DC-DC Converter

WRFD_S(D)_(ZD)(K)-5W/6WH0 Series

HenLv

Features

- Wide voltage input 2:1
- Dip and Din-rail
- Operating temperature range：-40℃～+85℃
- Isolation1500VDC 0.5mA 1Minute
- Internal SMD design
- Metal shell, high flame retardant plastic shell package
- Cooling Nature
- Good shielding anti-interference performance and electromagnetic compatibility, lightning protection, output over current, short circuit protection, overheat protection, self-recovery and other functions

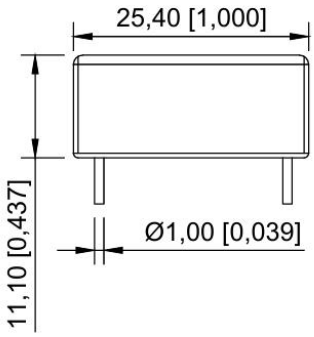
Product Picture

EMC-EN55032
EN55035
LVD-EN62368

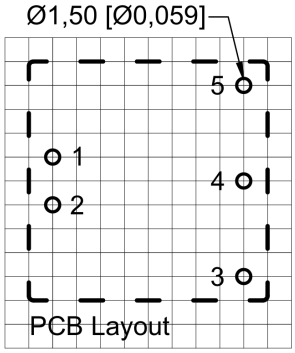
Dimensions

WRFD_S(D)_-5W/6WH0 Series Dimensions

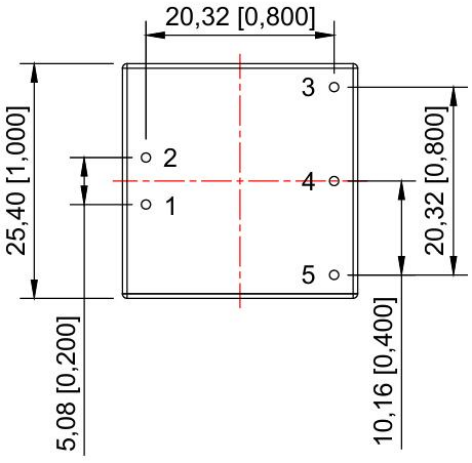
Front view



Top view



Note: The grid distance:2.54*2.54mm



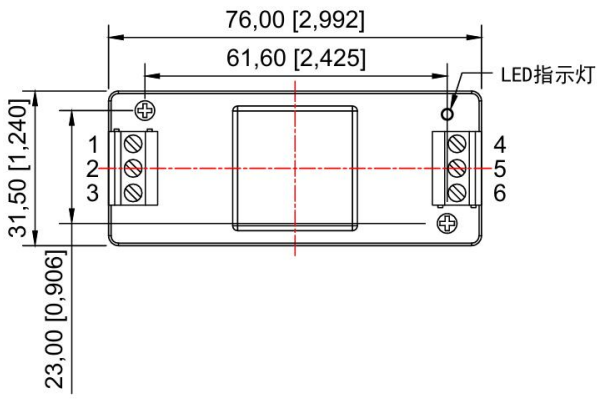
Bottom view

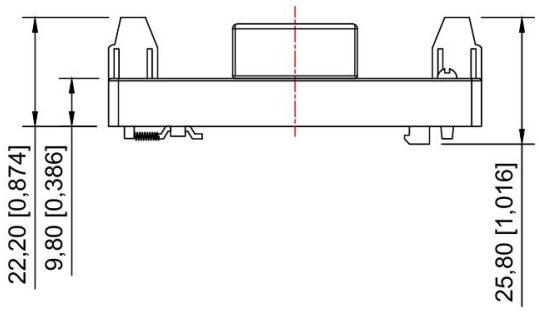
Pin mode		
Pin	Single(S)	Dual(D)
1	GND	GND
2	Vin	Vin
3	+XXVDC	+XXVDC
4	No Pin	COM
5	0V	-XXVDC

Note:
Size unit: mm[inch] Pin section tolerance: ±0.1[±0.004] Unmarked tolerance: ±0.25[±0.01]
The device layout is for reference only.

WRFD_S(D)_ZDK-5W/6WH0 Series Dimensions

Top View





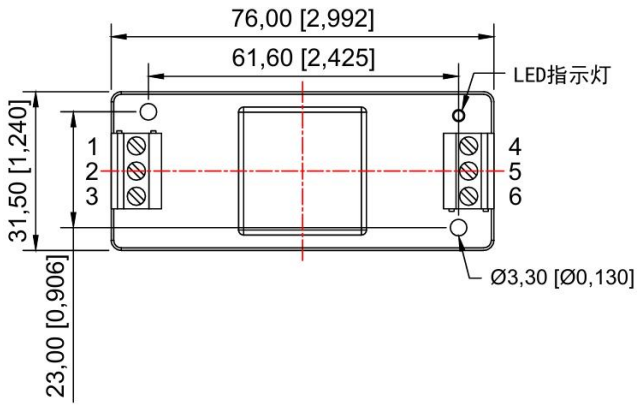
Front View

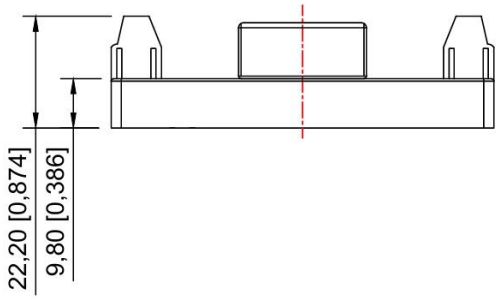
Pin mode		
Pin	Single	Dual
1	NC	NC
2	GND	GND
3	Vin	Vin
4	0V	-XXVDC
5	TRM	COM
6	+XXVDC	+XXVDC

Note:
Size unit: mm[inch]
Unmarked tolerance: ±0.25[±0.01]
Wiring strength: 24-12 AWG
Tightening torque: Max 0.4N ·m
Guide rail type: TS35
The device layout is for reference only.

WRFD_S(D)_ZD-5W/6W Series Dimensions

Top view





Front view

Pin mode		
Pin	Single	Dual
1	NC	NC
2	GND	GND
3	Vin	Vin
4	0V	-XXVDC
5	TRM	COM
6	+XXVDC	+XXVDC

Note:
Size unit: mm[inch]
Unmarked tolerance: ±0.25[±0.01]
Wiring strength: 24-12 AWG
Tightening torque: Max 0.4N ·m
The device layout is for reference only

Application

Railway communication, display, monitoring equipment, petrochemical, industrial control, remote DC power supply system, switching system and other communication equipment.

Selection Guide

Model	Input(VDC)	Output (Vo±2%)	Current (mA)	Efficiency (%)	Isolation (VDC)	Weight (g±0.5)	Certification
WRFD_S3.3-5W/6WH0	5(4.5~9) 12(9-18) 24(18-36) 48(36-72)	3.3	1515/1818	⩾78	1500	12	
WRFD_S05-5W/6WH0		5	1000/1200	⩾80	1500	12	
WRFD_S12-5W/6WH0		12	417/500	⩾80	1500	12	
WRFD_S15-5W/6WH0		15	333/400	⩾80	1500	12	
WRFD_S18-5W/6WH0		18	278/333	⩾80	1500	12	
WRFD_S24-5W/6WH0		24	208/250	⩾80	1500	12	
WRFD_S28-5W/6WH0		28	179/214	⩾81	1500	12	
WRFD_S36-5W/6WH0		36	139/167	⩾81	1500	12	
WRFD_S48-5W/6WH0		48	104/125	⩾81	1500	12	
WRFD_D05-5W/6WH0		±5	±500/±600	⩾80	1500	12	
WRFD_D12-5W/6WH0		±12	±209/±250	⩾80	1500	12	
WRFD_D15-5W/6WH0		±15	±167/±200	⩾80	1500	12	
WRFD_D18-5W/6WH0		±18	±139/±167	⩾80	1500	12	
WRFD_S3.3ZD(K)-5W/6WH0		3.3	1515/1818	⩾78	1500	12	
WRFD_S05ZD(K)-5W/6WH0		5	1000/1200	⩾80	1500	12	
WRFD_S12ZD(K)-5W/6WH0		12	417/500	⩾80	1500	12	
WRFD_S15ZD(K)-5W/6WH0		15	333/400	⩾80	1500	12	
WRFD_S18ZD(K)-5W/6WH0		18	278/333	⩾80	1500	12	
WRFD_S24ZD(K)-5W/6WH0		24	208/250	⩾80	1500	12	
WRFD_S28ZD(K)-5W/6WH0		28	179/214	⩾81	1500	12	
WRFD_S36ZD(K)-5W/6WH0		36	139/167	⩾81	1500	12	
WRFD_S48ZD(K)-5W/6WH0		48	104/125	⩾81	1500	12	
WRFD_D05ZD(K)-5W/6WH0		±5	±500/±600	⩾80	1500	12	
WRFD_D12ZD(K)-5W/6WH0		±12	±209/±250	⩾80	1500	12	
WRFD_D15ZD(K)-5W/6WH0		±15	±167/±200	⩾80	1500	12	
WRFD_D18ZD(K)-5W/6WH0		±18	±139/±167	⩾80	1500	12	

Note: The company for customers to customize any input and output module power supply, if you have special needs, please call our company, unless otherwise specified, input =Vi, the characteristics of the module power supply should meet the requirements of Table 1, and applicable to the full temperature range (-40℃⩽Tc⩽85℃)

Mechanical Specifications

Size	25.40 x 25.40 x 11.10 mm， ZD(K)：76.00 x 31.5 mm

Electrical Characteristics

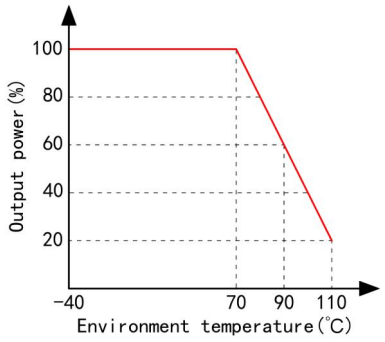
Characteristic	Symbol	Conditions Vi ,-40℃≤Tc≤85 (Unless otherwise specified)	Min	Max	Unit
Output Voltage	Vo	Full load	Vo-2%	Vo+2%	V
Output Current	Iomax	—	—	P(Power)/ U(Output voltage)	A
Output Ripple voltage	Vp-p	Full Load，Vi，BW=20MHz，Normal Temperature	80	200	mV
Output Noise Voltage	Vp-p	Full Load，Vi，BW=20MHz，Normal Temperature	100	250	mV
Voltage Regulation	Sv	Vimin、Vi、Vimax，Full Load	—	≤±2%	%
Load Regulation	Si	Vi，Io=(10%~100%)Iomax	—	≤±2%	%
Efficiency	η	Vi，Full Load，Normal Temperature	78	—	%
Insulation Resistance	Rl	Input-output, insulation voltage 500VDC	1000	—	MΩ

General Specifications

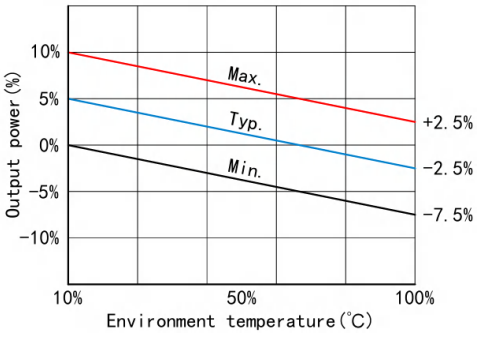
EMC Specifications	Magnetic Field Sensitivity Test	GB-4943
	Electrostatic Discharge Sensitivity Test	GB-4943
	Radiation Sensitivity Test	GB-4943
	Conduction Sensitivity Test	GB-4943
Temperature Drift	≤±0.02%/℃	
Storage Temperature	-40°C~125°C	
Input Frequency	270KHz~400KHz	
Humidity	10%~90%RH	
Leakage Current	＞500000H	
MTBF		

Typical Characteristic Curves

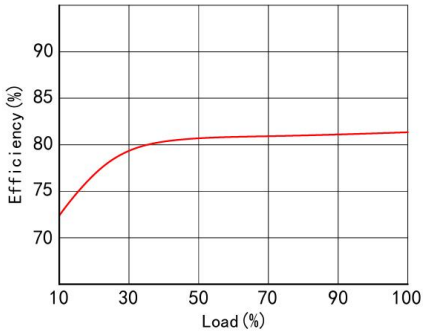
Temperature chart



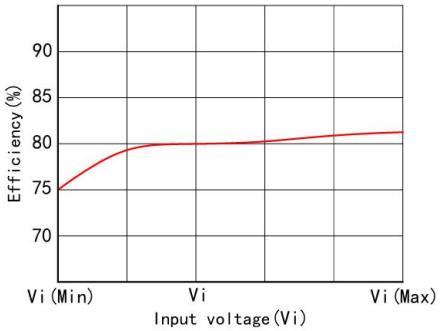
Error envelope graph



Efficiency/load graph

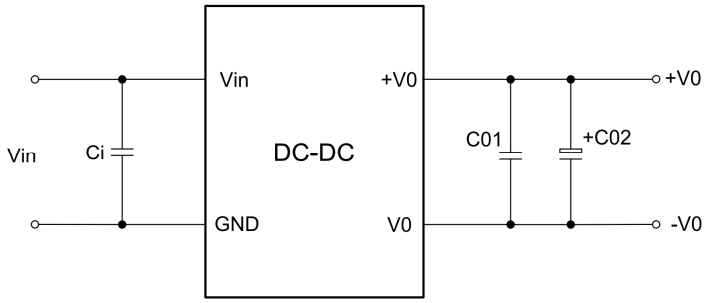


Efficiency/input voltage graph



Typical Application

Design Reference



Recommendation Test

Filter: In some circuits that are sensitive to noise and ripple, an external filter capacitor can be connected to the DC/DC input and output terminals to reduce the impact of ripple on the system, but the value of the filter capacitor should be appropriate, if the capacitor is too large, it is likely to cause startup problems, for each output, under the condition of ensuring safe and reliable operation, the maximum capacitance of the filter capacitor can be referred to the external capacitance table. In order to obtain very low ripple, an "LC" filter network can be connected to the input and output end of the DC/DC converter, so that the filtering effect will be better, and it should be noted that the size of the inductance value and the frequency of the "LC" filter network should be staggered from the frequency of the DC/DC module power supply to avoid mutual interference. For each output, under safe and reliable working conditions, the recommended capacitive load value is shown in (Table 1).

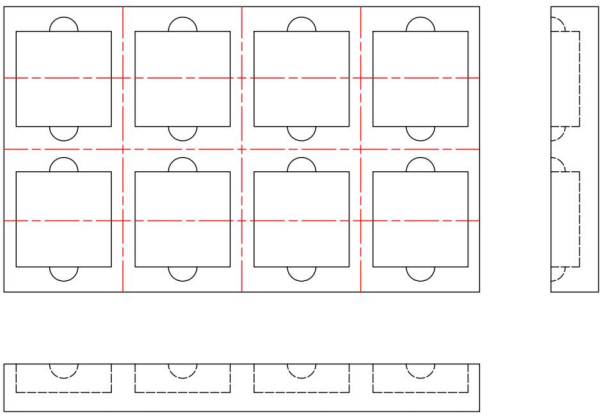
Single Vout	Cout	Dual Vout	Cout
5-12VDC	22-68uF	±5-±12VDC	4.7-22uF
24-48VDC	10-47uF	±24-±48VDC	4.7-10uF

Recommended output max capacitive load value table (Table 1)

Notice

Package

This series of modules are packed in shockproof and anti-static foam.



Transport

The package containing the module is allowed to be transported by any means of transport, which should avoid direct rain and snow and mechanical damage.

Storage

The module should be stored in a warehouse where the ambient temperature is -40 degrees ~ 125 degrees, the relative humidity is 20%~95%, and the surrounding environment is free from acidic, alkaline and other harmful gases.

Note: The above are the performance indicators of the product series listed in this manual. Some indicators of non-standard products may exceed the above requirements, so if there is any inconsistency between the manual and the product specification documents, please refer to the specification documents. If you have special needs, please contact us directly.