



Φ45-20124-24 Brushless DC Motor Product Datasheet

Φ45-20124-24 BLDC Overview

- Three Phase, Six Step, Full Wave, Y-Circuit
- Sintered Nd-Fe-B Permanent Magnet Rotor
- Hall Sensor / Sensorless
- Stepless (Coggingless)
- Slotless

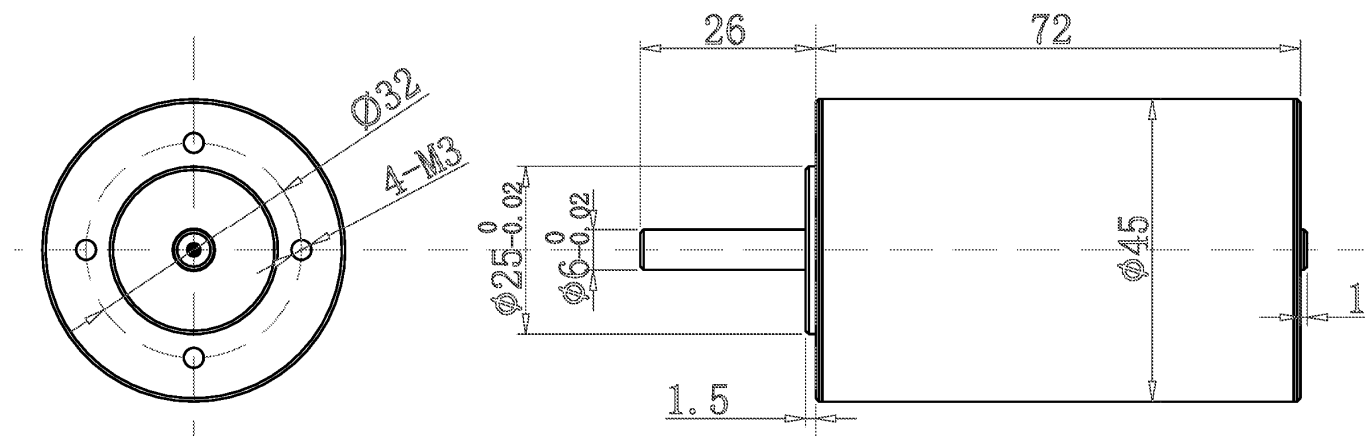


| Parameters | Φ45-20124-24 BLDC Absolute Maximum Ratings | Unit |
|-------------------------------|--|------|
| Peak Current | 6.0 | A |
| Speed | 10000 | rpm |
| Winding and Rotor Temperature | -20 to +130 | °C |
| Ambient Temperature | -20 to +85 | °C |

Notice: The Absolute Maximum Ratings are those values beyond which the safety of the device cannot be guaranteed

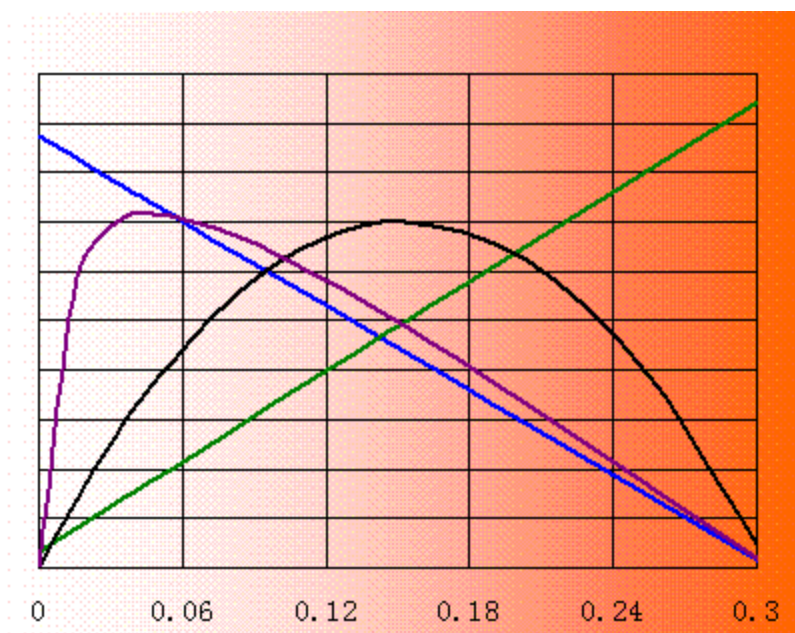
| Parameters | Φ45-20124-24 BLDC Intrinsic Characteristics (20°C) | Unit |
|--|---|--------|
| Resistance (Including 0.5m Line) | 3.0 | Ohm |
| Speed-Torque Gradient | 28600 | rpm/Nm |
| Torque Constant | 0.027 | Nm/A |
| Speed Constant | 365 | rpm/V |
| Back-EMF Constant | 2.6 | mV/rpm |
| Rotor Magnetic Poles | 2 | Poles |
| Ball Bearing No Load Continuous Life (At Nominal Voltage) | 20000 (Please order if have special requirement) | Hours |
| Weight (Including 0.5m Line) | Approximate 430 | g |

Φ45-20124-24 BLDC Physical Size (Unit: mm)





| Parameters | Φ45-20124-24 BLDC Performance Characteristics (20°C) | | | | | Unit |
|-------------------------|--|--------------------------------|------|-------|------|------|
| Nominal Voltage | 24 | | | | | V |
| Maximum Output Power | 70 | | | | | W |
| (See Curves Below) | No Load Point | Some Loaded Points Performance | | | | |
| Output Torque (T) | 0 | 0.025 | 0.05 | 0.075 | 0.1 | Nm |
| Output Speed (N) | 8750 | 8040 | 7320 | 6610 | 5890 | rpm |
| Input Current (I) | 0.40 | 1.31 | 2.22 | 3.13 | 4.05 | A |
| Output Power (P2) | 0 | 21 | 38 | 52 | 62 | W |
| Efficiency (η) | 0 | 67 | 72 | 69 | 64 | % |
| Free-convection Cooling | If the shell temperature of the motor is higher than 85°C, fan or other cooling equipments must be installed. Otherwise the motor may be damaged by hotness. | | | | | |



η(%) P2(W) I(A) N(rpm)
100 100 12 10000

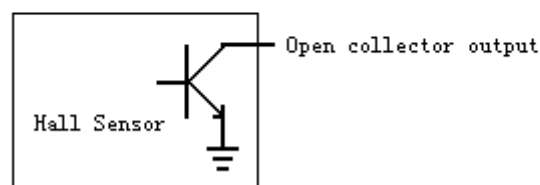
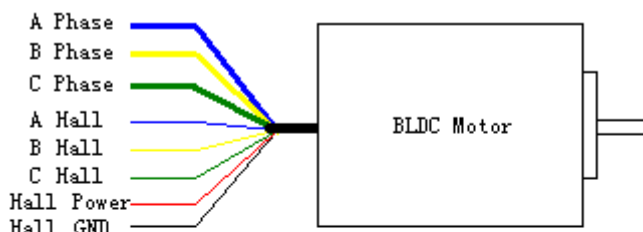
Efficiency vs. Torque: η -----
Output Power vs. Torque: P2 -----
Current vs. Torque: I -----
Speed vs. Torque: N -----

Short Term
Operation Range:

Torque(Nm)

Φ45-20124-24 BLDC Connection Diagram and Hall Output Waveforms

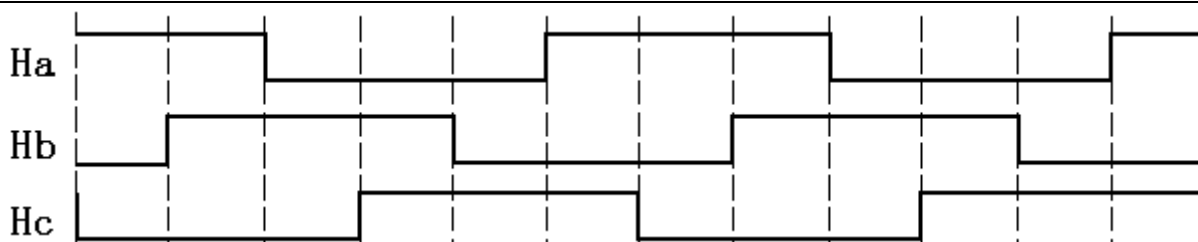
- Connection: Blue thick--A phase, Yellow thick--B phase, Green thick--C phase, Blue thin--A hall, Yellow thin--B hall, Green thin--C hall, Red thin--Hall power supply, Black thin--Hall GND
- Hall Supply Voltage: 4.5 to 16VDC Regulated Supply
- Hall Power Supply Current: Less than 30mA
- Hall Output: Open collector. Require external pull-up resistors for proper logical operation. Maximum output voltage is 16V
- Electrical Hall Sensor Phasing: 120°
- Line Length: 0.5m, (Please order if have special requirement)





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Hall Sensor Output Commutation Waveforms

Notice: The A, B, C three windings and Ha, Hb, Hc three hall sensors must be connected correctly, otherwise the controller and motor may be damaged.

Eletechnic BLDC Motor Product Code Regulation

X - **Y** - **Z**

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Flange Size (mm) Sub-series Nominal Voltage (V)



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