RHENXV
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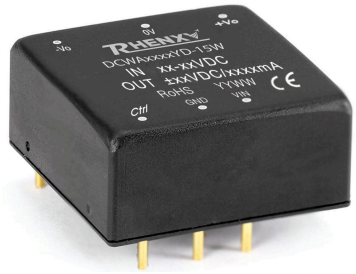
DC-DC CONVERTERS

15 WATTS

DCWA_YD-15W Series



CE Report RoHS 3 YEARS WARRANTY

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 15W, Isolated, Regulated, Positive And Negative Dual Output, DIP Packaging

MODEL NUMBERING

DCWAxxxxYD-15W

- Series
- Input Voltage
- Output Voltage
- Output Power
- Packaging Form

SELECTION GUIDE

Product Model	Input Voltage Standard Value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
DCWA2403YD-15W	24VDC (9-36)	±3.3	±1800/0	75/78	2400
DCWA2405YD-15W		±5	±1500/0	77/80	2400
DCWA2409YD-15W		±9	±833/0	77/81	1000
DCWA2412YD-15W		±12	±625/0	78/82	1000
DCWA2415YD-15W		±15	±500/0	78/82	560
DCWA2424YD-15W		±24	±313/0	78/83	560

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Product Model	Input Voltage Standard Value(range)	Output Voltage	Output Current (mA) (Max./Min.)	Efficiency % (Min./Typ.)	Maximum capacitive load (μF)
DCWA4803YD-15W	48VDC (18-75)	±3.3	±1800/0	75/78	2400
DCWA4805YD-15W		±5	±1500/0	77/80	2400
DCWA4809YD-15W		±9	±833/0	77/81	1000
DCWA4812YD-15W		±12	±625/0	78/82	1000
DCWA4815YD-15W		±15	±500/0	78/82	560
DCWA4824YD-15W		±24	±313/0	78/83	560

INPUT CHARACTERISTICS

Parameter	Operating Conditions	Min.	Typ.	Max.	Units
Input Current (full load)	24VDC nominal input series, nominal input voltage	--	720	900	mA
	48VDC nominal input series, nominal input voltage	--	365	500	mA
Input Current (no load)	24VDC nominal input series, nominal input voltage	--	10	15	mA
	48VDC nominal input series, nominal input voltage	--	6	9	mA
Reflected Ripple Current	24VDC nominal input series, nominal input voltage	30	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

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	--	50	200	mVp-p
Transient Recovery Time		--	50	200	μs
Transient Response Deviation		--	±3	±8	%
Temperature Coefficient	Full load	--	±0.03	--	%/°C
Over-voltage Protection	Full voltage range input	110	--	160	%Vo
Over-current Protection		110	200	270	%Vo
Short-circuit Protection		Continuous, self-recovery			

Note:
①Output voltage accuracy of ±5VDC/±9VDC output converter for 0%-5% load is ±5% max;
②Load regulation for 0%-100% load is ±5%;
③Under 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
Insulation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	2000	--	pF
Operating Temperature	See Fig. 1	-40	--	+105	°C
Storage Temperature		-55	--	+125	%
Storage Humidity	Non-condensing	5	--	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 *	PWM mode	--	270	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	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 ±4KV	perf. CriteriaB
	RS	IEC/EN61000-4-3	10V/m	perf. CriteriaA
	EFT	IEC/EN61000-4-4	±2KV (see Fig.2)	perf. CriteriaB
	Surge	IEC/EN61000-4-5	line to line ±2KV (see Fig.2)	perf. CriteriaB
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. CriteriaA
	Voltage dips, short interrupti -ons and voltage variations immunity	IEC/EN61000-4-29	0%, 70%	perf. CriteriaB

CIRCUIT DESIGN AND APPLICATION

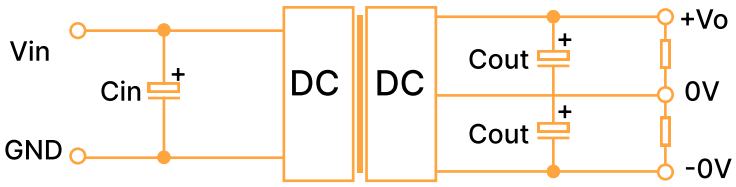


Figure 1: Application circuit

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

Table 1:
Recommended Capacitive Load Values

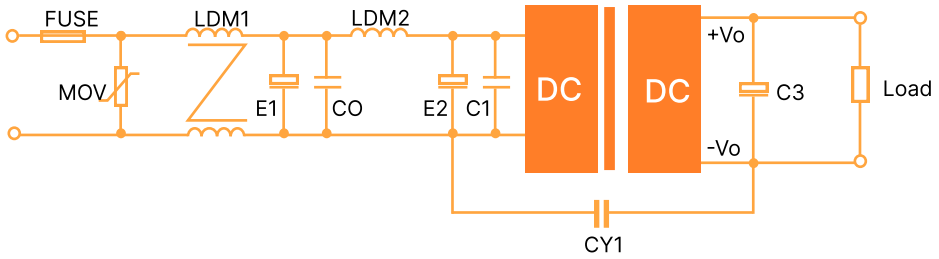


Figure 2: EMC Typical Recommended Circuits

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

Table 2:
Recommended Circuit Parameter Values

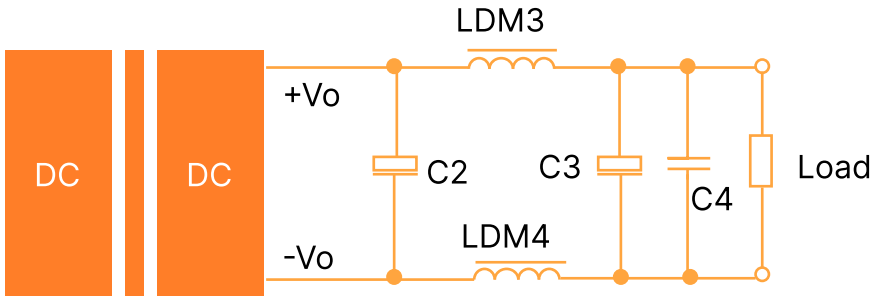
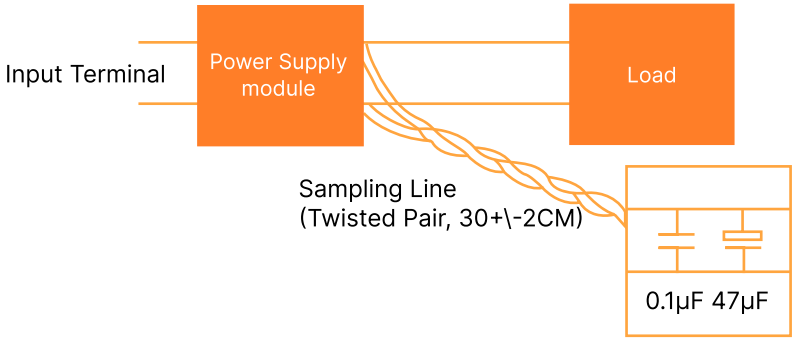


Figure 3: Ripple application and testing

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

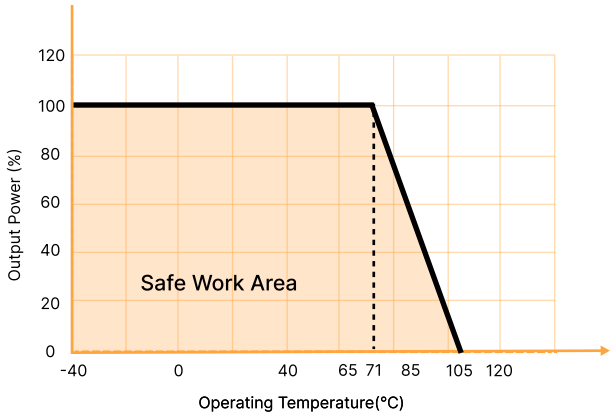


Figure 4: Temperature Derating Curve

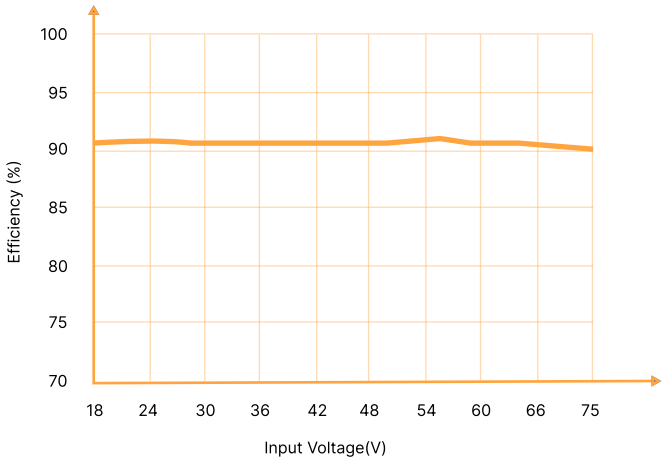


Figure 5: Efficiency Vs Input Voltage (Full Load)

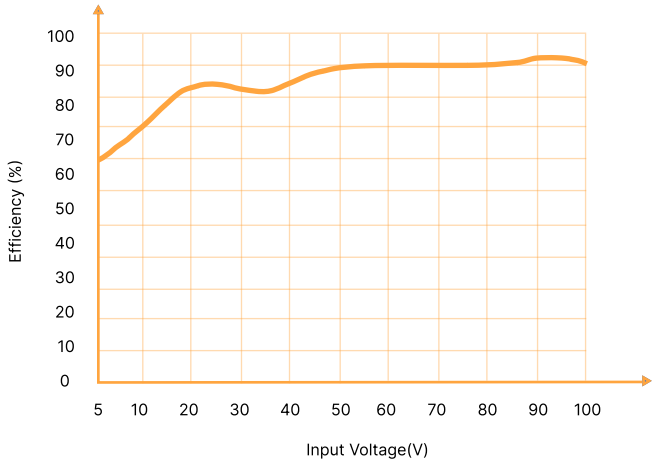


Figure 6: Efficiency Vs Output Load

OVERALL DIMENSIONS AND PIN FUNCTIONS

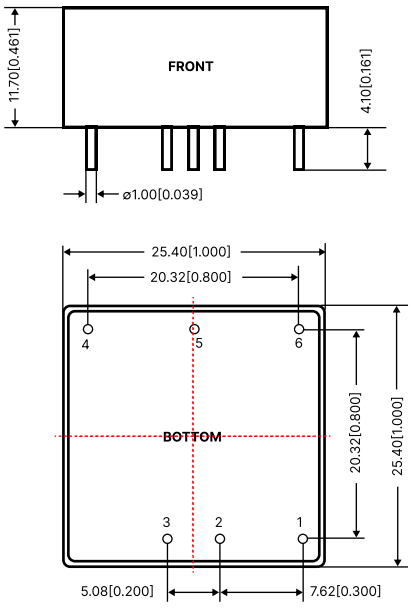
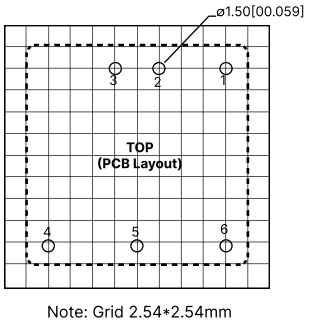


Figure 7: Overall dimensions



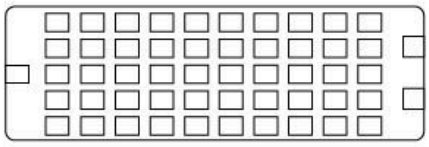
Note: Grid 2.54*2.54mm

Unit: mm[inch]
Pin diameter tolerances: ±0.10
General tolerances: ±0.50

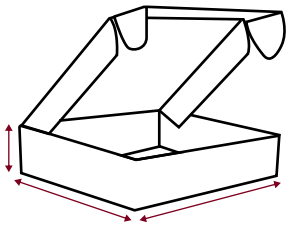
Table 3: Pin Function Table

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

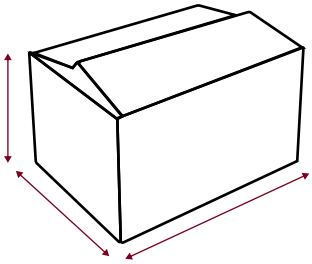
PACKAGING METHOD



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.