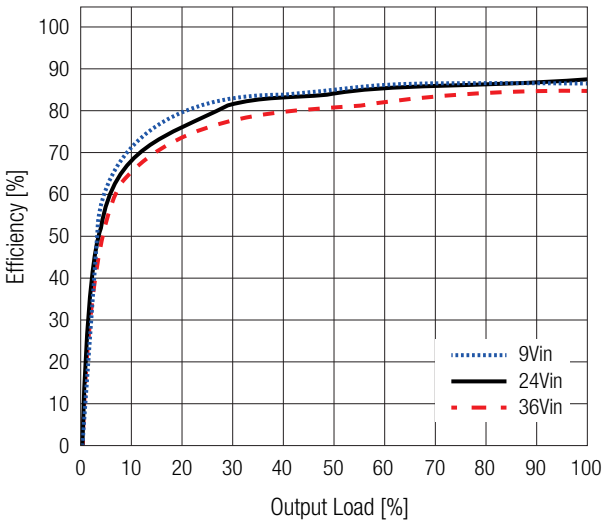
REC6K-2412SRW



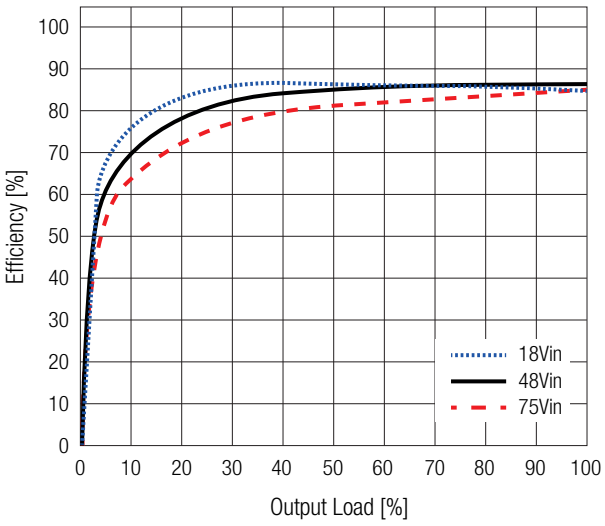
REC6K-4812SRW



REC6K-2424SRW



REC6K-4824SRW



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REC6K-RW series ◊ Regulated DC-DC Converter

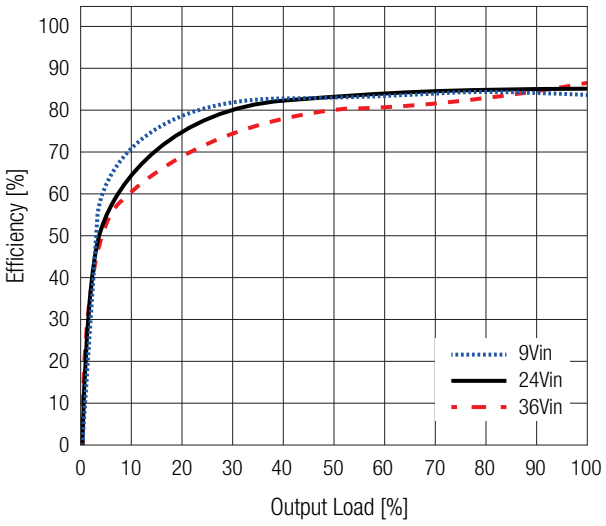
6W ◊ Isolated Output ◊ 4:1 Input

RECOM DC/DC Converter

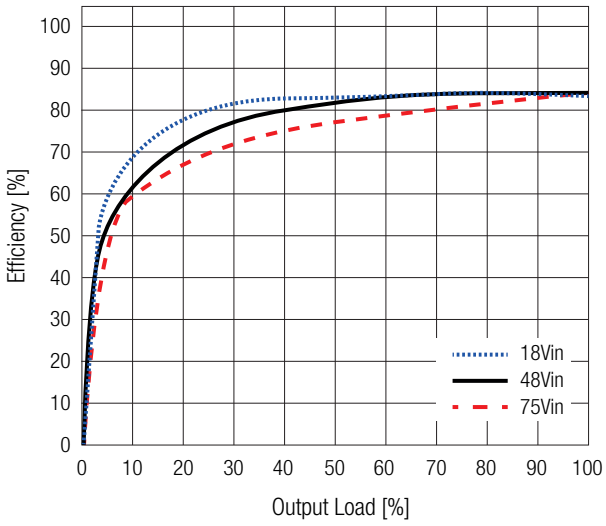
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Efficiency vs. Load

REC6K-2412DRW



REC6K-4812DRW



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

Parameter	Condition			Value
Output Accuracy	@ nom. V_{IN}=24VDC	@ V_{OUT}= 3.3VDC	single	±3.0% max.
	@ nom. V_{IN}=48VDC	@ V_{OUT}= 05VDC	dual	
	others			±2.0% max.
Line Regulation	low line to high line, full load			±1.0% max.
Load Regulation	0% to 100% load			±1.0% max.
Cross Regulation	10% to 100% load	dual output only		±5.0% max.
Transient Response	50% load step change (50% - 100%)			500mV typ.
	recovery time			500µs typ.

PROTECTIONS (measured @ T_{AMB}= 25°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}= 500VDC		1GΩ min.
Isolation Capacitance	I/P to O/P, 100kHz/0.1V		2500pF max.
Insulation Grade			functional

ENVIRONMENTAL (measured @ T_{AMB}= 25°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°C to +100°C / +105°C
Maximum Case Temperature			+125°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°C	1100 x 10^3 hours
		T_{AMB}= +85°C	400 x 10^3 hours

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

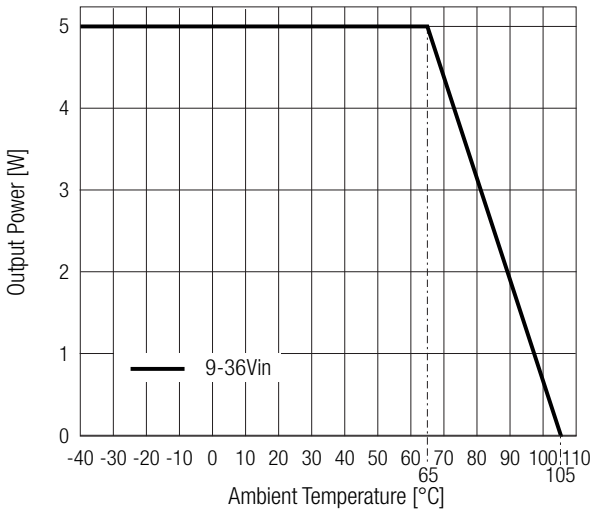
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ENVIRONMENTAL (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

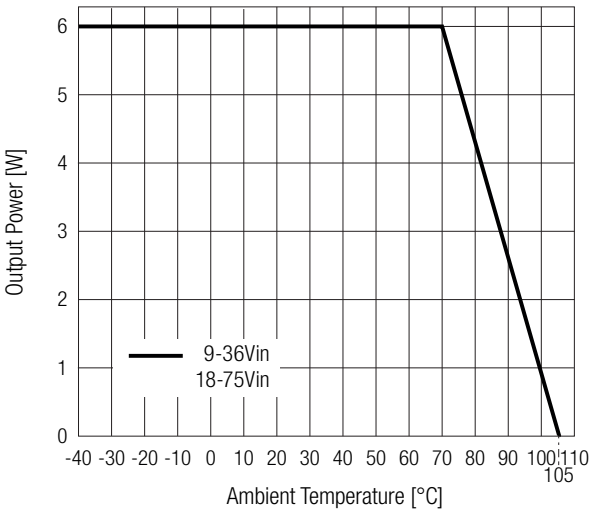
Derating Graph

(@ Chamber and natural convection 0.1m/s)

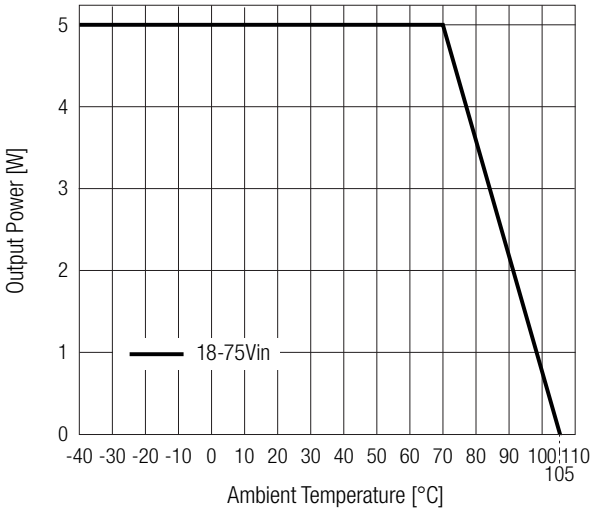
REC6K-243.3SRW



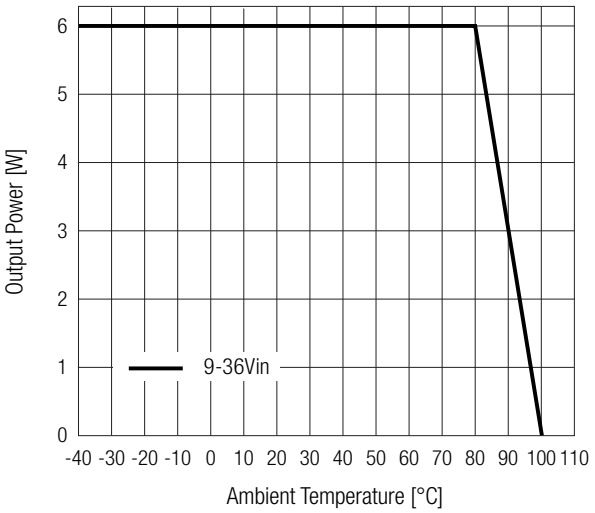
REC6K-2405SRW, REC6K-2409SRW, REC6K-2412SRW, REC6K-2415SRW, REC6K-2405DRW, REC6K-2412DRW, REC6K-2415DRW, REC6K-4805SRW



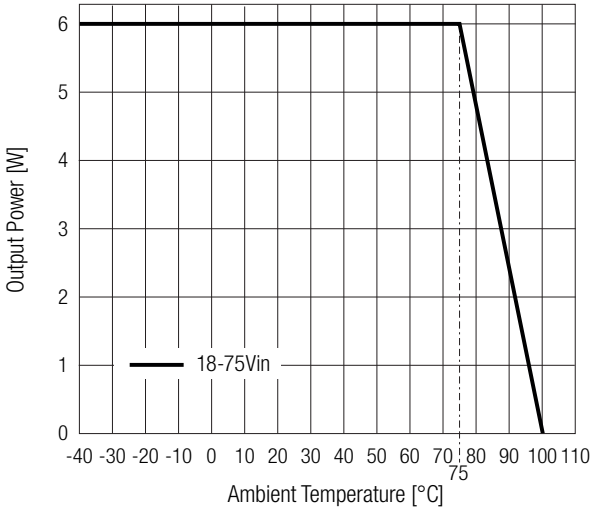
REC6K-483.3SRW



REC6K-2424SRW



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



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SAFETY AND CERTIFICATIONS

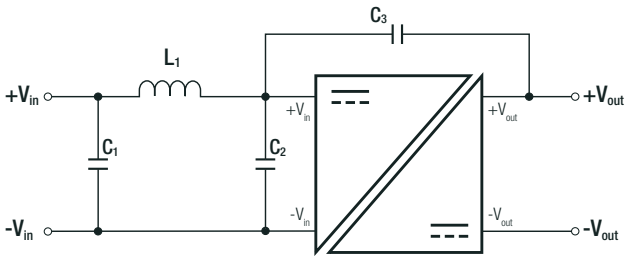
Certificate Type (Safety)	Report Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E518942-A6005-UL	UL62368-1:2019 3rd Edition
		CAN/CSA-C22.2 No. 62368-1-19 3rd Edition
Audio/Video, information and communication technology equipment - 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

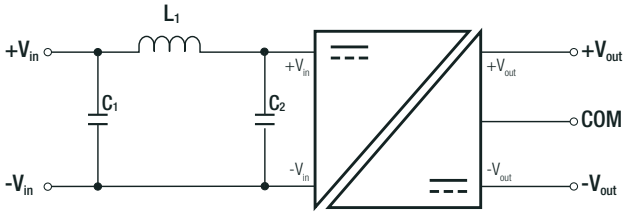
SAFETY AND CERTIFICATIONS

EMC filter suggestions according to EN55032

Single Output



Dual Output



Component List Class B			
Model	C1, C2	L1	C3
REC6K-243.3SRW	10µF	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	10µF	RLS 126

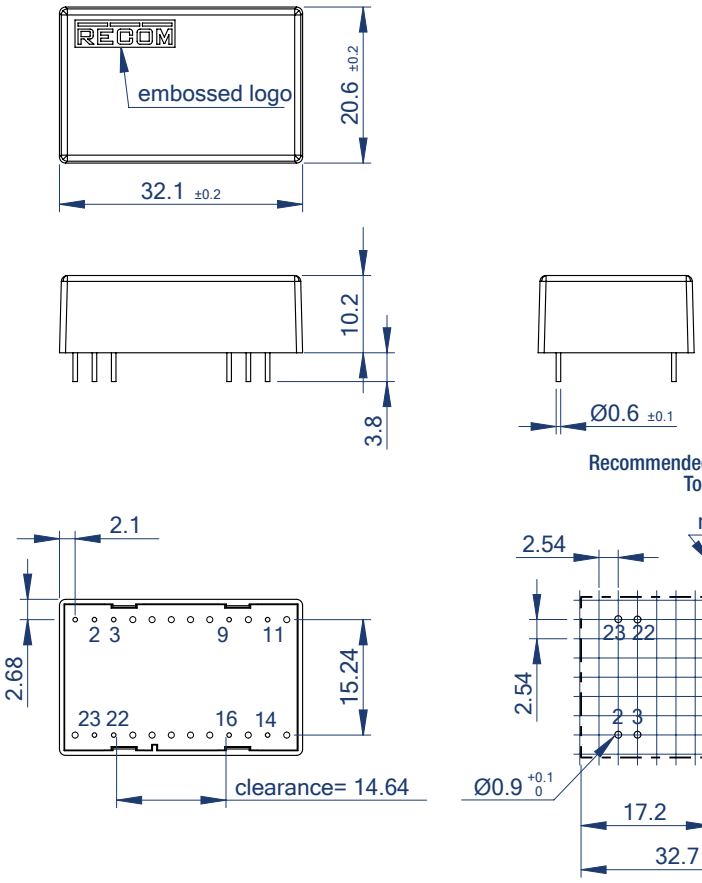
DIMENSION & PHYSICAL CHARACTERISTICS

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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DIMENSION & PHYSICAL CHARACTERISTICS

Dimension Drawing (mm)



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.

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