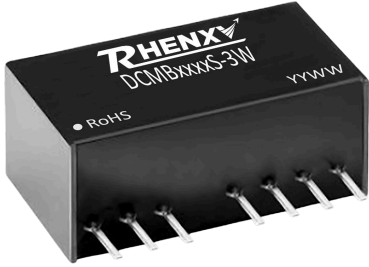


DCMB_S-3W Series



CE Report

RoHS



FEATURES

- Wide voltage range input (2:1)
- Working temperature range: -40 °C To +85 °C
- Up to 84% efficiency
- Standby power consumption: 0.3W
- Output short circuit, overcurrent, overload protection
- 3 Years Warranty

APPLICATIONS

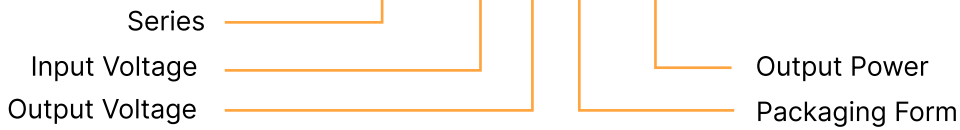
- Industrial control
- Energy storage systems
- Photovoltaic inverters

DESCRIPTION

DC-DC Module Power Supply, Wide Voltage Input, Power 3W, Isolated, Regulated, Single Output, SIP Packaging.

MODEL NUMBERING

DCMBxxxxS-3W



SELECTION GUIDE

Product Model	Input Voltage Standard Value(range)	Output Voltage (Vdc)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μ F)
DCMB0503S-3W	5VDC (4.5-9)	3.3	758/38	66/68	1800
DCMB0505S-3W		5	500/25	71/73	2200
DCMB0509S-3W		9	278/14	72/74	1000
DCMB0512S-3W		12	208/10	75/77	680
DCMB0515S-3W		15	167/8	72/77	470
DCMB0524S-3W		24	104/5	74/76	330

Product Model	Input Voltage Standard Value(range)	Output Voltage (Vdc)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μ F)
DCMB1203S-3W	12VDC (9-18)	3.3	758/38	73/75	2700
DCMB1205S-3W		5	600/30	74/76	2200
DCMB1209S-3W		9	333/17	77/79	1000
DCMB1212S-3W		12	250/13	80/82	680
DCMB1215S-3W		15	200/10	81/83	470
DCMB1224S-3W		24	125/6	79/81	330
DCMB2403S-3W	24VDC (18-36)	3.3	758/38	72/74	2700
DCMB2405S-3W		5	600/30	79/81	2200
DCMB2409S-3W		9	333/17	81/83	1000
DCMB2412S-3W		12	250/13	81/83	680
DCMB2415S-3W		15	200/10	81/83	470
DCMB2424S-3W		24	125/6	81/83	330
DCMB4803S-3W	48VDC (36-75)	3.3	758/38	73/75	2700
DCMB4805S-3W		5	600/30	74/76	2200
DCMB4809S-3W		9	313/17	74/76	1000
DCMB4812S-3W		12	250/13	78/80	680
DCMB4815S-3W		15	200/10	82/84	470
DCMB4824S-3W		24	125/6	80/82	330

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units	
Input Current (full load /no-load)	5VDC Input	3.3VDC Output	--	734/40	758/85	
		Others		805/40	846/85	
	12VDC Input	3.3VDC Output	--	278/30	286/40	
		Others		314/30	338/40	
	24 VDC Input	3.3VDC Output	--	140/20	145/40	
		Others		154/20	163/40	
	48 VDC Input	3.3VDC Output	--	69/5	72/15	
		Others		78/5	85/15	
Reflected Ripple Current	5VDC Input	--	20	--		
	12VDC Input	--	20	--		
	24VDC Input	--	55	--		
	48VDC Input	--	55	--		
Surge Voltage (1sec.max.)	5VDC Input	-0.7	--	12		
	12VDC Input	-0.7	--	25		
	24VDC Input	-0.7	--	50		
	48VDC Input	-0.7	--	100		
Start-up Voltage	5VDC Input	--	--	4.5		
	12VDC Input	--	--	9		
	24VDC Input	--	--	18		
	48VDC Input	--	--	36		
Input Filter		Capacitive Filter				
Hot Plug		Unavailable				
Ctrl*	Module On	Ctrl pin open (high resistance)				
	Module Off	Ctrl pin pulled high (current5-10mA typ. into Ctrl.)				

Note: *For use of Ctrl, please refer to the "design reference" in this manual.

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	5% -100% Load	--	±1	±3	%
Linear regulation rate	Input voltage variation+/- 1%	--	±0.2	±0.5	%
Load regulation rate	Input voltage variation+/- 1%	--	±0.6	±1	%
Ripple & Noise	20MHz bandwidth	--	30	100	mVp p
Dynamic response step deviation		--	±0.25	±5	%
Dynamic response recovery time		--	0.5	3	ms
Temperature drift coefficient	100% load	--	±0.02	±0.03	%/°C
Output over voltage protection	Full voltage range input	110	--	160	%Vo
Output over current protection	Full voltage range input	110	140	190	%Io
Short circuit protection	Sustainable, Self healing				

Note: The Testing Method For Ripple And Noise Is The Parallel Line Testing Method.

GENERAL CHARACTERISTIC

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Input output, test time1 minute, Leakage current less than1 mA	1500	--	--	VDC
Insulation resistance	Input output, Insulation voltage 500VDC	1000	--	--	MΩ
Isolation capacitance	Input output, 100KHz/0.1V	--	120	--	pF
Working temperature	Temperature ≥ 71 °C for derating (See Figure4)	-40	--	+85	°C
Storage temperature		-55	--	+125	°C
Storage humidity	Non condensing	--	--	95	%RH

Parameter	Conditions	Min.	Typ.	Max.	Units
Housing temperature rise during operation	Ta=25°C,Nominal input, Full output	--	15	25	°C
Soldering temperature resistance of pins	The distance from the welding spot to the shell is 1.5mm, 10 seconds	--	--	300	°C
	REFLOW: Peak temperature Tc≤245°C, maximum time above 217°C for 60 seconds.	--	--	245	°C
Switching frequency	Full load, Nominal input voltage	--	250	--	kHz
Mean time between failures 【MTBF】	MIL HDBK-217F@25°C	1000	--	--	kHours

PHYSICAL CHARACTERISTICS

Parameter	Conditions
Housing material	Black flame retardant and heat resistant plastic (UL94V 0)
Overall dimensions	22.00 × 9.50 × 12.00 mm
Weight	4.7g(Typ.)
Cooling mode	Natural air cooling

EMC CHARACTERISTICS

Parameter	Category	Content
EMI	Conductive disturbance	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 2)
	Radiation disturbance	CISPR32/EN55032 CLASS B (The recommended circuit is shown in Figure 2)
EMS	Electrostatic discharge	IEC/EN61000-4-2 Contact ±4KV perf. Criteria B

CIRCUIT DESIGN AND APPLICATION

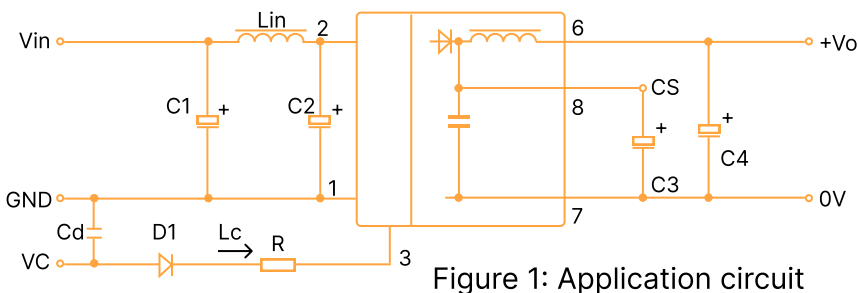


Figure 1: Application circuit

VIn	5VDC & 12VDC	24VDC & 48VDC
C1	100μF/25V	10μF/100V
C2	47μF/25V	1μF/100V
LIn	4.7μH-12μH	
C3	10μF/50V-22 μF/50V	
C4	100μF/50V(Typ.)	
Cd	47nF/100V	

Table 1: Recommended Capacitive Load Values

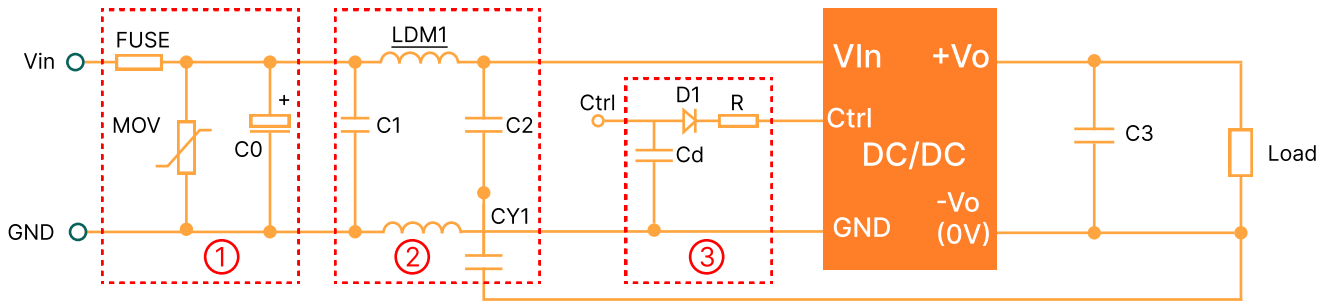


Figure 2: EMC Typical Recommended Circuits

Model	VI _n : 5VDC	VI _n : 12VDC	VI _n : 24VDC	VI _n : 48VDC
FUSE	Slow-blow, selecting based on needs			
MOV	--	S14K20	S20K30	S14K60
C0	680μF/25V	680μF/25V	330μF/50V	330μF/100V
C1	4.7μF/50V			4.7μF/100V
LDM1	12μH			
C2	4.7μF/50V			4.7μF/100V
C3	Refer to the Cout in Fig.2			
CY1	1nF/2kV			
D1	RB160M-60V/1A			
R	In accordance with the formula: $R = \frac{V_c - V_D - 1.0}{I_c} - 300$			
Cd	47nF/100V			

Table 2: Recommended Circuit Parameter Values

1. Typical application: If further reduction of input and output ripple is required, a capacitor Filter network can be connected at the input and output ends. The application circuit is shown in Figure 1. However, suitable Filter capacitors should be selected. If the capacitance is too large, it may cause overcurrent or poor startup of the power supply. For each output, while ensuring safe and reliable operation, the recommended capacitance load values are shown in Table 1.
2. EMC requirements: For situations with high EMC requirements, a typical EMC recommended circuit is shown in Figure 2.
3. Input requirements: Ensure that the Fluctuation range of the input voltage does not exceed the upper and lower limits of the input voltage Specified in this data sheet, and the input power must be greater than the output power Specified in this data sheet. For situations with a 24V input voltage, it is recommended to connect a TVS tube between the positive and negative input pins for protection (recommended parameters for TVS tubes: 30V, bidirectional, SOD-123 packaging).
4. Output load requirements: Try to avoid using it without load as much as possible; When the actual power of the load is less than 10% of the rated output power in this data sheet, or when it needs to be used in no-load situations, it is recommended to connect a load resistor externally at the output end. The load resistor can be calculated according to 5-10% of the rated power in this data sheet. The calculation formula for the load resistor value is $R_L = V_{out}^2 / (P_{out} * 10\%)$.
5. Overload protection: Under normal working conditions, the output circuit of this product has no protection function for overload situations. The simplest method is to connect a self recovery fuse in series at the input end, or add a circuit breaker outside the circuit; Or during design and selection, the actual power of the circuit should be around 60-80% of the rated power in this data sheet.

PRODUCT CHARACTERISTIC CURVE

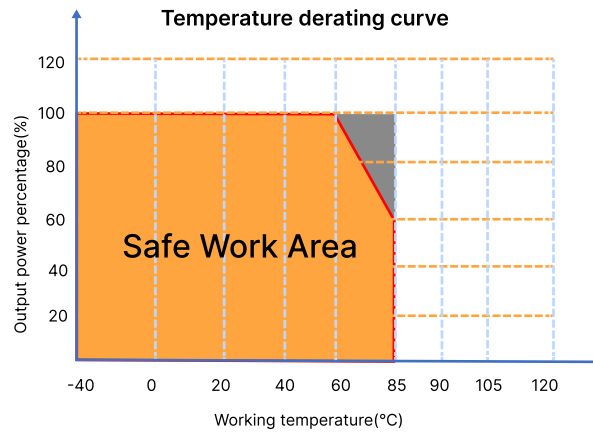


Figure 3: Temperature Derating Curve

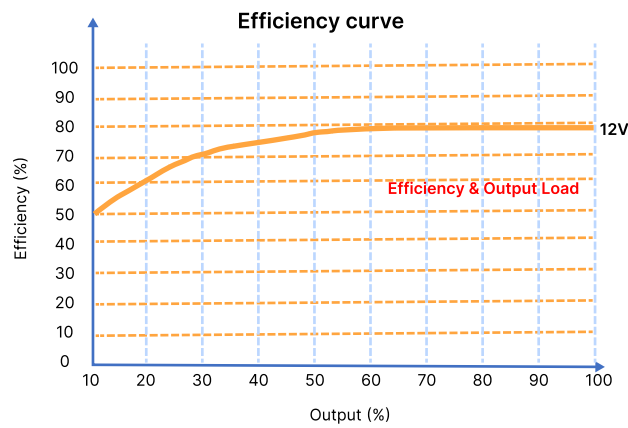


Figure 4: Efficiency Vs Output Load (Nominal Voltage Input)

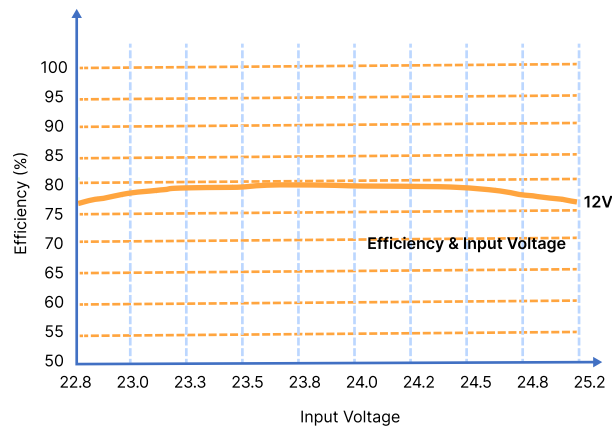


Figure 5: Efficiency Vs Input Voltage (100% Load)

OVERALL DIMENSIONS AND PIN FUNCTIONS

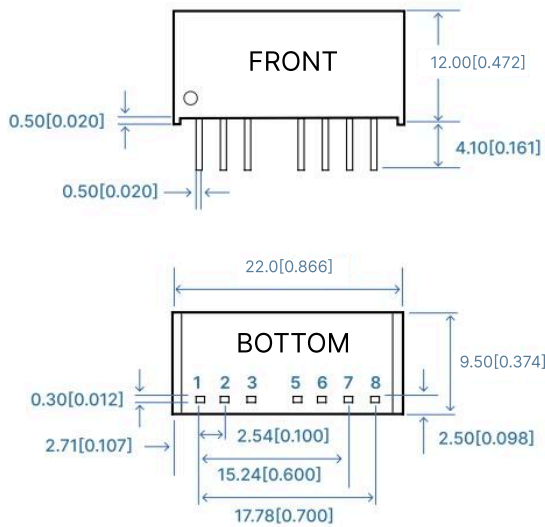
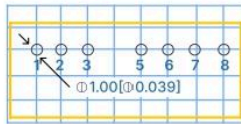


Figure 6: Overall dimensions

Note: The grid distance is 2.54mm * 2.54mm



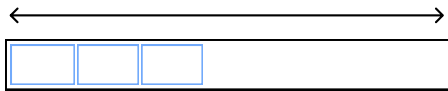
Note:
Dimensions in mm
Terminal diameter tolerance: +/-0.10
Undeclared tolerance: +/-0.50

Table 3: Pin Function Table

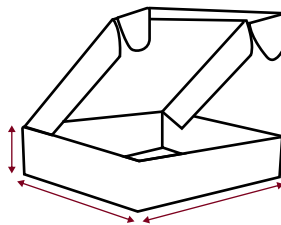
Pin	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

*NC cannot be connected to any external circuits

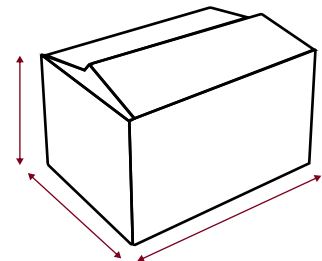
PACKAGING METHOD



16 Pieces/Tube



432 Pieces/Inner box



2160 Pieces/Outer box

NOTES & INSTRUCTIONS

- 1.The input voltage shall not exceed the specified range value, otherwise permanent and unrecoverable damage maybe caused;
2. Unless otherwise specified, the parameters in this manual are measured at 25 °C, 40%~75% humidity, input nominal voltage and output pure resistance mode under full load;
- 3.All index test methods are based on the company's enterprise standards.
- 4.The copyright and the final interpretation right of the product belong to HENXY.