Technical Data Sheet

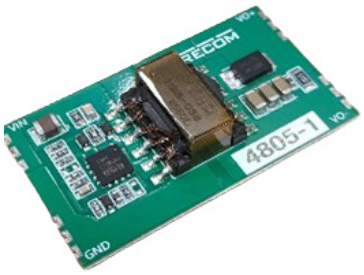
DS-RVPW012-RBE-038-4805-1

10W ◊ Regulated Isolated Output ◊ 1.5:1 Input

RECOM
DC/DC Converter

FEATURES

- Wide input range (40V - 60V)
- Isolation voltage 1.5kVDC/min
- Primary side regulation
- Operating temperature: -40°C to +85°C
- Short circuit protection
- Castellated connections



Dimensions (LxWxH): 45.72 x 25.4 x 8.2mm (1.8 x 1.0 x 0.283 inch)
6.30g (0.0139lbs)

DESCRIPTION

This application scheme is based on a highly integrated peak current type flyback power supply controller RVPW012, combined with an isolated power transformer RBE-038, an output rectifier diode, and necessary resistive and capacitive components, to achieve a 40V-60V input, 5V output isolated voltage stabilizing power supply solution. This scheme can achieve an output power of up to 10W within the full input voltage range, with an isolation withstand voltage between the primary and secondary sides not less than 1500VDC. It also features overvoltage and undervoltage protection, over-current protection, long-term short-circuit protection and self-recovery functions. This scheme can be applied in scenarios where electrical isolation is required on the system board to achieve safety and anti-interference purposes.

SELECTION GUIDE

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current max. [mA]	Efficiency typ. [%]	max. Capacitive[1] [µF]
DS-RVPW012-RBE-038-4805-1	40-60	5	2000	84	6800

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

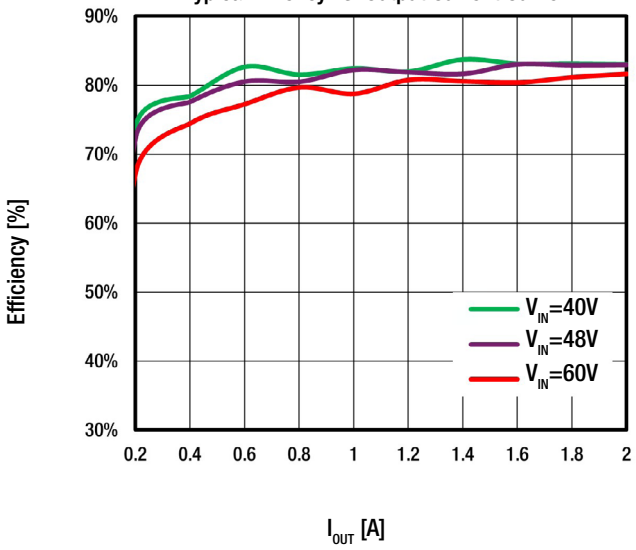
BASIC CHARACTERISTIC (measured @ T_{AMB}= 25°C, nominal Input and full load after warm-up time unless otherwise noted)

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range		40VDC	48VDC	60VDC
Minimum Load		0%		
Internal Operating Frequency			300kHz	
Output Ripple and Noise	20MHz BW			160mVp-p

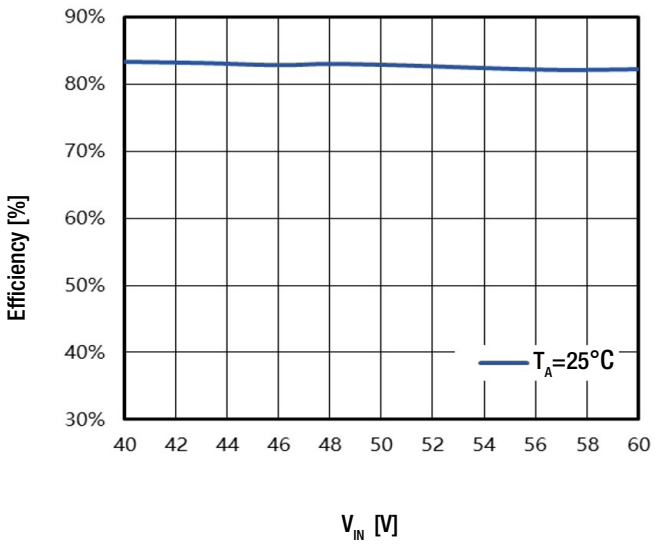
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SPECIFICATIONS (measured @ T_{AMB}= 25°C, nominal Input and full load after warm-up time unless otherwise noted)

Typical Effiency vs. Output Current Curve

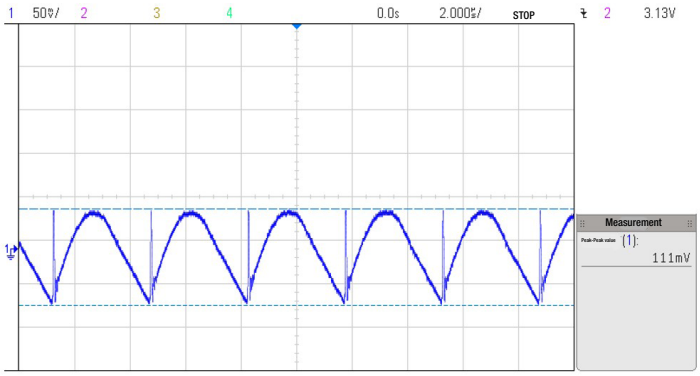


Typical Effiency vs. Input Voltage Curve

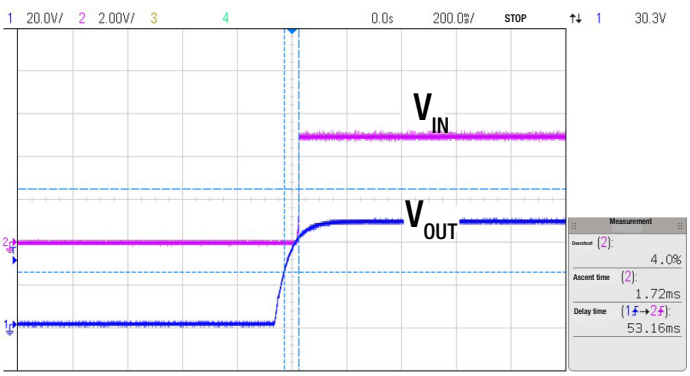


Typical Waveform

V_{IN}=48V, Full-load output voltage ripple waveform



V_{IN} =48V, Full-load startup waveform



REGULATIONS

Parameter	Condition	Values
Output Accuracy		±2.0% Typ.
Line Regulation	low line to high line, full load	±2.0% Typ.
Load Regulation	10% to 100% load, V_{OUT}	±2.0% 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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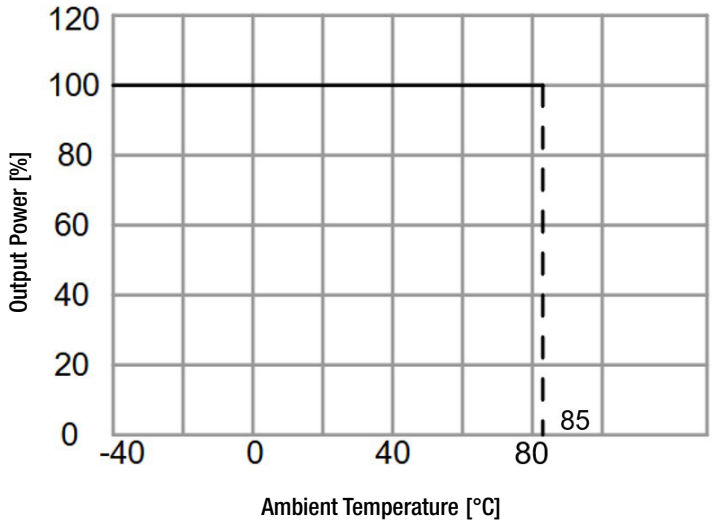
RECOM DC/DC Converter

ENVIRONMENT

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

Derating Graph

(@ Chamber and natural convection 0.1m/s)

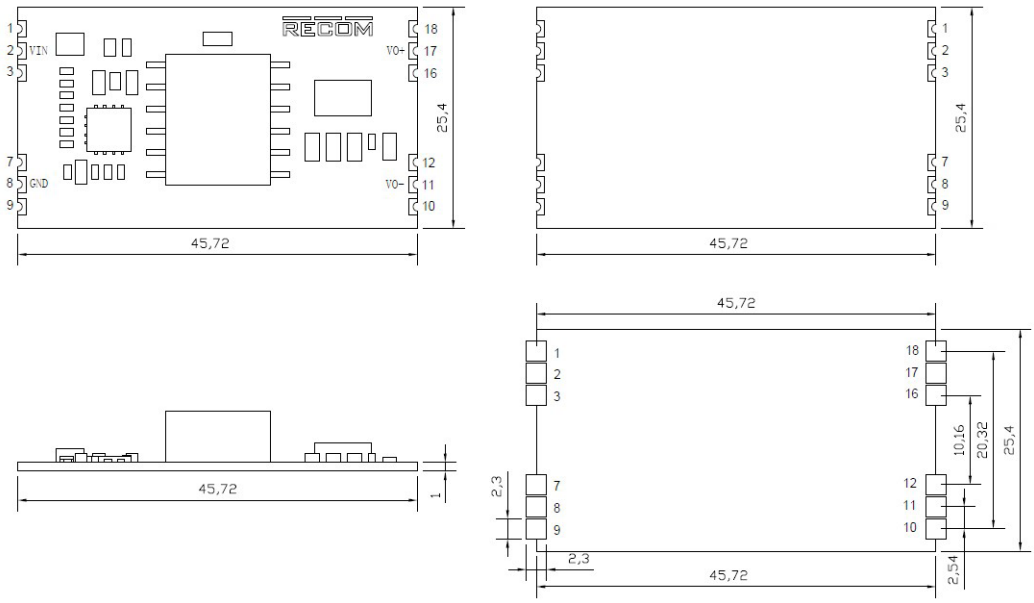


DIMENSION & PHYSICAL CHARACTERISTICS

Parameter	Type	Values
Material	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		45.72 x 25.4 x 8.2mm
Weight		6.30g (0.014 lbs)

Dimension Drawing (mm)

Pinning Information	
Pin #	Single
1,2,3	V_{IN}
7,8,9	GND
10,11,12	V_{OUT-}
16,17,18	V_{OUT+}



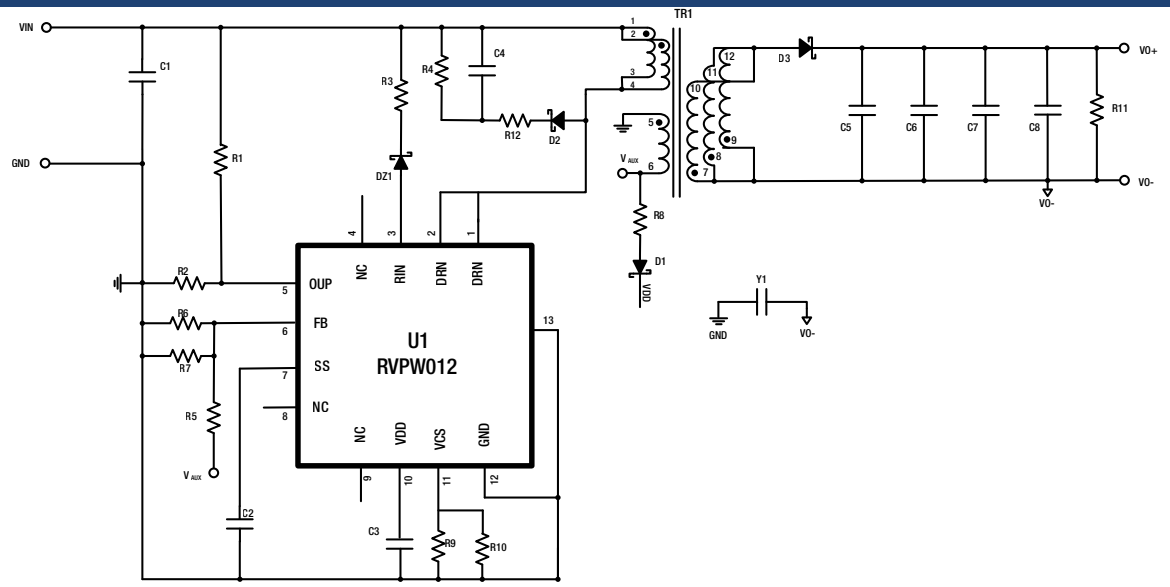
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DC/DC Converter

SCHEMATIC



BOM

Component Designator	Description	Package	Manufacturer Part Number	Manufacturer
C1	4.7uF/100V-X5R	1210	1210X475K101NT	FH
C2	100nF/50V-X7R	0603	CC0603KRX7R9BB104	YAGEO
C3,C8	2.2uF/16V-X7R	0603	CC0603KRX7R7BB225	YAGEO
C4	47nF/100V-X7R	0805	CC0805KKX7R0BB473	YAGEO
C5,C6,C7	22uF/16V-X5R	1206	CC1206KKX5R7BB226	YAGEO
Y1	1nF/2KV-X7R	1206	CC1206KKX7RDBB102	YAGEO
R1	220KΩ±1%	0603	RC0603FR-07220KL	YAGEO
R2	12KΩ±1%	0603	RC0603FR-0712KL	YAGEO
R3	820KΩ±1%	0603	RC0603FR-07820KL	YAGEO
R4	10KΩ±1%	0805	RC0805FR-0710KL	YAGEO
R5	10KΩ±1%	0603	RC0603FR-0710KL	YAGEO
R6	3KΩ±1%	0603	RC0603FR-073KL	YAGEO
R8	10Ω±1%	0603	RC0603FR-0710RL	YAGEO
R9	43KΩ±1%	0603	RC0603FR-0743KL	YAGEO
R11	510Ω±1%	1206	RC1206FR-07510RL	YAGEO
R12	20Ω±1%	0805	RC0805FR-0720RL	YAGEO
R7,R10	-	-	-	-
TR1	-	ER14.5	RBE-038	RECOM
D1,D2	200V/0.2A	SOD-323	BAV21WS	CJ
D3	45V/15A	TO-277	SL1545	MDD
DZ1	27V	SOD-323	BZT52C27S	CJ
U1	-	QFN5*5	RVPW012	RECOM

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