



Size: 0.46in x 0.24in x 0.4in
(11.60mm x 6mm x 10.16mm)

FEATURES

- Fixed Input Voltage
- Unregulated Single Output
- Industry Standard Pin-Out
- Compact SIP Package
- Continuous Short Circuit Protection
- RoHS Compliant
- Meets IEC62368, UL62368 & EN62368 Standards

APPLICATIONS

- Industrial Robotics
- Pure Digital Circuits
- Low Frequency Analog Circuits
- Relay-Driven Circuits
- Data Switching Circuits

DESCRIPTION

The RBAT1 series of DC/DC converters offers 1 watt of output power in a very compact 0.46" x 0.24" x 0.4" SIP package. This series consists unregulated single output models with fixed input voltage. Each model features industry standard pin-out, continuous short circuit protection, and RoHS compliance. This series also meets IEC62368, UL62368 and EN62368 standards. Contact factory for order details.

MODEL SELECTION TABLE

Model Number	Input Voltage Range	Output Voltage	Output Current		Ripple & Noise		Efficiency		Maximum Capacitive Load	Output Power	Certifications
			Min Load	Max Load	Typ.	Max.	Min.	Typ.			
RBAT1-12S03	12VDC (10.8~13.2VDC)	3.3VDC	30mA	303mA	30mVp-p	75mVp-p	71%	75%	2400µF	1 Watt	UL/CE/CB
RBAT1-12S05		5VDC	20mA	200mA	30mVp-p	75mVp-p	76%	80%	2400µF		
RBAT1-12S09		9VDC	12mA	111mA	30mVp-p	75mVp-p	76%	80%	1000µF		
RBAT1-12S12		12VDC	9mA	83mA	30mVp-p	75mVp-p	76%	80%	560µF		
RBAT1-12S15		15VDC	7mA	67mA	30mVp-p	75mVp-p	77%	81%	560µF		
RBAT1-12S24		24VDC	4mA	42mA	50mVp-p	100mVp-p	77%	81%	220µF		
RBAT1-15S05	15VDC (13.5~16.5VDC)	5VDC	20mA	200mA	30mVp-p	75mVp-p	76%	80%	2400µF	1 Watt	-
RBAT1-15S09		9VDC	12mA	111mA	30mVp-p	75mVp-p	76%	80%	1000µF		
RBAT1-15S12		12VDC	9mA	83mA	30mVp-p	75mVp-p	76%	80%	560µF		
RBAT1-15S15		15VDC	7mA	67mA	30mVp-p	75mVp-p	77%	81%	560µF		
RBAT1-15S24		24VDC	5mA	42mA	50mVp-p	100mVp-p	77%	81%	220µF		
RBAT1-24S03		24VDC (21.6~26.4VDC)	3.3VDC	30mA	303mA	30mVp-p	75mVp-p	69%	75%		
RBAT1-24S05	5VDC		20mA	200mA	30mVp-p	75mVp-p	73%	79%	2400µF		
RBAT1-24S09	9VDC		12mA	111mA	30mVp-p	75mVp-p	74%	80%	1000µF		
RBAT1-24S12	12VDC		9mA	83mA	30mVp-p	75mVp-p	75%	81%	560µF		
RBAT1-24S15	15VDC		7mA	67mA	30mVp-p	75mVp-p	75%	81%	560µF		
RBAT1-24S24	24VDC		5mA	42mA	50mVp-p	100mVp-p	75%	81%	220µF		

SPECIFICATIONS

All specifications are based on Ta=25°C, Humidity <75%RH, Nominal Input Voltage, and Rated Output Load unless otherwise noted. We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS				Min	Typ	Max	Unit
INPUT SPECIFICATIONS								
Input Voltage Range					See Table			
Input Current	Full Load	12V Input	3.3VDC Output			112	118	mA
			5VDC/9VDC/12VDC Output			105	110	
			15VDC/24VDC Output			103	109	
		15V Input	5VDC/9VDC/12VDC Output			84	88	
			15VDC/24VDC Output			83	87	
		24V Input	3.3VDC Output			56	61	
			5VDC Output			53	58	
9VDC Output				53	57			
	No Load	All Models			8	-		
Reflected Ripple Current ⁽¹⁾						15		mA
Surge Voltage (1 sec Max.)	12VDC Input				-0.7		18	VDC
	15VDC Input				-0.7		21	
	24VDC Input				-0.7		30	
Input Filter					Capacitance Filter			
Hot plug					Unavailable			

SPECIFICATIONS

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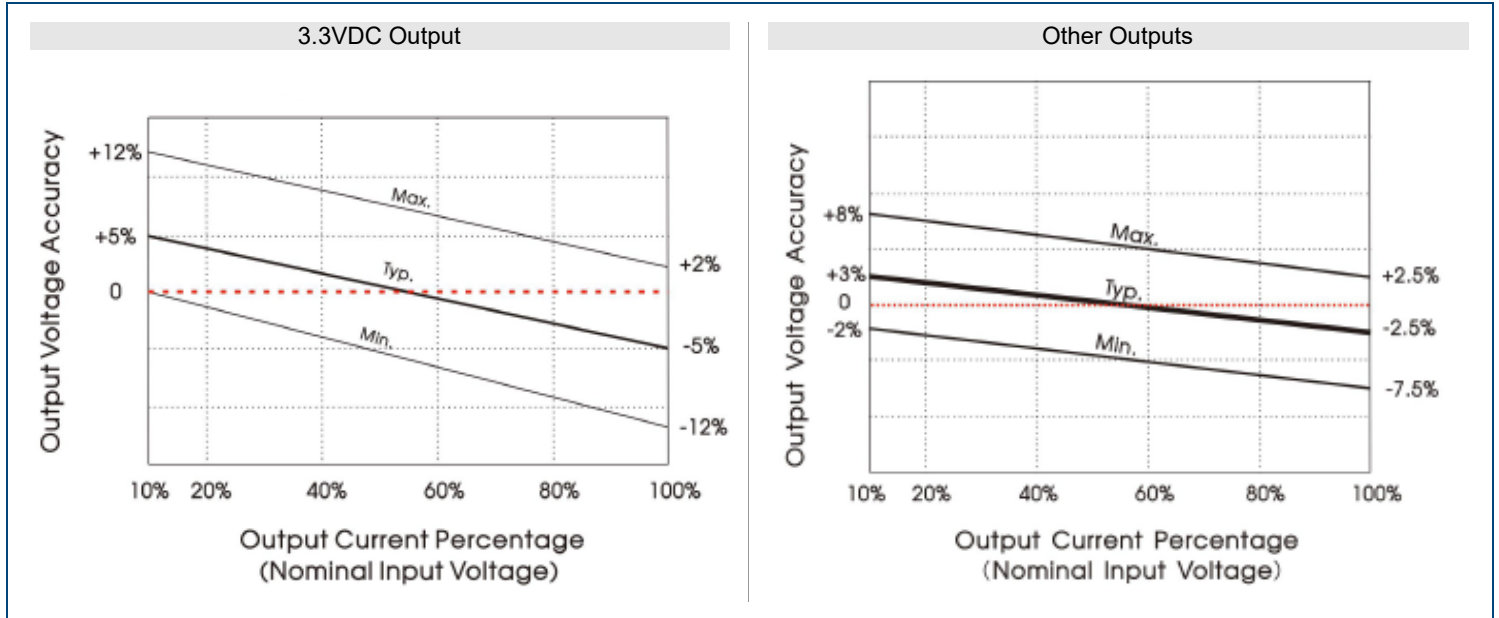
SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Voltage Accuracy			See Output Regulation Curves			
Line Regulation	Input Voltage Change: ±1%	3.3VDC Output Model			1.5	%
		Other Output Model			1.2	
Load Regulation	10%-100% Load	3.3VDC Output Model		8	20	%
		5VDC Output Model		5	15	
		9VDC Output Model		3	10	
		12VDC Output Model		3	10	
		15VDC Output Model		3	10	
		24VDC Output Model		2	10	
Output Power			See Table			
Output Current			See Table			
Maximum Capacitive Load	Tested at input voltage range and full load		See Table			
Ripple & Noise ⁽¹⁾	20MHz Bandwidth		See Table			
Temperature Drift Coefficient	100% Load			±0.02		%/°C
PROTECTION						
Short Circuit Protection			Continuous, Self-Recovery			
ENVIRONMENTAL SPECIFICATIONS						
Operating Temperature	Derating if the temperature ≥85°C		-40		105	°C
Storage Temperature			-55		125	°C
Case Temperature Rise	Ta=25°C, nominal input, full load output			25		°C
Storage Humidity	Non-Condensing		5		95	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from the case, 10 seconds				300	°C
Cooling Method			Free Air Convection			
Vibration			10-150Hz, 5G, 0.75mm, along X, Y, and Z			
MTBF	MIL-HDBK-217F@25°C		3500			kHours
GENERAL SPECIFICATIONS						
Efficiency	@Full Load		See Table			
Switching Frequency	Full Load, Nominal Input Voltage			260		KHz
Isolation	Input-Output electric strength test for 1 minute with a leakage current for 1mA max.		1500			VDC
Insulation Resistance	Input-Output Resistance at 500VDC		1000			MΩ
Isolation Capacitance	Input-Output Capacitance at 100kHz/0.1V			20		pF
PHYSICAL SPECIFICATIONS						
Weight			0.046oz (1.3g)			
Dimensions (L x W x H)			0.46in x 0.24in x 0.4in (11.60mm x 6mm x 10.16mm)			
Case Material			Black Flame-Retardant and Heat-Resistance Plastic (UL94 V-0)			
SAFETY CHARACTERISTICS						
Safety			IEC62368, UL62368 ⁽³⁾ , EN62368			
Emissions	CE			CISPR32/EN55032		Class B ⁽⁴⁾
	RE			CISPR32/EN55032		Class B ⁽⁴⁾
Immunity	ESD	IEC/EN61000-4-2	Air ±8kV, Contact ±4KV			Perf. Criteria B

NOTES

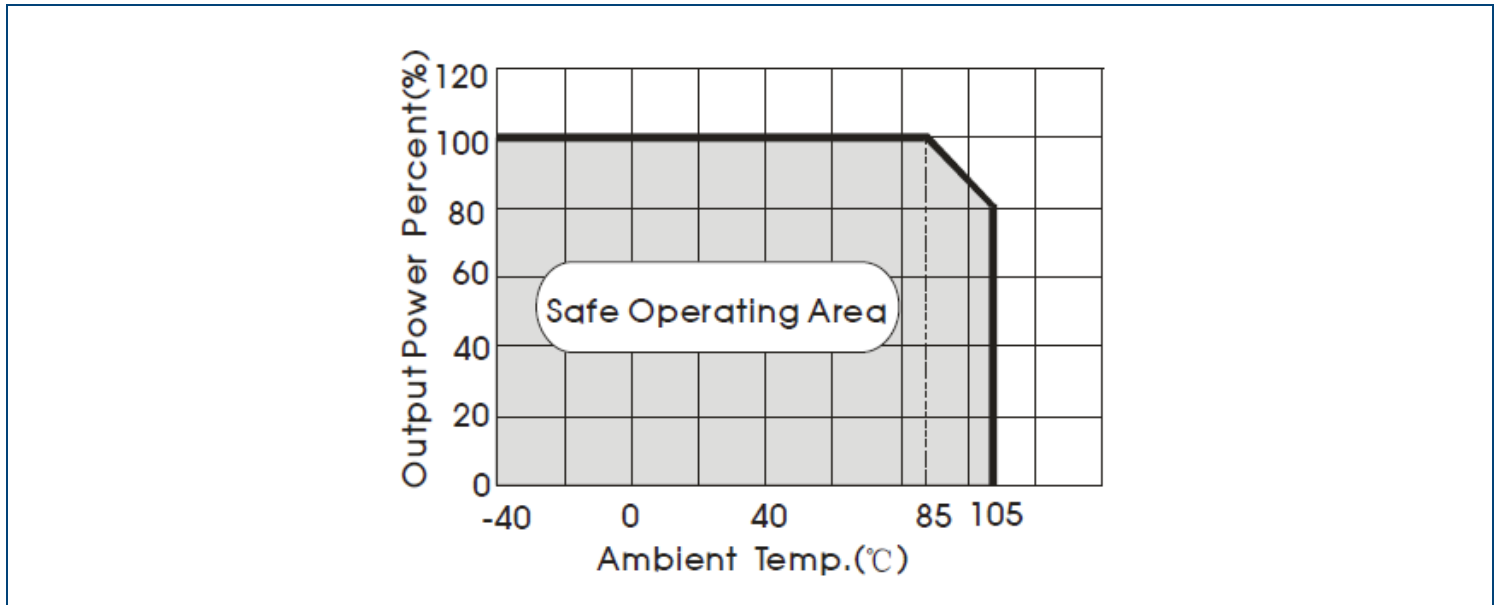
- Contact factory for reflected ripple current testing method.
- Ripple and noise tested with "parallel cable" method.
- This product is Listed to applicable standards and requirements by UL
- See Design Reference: EMC Compliance Circuit for recommended circuit.
- If product is not operated within required load range, the product's performance cannot be guaranteed to comply with all parameters in data sheet.
- Customization service is available, please contact factory.
- Products classified according to ISO14001 and related environmental laws and regulations and should be handled by qualified units.

*Due to advances in technology, specifications subject to change without notice.

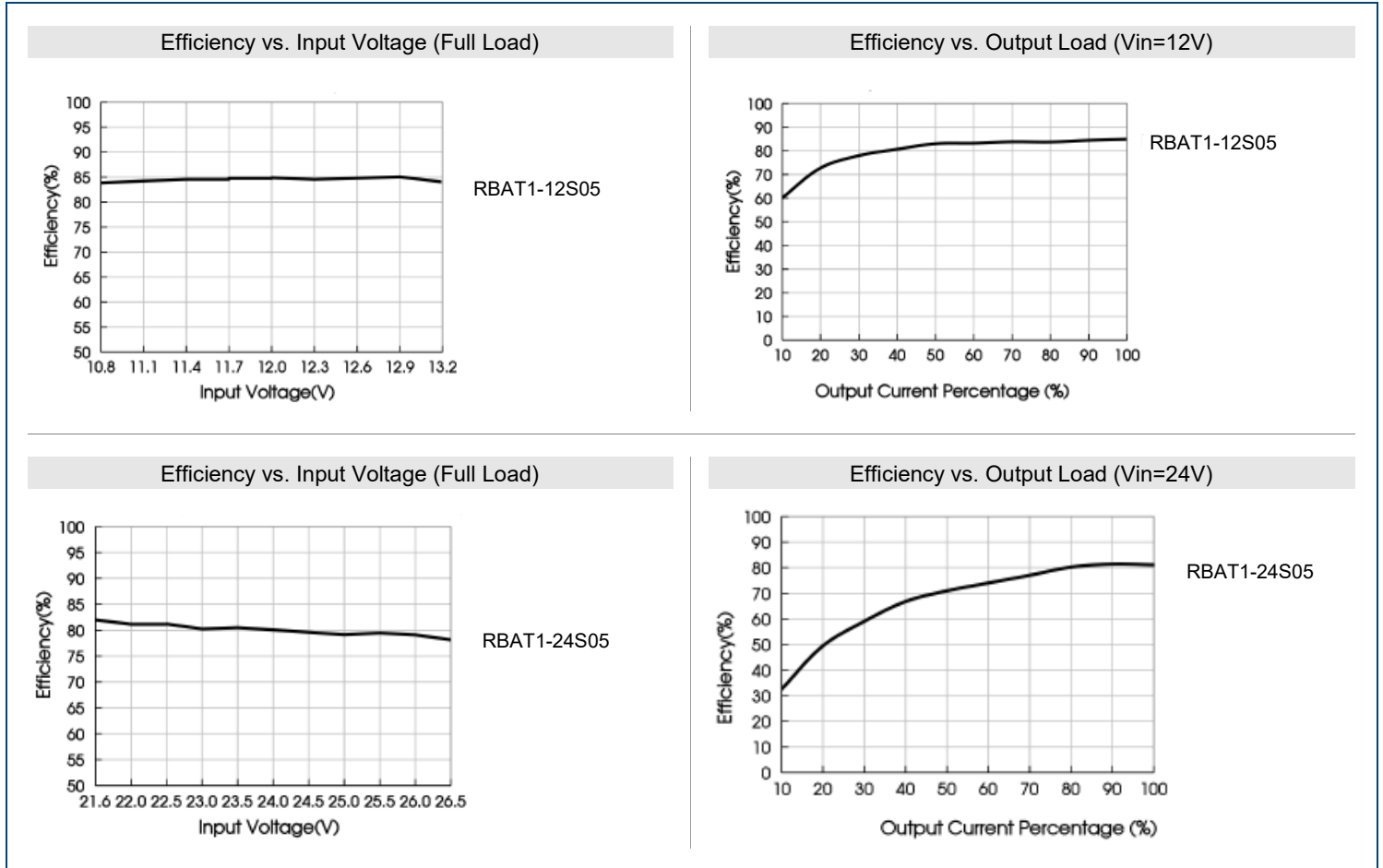
TYPICAL PERFORMANCE CURVES



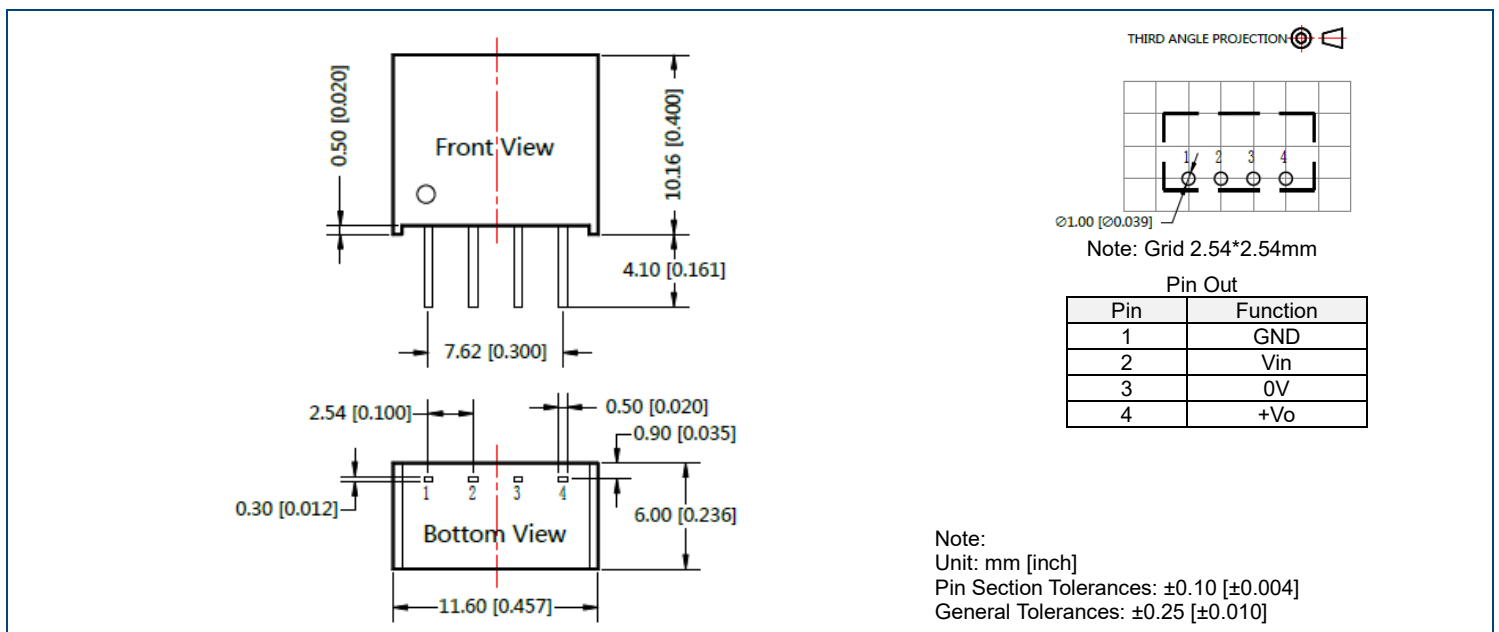
DERATING CURVES



EFFICIENCY GRAPHS



MECHANICAL DRAWINGS



DESIGN REFERENCE

1. Typical Application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown below. Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. Recommended input and output capacitor values in table below.



Fig. 1

Recommended Input and Output Capacitor Values

Vin	Cin	Vo	Cout
12VDC	2.2µF/25V	3.3VDC	10µF/16V
15VDC	2.2µF/25V	5VDC	10µF/16V
24VDC	1µF/50V	9VDC	2.2µF/16V
-	-	12VDC	2.2µF/25V
-	-	15VDC	1µF/25V
-	-	24VDC	1µF/50V

2. EMC Compliance Circuit

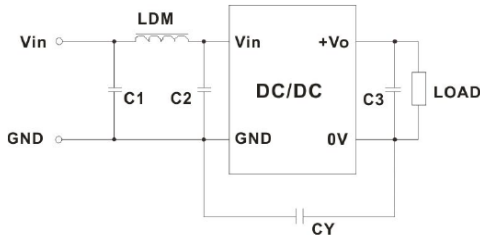


Fig. 2

Emissions	Component	Value
	C1	4.7µF/50V
	C2	4.7µF/50V
	C3	Refer to Cout in Fig. 1
	LDM	6.8µH
	CY	270pF/2kV

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

Phone: ☎(603)778-2300
 Toll Free: ☎(888)597-9255
 Fax: ☎(603)778-9797
 E-mail: sales@wallindustries.com
 Web: www.wallindustries.com
 Address: 37 Industrial Drive
 Exeter, NH 03833

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