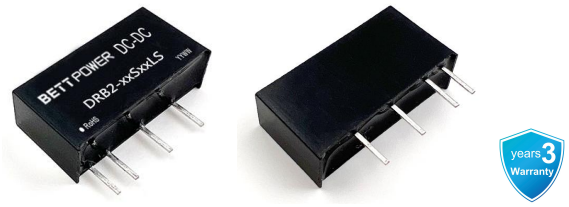
DRB2-xxSxxLS Series

DC-DC Converter | 2W | SIP6 | Fixed voltage input, Regulated Output | 1500VDC



Features

- SIP6 Package
- Operating Temperature Range: -40℃ ~ +85℃
- Isolation Voltage: 1500VDC
- Full Load Efficiency: up to 78% (typ.)
- Regulated Output, Voltage Accuracy 3% (tpy.)
- Designed to meet IEC/EN/BS EN/UL 62368

Product Description

Industrial Automate Power Security

The DRB2-xxSxxLS series is 2W regulated DC/DC converters that are an ideal and economical solutions for on-board power applications where an isolated voltage is required. Typical applications are digital interfaces, voltage conversion in distributed power systems, general low-frequency analog circuits, relay drive circuits, data exchange circuits, etc.

Selection Guide

Certification	Part No.	Input Voltage	Output			Full Load Efficiency (%)	Capacitive Load (μF)
		Nominal (Range) (VDC)	Voltage (VDC)	Current (mA) Min.	Current (mA) Max.	Typ.	Max.
EN/UL Pending	DRB2-05S03LS	5 (4.75~5.25)	3.3	0	400	76	2400
	DRB2-05S05LS	5 (4.75~5.25)	5	0	400	78	2400
	DRB2-12S03LS	12 (11.4~12.6)	3.3	0	400	76	2400
	DRB2-12S05LS	12 (11.4~12.6)	5	0	400	78	2400
	DRB2-12S12LS	12 (11.4~12.6)	12	0	167	79	560
	DRB2-24S03LS	24 (22.8~25.2)	3.3	0	400	76	2400
	DRB2-24S05LS	24 (22.8~25.2)	5	0	400	78	2400
	DRB2-24S12LS	24 (22.8~25.2)	12	0	167	79	560

Note: The above efficiency is measured at nominal input voltage and rated output load.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (Full Load/No-load)	5VDC Input	--	260/15	--/20	mA
	12VDC Input	--	110/8	--/15	mA
	24VDC Input	--	57/4	--/10	mA
Input Filter Type		Capacitance Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			--	±3	--	%
Line Regulation	Rated Load		--	±0.25	--	%
Load Regulation	10%~100% Load	3.3VDC Output	--	±3	--	%
		Others		±2	--	%
Ripple & Noise	20MHz Bandwidth (Peak-to-Peak)	3.3VDC Output	--	50	100	mV
		Others	--	30	75	mV
Temperature Coefficient	Full Load		--	±0.02	--	%/℃
Short Circuit Protection			Continuous, self-recovery			

Note: Ripple & noise are measured at 20MHz of bandwidth with a 10uF electrolytic capacitor and a 1uF ceramic capacitor connected inparallel at the output.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output, Test Time1 minute, leakage current < 1mA	1500	--	--	VDC
Insulation Resistance	Input-Output, Insulation Voltage500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-Output,100KHz/0.1V	--	20	--	pF
Operating Temperature	Temperature ≥71℃ derating (See Temperature derating curve chart)	-40	--	85	℃
Storage Temperature		-55	--	125	℃
Case Temperature Rise	Ta=25℃, nominal input, full load	--	25	--	℃
Storage Humidity	No condensation	--	--	95	%RH
Soldering Profile	Welding point distance from shell 1.5mm, 10 seconds	--	--	300	℃
Switching Frequency	Full load, nominal input voltage	--	250	--	kHz
MTBF	MIL-HDBK-217F@25℃	>3500Kh			

Mechanical Specifications

Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)

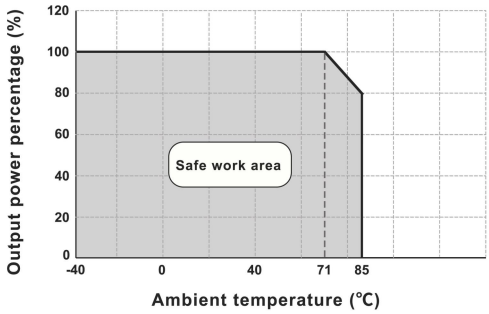
Mechanical Dimensions	19.60 * 10.10 * 7.05 mm
Weight	2.4 g (typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS B (EMC recommended circuit see Fig. 2)	
	RE	CISPR32/EN55032 CLASS B (EMC recommended circuit see Fig. 2)	
EMS	ESD	IEC/EN61000-4-2 Contact ±8KV	perf. Criteria B

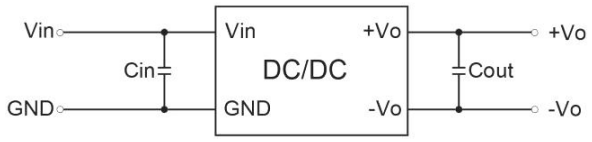
Product Characteristic Curve

Temperature Derating Curve



Design Reference - Application circuit

Application circuit



(Figure 1)

Recommended Capacitive Load Value Table

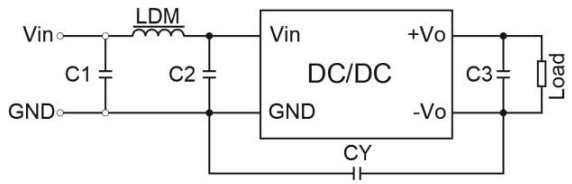
Vin	Cin	Vo	Cout
5VDC	4.7uF/16V	3.3VDC	10uF/16V
12VDC	2.2uF/25V	5VDC	10uF/16V
24VDC	1.0uF/50V	12VDC	2.2uF/25V

1. If further reduction of input and output ripple is required, a Capacitance Filter network can be connected at the input and output terminals, as shown in the application circuit in Figure 1. However, care should be taken to select appropriate filter capacitors. If the capacitor is too large, it may cause startup issues. For each output, under conditions ensuring safe and reliable operation, the recommended capacitive load values are detailed in the table;

2. To ensure the module operates efficiently and reliably, the minimum output load during use must not be less than 10% of the rated load. If the required power is indeed small, please connect a resistor in parallel at the output terminal (the sum of the power consumed by the resistor and the actual used power must be greater than or equal to 10% of the rated power).

Design Reference - EMC Solutions - Recommended Circuits

EMC Recommended Circuit Design and Application



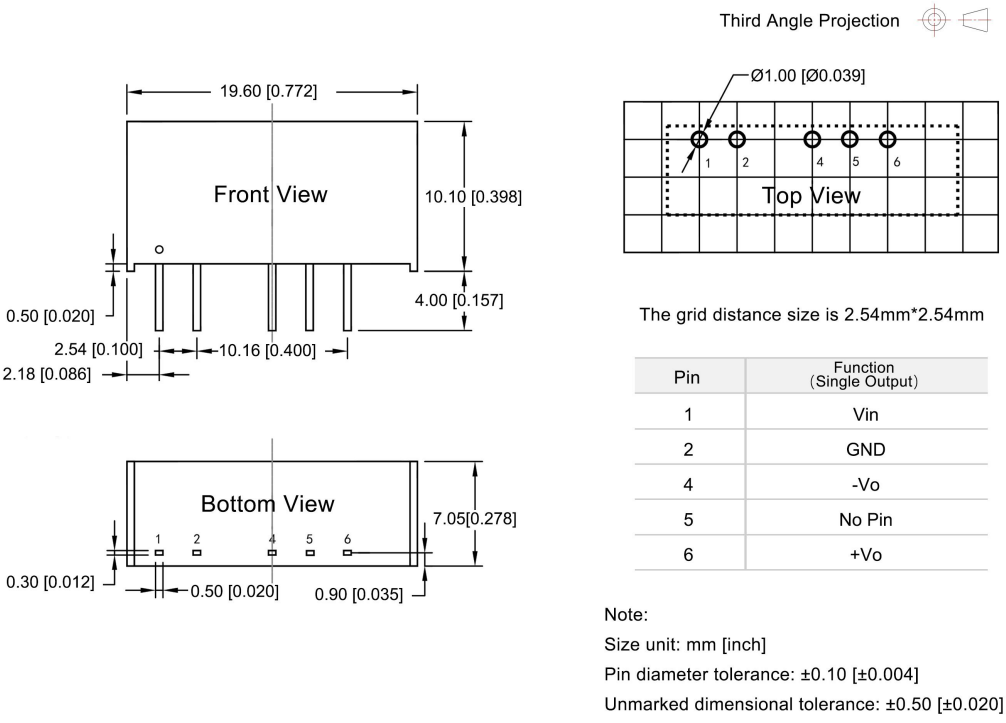
(Figure 2)

Recommended parameter values

C1	10μF /25V
C2	10μF /25V
C3	Refer to Cout parameter in Figure 1
CY	--
LDM	6.8μH

Dimensions and Recommended Layout

DRB2-xxSxxLS Dimensions and Recommended Layout



The grid distance size is 2.54mm*2.54mm

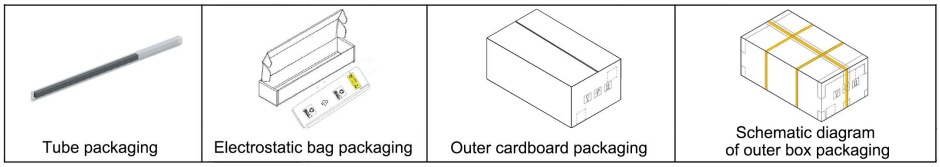
Pin	Function (Single Output)
1	Vin
2	GND
4	-Vo
5	No Pin
6	+Vo

Note:
Size unit: mm [inch]
Pin diameter tolerance: ±0.10 [±0.004]
Unmarked dimensional tolerance: ±0.50 [±0.020]

Packaging Information

Model series (Tube packaging)	Quantity per tube (pcs/ tube)	Quantity of electrostatic bag (pcs/ bag)	Quantity of inner box (pcs/ box)	Full box Quantity (pcs)
DRB2-xxSxxLS	26	416	1664	6656

The schematic diagram of tube packaging is shown below:



Precautions

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, all indicators in this manual are measured at Ta=25 ℃, humidity<75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this manual are based on our company's corporate standards;
6. Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
7. Product specifications are subject to change without prior notice.

Manufacturer contact information

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