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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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)

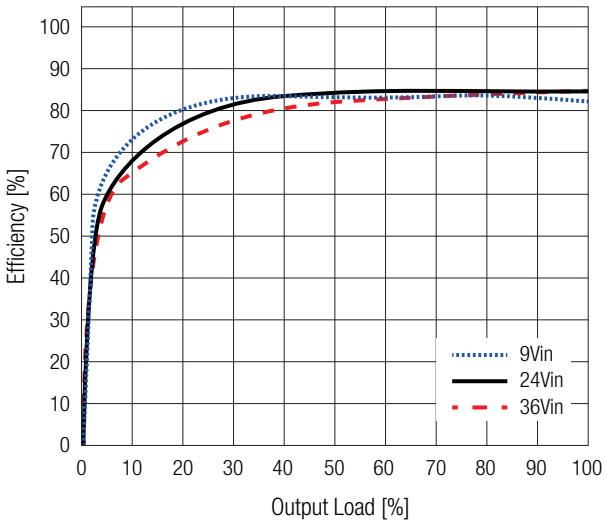
Parameter	Condition				Min.	Typ.	Max.
Internal Input Filter							Pi type
Input Voltage Range	nom. V_{IN}= 24VDC				9VDC		36VDC
	nom. V_{IN}= 48VDC				18VDC		75VDC
Input Under Voltage Lockout (UVLO)	nom. V_{IN}= 24VDC			DC-DC ON	8.1VDC		8.6VDC
				DC-DC OFF	7VDC		8.1VDC
	nom. V_{IN}= 48VDC			DC-DC ON	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.)

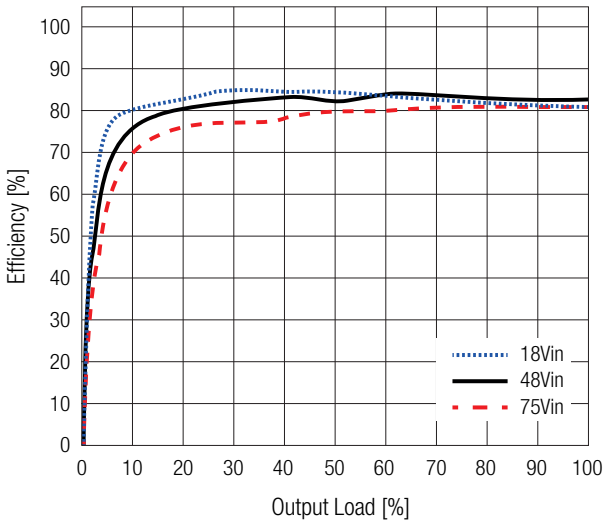
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Efficiency vs. Load

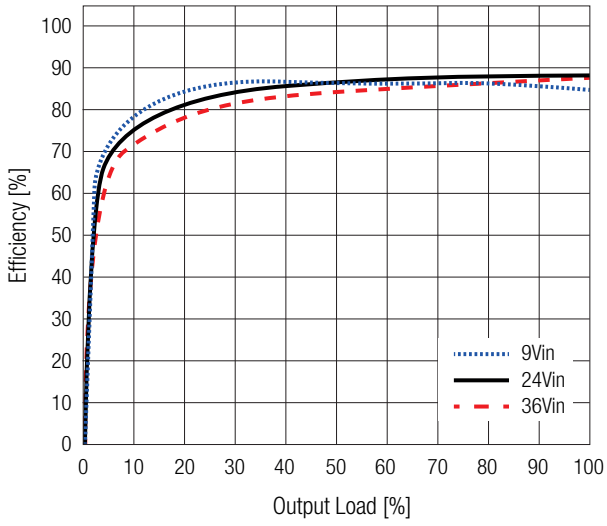
REC6K-2405SRW



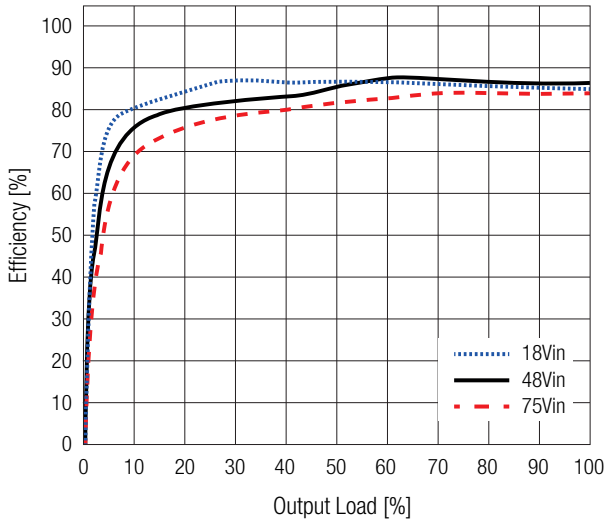
REC6K-4805SRW



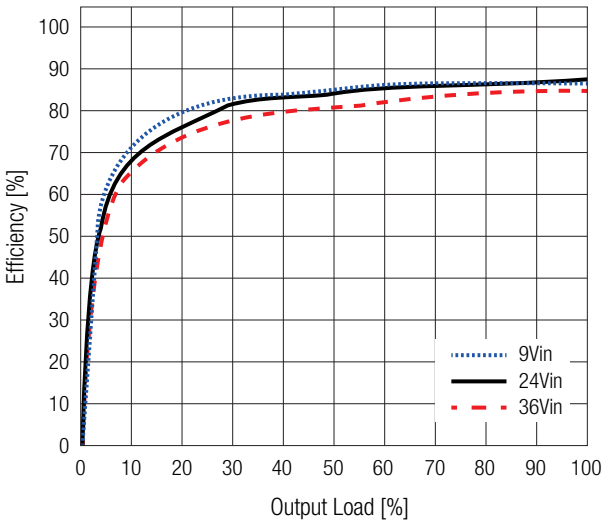
REC6K-2412SRW



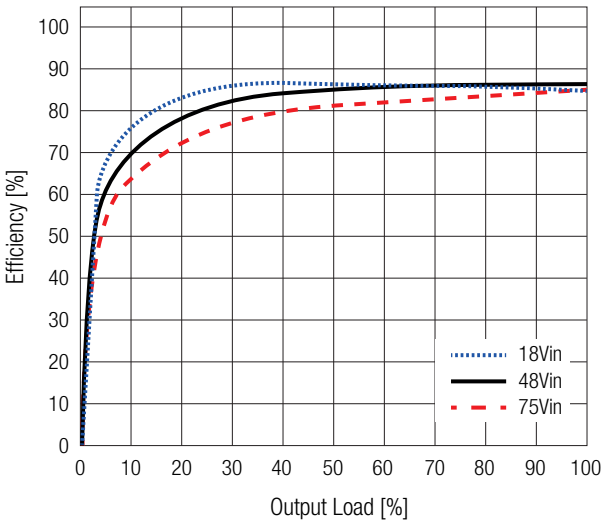
REC6K-4812SRW



REC6K-2424SRW



REC6K-4824SRW



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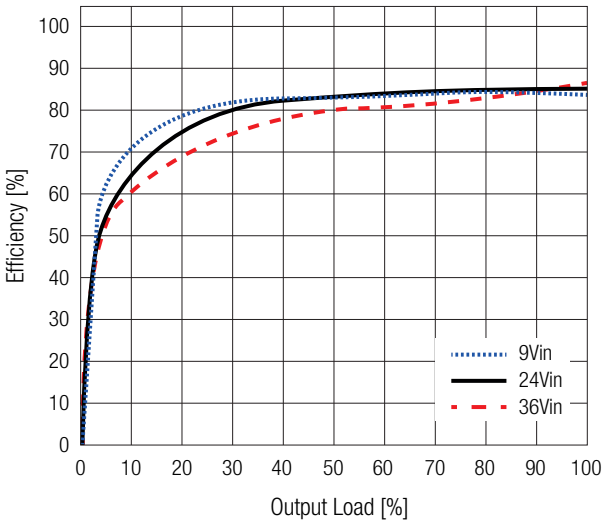
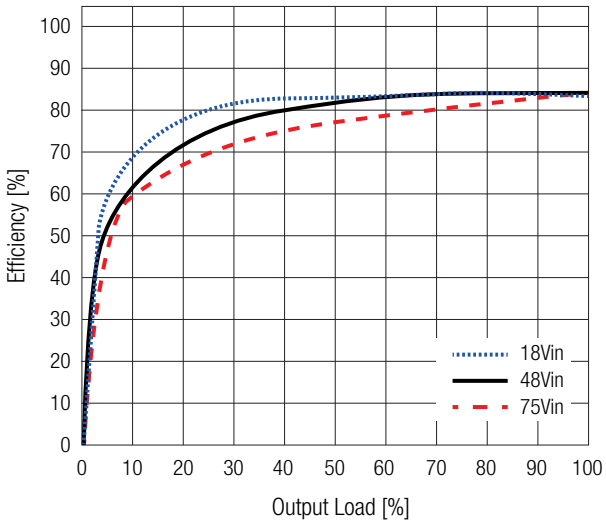
BASIC CHARACTERISTICS (measured @ T_{AMB}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

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

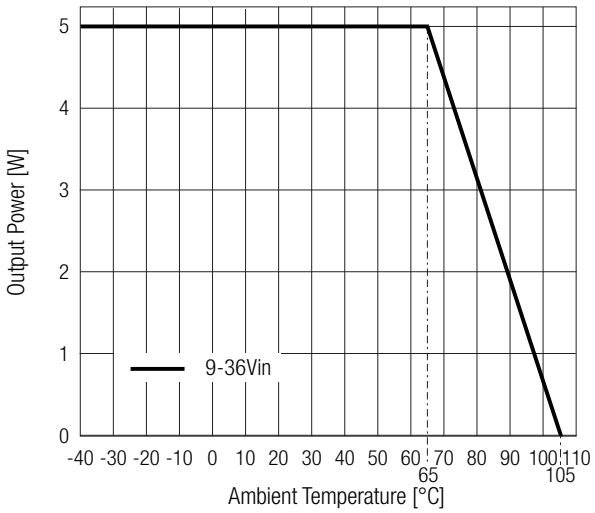
Note5: Refer to local safety regulations if input over-current protections is also required. Recommended fuse: slow blow type

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

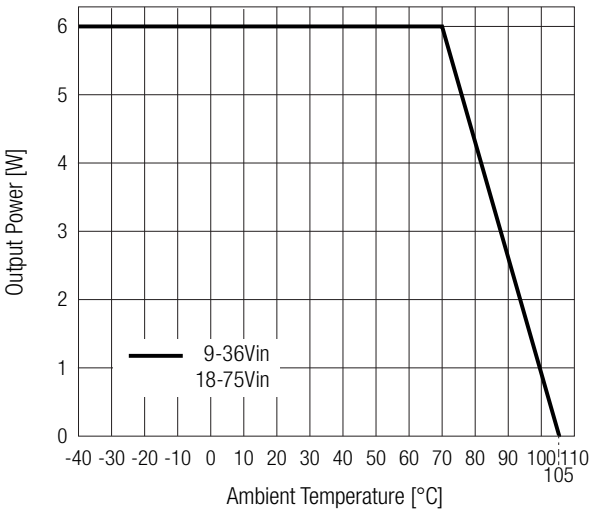
Derating Graph

(@ Chamber and natural convection 0.1m/s)

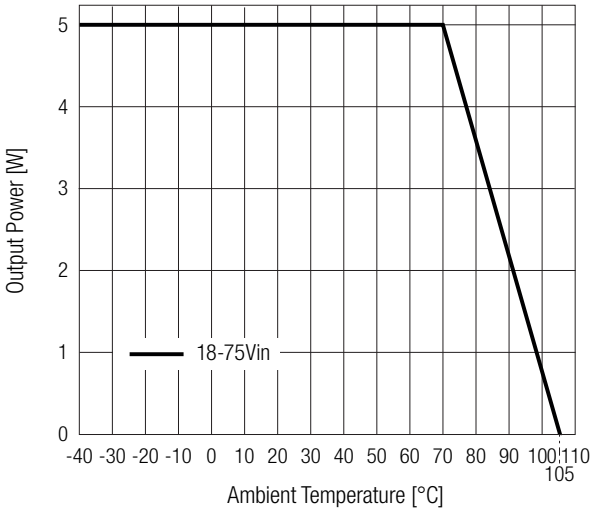
REC6K-243.3SRW



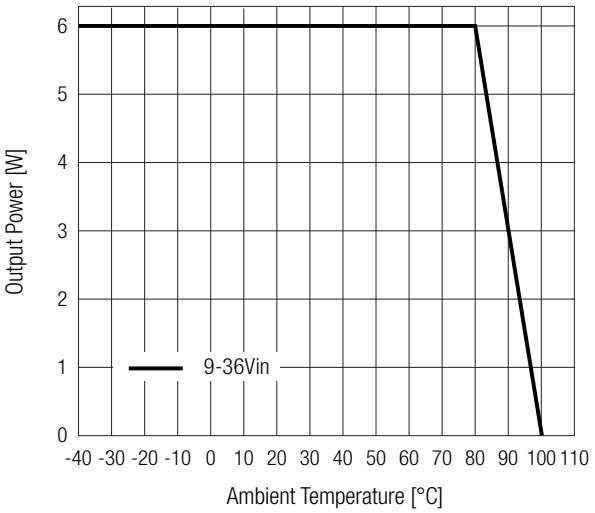
REC6K-2405SRW, REC6K-2409SRW, REC6K-2412SRW, REC6K-2415SRW, REC6K-2405DRW, REC6K-2412DRW, REC6K-2415DRW, REC6K-4805SRW



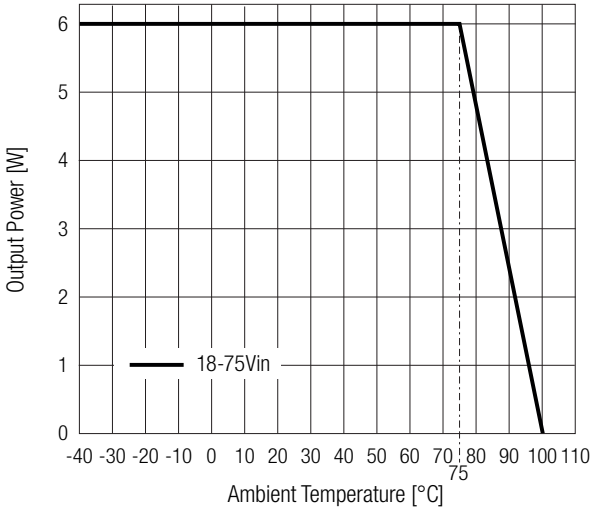
REC6K-483.3SRW



REC6K-2424SRW



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



SAFETY AND CERTIFICATIONS

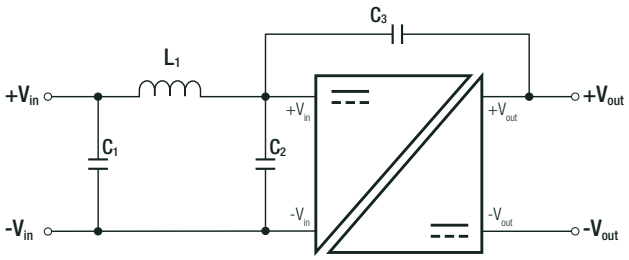
Certificate Type (Safety)	Report Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E518942-A6005-UL	UL62368-1:2019 3rd Edition
		CAN/CSA-C22.2 No. 62368-1-19 3rd Edition
Audio/Video, information and communication technology equipment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

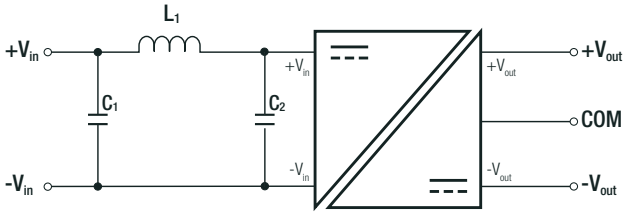
SAFETY AND CERTIFICATIONS

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			

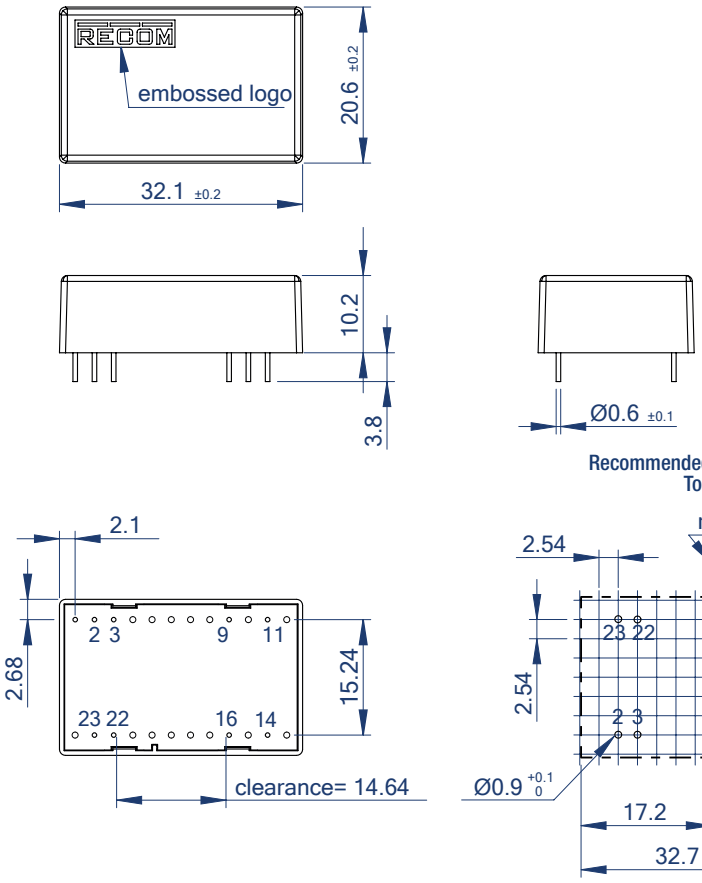
Component List Class B		
Model	C1, C2	L1
all dual types	10µF	RLS 126

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

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.