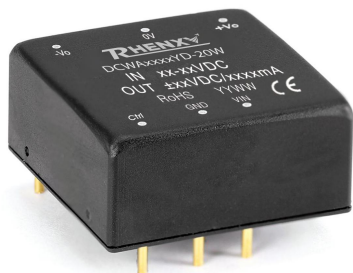


DCWA_YD-20W Series



CE Report

RoHS



FEATURES

- Wide voltage range input (4:1)
- Working temperature range: -40°C To +105°C
- Up to 85% efficiency
- Output short circuit, overcurrent, overload protection
- 3 Years Warranty

DESCRIPTION

DC-DC Module Power Supply, Wide Voltage Input, Power 20W, Isolated, Regulated, Positive And Negative Dual Output, DIP Packaging

MODEL NUMBERING

DCWAxxxxYD-20W



SELECTION GUIDE

Product Model	Input Voltage Standard Value(range)	Output Voltage (Vdc)	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
DCWA2403YD-20W	24VDC (9-36)	±3.3	±2400/0	75/77	1800
DCWA2405YD-20W		±5	±2000/0	80/83	1000
DCWA2409YD-20W		±9	±1111/0	82/84	680
DCWA2412YD-20W		±12	±833/0	83/85	470
DCWA2415YD-20W		±15	±667/0	83/86	220
DCWA2424YD-20W		±24	±417/0	83/86	100

DC-DC CONVERTERS

20 WATTS

Product Model	Input Voltage Standard Value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μ F)
DCWA4803YD-20W	48VDC (18-75)	± 3.3	$\pm 2400/0$	75/77	1800
DCWA4805YD-20W		± 5	$\pm 2000/0$	80/83	1000
DCWA4809YD-20W		± 9	$\pm 1111/0$	82/84	680
DCWA4812YD-20W		± 12	$\pm 833/0$	83/85	470
DCWA4815YD-20W		± 15	$\pm 667/0$	83/86	220
DCWA4824YD-20W		± 24	$\pm 417/0$	83/86	100

INPUT CHARACTERISTICS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Input Current (full load)	24VDC nominal input series, nominal input voltage	--	750	1050	mA
	48VDC nominal input series, nominal input voltage	--	450	560	mA
Input Current (no load)	24VDC nominal input series, nominal input voltage	--	7	25	mA
	48VDC nominal input series, nominal input voltage	--	6	25	mA
Reflected Ripple Current		20	40	50	mA
Input Impulse Voltage (1sec. Max.)	24VDC nominal input series, nominal input voltage	-0.7	--	50	VDC
	48VDC nominal input series, nominal input voltage	-0.7	--	100	VDC
Start Voltage	24VDC nominal input series, nominal input voltage	--	--	9	VDC
	48VDC nominal input series, nominal input voltage	--	--	18	VDC
Input Under-voltage Protection	24VDC nominal input series	5.5	6.5	--	VDC
	48VDC nominal input series	12	15.5	--	VDC
Start-up Time	Nominal input voltage & constant resistance load	--	10	--	ms

DC-DC CONVERTERS

20 WATTS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Filter		Pi filter			
Ctrl *	Module on	Ctrl pin open or pulled high (3.5-12VDC)			
	Module off	Ctrl pin pulled low to GND(0-1.2VDC)			
	Input current when off	--	06	07	mA

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Voltage Accuracy	0%-100% load	--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full	--	±0.2	±0.5	%
Load Regulation	Input voltage variation from low to high at full	--	±0.5	±1.5	%
Ripple & Noise	Pure resistive load, 20MHz bandwidth	--	100	200	mVp-p
Transient Recovery Time		--	300	500	μs
Transient Response Deviation		--	±3	±5	%
Temperature Coefficient	Full load	--	±0.03	--	%/°C
Over-voltage Protection	Full voltage range input	110	--	160	%Vo
Over-current Protection		110	140	190	%Vo
Short-circuit Protection		Continuous, self-recovery			

Note:

① Output voltage accuracy of ±5VDC/±9VDC output converter for 0%-5% load is ±5% max;

② Load regulation for 0%-100% load is ±5%;

③ Under 0% -5% load conditions, ripple & noise does not exceed 5%Vo. The "parallel cable" method is used for Ripple and Noise test.

GENERAL CHARACTERISTIC

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, Insulation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	2000	--	pF
Operating Temperature	See Fig. 4	-40	--	+85	°C
Storage Temperature		-55	--	+125	%
Storage Humidity	Non-condensing	--	--	95	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	°C
Vibration		10-55Hz, 10G, 30Min.along X, Y and Z			
Switching Frequency *	Full load, Nominal input voltage	--	270	--	KHz
MTBF	MIL-HDBK-217F@25°C	1500	--	--	khours

Note: *Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.
Mechanical Specifications

PHYSICAL CHARACTERISTICS

Parameter	Conditions
Housing material	Aluminum alloy
Overall dimensions	25.40 × 25.40 × 13.64 mm
Cooling mode	Free air convection

EMC CHARACTERISTICS

Parameter	Category	Content
EMI	CE	CISPR32/EN55032 CLASS A (without extra components)/ CLASS B (see Fig.2 for recommended circuit)
	RE	CISPR32/EN55032 CLASS A (without extra components)/ CLASS B (see Fig.2 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Contact $\pm 4\text{KV}$
	RS	IEC/EN61000-4-3 10V/m
	EFT	IEC/EN61000-4-4 $\pm 2\text{KV}$ (see Fig.2)
	Surge	IEC/EN61000-4-5 line to line $\pm 2\text{KV}$ (see Fig.2)
	CS	IEC/EN61000-4-6 3 Vr.m.s
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29 0%, 70%

CIRCUIT DESIGN AND APPLICATION

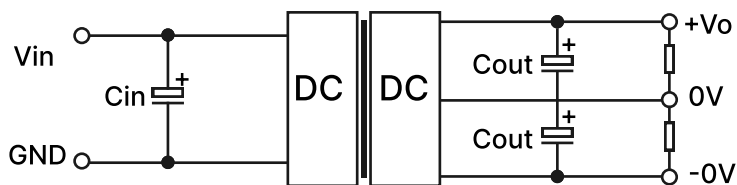


Figure 1: Application circuit

Vin(VDC)	Cin	Cout(uF)
24	100 μF /50V	10 μF /100V
48	10 μF - 47 μF /100V	10 μF /100V

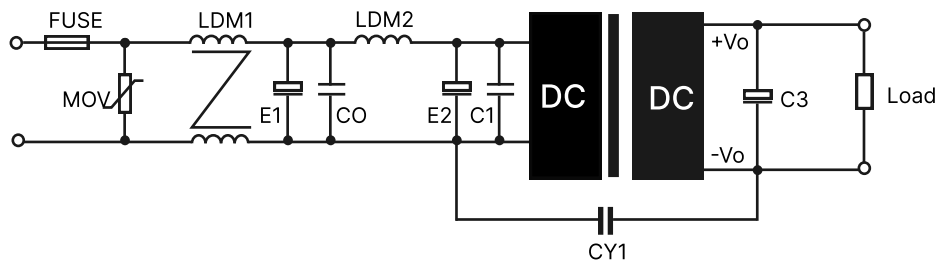
Table 1:
Recommended Capacitive Load Values


Figure 2: EMC Typical Recommended Circuits

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

Table 2:
Recommended Circuit Parameter Values

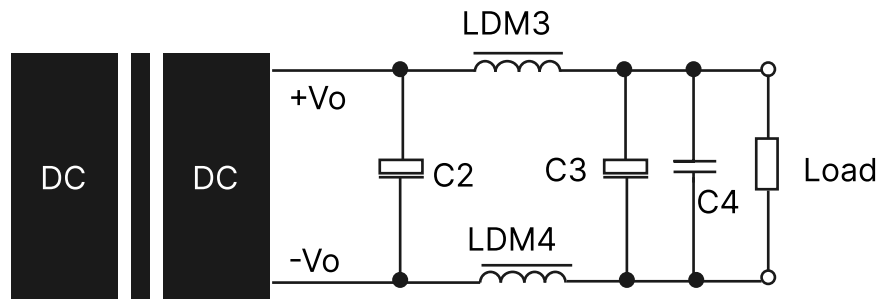
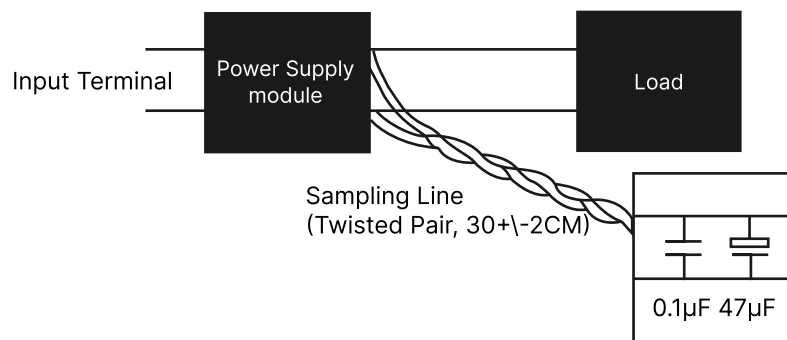


Figure 3: Ripple application and testing

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

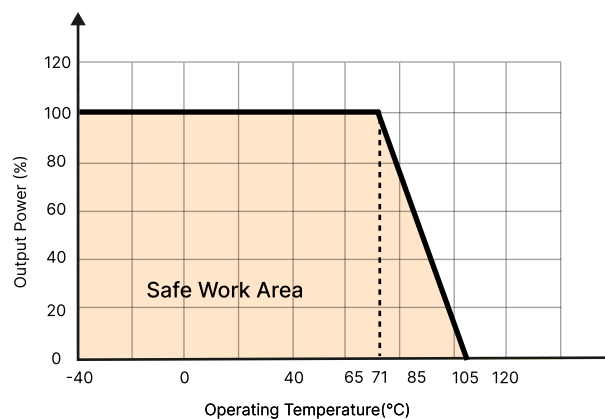


Figure 4: Temperature Derating Curve

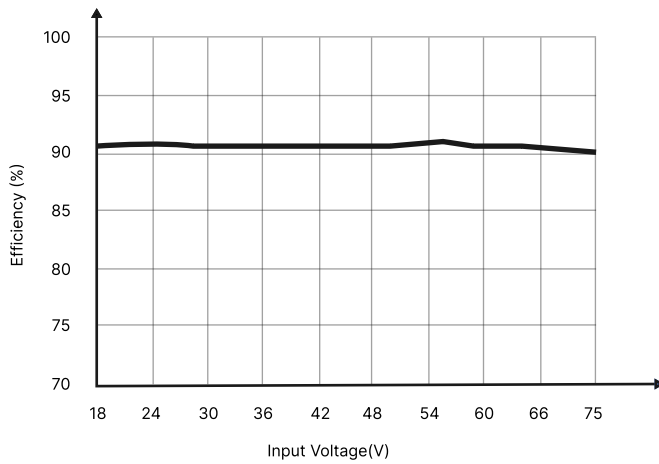


Figure 5: Efficiency Vs Input Voltage (Full Load)

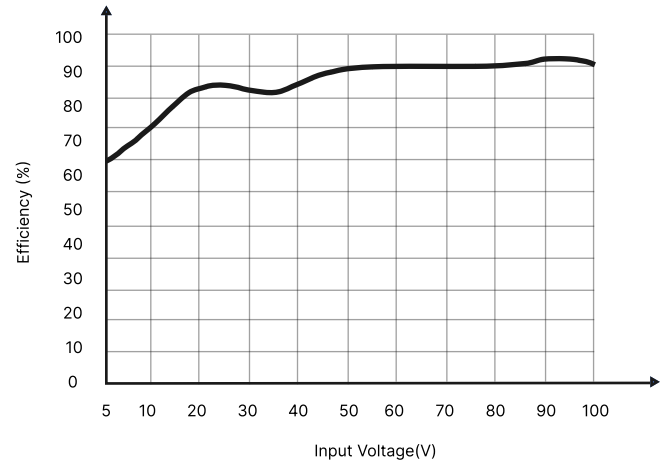


Figure 6: Efficiency Vs Output Load

OVERALL DIMENSIONS AND PIN FUNCTIONS

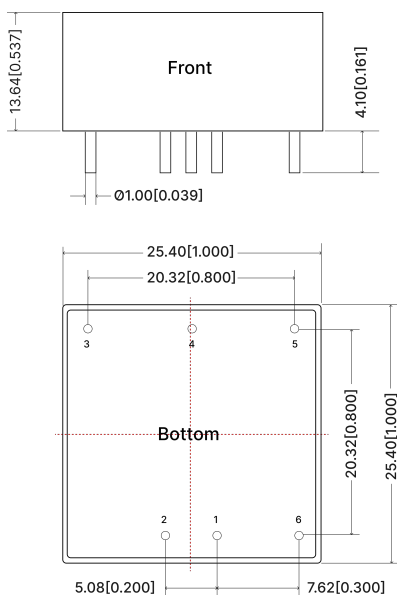


Figure 7: Overall dimensions

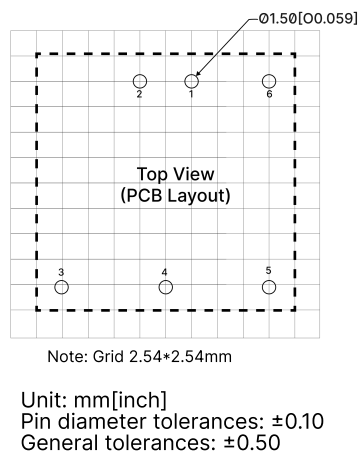
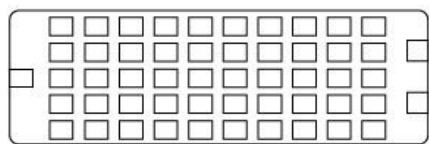


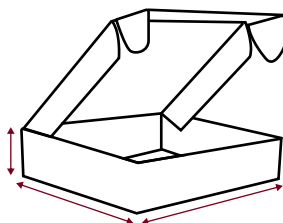
Table 3: Pin Function Table

Pin	Function
1	GND
2	Vin
3	+Vo
4	0V
5	-Vo
6	Ctrl

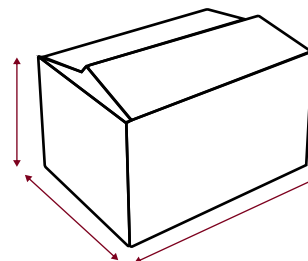
PACKAGING METHOD



50 Pieces/Tube



100 Pieces/Inner box



500 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.