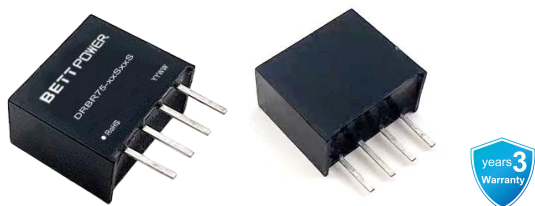


DRBR75-xxSxxS Series

DC-DC Converter | 0.75W | SIP4 | Fixed voltage input, Regulated Output | 1500VDC



Features

- Compact SIP4 Package
- Operating Temperature Range: -40°C ~ +105°C
- Isolation Voltage: 1500VDC
- Full Load Efficiency: up to 74% (typ.)
- Continuous Short Circuit Protection
- Regulated Output, Voltage Accuracy 3% (MAX.)
- Designed to meet IEC/EN/BS EN/UL 62368

Product Description



The DRBR75-xxSxxS series is 0.75W 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.		
EN/UL Pending	DRBR75-05S03S	5 (4.75~5.25)	3.3	0	200	68	2400
	DRBR75-05S05S	5 (4.75~5.25)	5	0	150	72	2400
	DRBR75-05S12S	5 (4.75~5.25)	12	0	62	73	560
	DRBR75-05S15S	5 (4.75~5.25)	15	0	50	74	560
	DRBR75-12S03S	12 (11.4~12.6)	3.3	0	200	68	2400
	DRBR75-12S05S	12 (11.4~12.6)	5	0	150	72	2400
	DRBR75-12S12S	12 (11.4~12.6)	12	0	62	73	560
	DRBR75-12S15S	12 (11.4~12.6)	15	0	50	74	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	--	290/15	221/--	mA
	12VDC Input	--	92/8	98/--	mA
Reflected Ripple Current		--	15	--	mA
Input Filter Type		Capacitance Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	--	±3	%
Line Regulation	Input Voltage Variation ±1%	--	--	±0.25	%
Load Regulation	10%~100% Load				
	3.3VDC Output	--	±3	--	%
	Others	--	±2	--	%
Ripple & Noise	20MHz Bandwidth (Peak-to-Peak)	--	70	150	mV
Temperature Coefficient	Full Load	--	±0.03	--	%/°C
Short Circuit Protection		Continuous Short Circuit, 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 time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-Output,100KHz/0.1V	--	20	--	pF
Operating Temperature	Temperature ≥Derating at 85°C (See Temperature derating curve chart)	-40	--	105	°C
Storage Temperature		-55	--	125	°C
Case Temperature Rise	Ta=25°C, nominal input, full load output	--	15	--	°C
Storage Humidity	No condensation	5	--	95	%RH
Soldering Profile	Wave soldering	260±5°C; Time: 5-10s			
	Manual soldering	360±10°C; Time: 3-5s			
Switching Frequency	Full load, nominal input voltage	--	220	--	kHz
MTBF	MIL-HDBK-217F@25°C	>3500Kh			

Mechanical Specifications

Case Material	Black flame-retardant heat-resistant plastic (UL94V-0)
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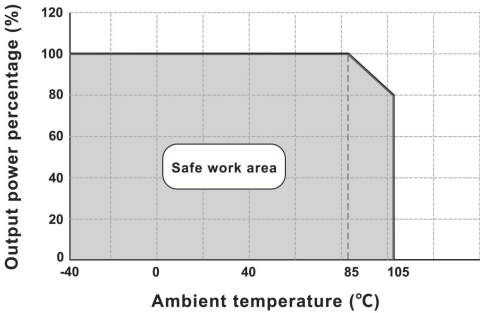
Mechanical Dimensions	11.6 * 6.00 * 10.20mm
Weight	1.6g(typ.)
Cooling Method	Free air convection

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 ±6KV/Air ±8KV	perf. Criteria B

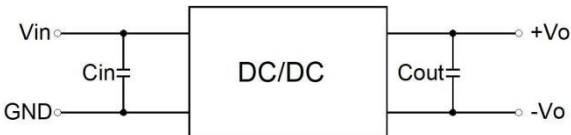
Product Characteristic Curve

Temperature Derating Curve



Design Reference - Application circuit

Application circuit



(Figure 1)

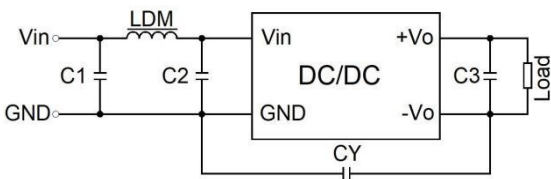
Recommended Capacitive Load Value Table

Vin	Cin	Vo	Cout
5VDC	10uF/16V	3.3/5VDC	10μF/16V
12VDC	4.7uF/50V	12VDC	2.2μF/25V
--	--	15VDC	1μF/25V

All DC/DC converters in this series are tested before shipment using the recommended test circuit shown in (Figure 1). To further reduce input and output ripple, the external input and output capacitors Cin and Cout can be increased, or capacitors with lower equivalent series impedance can be selected. For each output, under safe and reliable operating conditions, the maximum capacitance of the filter capacitor must not exceed the maximum capacitive load of the product.

Design Reference - EMC Solutions - Recommended Circuits

EMC Recommended Circuit Design and Application



(Figure 2)

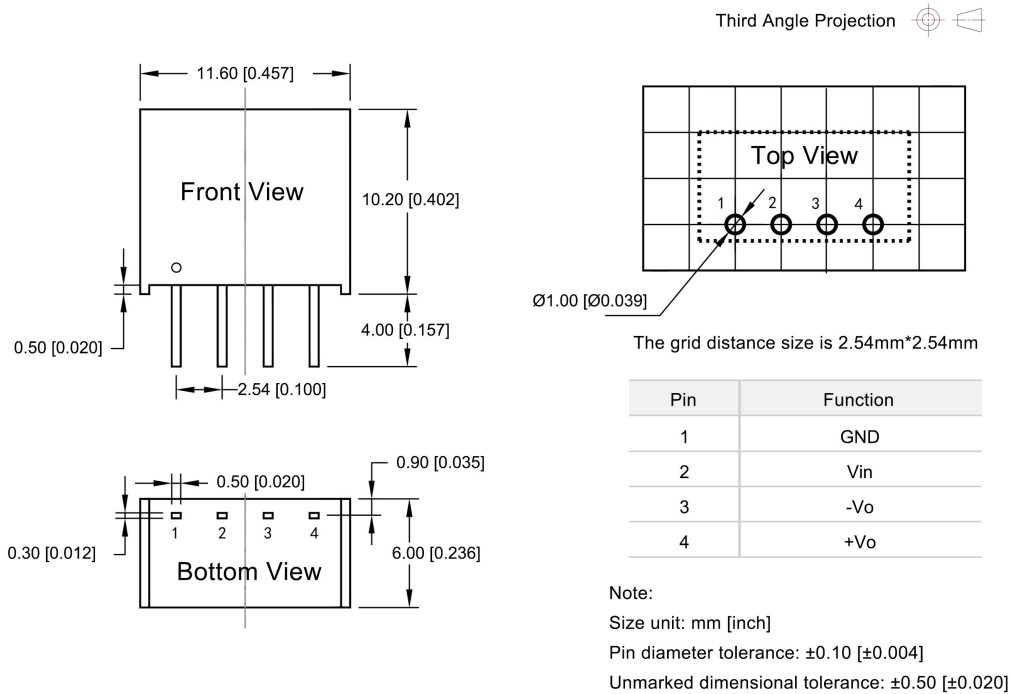
Recommended parameter values

	Recommended parameter values
C1	4.7μF /50V
C2	4.7μF /50V
C3	Refer to Cout parameter in Figure 1
CY	1nF/4kVDC
LDM	6.8μH

- Note:
- 1. Typical Application
If further reduction of input and output ripple is required, a Capacitance Filter network can be connected at the input and output terminals. The application circuit is shown in Figure 1. However, appropriate filter capacitors should be selected. 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. EMC Recommended Circuit: See Figure 2
 - 3. Output Load Requirements
To ensure efficient and reliable operation of the module, the minimum output load during use must not be less than 10% of the rated load. If the required power is indeed small, connect a resistor in parallel at the output terminal (the sum of the resistor's power dissipation and the actual usage power must be greater than or equal to 10% of the rated power).

Dimensions and Recommended Layout

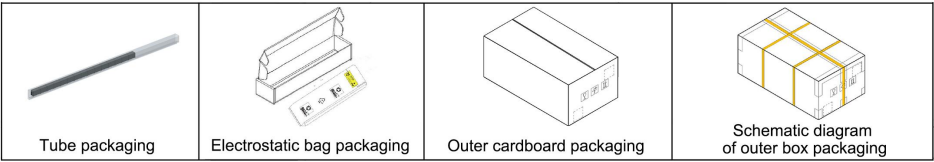
DRBR75-xxSxxS Dimensions and Recommended PCB Layout



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)
DRBR75-xxSxxS	44	704	2816	11264

The schematic diagram of tube packaging is shown below:



Product 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 $T_a=25\text{ }^{\circ}\text{C}$, 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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