

DCMF_S-3W Series



RoHS



FEATURES

- Compact SIP package
- Wide 2:1 input voltage range
- Operating ambient temperature range: -40°C to + 85°C
- I/O isolation test voltage 3k VDC
- High power density
- Short circuit protection (self-recovery)
- Remote On/Off
- 3 Years Warranty

DESCRIPTION

DC-DC module power supply, Wide voltage input, Power 3W, Isolated, Regulated, Single output, SIP packaging, 3KV isolation voltage.

MODEL NUMBERING

DCMFxxxxS-3W



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)
DCMF0505S-3W	5 (4.5-9)	5	500/25	71/73	2200
DCMF0509S-3W		9	278/14	72/74	1000
DCMF0512S-3W		12	208/10	75/77	680
DCMF0515S-3W		15	167/8	72/74	470
DCMF1203S-3W	12 (9-18)	3.3	758/38	73/75	2700
DCMF1205S-3W		5	600/30	74/76	2200

Product Model	Input Voltage (Vdc) Standard Value(range)	Output Voltage (VDC)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μ F)
DCMF1209S-3W	12 (9-18)	9	333/17	77/79	1000
DCMF1212S-3W		12	250/13	80/82	680
DCMF1215S-3W		15	200/10	81/83	470
DCMF1224S-3W		24	125/6	79/81	330
DCMF2403S-3W	24 (18-36)	3.3	758/38	72/74	2700
DCMF2405S-3W		5	600/30	79/81	2200
DCMF2409S-3W		9	333/17	81/83	1000
DCMF2412S-3W		12	250/13	81/83	680
DCMF2415S-3W		15	200/10	81/83	470
DCMF2424S-3W		24	125/6	81/83	330
DCMF4803S-3W	48 (36-75)	3.3	758/38	73/75	2700
DCMF4805S-3W		5	600/30	74/76	2200
DCMF4812S-3W		12	250/13	78/80	680
DCMF4815S-3W		15	200/10	82/84	470

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input current (Full Load)	Nominal voltage input (5VDC)	--	800	846	mA
	Nominal voltage input (12VDC)	--	277	338	mA
	Nominal voltage input (24VDC)	--	140	163	mA
	Nominal voltage input (48VDC)	--	69	85	mA
Input current (No load)	Nominal voltage input (5VDC)	--	60	65	mA
	Nominal voltage input (12VDC)	--	25	30	mA
	Nominal voltage input (24VDC)	--	8	13	mA
	Nominal voltage input (48VDC)	--	3	10	mA

Parameter	Conditions	Min.	Typ.	Max.	Units
Reflected ripple current	Nominal voltage input	--	20	55	mA
Input impulse voltage (1sec. max.)	Nominal voltage input (5VDC)	-0.7	--	12	VDC
	Nominal voltage input(12VDC)	-0.7	--	25	VDC
	Nominal voltage input(24VDC)	-0.7	--	50	VDC
	Nominal voltage input(48VDC)	-0.7	--	100	VDC
Starting voltage	Nominal voltage input (5VDC)	3.5	4	4.5	VDC
	Nominal voltage input(12VDC)	4.5	8	9	VDC
	Nominal voltage input(24VDC)	11	16	18	VDC
	Nominal voltage input(48VDC)	24	33	36	VDC
Remote control foot (Ctrl*)	Module On	The Ctrl end is suspended or of high resistance			
	Module shutdown	Connect with high level to make the 5-10mA current flows into the Ctrl end.			
Input filter		Filter capacitor			

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	5% - 100% load	--	±1	±3	%
Line regulation rate	Input voltage variation from low to high at full load	--	±0.2	±0.5	%
Load regulation rate	5% - 100% load	--	±0.4	±0.75	%
Ripple & Noise	20MHz bandwidth	40	75	150	mVp p
Dynamic response step deviation	25% load step change	--	±2.5	±5	%
Dynamic response recovery time	25% load step change	--	0.5	3	ms
Temperature drift coeicient	100% load	--	±0.02	±0.03	%/°C
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 Electric Strength Test for 1 minute with a leakage current of 1mA max.	3000	--	--	VDC
Insulation resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation capacitance	Input-output capacitance at 100kHz/0.1V	--	30	50	pF
Working temperature	see Fig.3	-40	--	+85	°C
Storage temperature		-55	--	+125	°C
Storage humidity	Non-condensing	--	--	95	%RH
Soldering temperature resistance of pins	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	°C
Case Temperature Rise	Ta=25°C, nominal input, full load	--	+25	--	°C
Switching frequency	Full load, nominal input voltage	--	200	--	kHz
Mean time between failures 【MTBF】	MIL-HDBK-217F@25°C	1000	--	--	k hours

PHYSICAL CHARACTERISTICS

Parameter	Conditions
Housing material	Black plastic; flame-retardant and heat-resistant
Overall dimensions	22.00 × 9.50 × 12.00 mm
Weight	4.9g(Typ.)
Cooling mode	Natural air cooling

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)

Parameter	Category	Content		
EMS	ESD	IEC/EN61000-4-2	Contact $\pm 4\text{kV}$	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	$\pm 2\text{kV}$ (see Fig.2-Ⓐ for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line $\pm 2\text{kV}$ (see Fig.2-Ⓐ for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%, 70%	perf. Criteria B

CIRCUIT DESIGN AND APPLICATION

Typical application

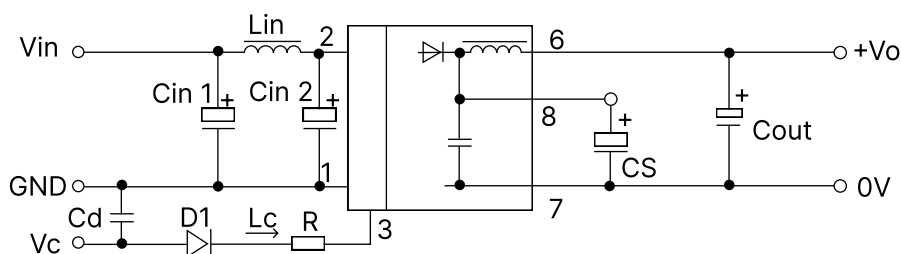


Fig.1

Table 1 : Recommended Capacitive Load Values

Vin	5Vdc & 12Vdc	24Vdc & 48Vdc
Cin 1	100 μF /25VDC	10 μF /100VDC
Cin 2	47 μF /25VDC	1 μF /100VDC
Lin	4.7 μH -12 μH	
Cout	100 μF /50VDC(Typ.)	
Cd	47nF/100V	
Cs	10 μF -22 μF /50VDC	

EMC compliance circuit

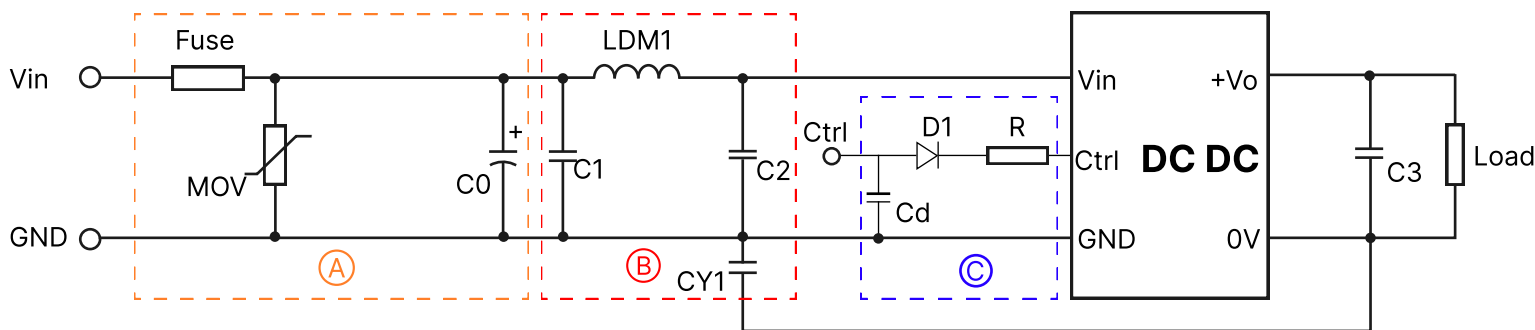


Fig.2

Table 2 : recommended component parameters

Model	Vin: 5VDC	Vin: 12VDC	Vin: 24VDC	Vin: 48VDC
FUSE	Select based on needs			
MOV	--	S14K20	S20K30	S14K60
LDM1	12μH	12μH	12μH	12μH
C0	680μF/25V		330μF/50V	330μF/100V
C1	4.7μF/50V			4.7μF/100V
C2	4.7μF/50V			4.7μF/100V
C3	Refer to the Cout in Fig.1			
CY1	1nF/3kV			
D1	RB160M-60V/1A			
R	In accordance with the formula: $R = \frac{V_c - V_D - 1.0}{I_c} - 300$			
Cd	47nF/100V			

PRODUCT CHARACTERISTIC CURVE

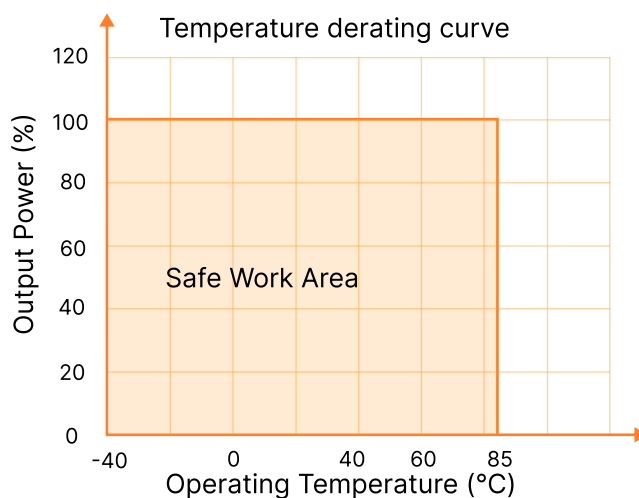
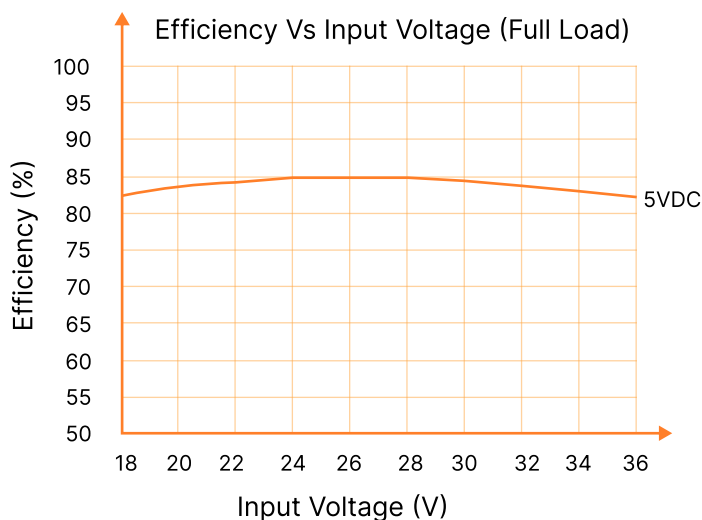
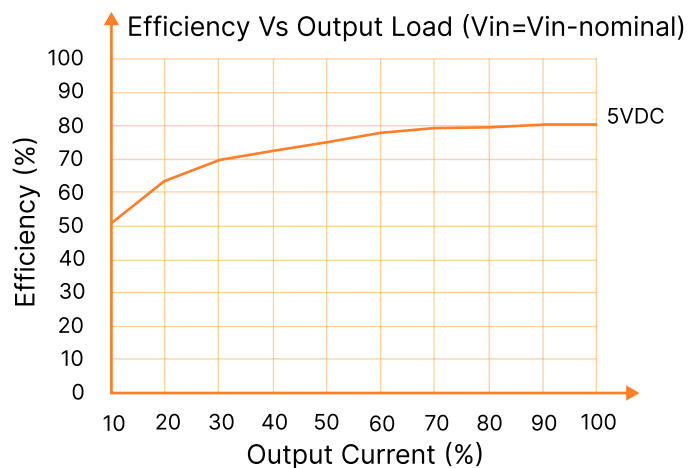


Fig.3



OVERALL DIMENSIONS AND PIN FUNCTIONS

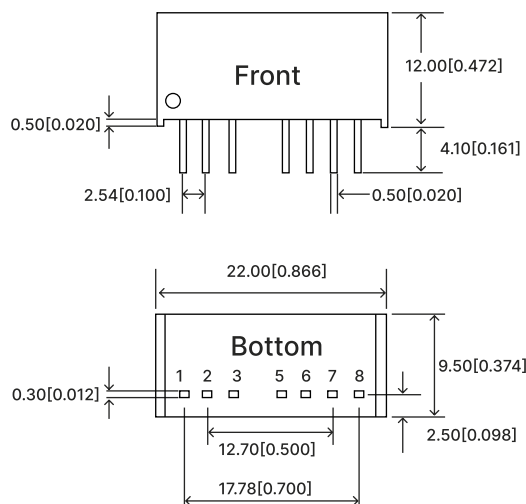
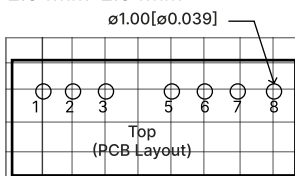


Fig.7: Overall dimensions

Note: The grid distance is 2.54mm*2.54mm



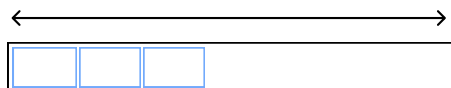
Note:
Dimensions in mm
Pin section tolerance: ± 0.10 [± 0.004]
Undeclared tolerance: ± 0.25 [± 0.010]

Table 3: Pin Function Table

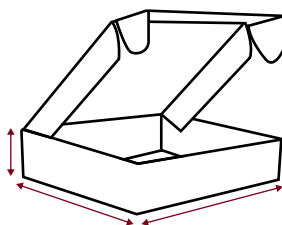
Pin	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	CS

*NC cannot be connected to any external circuits

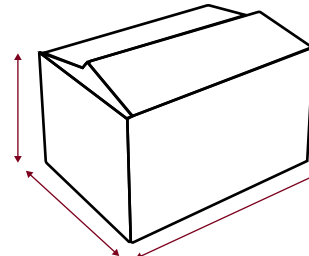
PACKAGING METHOD



16 Pieces/Tube



432 Pieces/Inner box



2160 Pieces/Outer box

NOTES & INSTRUCTIONS

1. Recommend to use module with more than 5% load, if not, the ripple of the product may exceeds the specification, but does not affect there liability of the product;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless other wise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity $<75\%\text{RH}$ with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on company corporate standards;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. The copyright and the final interpretation right of the product belong to RHENXV.