

DCMB_S-10W Series



FEATURES

- Wide 2:1 input voltage range
- Industry standard pin-out
- Operating ambient temperature range: -40°C to +85°C
- High efficiency up to 88%
- Isolation voltage : 1.5K VDC
- Input under-voltage protection, output short-circuit, over-current protection
- 3 Years Warranty

DESCRIPTION

DC-DC module power supply, Wide voltage input, Power 10W, Isolated, Regulated, Single output, SIP packaging.

MODEL NUMBERING



SELECTION GUIDE

Product Model	Input Voltage (Vdc) Standard Value(range)	Output Voltage (Vdc)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
DCMB1203S-10W	12 (9-18)	3.3	2400/0	80/82	2200
DCMB1205S-10W		5	2000/0	83/85	2200
DCMB1209S-10W		9	1111/0	84/86	680
DCMB1212S-10W		12	833/0	84/86	470
DCMB1215S-10W		15	667/0	84/86	330
DCMB1224S-10W		24	417/0	84/86	220

DC-DC CONVERTERS

10 WATTS

Product Model	Input Voltage Standard Value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μ F)
DCMB2403S-10W	24 (18-36)	3.3	2400/0	82/84	2200
DCMB2405S-10W		5	2000/0	85/87	2200
DCMB2409S-10W		9	1111/0	86/88	680
DCMB2412S-10W		12	833/0	86/88	470
DCMB2415S-10W		15	667/0	86/88	330
DCMB2424S-10W		24	417/0	85/87	220

INPUT CHARACTERISTICS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Input Current (full load)	Nominal voltage input 12VDC	--	795	992	mA
	Nominal voltage input 24VDC	--	389	485	mA
Input current (No-load)	Nominal voltage input 12VDC	--	9	50	mA
	Nominal voltage input 24VDC	--	9	45	mA
Reflected Ripple Current		--	50	--	mA
Input Impulse Voltage (1sec. max.)	Nominal voltage input 12VDC	-0.7	--	25	VDC
	Nominal voltage input 24VDC	-0.7	--	50	VDC
Starting voltage	Nominal voltage input 12VDC	--	--	9	VDC
	Nominal voltage input 24VDC	--	--	18	VDC
Input Under-voltage Protection	Nominal voltage input 12VDC	5.5	6.5	--	VDC
	Nominal voltage input 24VDC	12	15.5	--	VDC

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Filter		Capacitance filter			
Remote control foot (Some models are applicable)	Module On	Ctrl pin open or pulled high (3.5-12VDC)			
	Module shutdown	Ctrl pin pulled low to GND (0-1.2VDC)			
	Input current during shutdown	--	6	10	mA

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	5%-100% load	--	±1.5	±2	%
Line regulation rate	Input voltage variation from low to high at full load	--	±0.25	±0.5	%
Load regulation rate	5%-100% load	--	±0.5	±1	%
Ripple & Noise	20MHz bandwidth, 5%-100% load	--	75	150	mVp-p
Dynamic response step deviation	25% load step change	--	±3	±8	%
Dynamic response recovery time	25% load step change	--	300	500	us
Temperature drift coefficient	100% load	--	--	±0.03	%/°C
Output Over Current protection	Full voltage range input	110	160	230	%Io
Short circuit protection	Input voltage range	Continuous, 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 electric strength test for 1 minute with a leakage current of 1mA max.	1500	--	--	VDC
Insulation resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation capacitance	Input-output capacitance at 100kHz/0.1V	--	1000	--	pF
Working temperature	See Fig.4	-40	--	+85	°C
Storage temperature		-55	--	+125	°C
Storage humidity	Non condensing	5	--	95	%RH
Soldering temperature resistance of pins	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
	Wave soldering, 10 seconds	255	260	265	°C
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	PWM mode	--	500	--	kHz
Mean time between failiures 【MTBF】	MIL-HDBK-217F@25°C	1000	--	--	khours

PHYSICAL CHARACTERISTICS

Parameter	Conditions
Housing material	Black plastic, flame-retardant and heat-resistant (UL94 V-0)
Overall dimensions	22.00 × 9.50 × 12.00 mm
Weight	5.5g (Typ.)
Cooling mode	Natural air cooling (20LFM)

EMC CHARACTERISTICS

Parameter	Category	Content		
EMI	CE	CISPR32/EN55032	CLASS B (see Fig.2-Ⓑ for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig.2-Ⓑ for recommended circuit)	
EMS	ESD	IEC/EN61000-4-2	Contact ±6kV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±2kV (see Fig.2-Ⓐ for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2kV (see Fig.2-Ⓐ for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A

CIRCUIT DESIGN AND APPLICATION

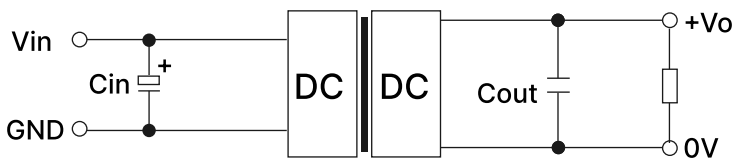


Fig 1: Application circuit

Table 1: Recommended Capacitive Load Values

Vout(VDC)	Cout	Cin	
		Vin: 12VDC	Vin: 24VDC
3.3/5/9	22μF/16V	47μF/50V	47μF/100V
12/15	22μF/25V		
24	22μF/50V		

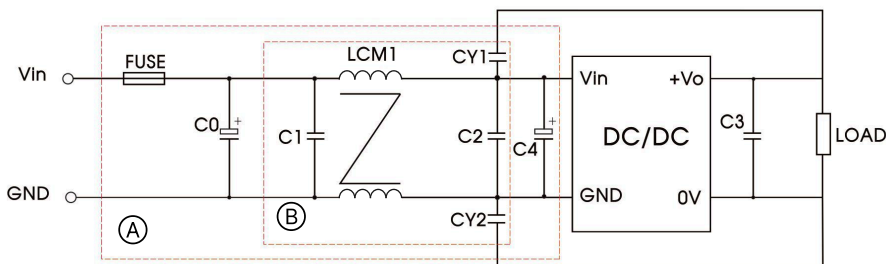


Fig. 2 : EMC Typical Recommended Circuits

Table 2 : Recommended component parameters

Component	Vin: 12VDC	Vin: 24VDC
FUSE	Choose according to actual input current	
C0/C4	330μF/35V	330μF/50V
C1/C2	10μF/50V	
C3	Refer to the Cout in Fig.1	
LCM1	470μH	
CY1/CY2	1nF/2000VDC	

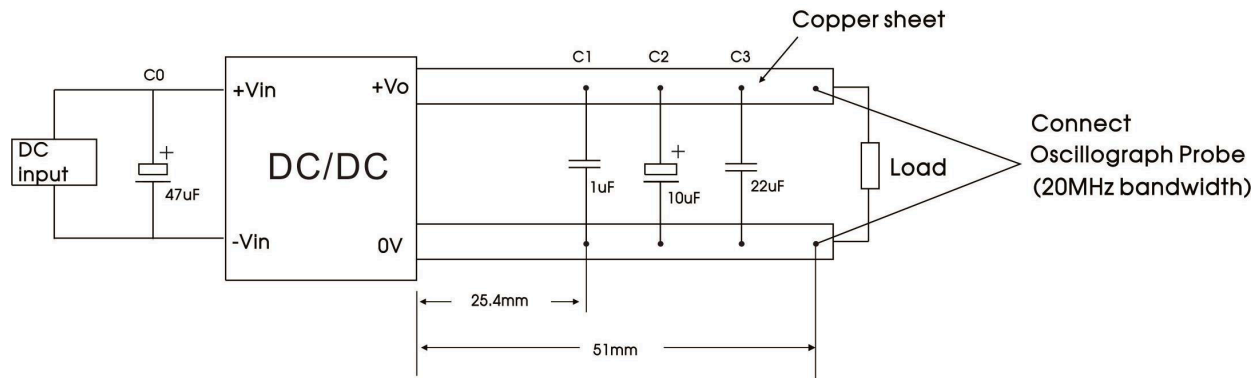


Fig.3: Ripple & Noise

PRODUCT CHARACTERISTIC CURVE

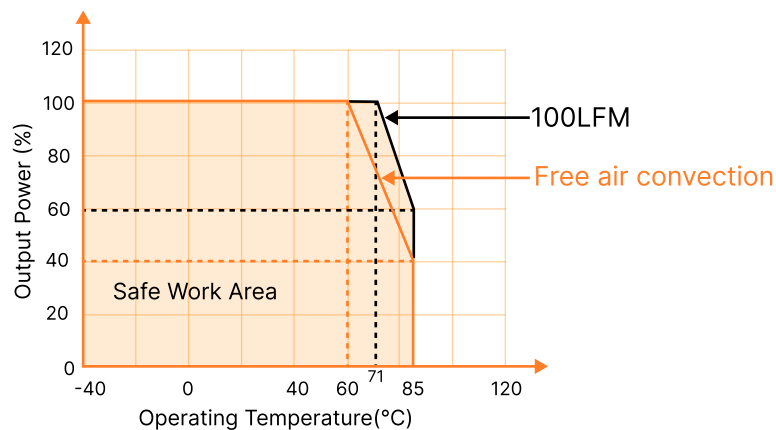
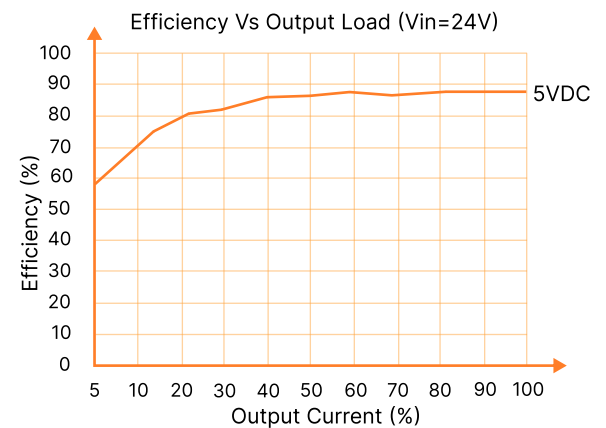
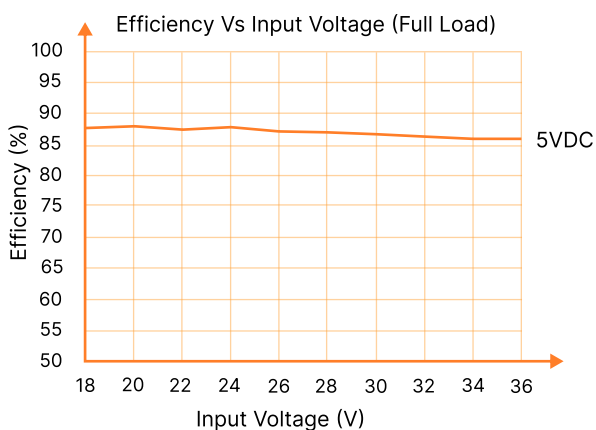
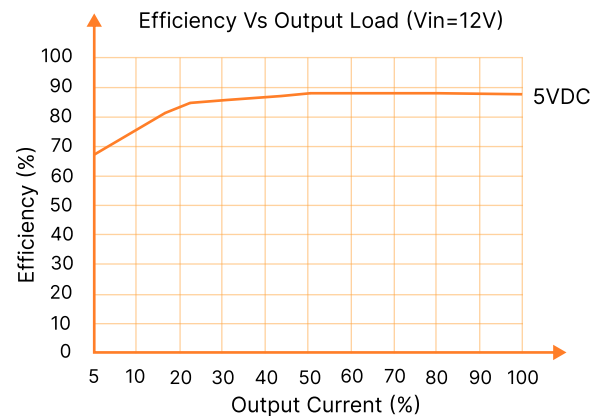
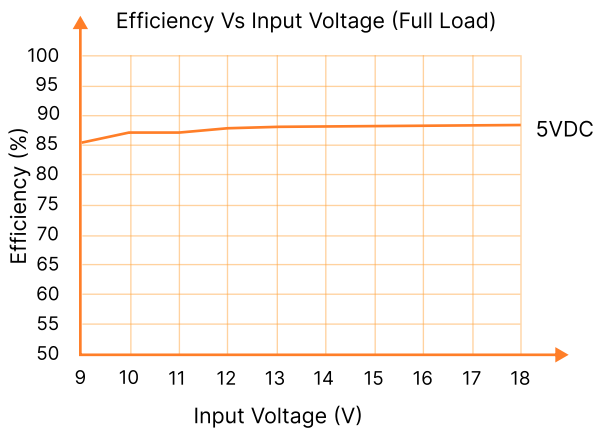


Fig.4 Temperature Derating Curve



OVERALL DIMENSIONS AND PIN FUNCTIONS

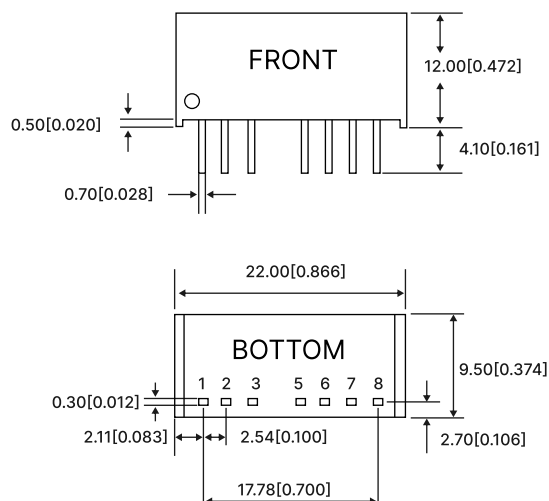
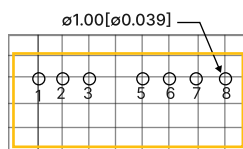


Figure 5: Overall dimensions



Note: The grid distance is 2.54mm*2.54mm

Note:
Dimensions in mm
Terminal diameter tolerance: $\pm 0.10 [\pm 0.004]$
Undeclared tolerance: $\pm 0.50 [\pm 0.020]$

Table 3: Pin Function Table

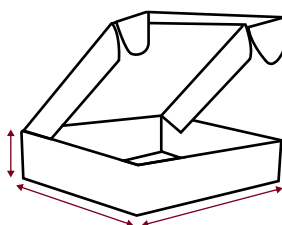
Pin	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

*NC cannot be connected to any external circuits

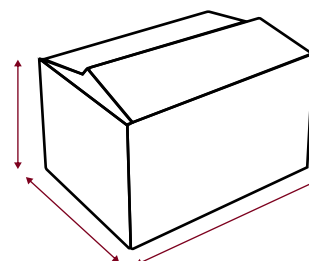
PACKAGING METHOD



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 RHENXV.