



# DC/DC 铁路机车电源模块

DC/DC Railway locomotive power supply module

## JWDBR--10W 双路输出系列

JWDBR--10W dual output series

### 典型性能 Typical Performance

- ◆外形尺寸: 50.8\*25.4\*10.16 (mm)  
Dimension: 50.8\*25.4\*10.16 (mm)
- ◆宽输入电压范围  
Wide range input voltage
- ◆105°C长寿命电解电容  
105°C long life electrolytic capacitors
- ◆高效率、高功率密度、低纹波  
High efficiency、High power density、Low ripple & noise
- ◆黑金属外壳, 八面屏蔽, 通孔安装  
Black metal shell, Eight face shield, Hole is installed
- ◆安规: EN60950  
Ann rules: EN60950



### 输入特性 Input Features

|                               |                                  |           |
|-------------------------------|----------------------------------|-----------|
| 输入电压范围<br>Input voltage range | 标称 110V<br>Nominal voltage 110V  | 66~160VDC |
|                               | 标称 72V<br>Nominal voltage 72V(W) | 45~135VDC |

### 输出特性 Output Features

|                                       |  |  |
|---------------------------------------|--|--|
| 输出电压精度<br>Voltage tolerance           | 标称电压<br>Nominal voltage  | $\cong \pm 1\%$ (3.3V、5V $\cong \pm 2\%$ ), $V_{o2} \cong \pm 3\%$ |
| 电压调整率<br>Line regulation (full load)  | 输入电压从低端到高端变化<br>Change of input voltage from lowend to highend | $V_{o1} \cong \pm 0.5\%$ , $v_{o2} \cong \pm 1.5\%$                |
| 负载调整率<br>Load regul                   | 20%~100%负载变化<br>20%~100% Load change                           | $V_{o1} \cong \pm 0.5\%$ , $v_{o2} \cong \pm 3\%$                  |
| 纹波噪声<br>Ripple&Noise                  | 20M 带宽<br>20M Bandwidth  | $\cong 1\%$  |
| 温度系数<br>Temperature coefficient       |  | $\pm 0.02\%/^{\circ}\text{C}$                                      |
| 过功率保护<br>Output overcpower Protection |  | 115~150%额定功率, 自恢复<br>115~150%rated output power ,auto recovery     |
| 短路保护<br>Short Circuit Protection      |  | 长期, 自恢复<br>Long-term, auto recovery                                |
| 过冲幅度<br>Overshoot                     | 25% 额定负载变化<br>25% rated load change                            | $\cong 500\mu\text{S}$   |
|                                       | $\Delta V_{o1} / V_{o1}$                                       | $\cong \pm 5.0\%$  |

### 一般特性 General Features

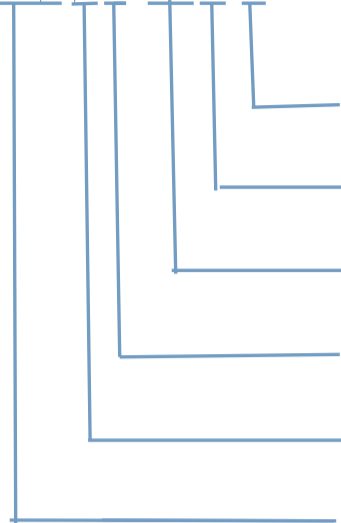
|                                       |   |                              |
|---------------------------------------|---|------------------------------|
| 隔离耐压<br>Withstand voltage             | 输入对输出<br>I/P-O/P<br>(1 分钟, 漏电流 $\cong 5\text{mA}$ )<br>(1Mintute ,leakage current) $\cong 5\text{mA}$ )   | 1500VDC                      |
| 绝缘电阻<br>Isolation resistance          | 500V  | $\cong 100\text{M}\Omega$    |
| MTBF                                  | 环境 25°C<br>Environment 25°C   | $2.0 \times 10^5 \text{Hrs}$ |
| 开关频率<br>switching frequency           |   | 300KHz                       |
| 最大壳温<br>The highest shell temperature | 工作环境温度较高时, 需加装辅助散热措施, 确保模块表面温度低于 95°C<br>When workingenvironment temperature is higher, need to add auxiliBRy colling measures, to ensure that the surface temperature below 95°C | +95°C                        |
| 工作温度<br>Operating temperature         | 70°C 以上降额使用<br>Above 75°C derating make   | -45°C~85°C                   |
| 储存温度<br>Storage temperature           |   | -45°C~105°C                  |
| 工作相对湿度<br>Operating humidity          | 无凝露及结冰现象<br>(non condensing)  | 10%~90%RH                    |
| 储存相对湿度<br>Storage humidity            | 无凝露及结冰现象<br>(non condensing)  | 5%~95%RH                     |
| 冷却方式<br>Cooling method                |   | 自然冷却<br>Convection           |

注: 模块的输出端可以外加电解电容, 但过大的容量和过低的 ESR 值可能会引起模块工作的不稳定, 或造成限流点变低, 推荐输出电容值为 100 $\mu\text{F/A}$ , 此处的电流指额定输出电流。

Note: The output end of the module can be coupled with electrolytic capacitor, but too much capacity and low ESR value may cause the instability of the module, or current limit points of lower output capacitance of the recommended value of 100  $\mu\text{F/A}$ , the current here refers to the rated output current.

## 命名方式 Naming Rules

JWDB R10-72 D 5



输出电压  
Output voltage  
双路输出  
Dual Output  
标称输入电压  
Nominal Input voltage  
输出功率  
Output power  
铁路机车  
Railway locomotive  
DC/DC 电源模块 外形尺寸 50.8\*50.8(mm)  
DC/DC power module Dimension 50.8\*50.8(mm)

## 产品选型 Product selection

| 产品型号<br>Model No. | 输入电压<br>Input voltage<br>$V_{in}$ | 输出电压<br>Output voltage<br>$V_o$ | 输出电流<br>Output current<br>$I_o$ | 输出电压精度<br>Output voltage<br>tolerance | 纹波噪声<br>R&N<br>$V_{(P-P)mV}$ | 最大容性负载<br>Capacitive load<br>maximum | 效率<br>Efficiency |
|-------------------|-----------------------------------|---------------------------------|---------------------------------|---------------------------------------|------------------------------|--------------------------------------|------------------|
| JWDBR10-110D5     | 66~160V                           | +5V                             | 0.10~1.00A                      | ±2%                                   | 50mV                         | 1100uF                               | 80%              |
|                   |                                   | -5V                             | 0.10~1.00A                      | ±3%                                   | 100mV                        | 1100uF                               |                  |
| JWDBR10-110D12    |                                   | +12V                            | 0.04~0.42A                      | ±1%                                   | 100mV                        | 330uF                                | 82%              |
|                   |                                   | -12V                            | 0.04~0.42A                      | ±3%                                   | 100mV                        | 330uF                                |                  |
| JWDBR10-110D15    |                                   | +15V                            | 0.03~0.33A                      | ±1%                                   | 100mV                        | 220uF                                | 83%              |
|                   |                                   | -15V                            | 0.03~0.33A                      | ±3%                                   | 100mV                        | 220uF                                |                  |
| JWDBR10-110D24    |                                   | +24V                            | 0.02~0.21A                      | ±1%                                   | 120mV                        | 100uF                                | 85%              |
|                   |                                   | -24V                            | 0.02~0.21A                      | ±3%                                   | 120mV                        | 100uF                                |                  |
| JWDBR10-72D5      | 45~135V                           | +5V                             | 0.10~1.00A                      | ±2%                                   | 50mV                         | 1100uF                               | 80%              |
|                   |                                   | -5V                             | 0.10~1.00A                      | ±3%                                   | 100mV                        | 1100uF                               |                  |
| JWDBR10-72D12     |                                   | +12V                            | 0.04~0.42A                      | ±1%                                   | 100mV                        | 330uF                                | 82%              |
|                   |                                   | -12V                            | 0.04~0.42A                      | ±3%                                   | 100mV                        | 330uF                                |                  |
| JWDBR10-72D15     |                                   | +15V                            | 0.03~0.33A                      | ±1%                                   | 100mV                        | 220uF                                | 83%              |
|                   |                                   | -15V                            | 0.03~0.33A                      | ±3%                                   | 100mV                        | 220uF                                |                  |
| JWDBR10-72D24     |                                   | +24V                            | 0.02~0.21A                      | ±1%                                   | 120mV                        | 100uF                                | 85%              |
|                   |                                   | -24V                            | 0.02~0.21A                      | ±3%                                   | 120mV                        | 100uF                                |                  |

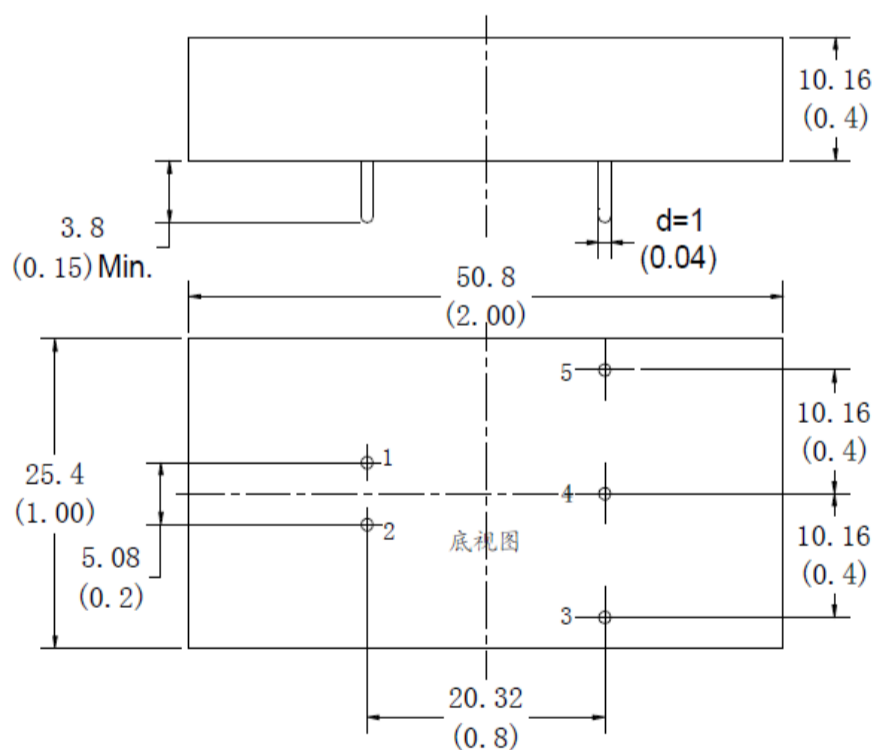
注：因篇幅有限，以上只是部分产品列表，若需列表以外产品，请与本公司销售部联系。

输出纹波噪声（峰-峰值）的测量，请参照模块测试说明中介绍的方法进行。

Note: Due to space limitations, the above list is only for some products, If other than a list of products, please contact the Company's sales department.

Output ripple noise measurement (peak - peak), please refer to the module test notes method is introduced.

## 封装尺寸图 Mechanical DBRta



单位: mm (inch)

## 管脚定义 Pin Assignments

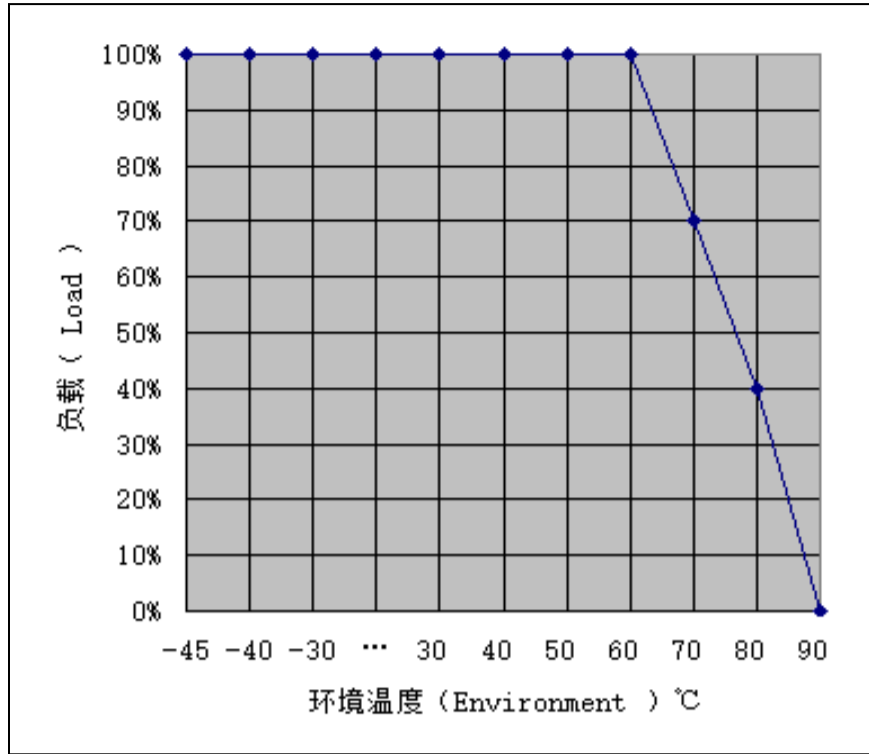
| P1        | P2        | P3        | P4  | P5        |
|-----------|-----------|-----------|-----|-----------|
| $V_{in+}$ | $V_{in-}$ | $V_{o2-}$ | COM | $V_{o1+}$ |

注：电源模块的外形尺寸和管脚定义如与选型手册不符，请以实物实际尺寸为准。

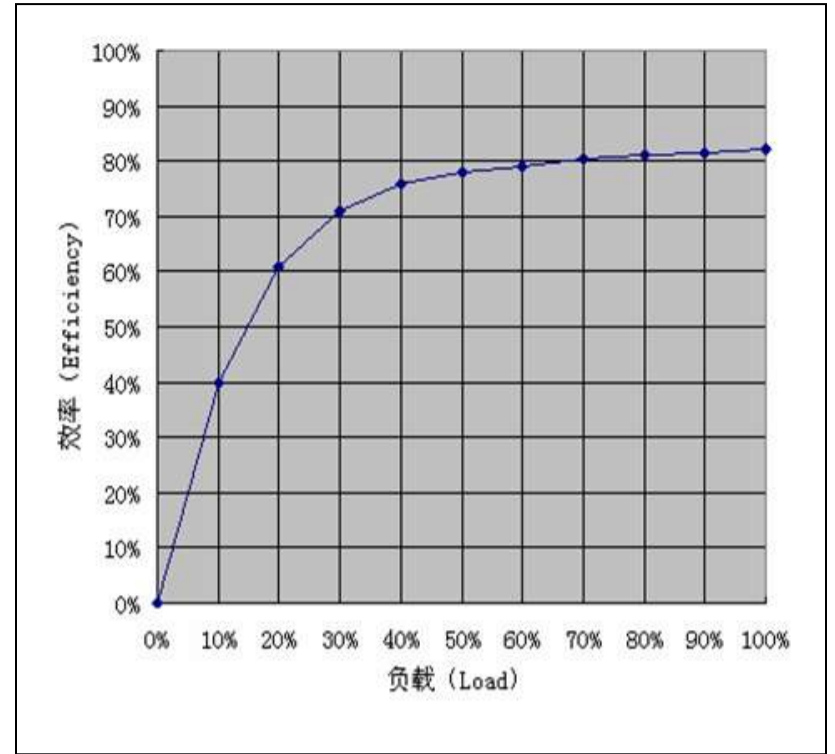
Note: Dimensions and pin definitions of power module such as inconsistent with the hand book, please in kind prevail actual size

典型曲线 Typical curve

降额曲线  
Derating curve



效率曲线  
Efficiency curve



纹波噪声测试: (靠测法 20MHz)

测试方法: 纹波&噪声用示波器来测试。测试模块噪声时为了避免引入额外噪声, 须用示波器探头直接接触模块输出引脚

