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Features

Regulated Converters

- 8W in a compact 1x1" package
- 2:1 input voltage range
- 12, 24, and 48VDC nominal voltage options
- UL/IEC/EN62368-1 + IEC60950-1 (pending)
- UVLO and ON/OFF pin

RECOM
DC/DC Converter

REC8E

8 Watt 1" x 1" Single and Dual Output

3 YEAR warranty

Description

The REC8E series is a high power density, wide input voltage range, 8W DC/DC converter with single and dual outputs in a compact 1x1" package. Control ON/OFF is offered as standard, and the outputs are fully protected against short circuits and overcurrent. The series is fully certified to UL/EN/IEC 62368-1 standards. With nominal input options of 12, 24, and 48VDC, the REC8E is suitable for higher power industrial applications where board space is at a premium.

Selection Guide

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
REC8E-1205S/CTRL/X1	9-18	5	1600	83.5	4700
REC8E-1209S/CTRL/X1	9-18	9	888	84.5	2200
REC8E-1212S/CTRL/X1	9-18	12	666	84.5	680
REC8E-1215S/CTRL/X1	9-18	15	533	84.5	470
REC8E-1224S/CTRL/X1	9-18	24	333	84.5	220
REC8E-1212D/CTRL/X1	9-18	±12	±333	84.5	±340
REC8E-1215D/CTRL/X1	9-18	±15	±267	84.5	±240
REC8E-2405S/CTRL/X1	18-36	5	1600	83.5	4700
REC8E-2409S/CTRL/X1	18-36	9	888	84.5	2200
REC8E-2412S/CTRL/X1	18-36	12	666	84.5	680
REC8E-2415S/CTRL/X1	18-36	15	533	84.5	470
REC8E-2424S/CTRL/X1	18-36	24	333	84.5	220
REC8E-2412D/CTRL/X1	18-36	±12	±333	84.5	±340
REC8E-2415D/CTRL/X1	18-36	±15	±267	84.5	±240
REC8E-4805S/CTRL/X1	20-60	5	1600	83.0	4700
REC8E-4809S/CTRL/X1	20-60	9	888	83.0	2200
REC8E-4812S/CTRL/X1	20-60	12	666	83.0	680
REC8E-4815S/CTRL/X1	20-60	15	533	83.0	470
REC8E-4824S/CTRL/X1	20-60	24	333	83.0	220
REC8E-4812D/CTRL/X1	20-60	±12	±333	83.0	±340
REC8E-4815D/CTRL/X1	20-60	±15	±267	83.0	±240

Notes:

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



c UL us
E224736

UL62368-1 certified
CSA/CAN C22.2 No. 62368-1 certified
IEC62368-1 2nd + 3rd Ed. certified
EN62368-1 2nd + 3rd Ed. certified
CB Report

Model Numbering

REC8E- ___ ___ /CTRL / X1

- nom. Output Power
- nom. Input Voltage
- Output Voltage
- UVLO function
- CTRL function
- **S**ingle or **D**ual

Ordering Examples:

REC8E-1205S/CTRL/X1	9-18Vin	5Vout	Single Output	with CTRL Pin and UVLO
REC8E-2412D/CTRL/X1	18-36Vin	±12Vout	Dual Output	with CTRL Pin and UVLO
REC8E-4815S/CTRL/X1	20-60Vin	15Vout	Single Output	with CTRL Pin and UVLO

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RECOM

DC/DC Converter

REC8E Series

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

BASIC CHARACTERISTICS

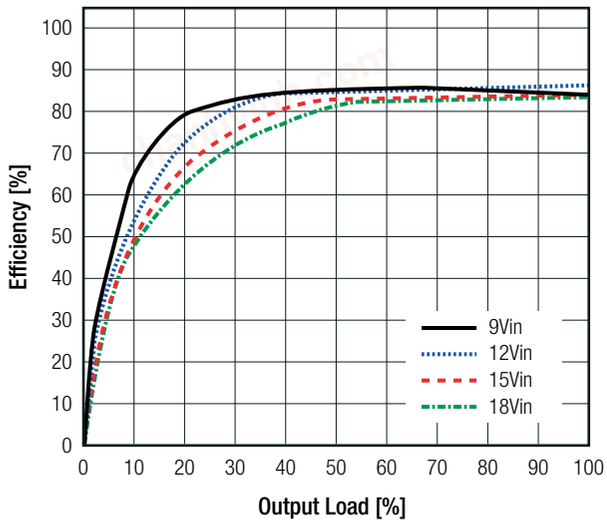
Parameter	Condition		Min.	Typ.	Max.
Internal Input Filter					Pi type
Input Voltage Range	2:1 Input	nom. Vin= 12VDC 24VDC 48VDC	9VDC 18VDC 20VDC		18VDC 36VDC 60VDC
Input Surge Voltage	100ms max.	nom. Vin= 12VDC 24VDC 48VDC			25VDC 50VDC 70VDC
Under Voltage Lockout (UVLO)	nom. Vin= 12VDC	DC-DC ON DC-DC OFF		8VDC 7VDC	9VDC
	nom. Vin= 24VDC	DC-DC ON DC-DC OFF		17VDC	18VDC
	nom. Vin= 48VDC	DC-DC ON DC-DC OFF		19VDC	20VDC
Quiescent Current	nom Vin= 12VDC 24VDC 48VDC			55mA 32mA 21mA	
Input Current Range	nom Vin= 12VDC 24VDC 48VDC				800mA 400mA 200mA
Standby Current	nom Vin= 12VDC 24VDC 48VDC			0.5mA 0.6mA 0.7mA	
Minimum Load			0%		
ON/OFF CTRL	DC-DC ON DC-DC OFF				Open or 3VDC<V_{CTRL}<12VDC Short or 0VDC<V_{CTRL}<1.2VDC
Input Current of CTRL Pin	nom Vin= 12VDC, 24VDC 48VDC				0.3mA 0.4mA
Internal Operating Frequency				350kHz	
Output Ripple and Noise [3]	20MHz BW				100mVp-p

Notes:

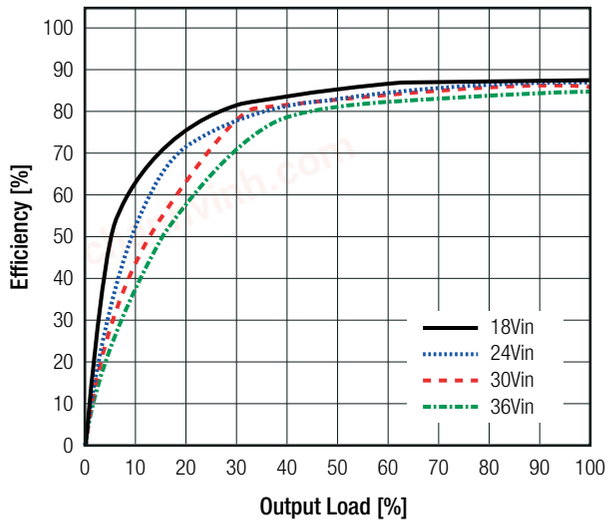
Note3: Measurements are made with a 0.47µF MLCC across output (low ESR)

Efficiency vs. Load

REC8E-1205S/CTRL/X1



REC8E-2405S/CTRL/X1



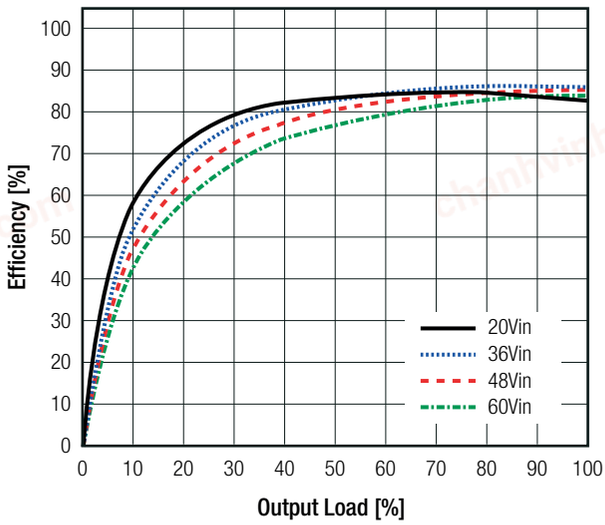
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Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

Efficiency vs. Load

REC8E-4805S/CTRL/X1



REGULATIONS

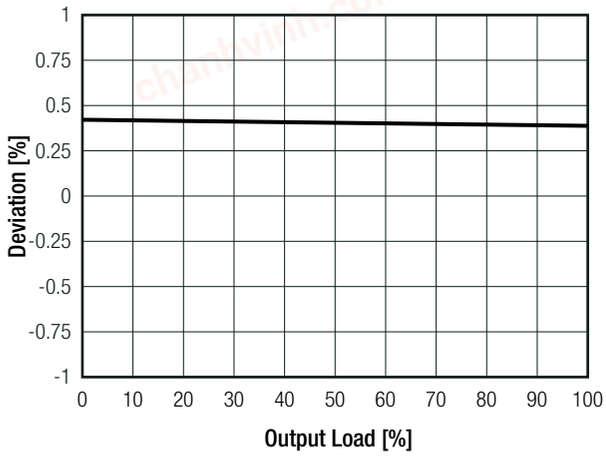
Parameter	Condition	Value
Output Accuracy		±1.0% typ.
Line Regulation	low line to high line, full load	±0.4% max.
Load Regulation [4]	10% to 100% load	0.5% max.
Cross Regulation		±5.0% typ.

Notes:

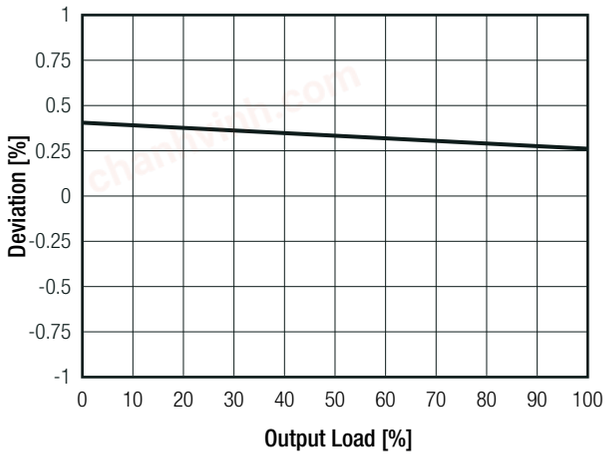
Note4: Operation below 10% load will not harm the converter, but specifications may not be met

Deviation vs Load

REC8E-1205S/CTRL/X1



REC8E-2405S/CTRL/X1
REC8E-4805S/CTRL/X1



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

PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)	below 100mΩ		continuous, automatic recovery
Over Current Protection (OCP)			120%, hiccup, automatic recovery
Isolation Voltage [5]	I/P to O/P	tested for 1 minute	1.6kVDC
Isolation Resistance			1GΩ min.
Isolation Capacitance			2200pF max.

Notes:

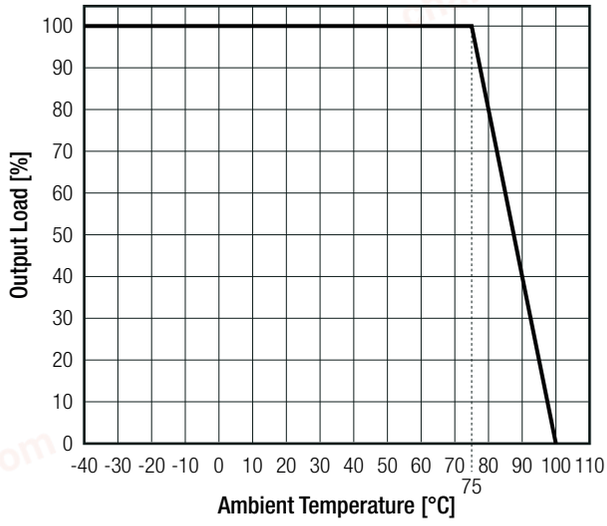
Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note6: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	without derating (refer to ***"Derating Graph"***)		-40°C to +75°C
Maximum Case Temperature			+95°C
Temperature Coefficient			±0.05%/K
Thermal Impedance			15K/W
Operating Altitude			5000m
Operating Humidity	non-condensing		5% - 95% RH max.
Pollution Degree			PD2
Vibration			MIL-STD-202G
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	1532 x 10^3 hours

Derating Graph
(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report Number	Standard
Audio/video, information and communication technology equipment - Safety requirements	E224736-A6007-UL	UL62368-1:2014 CAN/CSA-C22.2 No. 62368-1:2014
Audio/video, information and communication technology equipment - Safety requirements (CB Scheme)	2003047-3-CB	IEC62368-1:2014 2nd Edition
Audio/video, information and communication technology equipment - Safety requirement		EN62368-1:2014 + A11:2017
Audio/video, information and communication technology equipment - Safety requirements (CB Scheme)	2003047-4-CB	IEC62368-1:2018 3rd Edition
Audio/video, information and communication technology equipment - Safety requirements		EN IEC 62368-1:2020 + A11:2020
RoHS2		RoHS 2011/65/EU + AM2015/863

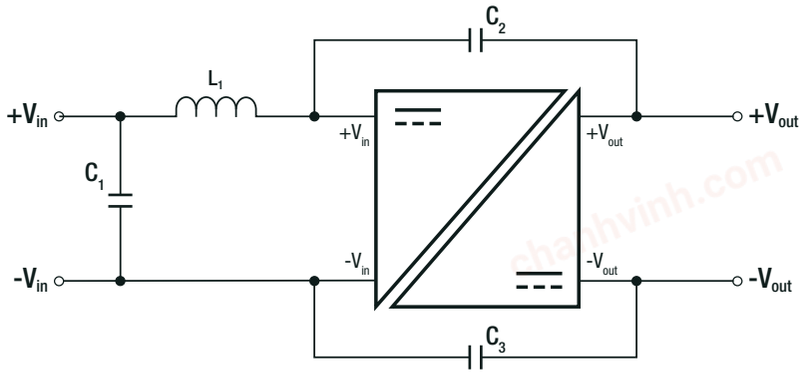
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Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

EMC Compliance	Condition	Standard / Criterion
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements (7)	refer to ***"EMC Filtering"***	EN55032:2015+AC:2016, Class A/B
Electromagnetic compatibility of multimedia equipment – Immunity requirements		EN55035:2017
ESD Electrostatic Discharge Immunity Test	Air: ±2, 4, 8kV, Contact: ±2, 4, 6kV	IEC61000-4-2:2008 , Criteria A EN61000-4-2:2009, Criteria A
Radiated, Radio-Frequency, Electromagnetic Field Immunity Test	3V/m (80-1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz)	IEC/EN61000-4-3:2006+A2:2010 Criteria A
Fast Transient and Burst Immunity	DC Port: ±0.5, 2kV	IEC/EN61000-4-4:2012, Criteria A
Surge Immunity	DC Port: ±0.5, 1kV	IEC/EN61000-4-5:2014, Criteria A
Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields	3Vrms (0.15-10MHz) 3-1Vrms (10-30MHz) 1Vrms (30-80MHz)	IEC61000-4-6:2013, Criteria A EN61000-4-6:2014, Criteria A
Power Magnetic Field Immunity	1A/m 50Hz	IEC61000-4-8:2009 EN61000-4-8:2010
Limitations on the amount of electromagnetic interference allowed from digital and electronic devices		FCC 47 CFR Part 15 Subpart B Class B

EMC Filtering Suggestions according to EN55032 (7)



Component List Class A

MODEL	C1	L1
REC8E-1205S/CTRL/X1 REC8E-2405S/CTRL/X1 REC8E-2415S/CTRL/X1 REC8E-4805S/CTRL/X1 REC8E-4815S/CTRL/X1	10µF, 100V	5.6µH choke RLS-567

Component List Class B

MODEL	C1	C2, C3	L1
REC8E-1205S/CTRL/X1 REC8E-2405S/CTRL/X1 REC8E-2415S/CTRL/X1 REC8E-4805S/CTRL/X1 REC8E-4815S/CTRL/X1	10µF, 100V	680pF 2kVDC	5.6µH choke RLS-567

Notes:

Note7: Filter suggestions are valid for indicated part numbers only.
For other part numbers, please contact RECOM for advice.

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting	non-conductive plastic, (UL94 V-0) epoxy, (UL94 V-0)
Dimension (LxWxH)		25.4 x 25.4 x 10.5mm
Weight		17g typ.

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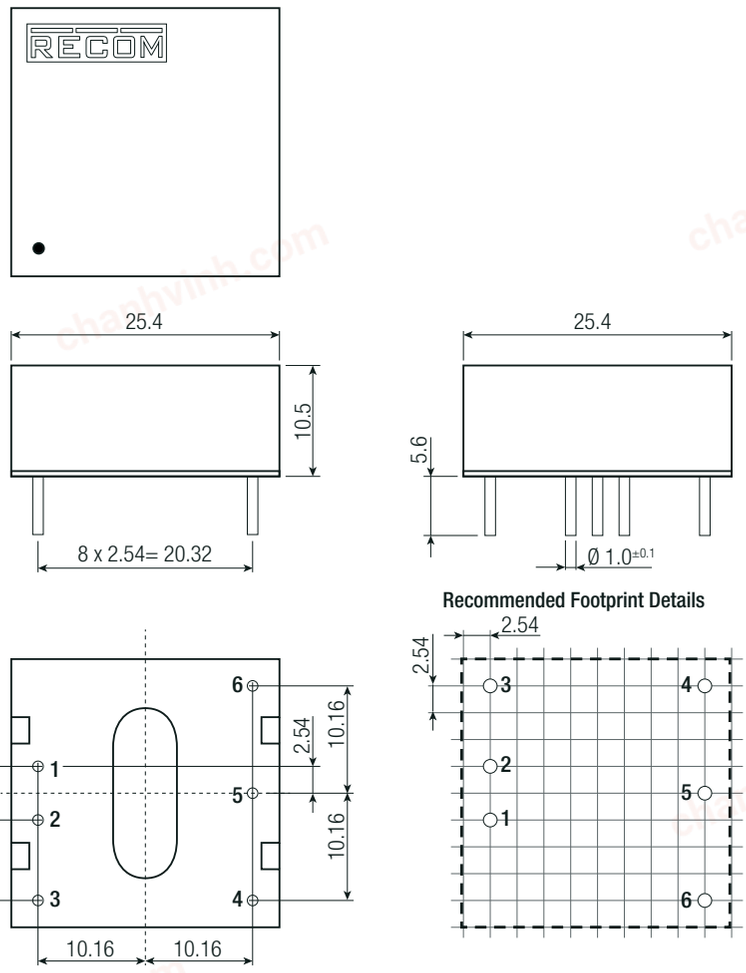
RECOM

DC/DC Converter

REC8E Series

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

Dimension Drawing (mm)



Pinning Information

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	-Vout	-Vout
5	no Pin	Com
6	+Vout	+Vout

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	260.0 x 28.5 x 20.8mm
Packaging Quantity		8pcs
Storage Temperature Range		-55°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.