



### Φ38-20113-12 Brushless DC Motor Product Datasheet

#### Φ38-20113-12 BLDC Overview

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

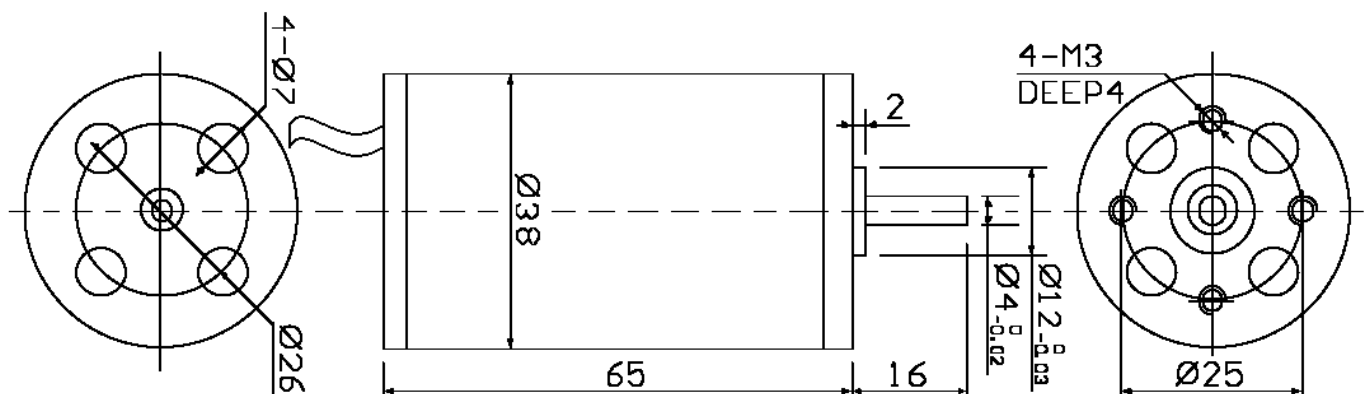


Parameters	Φ38-20113-12 BLDC Absolute Maximum Ratings	Unit
Continuous Current	11.6	A
Speed	15000	rpm
Winding and Rotor Temperature	-20 to +150	°C
Ambient Temperature	-20 to +85	°C

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

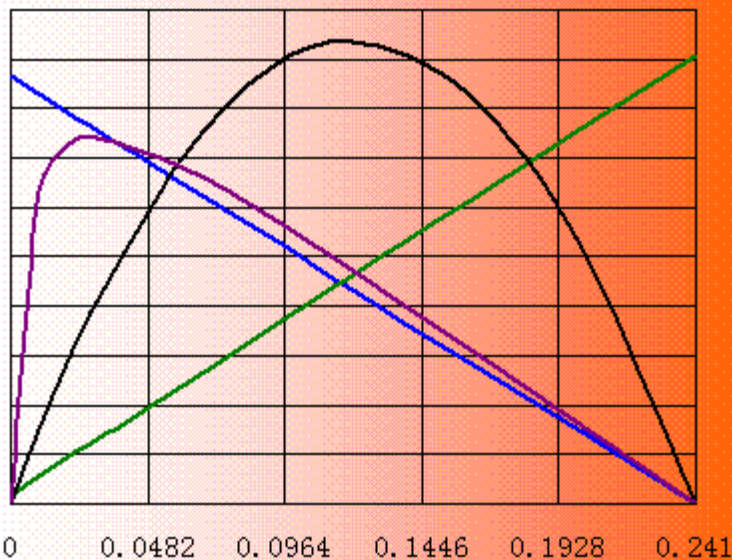
Parameters	Φ38-20113-12 BLDC Intrinsic Characteristics (20°C)	Unit
Resistance (Including 0.5m Line)	0.40	Ohm
Speed-Torque Gradient	43080	rpm/Nm
Torque Constant	0.0108	Nm/A
Speed Constant	865	rpm/V
Back-EMF Constant	1.14	mV/rpm
Rotor Magnetic Poles	2	Poles
Ball Bearing No Load Continuous Life (At Nominal Voltage)	20000	<a href="#">(Please order if have special requirement)</a> Hours
Weight (Including 0.5m Line)	Approximate	250 g

#### Φ38-20113-12 BLDC Physical Size (Unit: mm)





Parameters	Φ38-20113-12 BLDC Performance Characteristics (20°C)					Unit
Nominal Voltage	12					V
Maximum Output Power	66					W
(See Curves Below)	<b>No Load Point</b>	<b>Some Loaded Points Performance</b>				
Output Torque	0	0.03	0.04	0.05	0.06	Nm
Output Speed	10380	9090	8660	8230	7800	rpm
Input Current	0.45	3.22	4.14	5.06	5.99	A
Output Power	0	29	36	43	49	W
Efficiency	0	74	73	71	68	%
Free-convection Cooling	<u>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.</u>					



$\eta$ (%)      P(W)      I(A)      N(rpm)  
 100      70      25      12000

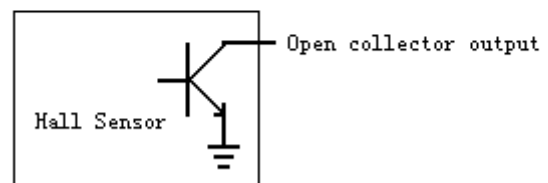
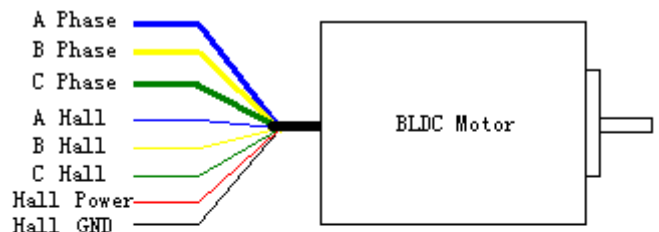
Speed vs. Torque : N -----  
 Current vs. Torque : I -----  
 Output Power vs. Torque : P -----  
 Efficiency vs. Torque :  $\eta$  -----

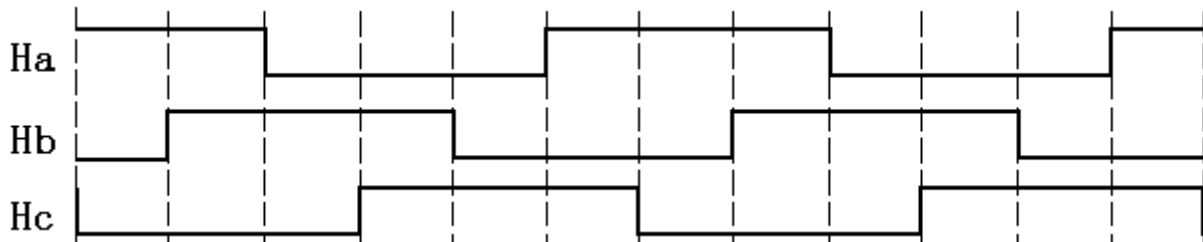
Short Term  
 Operation Range:                     

Torque(Nm)

### Φ38-20113-12 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)

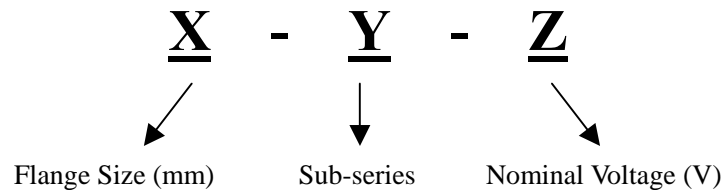




Hall Sensor Output Commutation Waveforms

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



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