Technical Data Sheet

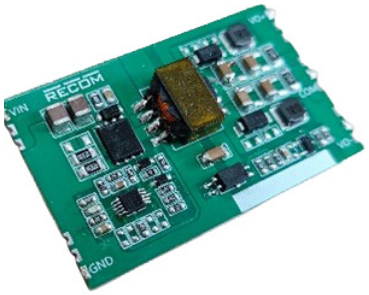
DS-RVPW016-RBE-029-2415D-1

10W ◊ Regulated Isolated Output ◊ 4:1 Input

RECOM
DC/DC Converter

FEATURES

- Wide input range (9V - 36V)
- Isolation voltage 1.5kVDC/min
- Secondary side regulation
- Operating temperature: -40°C to +85°C
- Short circuit protection
- Castellated connections



Dimensions (LxWxH): 48.26 x 30.48 x 7.0mm (1.9 x 1.2 x 0.27 inch)
6.4g (0.014lbs)

DESCRIPTION

This application solution is based on the RVPW016, a highly integrated peak current mode flyback power supply controller. Combined with the isolated power transformer RBE-029, output rectifier diodes, and necessary resistive and capacitive components, it implements an isolated regulated power supply solution featuring an input range of 9V–36V and dual ±15V outputs. The solution is capable of delivering a maximum output power of 10W across the full input voltage range, with a primary-secondary isolation withstand voltage of no less than 1500VDC. It also comes with built-in functions such as sustained short-circuit protection and auto-recovery. This solution is suitable for scenarios where system boards require electrical isolation to achieve safety and anti-interference objectives.

SELECTION GUIDE

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current max. [mA]	Efficiency typ. [%]	max. Capacitive[1] [uF]
DS-RVPW016-RBE-029-2415D-1	9-36	±15V	±340	88	470

Note 1: Max. capacitive load is tested at nominal input voltage and full load

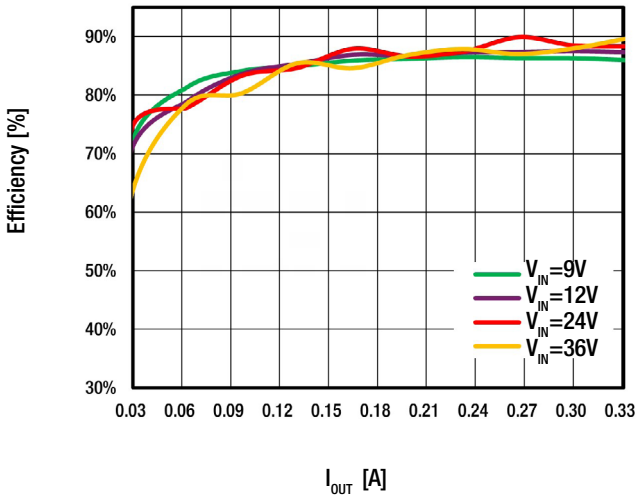
BASIC CHARACTERISTIC (measured @ T_{AMB}= 25°C, nominal Input and full load after warm-up time unless otherwise stated)

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		9VDC	24VDC	36VDC
Minimum Load		0%		
Internal Operating Frequency			330kHz	
Output Ripple and Noise	20MHz BW			100mVp-p

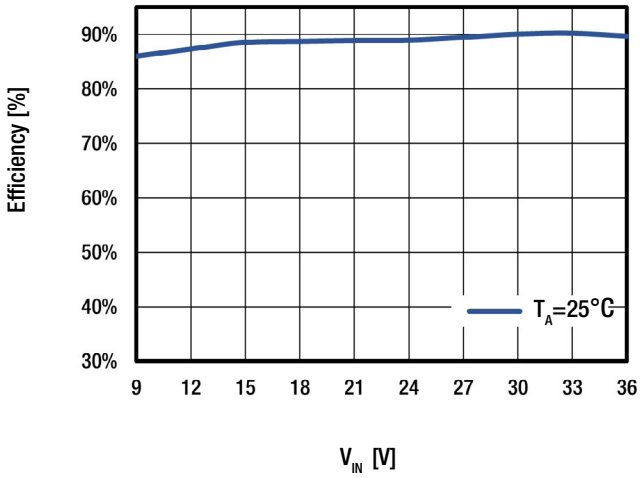
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SPECIFICATIONS (measured @ T_{AMB}= 25°C, nominal Input and full load after warm-up time unless otherwise stated)

Typical Effiency vs. Output Current Curve

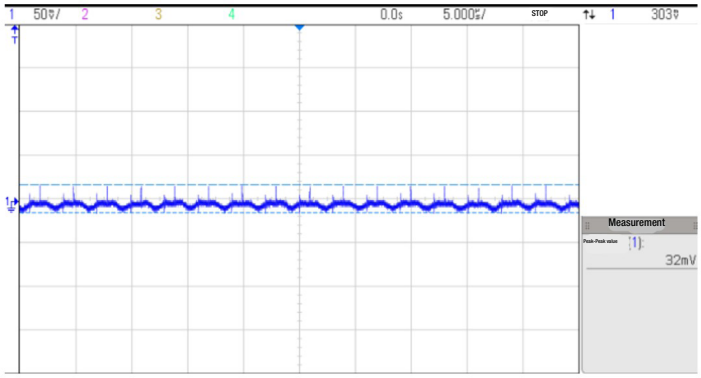


Typical Effiency vs. Input Voltage Curve

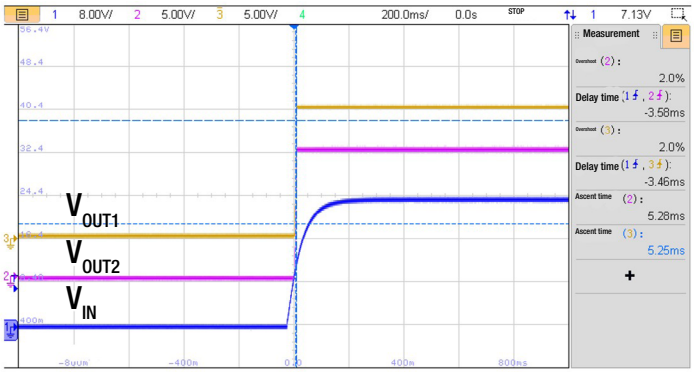


Typical waveform

V_{IN}=24V, Full-load output voltage ripple waveform



V_{IN}=24V, Full-load start-up waveform



REGULATIONS

Parameter	Condition	Values
Output Accuracy		±1.0% /±1.0% Typ.
Line Regulation	low line to high line, full load, V_{OUT+} / V_{OUT-}	±1.0% /±1.0% Typ.
Load Regulation	10% to 100% load, V_{OUT+} / V_{OUT-}	±1.0% /±1.0% Typ.

PROTECTION AND ISOLATION CAPABILITIES

Short Circuit Protection		continuous, automatic recovery
Isolation Voltage	tested for 1 minute	1.5kVDC min.
Insulation Grade		functional

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DS-RVPW016-RBE-029-2415D-1

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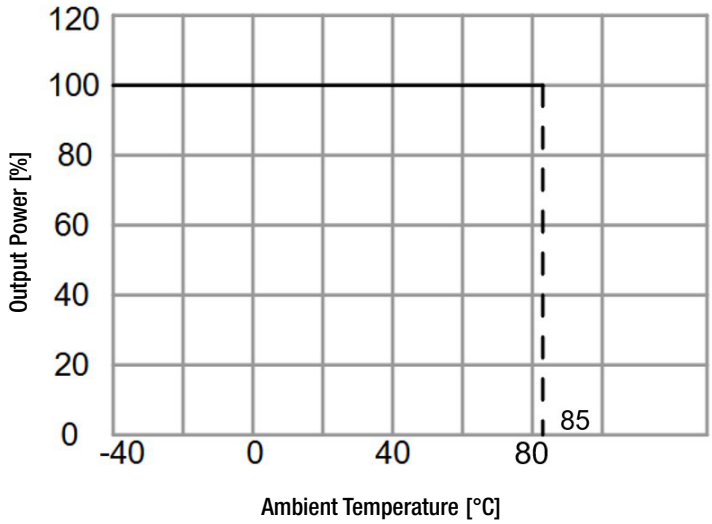
RECOM DC/DC Converter

ENVIRONMENT

Parameter	Condition	Values
Operating Temperature Range	full load	-40°C to +85°C

Derating Graph

(@ Chamber and natural convection 0.1m/s)

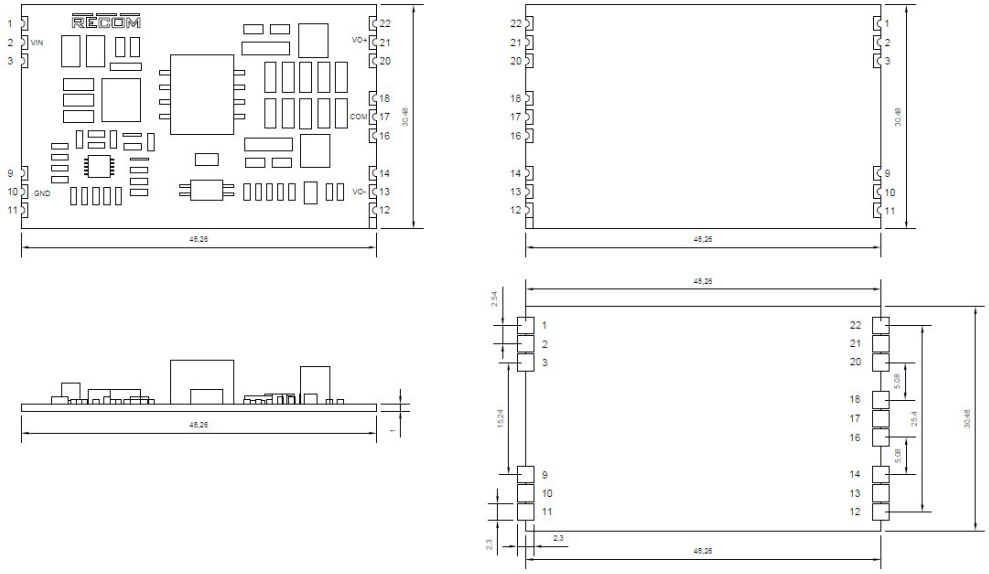


DIMENSION & PHYSICAL CHARACTERISTICS

Parameter	Type	Values
Material	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		48.26 x 30.48 x 7.0 mm
Weight		6.4g (0.014lbs)

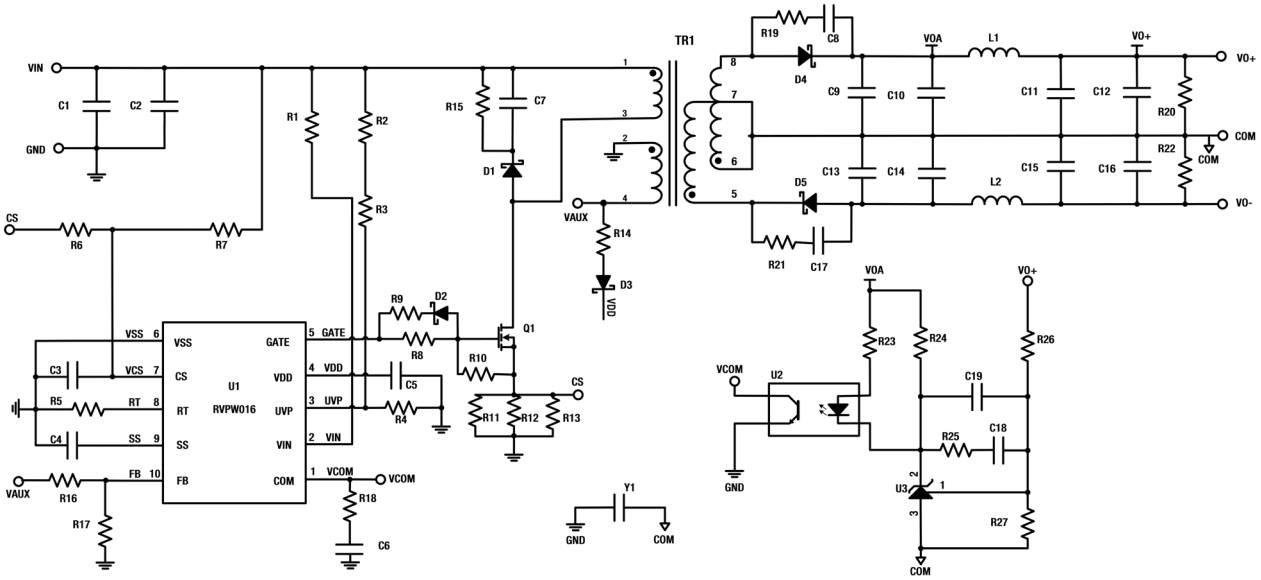
Dimension Drawing (mm)

Pinning Information	
Pin #	Single
1,2,3	V_{IN}
9,10,11	GND
12,13,14	V_{OUT-}
16,17,18	COM
20,21,22	V_{OUT+}



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SCHEMATIC



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Component Designator	Description	Package	Manufacturer Part Number	Manufacturer
C1,C2	10uF/50V-X7R	1210	CC1210KKX7R9BB106	YAGEO
C3	22pF/50V- NPO	0603	CC0603KRNPO9BN220	YAGEO
C4	100nF/50V-X7R	0603	CC0603KRX7R9BB104	YAGEO
C5	1uF/25V-X7R	0603	CC0603KRX7R8BB105	YAGEO
C6,C8,C10,C12,C14,C16,C17,C19	NC	-	-	-
C7	10nF/100V-X7R	0805	CC0805KRX7R0BB103	YAGEO
C9,C11,C13,C15	22uF/25V-X5R	1206	CL31A226KAHNNNE	SAMSUNG
C18	33nF/50V-X7R	0603	CC0603KRX7R9BB333	YAGEO
Y1	1nF/2KV-X7R	1206	CC1206KKX7RDBB102	YAGEO
R1,R6	510Ω±1%	0603	RC0603FR-07510RL	YAGEO
R2,R3	100KΩ±1%	0603	RC0603FR-07100KL	YAGEO
R4	75KΩ±1%	0603	RC0603FR-0775KL	YAGEO
R5,R24	20KΩ±1%	0603	RC0603FR-0720KL	YAGEO
R7	422KΩ±1%	0603	RC0603FR-07422KL	YAGEO
R8	200Ω±1%	0603	RC0603FR-07200RL	YAGEO
R9	0Ω±1%	0603	RC0603FR-70RL	YAGEO
R10	10KΩ±1%	0603	RC0603FR-0710KL	YAGEO
R11,12	0.068Ω ±1%	1206	RL1206FR-070R068L	YAGEO
R13,R16,R17,R18,R19,R21	NC	-	-	-
R14	20Ω±1%	0603	RC0603FR-0720RL	YAGEO
R15	20KΩ±1%	0805	RC0805FR-0720KL	YAGEO
R20,R22	5.1kΩ±1%	1206	RC1206FR-075K1L	YAGEO
R23	2KΩ±1%	0603	RC0603FR-072KL	YAGEO
R25,R26	15kΩ±1%	0603	RC0603FR-0715KL	YAGEO
R27	3KΩ±1%	0603	RC0603FR-073KL	YAGEO

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Component Designator	Description	Package	Manufacturer Part Number	Manufacturer
TR1	-	-	RBE-029	RECOM
Q1	100V/40A	PDFN-8(4.9x5.8)	NCEP0140AG	NCE
L1,L2	1uH±20%	SMD	SWPA4020S1R0NT	SUNLORD
D1	200V/1A	SOD-123	S120	YANGJIE
D2	40V/0.5A	SOD-323	B0540WS	YANGJIE
D3	200V/0.2A	SOD-323	BAV21WS	CJ
D4,D5	100V/3A	SMA	SSL310A	YANGJIE
U1	-	MSOP-10	RVPW016	RECOM
U2	CTR=80%~160%, Viso=3750VAC	SSOP-4	EL3H7(A)(TA)-G	EVERLIGHT
U3	Vref=2.495V	SOT23-3	CJ431	CJ

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