BETT POWER
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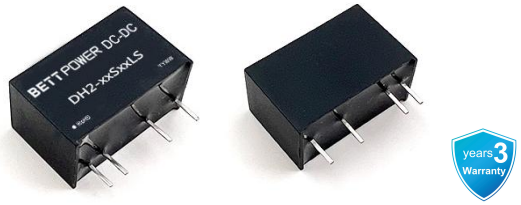
2025/08/18 (A/2)

DH2-xxSxxLS Series

DC-DC Converter | 2W | SIP7 | Fixed voltage input, unregulated output | 6000VDC



Features

- SIP7 Package
- Operating Temperature Range: -40℃ ~ +105℃
- Isolation Voltage: 5000VAC/6000VDC
- Full Load Efficiency: up to 86% (typ.)
- Continuous Short Circuit Protection
- CMTI >200kV/μS
- Designed to meet IEC/EN/BS EN/UL 62368

Product Description

Medical Industrial Automate Power Security

The DH2-xxSxxLS series is 2W unregulated DC/DC converters which features high isolation voltage of 5000VAC and 6000VDC and continuous short circuit protection. They are specially designed for applications where require compact size,high isolation, low isolation capacitor and low leakage current power. Typical applications are electricity, IGBT driver applications, 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	DH2-05S03LS	5(4.5~5.5)	3.3	40	400	78	2200
	DH2-05S05LS	5(4.5~5.5)	5	40	400	80	2200
	DH2-05S09LS	5(4.5~5.5)	9	22	222	80	1000
	DH2-05S12LS	5(4.5~5.5)	12	17	168	84	470
	DH2-05S15LS	5(4.5~5.5)	15	13	133	84	470
	DH2-05245LS	5(4.5~5.5)	24	8	83	85	220
	DH2-12S03LS	12(10.8~13.2)	3.3	40	400	80	1000
	DH2-12S05LS	12(10.8~13.2)	5	40	400	82	1000
	DH2-12S09LS	12(10.8~13.2)	9	22	222	82	680
	DH2-12S12LS	12(10.8~13.2)	12	17	168	84	470
	DH2-12S15LS	12(10.8~13.2)	15	13	133	84	470
	DH2-12S24LS	12(10.8~13.2)	24	8	83	85	220
	DH2-15S03LS	15 (13.5~16.5)	3.3	40	400	80	1000

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	DH2-15S05LS	15 (13.5~16.5)	5	40	400	82	1000
	DH2-15S09LS	15 (13.5~16.5)	9	22	222	82	680
	DH2-15S12LS	15 (13.5~16.5)	12	17	168	85	470
	DH2-15S15LS	15 (13.5~16.5)	15	13	133	85	470
	DH2-15S24LS	15 (13.5~16.5)	24	8	83	86	220
	DH2-24S03LS	24 (21.6~26.4)	3.3	40	400	81	1000
	DH2-24S05LS	24 (21.6~26.4)	5	40	400	83	1000
	DH2-24S09LS	24 (21.6~26.4)	9	22	222	83	680
	DH2-24S12LS	24 (21.6~26.4)	12	17	168	85	470
	DH2-24S15LS	24 (21.6~26.4)	15	13	133	85	470
	DH2-24S24LS	24 (21.6~26.4)	24	8	83	86	220

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	3.3VDCOutput	--	339/45	348/60	mA
		5/9VDCOutput	--	500/45	512/60	mA
		Others	--	480/50	490/60	mA
	12VDC Input	3.3VDCOutput	--	137/10	141/15	mA
		5/9VDCOutput	--	204/10	210/15	mA
		Others	--	200/10	205/15	mA
	15VDC Input	3.3VDCOutput	--	110/10	113/15	mA
		5/9VDCOutput	--	163/10	167/15	mA
		Others	--	156/10	161/15	mA
	24VDC Input	3.3VDCOutput	--	67/10	70/15	mA
		5/9VDCOutput	--	100/10	104/15	mA
		Others	--	98/10	102/15	mA
Reflected Ripple Current			--	15	--	mA
Surge Voltage	5VDC Input		-0.7	--	9	VDC
	12VDC Input		-0.7	--	18	VDC
	15VDC Input		-0.7	--	20	VDC
	24VDC Input		-0.7	--	30	VDC
Input Filter Type			Capacitance Filter			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See Output Regulation Curve			
Line Regulation	Input Voltage Variation Range ±1%	3.3/5VDCOutput	--	--	± 1.5	%
		Others	--	--	± 1.2	%
Load regulation	10%~100% Load	3.3/5VDCOutput	--	--	20	%
		Others	--	--	15	%
Ripple & noise	20MHz bandwidth (peak-to-peak)		--	80	120	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 time 1 minute, leakage current less than 1mA	5000	--	--	VAC

		6000	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-Output,100KHz/0.1V	--	5	10	pF
Operating Temperature	Derating when operating temperature≥85℃ (See Temperature derating curve chart)	-40	--	105	℃
Storage Temperature		-55	--	125	℃
Case Temperature Rise	Ta=25℃, 5V nominal input, full load output	--	35	--	℃
	Ta=25℃, others, full load output	--	25	--	℃
Storage Humidity	No condensation	--	--	95	%RH
Soldering Profile	Wave soldering	260±5℃; Time: 5 - 10s			
	Manual soldering	360±10℃; Time: 3 - 5s			
Switching Frequency	Full load, nominal input voltage	--	220	--	kHz
MTBF	MIL-HDBK-217F@25℃	>3500Kh			

Mechanical Specifications

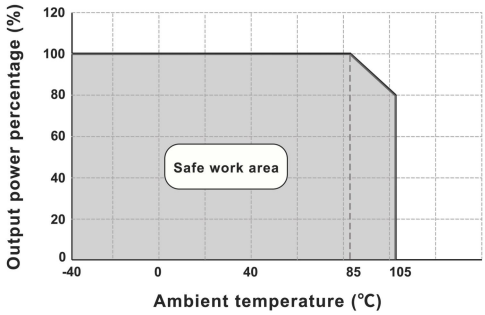
Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)
Mechanical Dimensions	19.50 * 9.80 * 12.50mm
Weight	4.1g (typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

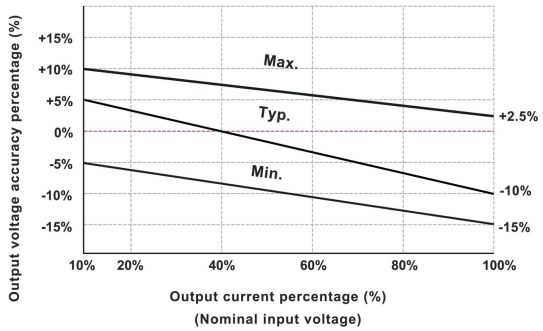
EMI	CE	CISPR32/EN55032 CLASS A (EMC recommended circuit see Fig. 2)	
	RE	CISPR32/EN55032 CLASS A (EMC recommended circuit see Fig. 2)	
EMS	ESD	IEC/EN61000-4-2 Contact ±8KV	perf. Criteria B

Product Characteristic Curve

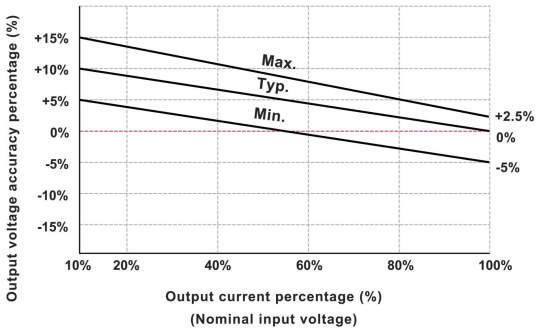
Temperature Derating Curve



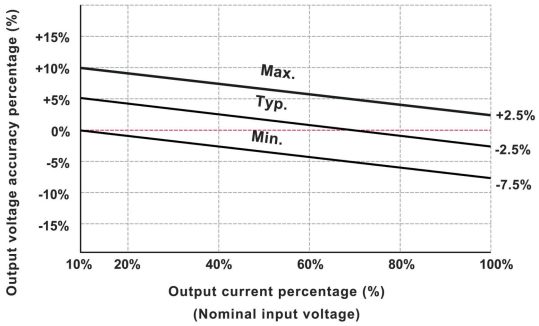
Output Regulation Curve (3.3V Output)



Output Regulation Curve (DH2-05S05LS, DH2-05S12LS, DH2-24S05LS, DH2-24S24LS)

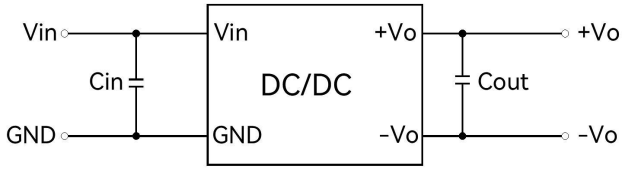


Output Regulation Curve (Others)



Design Reference - Application circuit

Application circuit



(Figure 1)

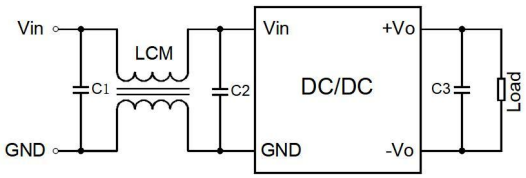
Recommended Capacitive Load Value Table

Vin	Cin	Vo	Cout
5VDC	10uF/16V	3.3/5VDC	10uF/16V
12VDC	10uF/25V	9VDC	10uF/25V
15VDC	4.7uF/25V	12VDC	2.2uF/25V
24VDC	2.2uF/50V	15VDC	1uF/25V
--	--	24VDC	0.47uF/50V

All DC/DC converters in this series are tested according to the recommended application circuit (Figure 1) before the shipment. To further reduce input and output ripple, increase the external input and output capacitors Cin and Cout, or select capacitors with lower equivalent series impedance. 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 Table

C1	4.7μF /50V
C2	4.7μF /50V
C3	Refer to the Cout parameter in Figure 1
LCM	22μH

Note:

1. Typical Application

To further reduce input and output ripple, a Capacitance Filter network can be connected at the input and output terminals. The application circuit is shown in Figure 1. However, care should be taken to select an appropriate filter capacitor. 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.

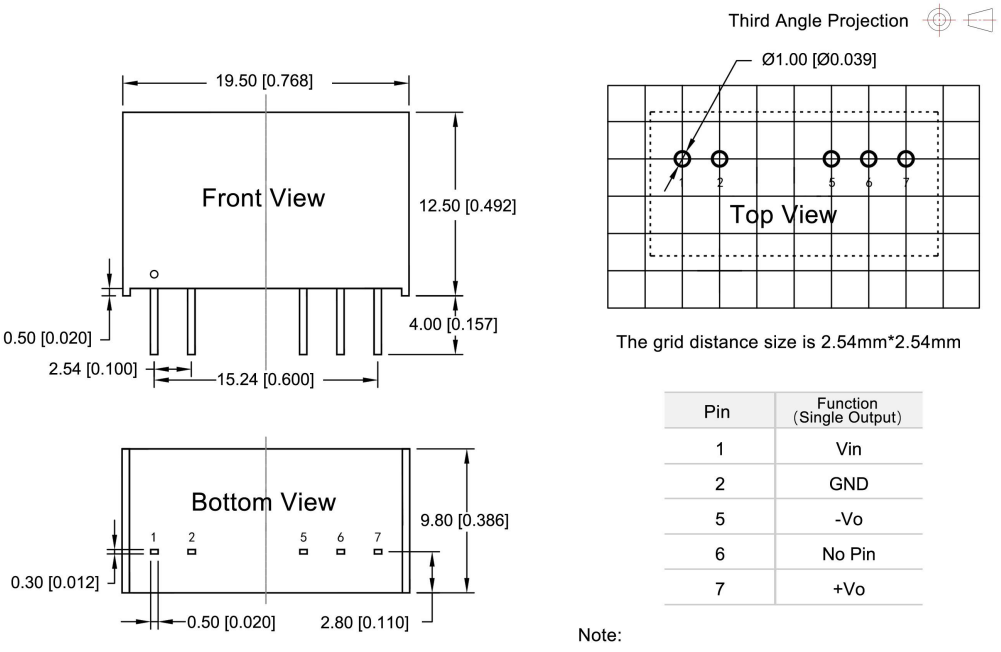
2. EMC Recommended Circuit: See Figure 2

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 very small, please connect a resistor in parallel at the output (the sum of the resistor's power dissipation and the actual used power must be greater than or equal to 10% of the rated power).

Dimensions and Recommended Layout

DH2-xxSxxLS Dimensions and Recommended Layout



The grid distance size is 2.54mm*2.54mm

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

Note:

Size unit: mm [inch]

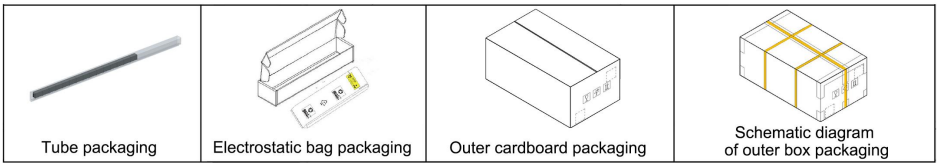
Pin diameter tolerance: ±0.10 [±0.004]

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)
DH2-xxSxxLS	26	260	780	3120

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 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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