

DCWF_S-3W Series



CE Report

RoHS



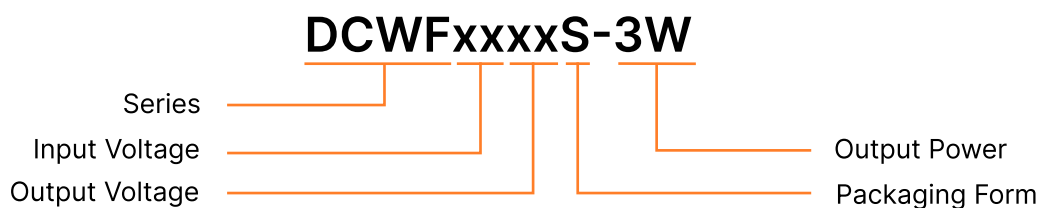
FEATURES

- Wide voltage range input (4:1)
- Working temperature range: -40 °C To +85 °C
- Up to 85% efficiency
- Standby power consumption: 0.3W
- Output short circuit, overcurrent, overload protection
- 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



SELECTION GUIDE

Product Model	Input Voltage Standard Value(range)	Output Voltage (Vdc)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
DCWF2403S-3W	24VDC (9-36)	3.3	900/0	73/77	1800
DCWF2405S-3W		5	600/0	80/83	1000
DCWF2409S-3W		9	333/0	82/84	680
DCWF2412S-3W		12	250/0	83/85	470
DCWF2415S-3W		15	200/0	83/86	220
DCWF2424S-3W		24	125/0	83/86	100

DC-DC CONVERTERS

3 WATTS

Product Model	Input Voltage Standard Value(range)	Output Voltage (Vdc)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μ F)
DCWF4803S-3W	48VDC (18-75)	3.3	900/0	73/77	1800
DCWF4805S-3W		5	600/0	80/83	1000
DCWF4809S-3W		9	333/0	82/84	680
DCWF4812S-3W		12	250/0	83/85	470
DCWF4815S-3W		15	200/0	83/86	220
DCWF4824S-3W		24	125/0	83/86	100

INPUT CHARACTERISTICS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Input Current (Rated Load)	Nominal voltage input 24VDC	--	130	160	mA
	Nominal voltage input 48VDC	--	65	80	mA
Input Current (No-Load)	Nominal voltage input 24VDC	--	7	25	mA
	Nominal voltage input 48VDC	--	6	25	mA
Reflected Ripple Current		20	40	50	mA
Input Impulse Voltage 1sec. max.	Nominal voltage input 24VDC	-0.7	--	50	VDC
	Nominal voltage input 48VDC	-0.7	--	100	VDC
Starting Voltage	Nominal voltage input 24VDC	--	--	9	VDC
	Nominal voltage input 48VDC	--	--	18	VDC
Under voltage protect	Nominal voltage input 24VDC	5.5	6.5	--	VDC
	Nominal voltage input 48VDC	12	15.5	--	VDC
Start Time		--	10	--	ms

Parameter	Conditions	Min.	Typ.	Max.	Units
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
Input filter	PI type				

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy Rate	0% -100% Load	--	±1	±3	%
Line Regulation Rate	Input voltage variation ±1%	--	±0.2	±0.5	%
Load Regulation Rate	10% to 100% load	--	±0.5	±1.5	%
Ripple & Noise	20MHz bandwidth	--	30	85	mVp-p
Dynamic Response Step Deviation		--	±3	±5	%
Dynamic Response Recovery Time		--	300	500	μs
Temperature Drift Coefficient	100% load	--	±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 time 1 minute, Leakage current less than 1 mA	3000	--	--	VDC
Insulation resistance	Input output, Insulation voltage 500VDC	1000	--	--	MΩ

GENERAL CHARACTERISTIC

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation capacitance	Input output, 100KHz/0.1V	--	120	1000	pF
Working temperature	Temperature $\geq 71^{\circ}\text{C}$ for derating (See Fig. 4)	-40	--	+85	$^{\circ}\text{C}$
Storage temperature		-55	--	+125	$^{\circ}\text{C}$
Storage humidity	Non condensing	--	--	95	%RH
Housing temperature rise during operation	Ta=25 $^{\circ}\text{C}$, Nominal input, Full output	--	--	100	$^{\circ}\text{C}$
Soldering temperature resistance of pins	The distance from the welding spot to the shell is 1.5mm, 10 seconds	--	--	300	$^{\circ}\text{C}$
	REFLOW: Peak temperature Tc $\leq 245^{\circ}\text{C}$, maximum time above 217 $^{\circ}\text{C}$ for 60 seconds.	--	--	245	$^{\circ}\text{C}$
Switching frequency	Full load, Nominal input voltage	--	270	--	KHz
Mean time between failiures 【MTBF】	MIL HDBK-217F@25 $^{\circ}\text{C}$	2000	--	--	kHours

PHYSICAL CHARACTERISTICS

Parameter	Conditions
Housing material	Black flame retardant and heat-resistant plastic (UL94V-0)
Overall dimensions	23.20 × 9.90 × 12.90 mm
Weight	5.1g(Typ.)
Cooling mode	Natural air cooling

EMC CHARACTERISTICS

Parameter	Category	Content
EMI	CE	CISPR32/EN55032 CLASS A (The recommended circuit is shown in Fig. 2)
	RE	CISPR32/EN55032 CLASS A (The recommended circuit is shown in Fig. 2)
EMS	ESD	IEC/EN61000-4-2 Contact $\pm 4\text{KV}$ perf. Criteria B

Parameter	Category	Content	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 $\pm 2\text{kV}$	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line $\pm 2\text{kV}$	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A
	Voltage dips, and short-term interruptions immunity	IEC/EN61000-4-29 0%, 70%	perf. Criteria B

CIRCUIT DESIGN AND APPLICATION

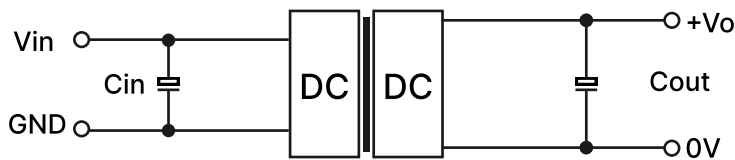


Fig 1: Application circuit

Table 1:
Recommended Capacitive Load Values

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout(μF)
Nominal voltage	100	Nominal voltage	10

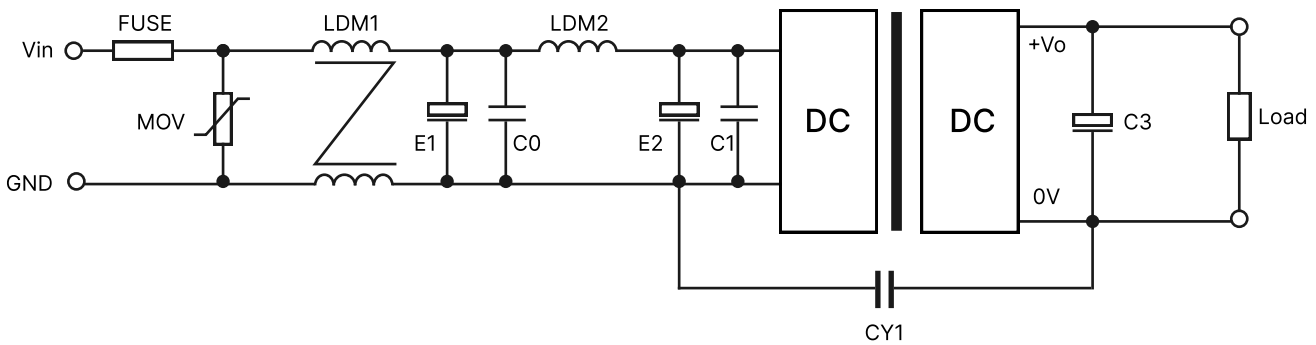


Fig 2: EMC Typical Recommended Circuits

Table 2:
Recommended Circuit Parameter Values

Category	Component	Value
EMI	MOV	14D560K
	E1/E2	100 μF
	C0/C1	1 μF
	CY1	1nF/2KV
	LDM1	10mH
	LDM2	10 μH

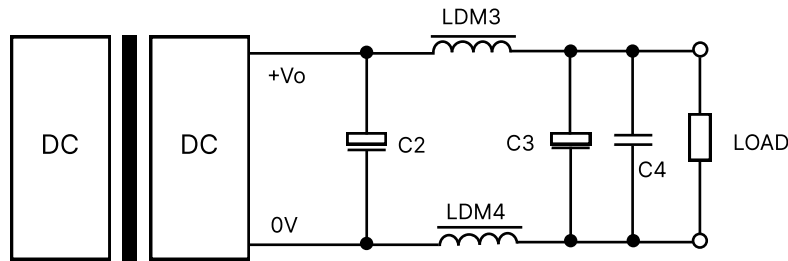
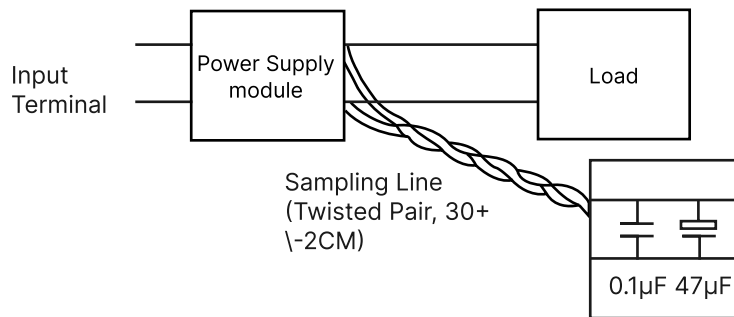


Figure 3: Ripple application and testing

When using in situations with strict requirements for ripple and noise, it is recommended to use the circuit shown in the figure above.



The testing method for ripple and noise is to use a 12" twisted pair connection, with an oscilloscope bandwidth of 20MHZ and a 100M bandwidth oscilloscope probe. The capacitor shown in the above figure is connected in parallel to the oscilloscope probe and the sampling mode of the oscilloscope is sample.

PRODUCT CHARACTERISTIC CURVE

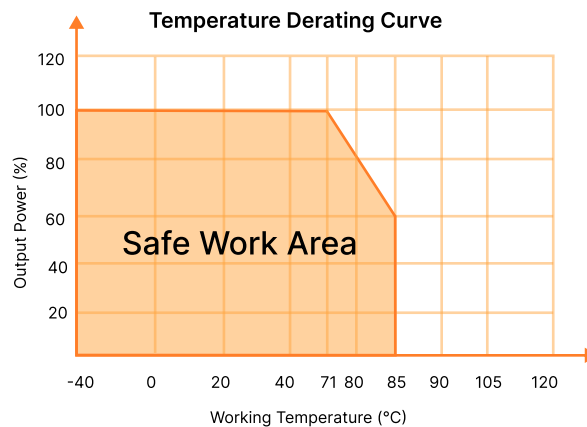


Figure 4: Temperature Derating Curve

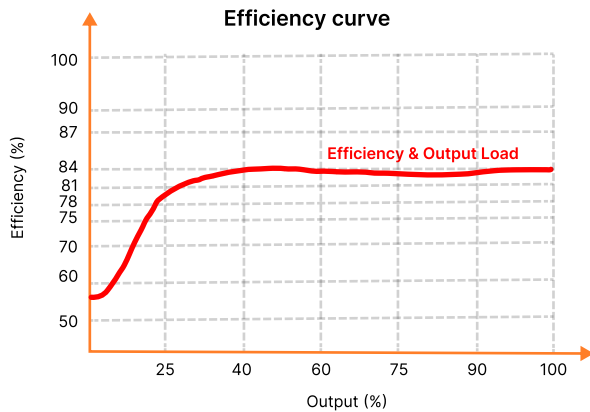


Figure 5: Efficiency Vs Output Load (Nominal Voltage Input)

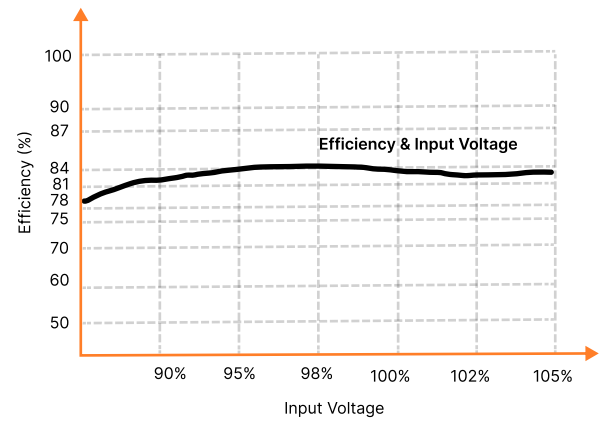


Figure 6: Efficiency Vs Input Voltage (100% Load)

OVERALL DIMENSIONS AND PIN FUNCTIONS

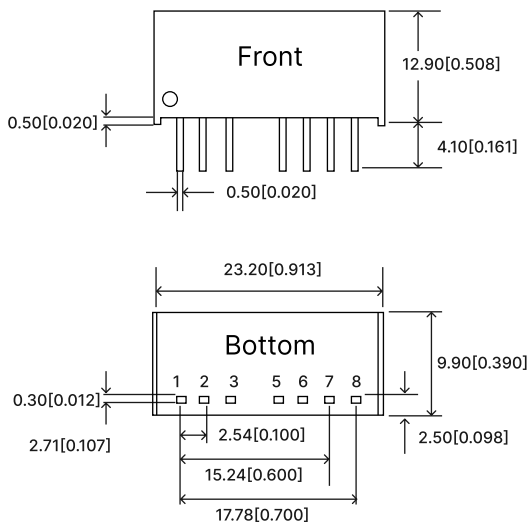
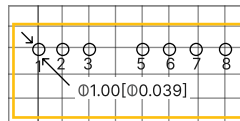


Figure 7: Overall dimensions

Note: The grid distance is 2.54mm*2.54mm



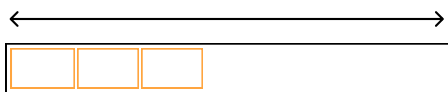
Note:
Dimensions in mm
Terminal diameter tolerance: ± 0.10
Undeclared tolerance: ± 0.50

Table 3: Pin Function Table

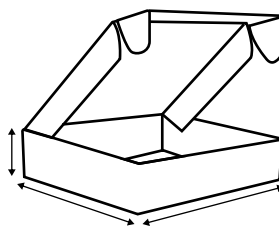
Pin	Function
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

*NC cannot be connected to any external circuits

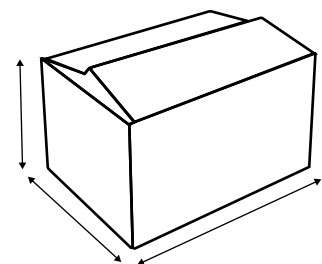
PACKAGING METHOD



16 Pieces/Tube



432 Pieces/Inner box



2160 Pieces/Outer box

NOTE

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