



Φ 40-4027-24 Brushless DC Motor Product Datasheet

Φ 40-4027-24 BLDC Overview

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

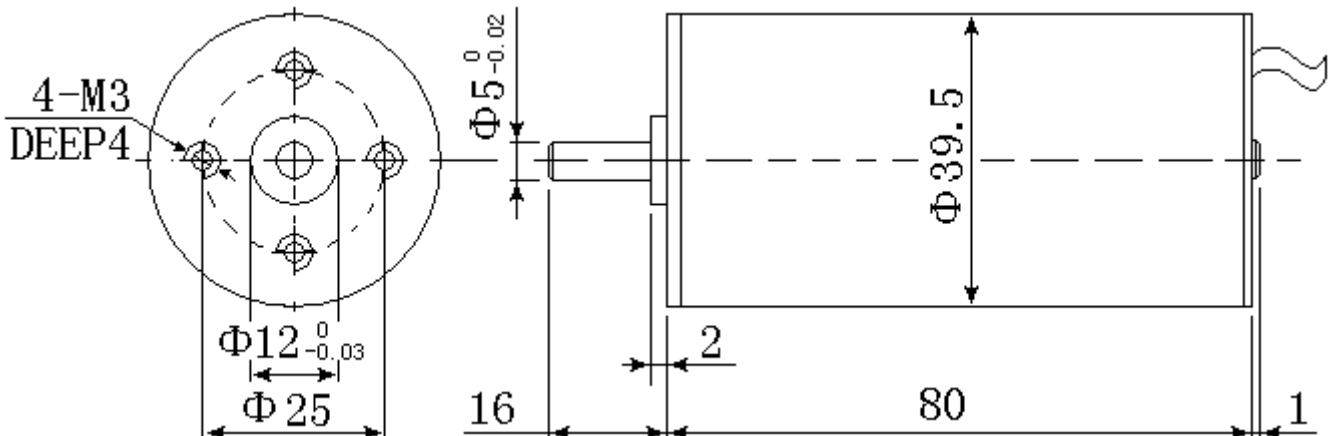


| Parameter | Φ 40-4027-24 BLDC Absolute Maximum Ratings | Unit |
|--|--|------|
| Continuous Current (At Nominal Voltage) | 11.5 | A |
| Speed | 10,000 | rpm |
| Winding and Rotor Temperature | -20 to +150 | °C |
| Ambient Temperature | -20 to +85 | °C |

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

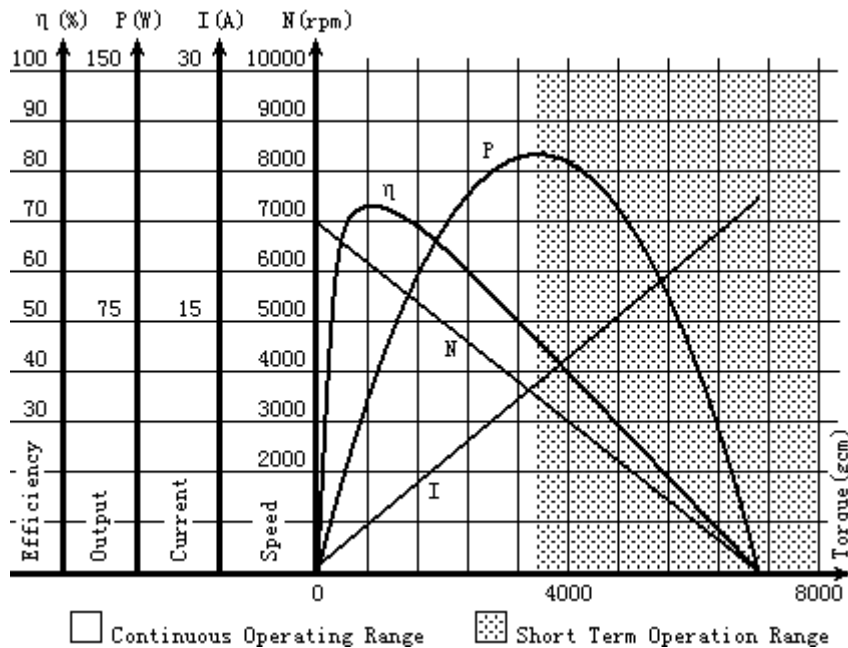
| Parameter | Φ 40-4027-24 BLDC Intrinsic Characteristics (20 °C) | Unit |
|---|--|---------|
| Resistance (Including 0.5m Line) | 0.42 | Ohm |
| Speed/Torque Gradient | 0.99 | rpm/gcm |
| Torque Constant | 314 | gcm/A |
| Speed Constant | 290 | rpm/V |
| Back-EMF Constant | 3.43 | mV/rpm |
| Rotor Magnetic Poles | 4 | Poles |
| Ball Bearing No Load Continuous Life (At Nominal Voltage) | 15,000 <i>(Please order if have special requirement)</i> | Hours |
| Weight (Including 0.5m Line) | Approximate 400 | g |

Φ 40-4027-24 BLDC Physical Size (Unit: mm)



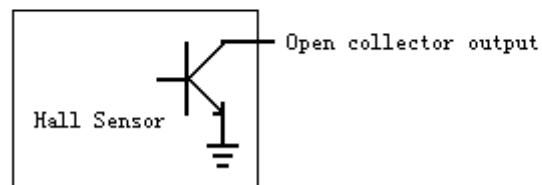
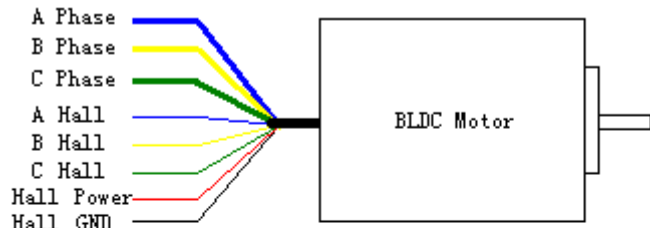


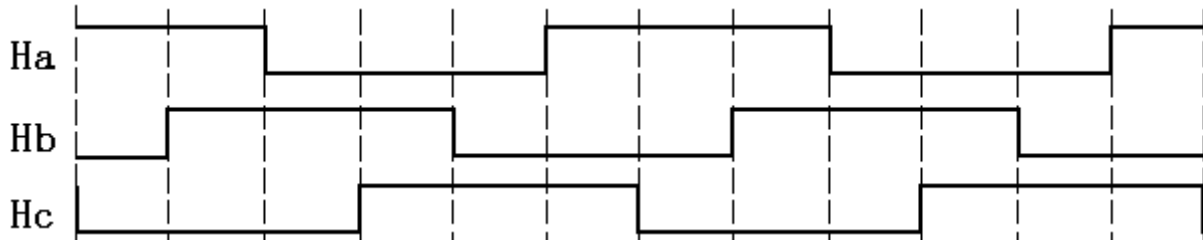
| Parameter | Φ 40-4027-24 BLDC Performance Characteristics (20 °C) | | | | | Unit |
|-------------------------------------|--|---|-------|-------|-------|------|
| Nominal Voltage | 24 | | | | | V |
| Maximum Output Power | 126 | | | | | W |
| (See Curves Below) | No Load Point | Some Loaded Points (For Reference Only) | | | | |
| Output Power | 0 | 40 | 60 | 80 | 100 | W |
| Current | 0.36 | 2.34 | 3.42 | 4.74 | 6.3 | A |
| Speed | 6,960 | 6,340 | 6,020 | 5,580 | 5,100 | rpm |
| Output Torque | 0 | 620 | 970 | 1,400 | 1,910 | gcm |
| Efficiency | 0 | 72 | 73 | 70 | 66 | % |
| External Forced Ventilation Cooling | <p style="color: red; text-align: center;">If the shell temperature of the motor is higher than 85 °C, more effective cooling equipments must be installed. Otherwise the motor may be damaged by hotness.</p> | | | | | |



Φ 40-4027-24 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 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)

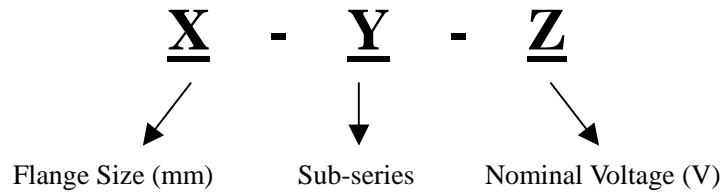




Hall Sensor Output Commutation Waveforms

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.

Eletech BLDC Motor Type Code Regulation



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How to reach us:

Address:

Chang Ping Qu, Er Bo Zi Gong Ye Yuan, Bei Qu Zhong Lu No.7

Beijing, 102208

P. R. China

Tel: 0086-10-68422061

Fax: 0086-10-68422061

EMAIL: SALES@ELETECHNIC.COM

[HTTP://WWW.ELETECHNIC.COM](http://WWW.ELETECHNIC.COM)

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<http://www.eletech.com>

