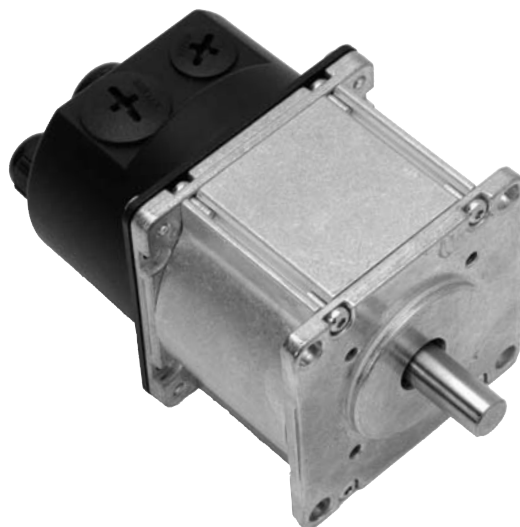


MOTORS

BRUSHLESS DC



Introduction

NMB Minebea is a world leader in the design and manufacture of precision brushless DC motors and stepping motors. The company offers a broad range of standard and custom designed brushless DC motors for OEM users.

New brushless DC motor series have been introduced and specified in this catalogue; They reflect efforts of the advanced engineering design center as well as leading edge production technology and on-going quality control programs that assure complete customer satisfaction.

All these brushless DC motors are developed at PM°DM GmbH (Precision-Motors-Deutsche-Minebea-GmbH) in Villingen-Schwenningen, Germany, NMB Minebea's worldwide development center for brushless DC motors.

NMB Minebea provides complete in-house volume production capabilities. These exclusive features include internal production of miniature precision bearings, die coating, lamination stamping and injection molding in addition to one of the largest tool and die centers in the industry. Such capabilities and facilities reflect the company's dedication to vertical integration and the resultant product quality at competitive prices.

NMB Minebea is a leader in both material research and automated production technology. Since March 1993, the company is also a forerunner in the area of environmental safety. All subsidiaries and companies are CFC and trichlorethylene free.

NMB Minebea GmbH and PM°DM GmbH are subsidiaries of the Minebea Co. Ltd. Group of worldwide companies. NMB Minebea GmbH and PM°DM GmbH have access to all the extensive resources of other group companies around the globe. We offer products to satisfy the most demanding requirements of our customers worldwide. We can support your engineers to find the best possible solution.

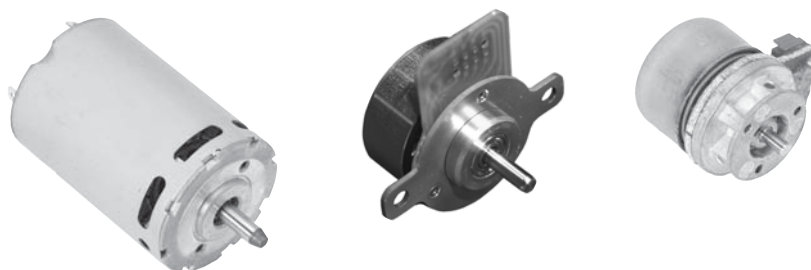
The high quality of our products is achieved by a continuous and permanent quality control.

NMB Minebea is certified according to DIN EN ISO 9000, our manufacturing plants are DIN EN ISO 9000, DIN EN ISO 14001 and QS 9000 certified. Additional, the development center PM°DM GmbH is certified according to ISO/TS 16949. Of course, all our motors are RoHS compliant.

This catalog does not constitute a part of the product specification and is intended only as reference material in aiding with the selection of a motor. Also, please note that the contents of these pages are liable to change without notice. Even if there are any changes to the information given here, this will have no influence whatsoever on products for which specifications have already been agreed upon and which are in production. If there should be any impact on products already manufactured, we will make arrangements with the customer to deal with the matter separately through a request for approval of changes. We ask for your understanding and cooperation.

Remark:

Technical modifications are subject to change.



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Table of Contents

Torque conversion factor

	Nm	Ncm	mNm	dyn cm	kgm	kgcm	gcm	oz in
Nm	1	10 ²	10 ³	10 ⁷	0.1019716	10.19716	1.019716-10 ⁴	1.41612-10 ²
Ncm	10 ⁻²	1	10 ¹	10 ⁵	1.019716-10 ⁻³	0.1019716	1.019716-10 ²	1.41612
mNm	10 ⁻³	10 ⁻¹	1	10 ⁴	1.019716-10 ⁻⁴	0.01019716	10.19716	0.141612
dyn cm	10 ⁻⁷	10 ⁻⁵	10 ⁻⁴	1	1.019716-10 ⁻⁸	1.019716-10 ⁻⁶	1.019716-10 ⁻³	1.41612-10 ⁻⁵
kgm	9.80665	9.80665-10 ²	9.80665-10 ³	9.80665-10 ⁷	1	10 ²	10 ⁵	1.38874-10 ³
kgcm	9.80665-10 ⁻²	9.80665	98.0665	9.80665-10 ⁵	10 ⁻²	1	10 ³	13.8874
gcm	9.80665-10 ⁻⁵	9.80665-10 ⁻³	9.80665-10 ⁻²	9.80665-10 ²	10 ⁻⁵	10 ⁻³	1	1.38874-10 ⁻²
oz in	7.06155-10 ⁻³	0.706155	7.06155	7.06155-10 ⁴	7.20077-10 ⁻⁴	7.20077-10 ⁻²	72.0077	1

Moment of inertia conversion factor

	kgm ²	kgcm ²	gcm ²	kgm s ²	kgcm s ²	gcm s ²	oz in ²	oz in s ²
kgm ²	1	10 ⁴	10 ⁷	0.101972	10.1972	1.01972-10 ⁴	5.46745-10 ⁴	1.41612-10 ²
kgcm ²	10 ⁻⁴	1	10 ³	1.01972-10 ⁻⁵	1.01972-10 ⁻³	1.01972	5.46745	1.41612-10 ⁻²
gcm ²	10 ⁻⁷	10 ⁻³	1	1.01972-10 ⁻⁸	1.01972-10 ⁻⁶	1.01972-10 ⁻³	5.46745-10 ⁻³	1.41612-10 ⁻⁵
kgm s ²	9.80665	9.80665-10 ⁻⁴	9.80665-10 ⁻⁷	1	10 ²	10 ⁵	5.36174-10 ⁵	1.38874-10 ³
kgcm s ²	9.80665-10 ⁻²	9.80665-10 ²	9.80665-10 ⁵	10	1	10 ³	5.36174-10 ³	13.8874
gcm s ²	9.80665-10 ⁻⁵	0.980665	9.80665-10 ²	10 ⁻⁵	10 ⁻³	1	5.36174	1.38874-10 ⁻²
oz in ²	1.82901-10 ⁻⁵	0.182901	1.82901-10 ²	1.86506-10 ⁻⁶	1.86506-10 ⁻⁴	0.186506	1	2.59008-10 ⁻³
oz in s ²	7.06154-10 ⁻³	70.6154	7.06154-10 ⁴	7.20077-10 ⁻⁴	7.20077-10 ⁻²	72.00766	3.86089-10 ²	1

Key

Pin	Function
1	W
2	V
3	U
4	GND
5	Vcc
6	H1
7	H2
8	H3

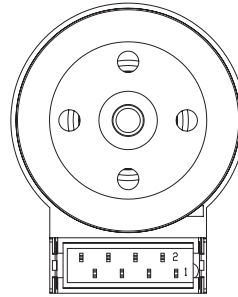
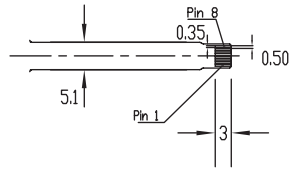
Pin	Function
1	H1
2	Vcc
3	H3
4	W
5	GND
6	U
7	H2
8	V

BLDC15

matching ZIF-connectors:
JST 08FLZ-SM1_TB
Molex 52745-0890

minimum bending radius of FPC:
3 mm

min.Vcc: 3.5V
max. Vcc: 20V



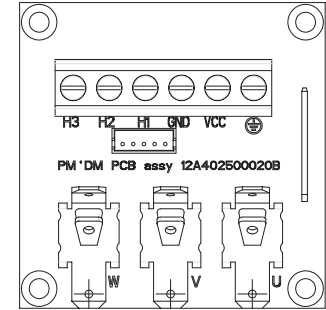
Connector AMP Micromatch female 0-338068-8

BLDC20-OR

matching connector:
Tyco 215083-08

min.Vcc: 3.5V
max. Vcc: 20V

BLDC65



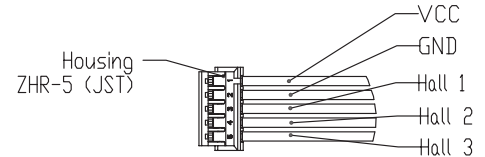
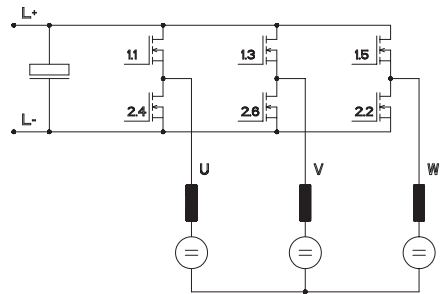
BLDC40

Hall ICs

matching connector:
JST S5B-ZR-SM3A-TF

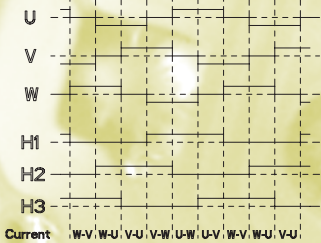
min.Vcc: 3.5V
max. Vcc: 20V

Phases: Terminals 4.8mm x 0.8 mm



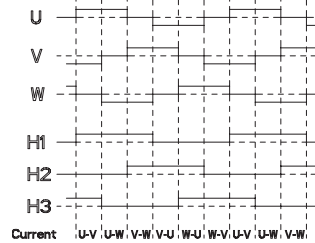
BLDC15

Direction CCW: (View on the motor shaft counter-clockwise)

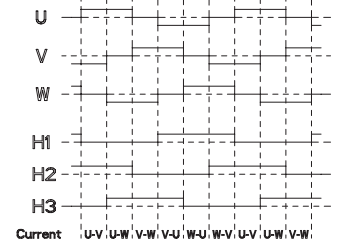


BLDC20-OR

Direction CCW: (View on the motor shaft counter-clockwise)

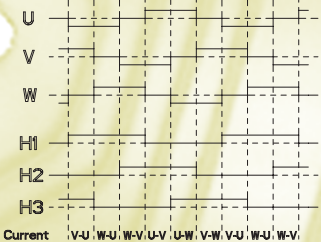


Direction CW: (View on the motor shaft clockwise)



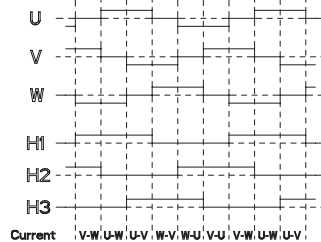
BLDC40 8-pol

Direction CCW: (View on the motor shaft counter-clockwise)



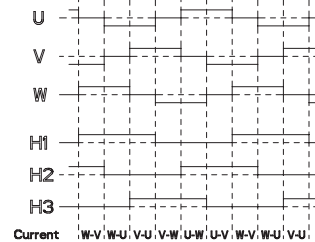
BLDC65

Direction CW: (View on the motor shaft clockwise)

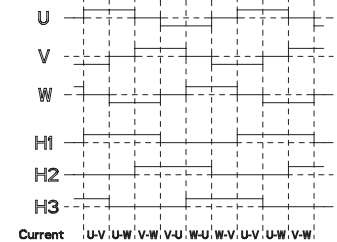


BLDC40 16-pol

Direction CCW: (View on the motor shaft counter-clockwise)



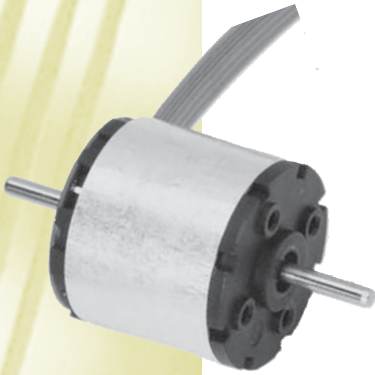
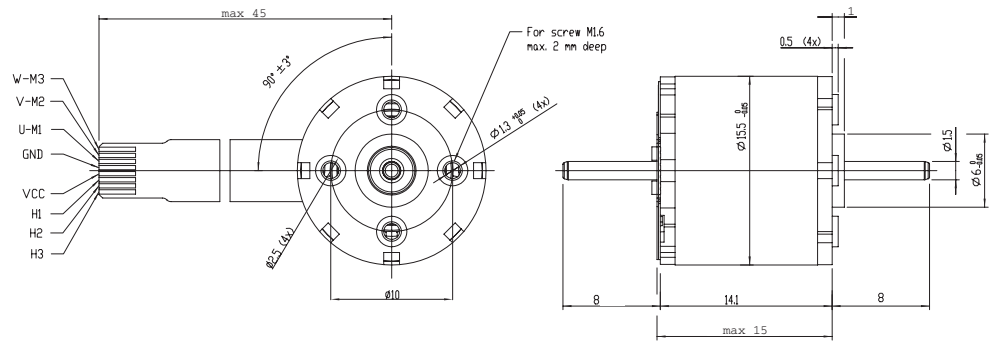
Direction CW: (View on the motor shaft clockwise)



Definitions

Abbr.	Unit	Characteristics
T_s	mNm	Stall torque: Peak torque at standstill without current limitation (very short time).
T_{max}	mNm	Maximum usable torque: Limited by the maximum current.
T_0	mNm	Continuous stall torque: Torque at standstill at a max. mean temperature of the windings of 70K.
T_n	mNm	Continuous torque: Motor torque at continuous power / nominal power.
P_n	W	Continuous power: Mechanical motor power at rated speed and continuous torque.
n_n	rpm	Rated speed: Motor speed at continuous power / nominal power/ rated voltage
n_0	rpm	No load speed: Max. achievable motor speed at rated voltage.
I_{max}	A	Max. allowable motor current: Limited by the heating of the windings or by the servo controller.
I_0	A	Continuous stall current: Winding current that produces the continuous stall torque T_0 .
R_{phph}	Ohm	Connection resistance: Resistance measured at 20°C (68°F) ambient temperature between two phase of the motor winding.
L_{phph}	mH	Connection inductance: Inductance measured at 20°C (68°F) ambient temperature between two phases of the motor winding, measured at 1kHz.
J	gcm ²	Rotor mass moment of inertia: Polar mass moment of inertia of the rotor.
T_E	ms	Electrical time constant: Describes the behaviour of the motor windings in the current control loop. It is the ratio of motor inductance to resistance: $T_E = L_{phph} / R_{phph}$.
T_M	ms	Mechanical time constant: Describes the time to accelerate the motor to 63 % of his final speed under no load conditions
K_e	V/rpm	Back EMF constant: The back EMF (back electro motif force) generated by the motor is directly proportional to the angular velocity of the motor. The proportionality constant is the back EMF constant of the motor.
K_t	mNm/A	Motor torque constant: Ratio of motor torque to current applied to the motor windings.
K_n	rpm/V	Speed constant: Describes the relationship between speed and voltage of a motor.

BLDC15



General Specification

Insulation class F

Housing protection IP30

Operating temperature $-0^{\circ}\text{C} \dots +45^{\circ}\text{C}$

2 NMB ballbearings for long lifetime

Max. radial load 2 N (5mm from flange)

Max. axial load 2 N

Features

Excellent power to volume ratio

High efficiency at operating point

High reliability

Options

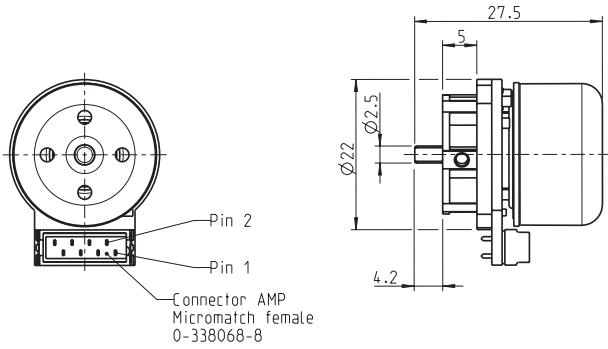
Without rear shaft

NMB-Partnumber		BLDC15P06-6V	BLDC15P06-12V
		43.1.0106	43.1.0106
Rated Voltage	[V]	6	12
Rated Speed	[rpm]	3600	10000
Continuous Power	[W]	0.84	2
Rated Torque	[mNm]	2.2	1.91
Continous Stall Torque	[mNm]	2.8	2.8
Efficiency at Rated Speed	[%]	54.2	70
Current at Rated Speed	[A]	0.255	0.23
No Load Speed	[rpm]	6500	12900
Resistance per Phase *1)	[Ω]	9.8	9.8
Inductance per Phase	[mH]	0.51	0.51
Torque Constant	[mNm/A]	8.8	8.3
Speed Constant	[rpm/V]	1085	1075
Mech. Time Constant	[ms]	10.1	10.1
Rotor Inertia	[gcm ²]	0.8	0.8
Number of Poles		12	12
Weight	[g]	15	15
Thermal Resistance *2)	[K/W]	40	40

Dwg.No.: 120701200025C

*1) resistance phase to phase at 20°C

*2) thermal resistance winding to ambient

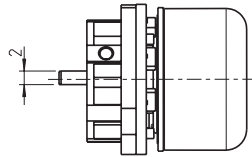
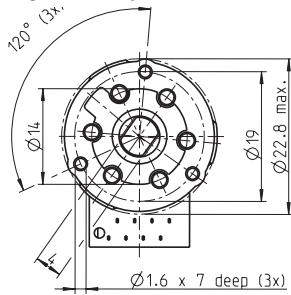


General Specification

Operating temperature
 - 40 ° C ... + 85°C
 2 NMB ballbearings for
 long lifetime

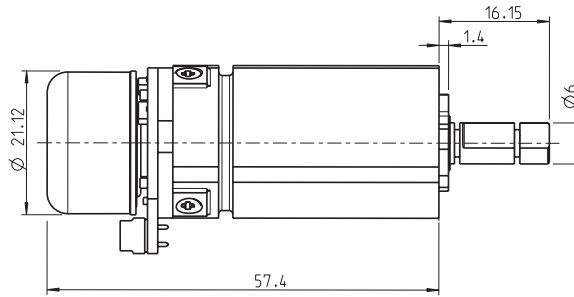
Features

Excellent power to volume ratio
 High efficiency at operating point
 High reliability



Options

Prepared for planetary gearbox



BLDC20-OR



BLDC20-OR-GB

NMB-Partnumber		BLDC20-OR	BLDC20-OR-GB *2)
		9V 46.014	9V 46.014
Rated Voltage	[V]	9	9
Rated Speed	[rpm]	3200	22
Continuous Power	[W]	2.38	1.55
Rated Torque	[mNm]	7.1	160
Continous Stall Torque	[mNm]	13.6 max.	160 min.
Efficiency at Rated Speed	[%]	63	40
Efficiency max.	[%]	>80	-
Current at Rated Speed	[A]	0.3	0.3
No Load Speed	[rpm]	6500	43
Resistance per Phase *1)	[Ω]	7.2	7.2
Inductance per Phase	[mH]	1.0	1.0
Torque Constant	[mNm/A]	13.8	13.8
Speed Constant	[rpm/V]	-	-
Mech. Time Constant	[ms]	37.7	38.0
Rotor Inertia	[gcm ²]	9.25	9.25
Number of Poles		6	6
Weight	[g]	30	56
Thermal Resistance *2)	[K/W]	22.0	22.0

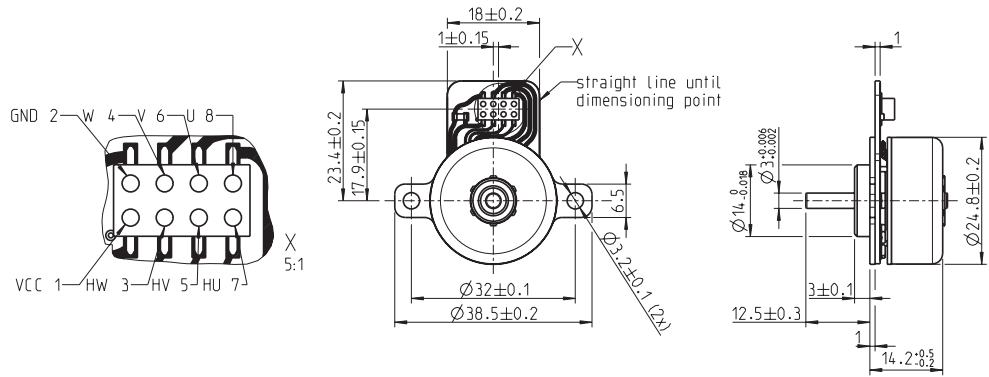
Dwg.No.: 120601200009G

*1) resistance phase to phase at 20°C

*2) other gear ratios available upon request



BLDC 25-OR



General Specification

- Insulation class F
- Housing protection IP20
- Operating temperature – 20 ° C ... + 85°C
- 2 NMB ballbearings for long lifetime
- Max. radial load 3 N (8mm from flange)
- Max. axial load 4 N

Features

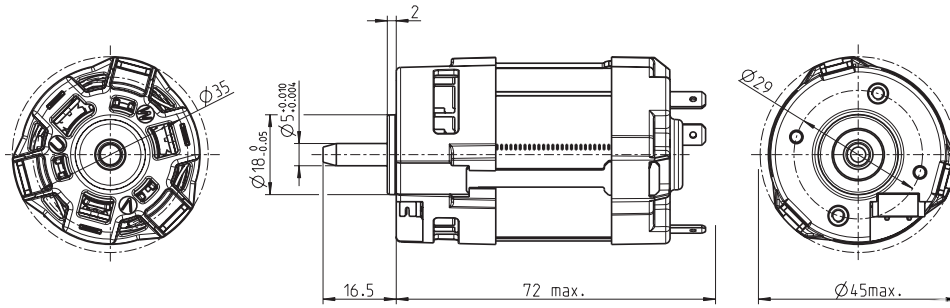
- Excellent power to volume ratio
- Flat construction motor
- Low cogging torque
- Position sensor system (Hall IC's)

NMB-Partnumber		BLDC25-OR-P6A 12V 99.1.015	BLDC25-OR-P6A 24V 99.1.015
Rated Voltage	[V]	12	24
Rated Speed	[rpm]	2020	3800
Continuous Power	[W]	1.8	3.3
Rated Torque	[mNm]	8.3	8.3
Continous Stall Torque	[mNm]	8.8	8.8
Efficiency at Rated Speed	[%]	54	71
Current at Rated Speed	[A]	0.28	0.26
No Load Speed	[rpm]	3650	5500
Resistance per Phase *1)	[Ω]	12.6	12.6
Inductance per Phase	[mH]	4	4
Torque Constant	[mNm/A]	29	29
Speed Constant	[rpm/V]	304	229
Mech. Time Constant	[ms]	18	18
Rotor Inertia	[gcm ²]	13	13
Number of Poles		12	12
Weight	[g]	40	40
Thermal Resistance *2)	[K/W]	23	23

Dwg.No.: 120888800036A

For high volume demand

BLDC 40-SG01



General Specification

Insulation class F
 Housing protection IP20
 Operating temperature – 20 ° C ... + 45°C
 2 NMB ballbearings for long lifetime
 Max. radial load 80 N (5mm from flange)
 Max. axial load 50 N

Features

Excellent power to volume ratio
 High efficiency at operating point
 High reliability



Different lengths, operating voltages and speeds are available. Please ask for details.

NMB-Partnumber	BLDC40P30F 12V 6.1.090D
----------------	----------------------------

Rated Voltage	[V]	12
Rated Speed	[rpm]	14200
Continuous Power	[W]	208
Rated Torque	[mNm]	140
Continous Stall Torque	[mNm]	140
Efficiency at Rated Speed	[%]	76
Efficiency max.	[%]	85
Current at Rated Speed	[A]	25
No Load Speed	[rpm]	18300
Resistance per Phase *1)	[Ω]	0.031
Inductance per Phase	[mH]	18
Torque Constant	[mNm/A]	6.1
Speed Constant	[rpm/V]	1525
Mech. Time Constant	[ms]	5.3
Rotor Inertia	[gcm ²]	64
Number of Poles		6
Weight	[g]	250
Thermal Resistance *2)	[K/W]	0.92

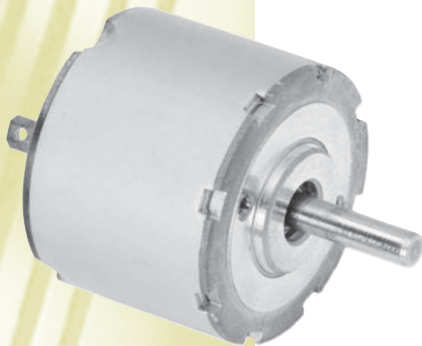
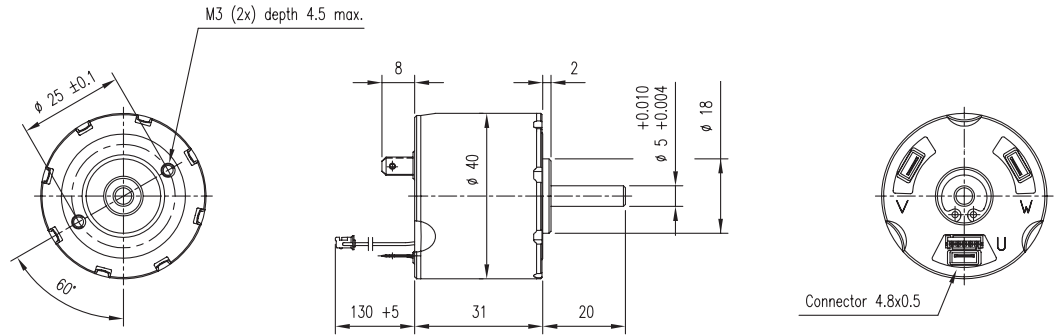
Dwg.No.: 120888800002F

*1) resistance phase to phase at 20°C
 *2) thermal resistance winding to ambient

Applications:

White Goods
Power Tools
Consumer Products

BLDC40P10



General Specification

Insulation class F

Protection IP20

Operating temperature – 20 °C ... + 70°C

2 NMB ballbearings for long lifetime

Max. radial load 80 N (5mm from flange)

Max. axial load 50 N

Features

Low cogging torque

High power to volume ratio

High efficiency at operating point

High reliability

Options

Driver

NMB-Partnumber		BLDC40P10A-12V	BLDC40P10A-24V
		38.1.040	38.1.040
Rated Voltage	[V]	12	24
Rated Speed	[rpm]	3000	6000
Continuous Power	[W]	12	26.8
Rated Torque *1)	[mNm]	57.6	51.7
Continuous Stall Torque	[mNm]	78	78
Efficiency at Rated Speed	[%]	79.1	84.2
Current at Rated Speed	[A]	0.61	0.82
No Load Speed	[rpm]	3400	6800
Resistance per Phase *2)	[Ω]	1.58	1.58
Inductance per Phase	[mH]	1.3	1.3
Torque Constant	[mNm/A]	34	34
Speed Constant	[rpm/V]	265.3	265.3
Mech. Time Constant	[ms]	1.95	1.95
Rotor Inertia	[gcm ²]	16	16
Number of Poles		14	14
Weight	[g]	160	160
Thermal Resistance *3) *4)	[K/W]	9	9

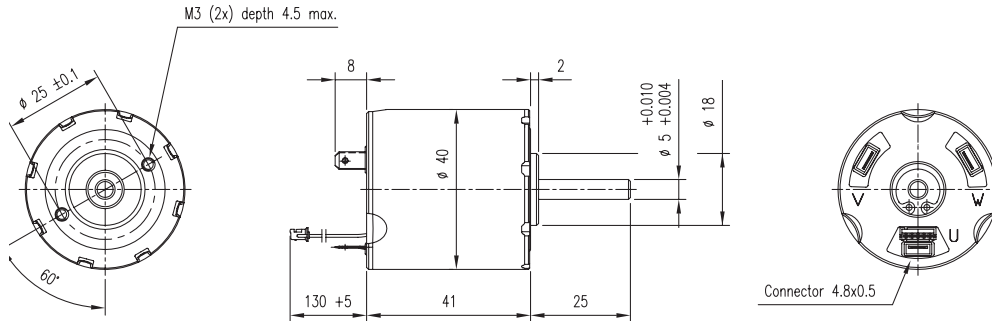
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

BLDC40P20A BLDC40S20A



General Specification

Insulation class F

Housing protection IP20

Operating temperature – 20 ° C ... + 70°C

2 NMB ballbearings for long lifetime

Max. radial load 80 N (5mm from flange)

Max. axial load 50 N

Features

Low cogging torque

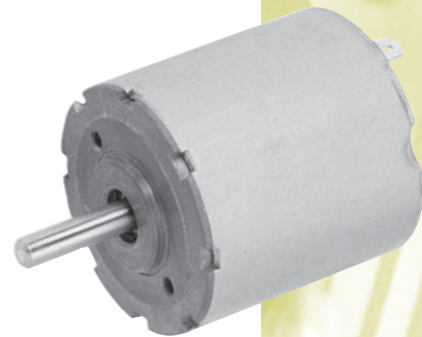
High power to volume ratio

High efficiency at operating point

High reliability

Options

Driver



NMB-Partnumber		BLDC40P20A-24V 40.1.040	BLDC40S20A-24V 39.1.040D
Rated Voltage	[V]	24	24
Rated Speed	[rpm]	3000	2700
Continuous Power	[W]	31	40.6
Rated Torque *1)	[mNm]	100	143
Continuous Stall Torque	[mNm]	121	250
Efficiency at Rated Speed	[%]	82.7	84.4
Current at Rated Speed	[A]	0.39	2.0
No Load Speed	[rpm]	3300	3300
Resistance per Phase *2)	[Ω]	2.65	0.87
Inductance per Phase	[mH]	2.6	0.8
Torque Constant	[mNm/A]	65	68
Speed Constant	[rpm/V]	141.9	140.4
Mech. Time Constant	[ms]	1.6	0.68
Rotor Inertia	[gcm ²]	28	36
Number of Poles		14	16
Weight	[g]	220	235
Thermal Resistance *3) *4)	[K/W]	7	7

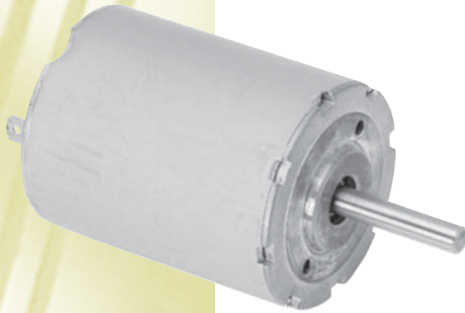
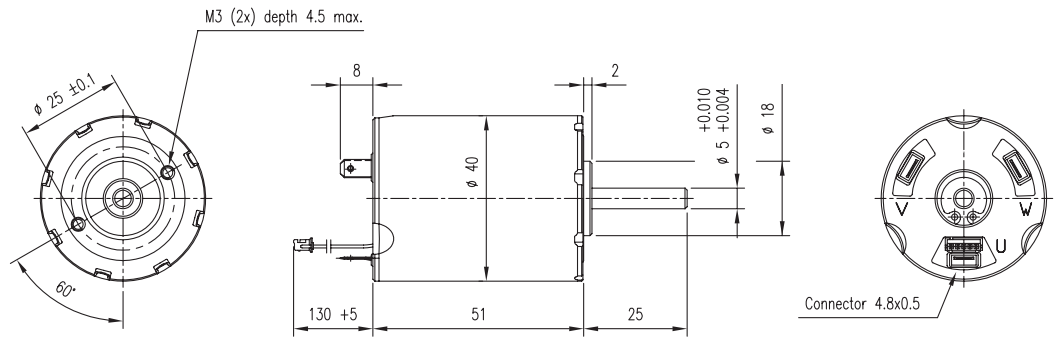
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

BLDC40P30A BLDC40S30A



General Specification

Insulation class F
 Protection IP20
 Operating temperature – 20 ° C ... + 70°C
 2 NMB ballbearings for long lifetime
 Max. radial load 80 N (5mm from flange)
 Max. axial load 50 N

Features

Low cogging torque
 High power to volume ratio
 High efficiency at operating point
 High reliability

Options

Driver

NMB-Partnumber		BLDC40P30A-24V 25.1.050	BLDC40S30A-24V 25.1.050D
Rated Voltage	[V]	24	24
Rated Speed	[rpm]	3000	3000
Continuous Power	[W]	44	63
Rated Torque *1)	[mNm]	140	200
Continuous Stall Torque	[mNm]	155	297
Efficiency at Rated Speed	[%]	83.1	89.4
Current at Rated Speed	[A]	2.3	3.0
No Load Speed	[rpm]	3700	3400
Resistance per Phase *2)	[Ω]	1.46	0.50
Inductance per Phase	[mH]	1.50	0.50
Torque Constant	[mNm/A]	60	66
Speed Constant	[rpm/V]	158.4	143.6
Mech. Time Constant	[ms]	1.60	0.57
Rotor Inertia	[gcm ²]	40	50
Number of Poles		14	16
Weight	[g]	280	280
Thermal Resistance *3) *4)	[K/W]	6	6

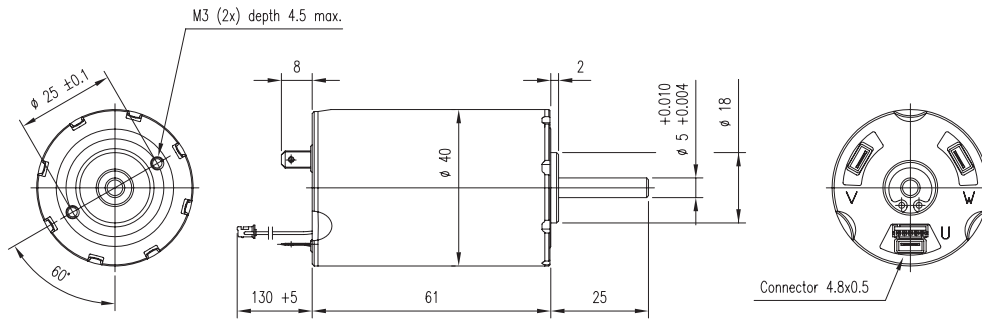
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

BLDC40S40



General Specification

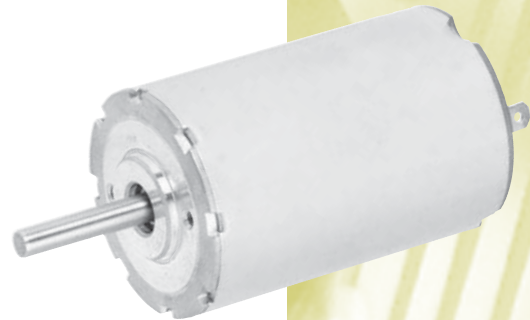
Insulation class F
 Protection IP20
 Operating temperature $-20^{\circ}\text{C} \dots +70^{\circ}\text{C}$
 2 NMB ballbearings for long lifetime
 Max. radial load 80 N (5mm from flange)
 Max. axial load 50 N

Features

Low cogging torque
 High power to volume ratio
 High efficiency at operating point
 High reliability

Options

Driver, Encoder



NMB-Partnumber		BLDC40S40A-12V 18.1.056D	BLDC40S40A-24V 18.1.056D
Rated Voltage	[V]	12	24
Rated Speed	[rpm]	1200	3000
Continuous Power	[W]	38.2	79
Rated Torque *1)	[mNm]	300	250
Continuous Stall Torque	[mNm]	389	389
Efficiency at Rated Speed	[%]	71.7	85.4
Current at Rated Speed	[A]	4.7	3.9
No Load Speed	[rpm]	1760	3500
Resistance per Phase *2)	[Ω]	0.38	0.38
Inductance per Phase	[mH]	0.30	0.30
Torque Constant	[mNm/A]	64	64
Speed Constant	[rpm/V]	148.5	148.5
Mech. Time Constant	[ms]	0.58	0.58
Rotor Inertia	[gcm ²]	64	64
Number of Poles		16	16
Weight	[g]	350	350
Thermal Resistance *3) *4)	[K/W]	5	5

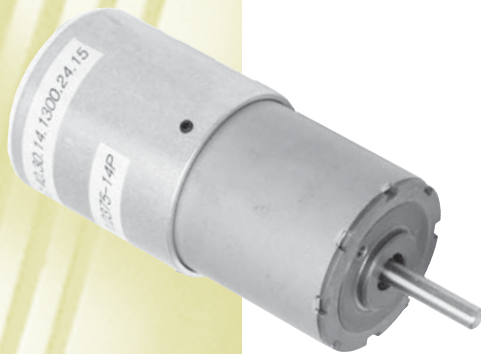
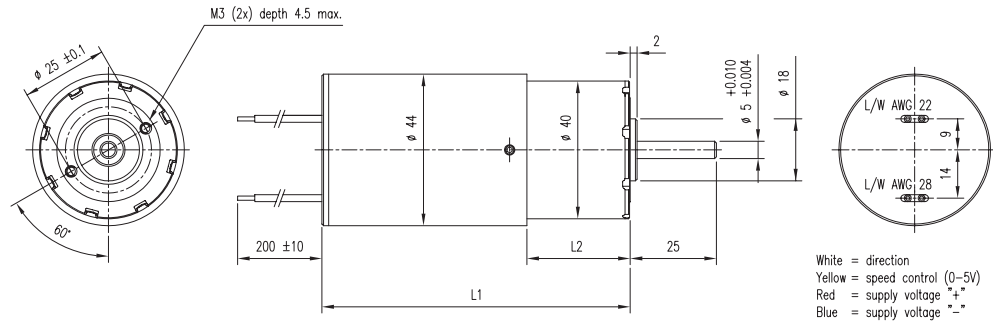
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

BLDC40X-DRV



General Specification

- Insulation class F
- Protection IP32
- Operating temperature – 10 ° C ... + 70°C
- 2 NMB ballbearings for long lifetime
- Max. radial load 80 N (5mm from flange)
- Max. axial load 50 N

Features

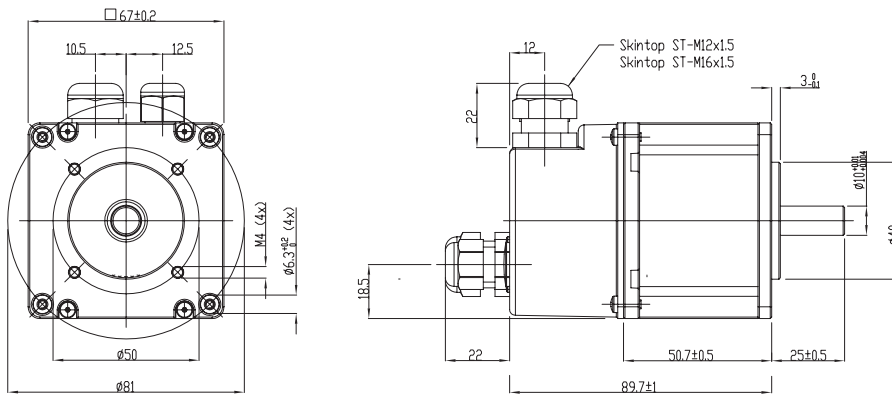
- Supply voltage 12 - 48 V DC
- Speed control (analogue input 0 - 5 V DC)
- Bidirectional drive
- Soft direction change by ramps
- Temperature sensor integrated
- Low cogging torque
- High power to volume ratio
- High efficiency at operating point
- High reliability

NMB-Partnumber	BLDC40P10A	BLDC40P20A	BLDC40P30A	BLDC40S40A
	DRV-A2	DRV-A2	DRV-A2	DRV-A2
	38.1.040	40.1.040	25.1.050	18.1.056D

Rated Voltage	[V]	24	24	24	24
Rated Speed	[rpm]	6000	3000	3000	3000
Continuous Power	[W]	26.8	31	44	79
Rated Torque *1)	[mNm]	51.7	100	140	250
No Load Speed	[rpm]	6800	3300	3700	3500
Torque Constant	[mNm/A]	34	65	60	64
Speed Constant	[rpm/V]	265.3	141.9	158.4	148.5
Rotor Inertia	[gcm ²]	16	28	40	64
Weight	[g]	230	260	320	390
L1	[mm]	66	76	86	96
L2	[mm]	19	29	39	49

*1) motor torque at 70K temperature rising of winding

BLDC65S18

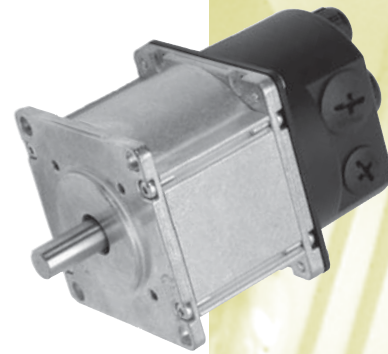


General Specification

Insulation class F
 Protection IP54
 Operating temperature – 20 °C ... + 70 °C
 2 NMB ballbearings for long lifetime
 Max. radial load 150 N (10 mm from flange)
 Max. axial load 100 N

Features

Low cogging torque
 High power to volume ratio
 High efficiency at operating point
 High reliability



**Higher power up to 300 W
 in S2/S3 - mode possible!**

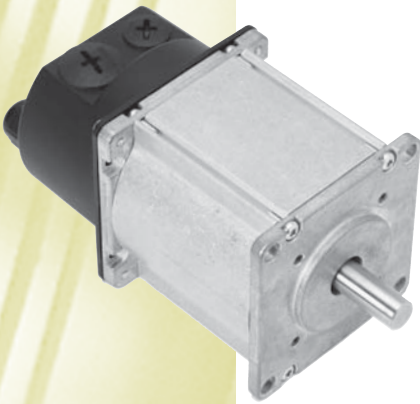
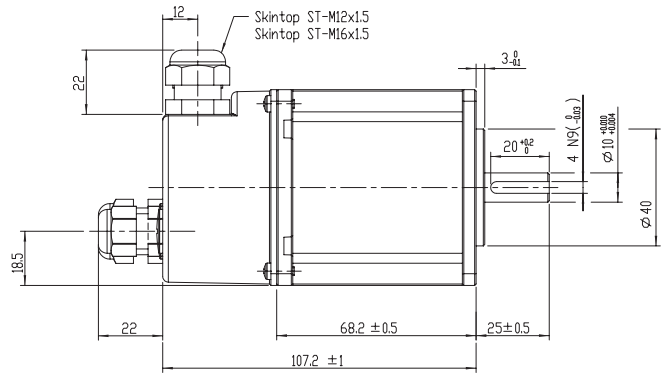
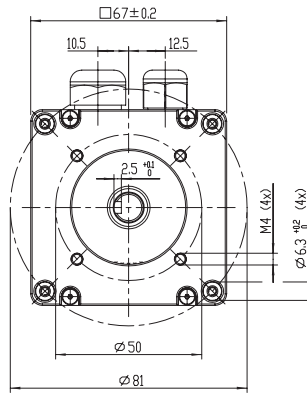
NMB-Partnumber		BLDC65S18A 81.P.040	BLDC65S18A 40.1.060
Rated Voltage	[V]	24	48
Rated Speed	[rpm]	3250	3300
Continuous Power	[W]	97.5	97
Rated Torque *1)	[mNm]	285	280
Continuous Stall Torque	[mNm]	395	410
Efficiency at Rated Speed	[%]	86	90
Current at Rated Speed	[A]	4.4	2.2
No Load Speed	[rpm]	3615	3645
Resistance per Phase *2)	[Ω]	0.31	1.05
Inductance per Phase	[mH]	0.49	1.98
Torque Constant	[mNm/A]	64.8	114.0
Speed Constant	[rpm/V]	151.6	79.4
Mech. Time Constant	[ms]	1.22	1.17
Rotor Inertia	[gcm ²]	170	170
Number of Poles		8	8
Weight	[g]	750	750
Thermal Resistance *3)	[K/W]	3.75	3.75

*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

BLDC65S35



General Specification

Insulation class F
 Protection IP54
 Operating temperature – 20 °C ... + 70 °C
 2 NMB ballbearings for long lifetime
 Max. radial load 150 N (10 mm from flange)
 Max. axial load 100 N

Features

Low cogging torque
 High power to volume ratio
 High efficiency at operating point
 High reliability

**Higher power up to 700 W
 in S2/S3 - mode possible!**

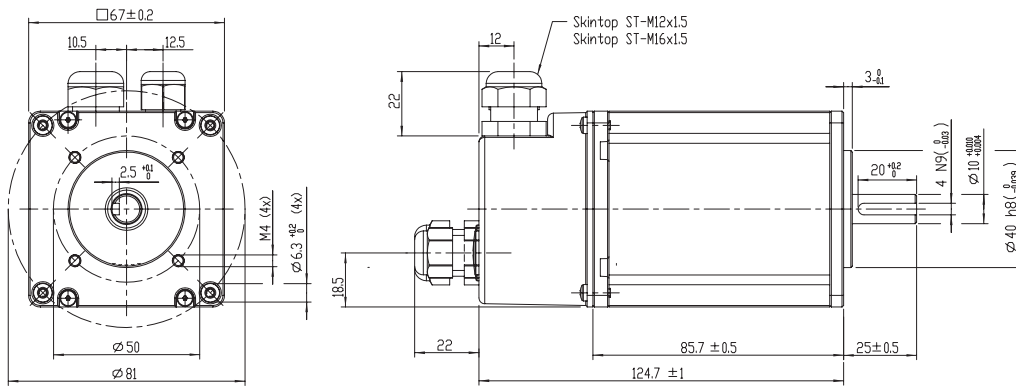
NMB-Partnumber		BLDC65S35A	BLDC65S35A
		41.P.060	82.P.040
Rated Voltage	[V]	24	48
Rated Speed	[rpm]	3300	3350
Continuous Power	[W]	140	148
Rated Torque *1)	[mNm]	406	423
Continuous Stall Torque	[mNm]	430	446
Efficiency at Rated Speed	[%]	89	91
Current at Rated Speed	[A]	5.54	3.1
No Load Speed	[rpm]	3550	3560
Resistance per Phase *2)	[Ω]	0.12	0.52
Inductance per Phase	[mH]	0.22	0.89
Torque Constant	[mNm/A]	66.0	124.0
Speed Constant	[rpm/V]	148.1	74.9
Mech. Time Constant	[ms]	0.86	0.94
Rotor Inertia	[gcm ²]	300	300
Number of Poles		8	8
Weight	[g]	1120	1120
Thermal Resistance *3)	[K/W]	3.2	3.2

*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

BLDC65S53

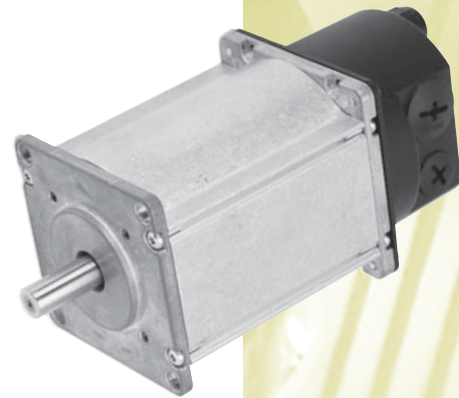


General Specification

Insulation class F
 Protection IP54
 Operating temperature – 20 °C ... + 70 °C
 2 NMB ballbearings for long lifetime
 Max. radial load 150 N (10 mm from flange)
 Max. axial load 100 N

Features

Low cogging torque
 High power to volume ratio
 High efficiency at operating point
 High reliability



**Higher power up to 1000 W
 in S2/S3 - mode possible!**

NMB-Partnumber		BLDC65S53A 30.P.071	BLDC65S53A 55.P.050
Rated Voltage	[V]	24	48
Rated Speed	[rpm]	3050	3250
Continuous Power	[W]	178	295
Rated Torque *1)	[mNm]	556	867
Continuous Stall Torque	[mNm]	850	895
Efficiency at Rated Speed	[%]	89	92
Current at Rated Speed	[A]	7.5	6.3
No Load Speed	[rpm]	3250	3520
Resistance per Phase *2)	[Ω]	0.09	0.32
Inductance per Phase	[mH]	0.17	0.69
Torque Constant	[mNm/A]	67.0	125.0
Speed Constant	[rpm/V]	135.5	73.7
Mech. Time Constant	[ms]	0.74	0.82
Rotor Inertia	[gcm ²]	430	430
Number of Poles		8	8
Weight	[g]	1440	1440
Thermal Resistance *3)	[K/W]	3	3

*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

Sample Request Form Brushless DC

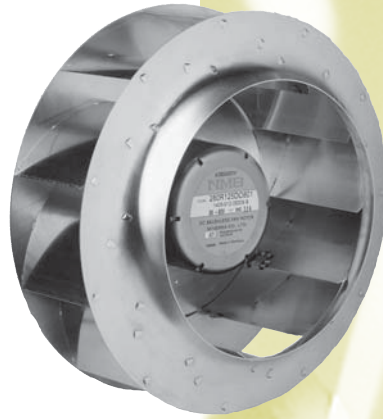
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Attn: Engineering Dept.
Rotary Component Division

Customer		Contact			
Address		Telephone			
Enduser		Fax			
Project No.		Project Name			
Customer Part No.		NMB Part No.			
Commercial Information					
Sample Qty.		Competitor			
Sample Price		Part No.			
Annual Qty.		Application			
Target Price		Application Details			
Time Schedule					
Technical Specification					
Drive Condition	Drive		Torque	Rated Torque	
	Source			Max. Torque	
Voltage	Rated Voltage		Life	No. of Cycles per Hour	
	Operating Voltage			Duty Cycle	
Speed	No Load Speed		Shaft Rotation	CW	
	Rated Speed			CCW	
Current	Rated Current			Both	
	Stall Current		Ambient Temp. Range		
Mechanical Dimensions					
Motor Diameter		Shaft Diameter			
Motor Length		Shaft Length			
Special Requirements					

Products

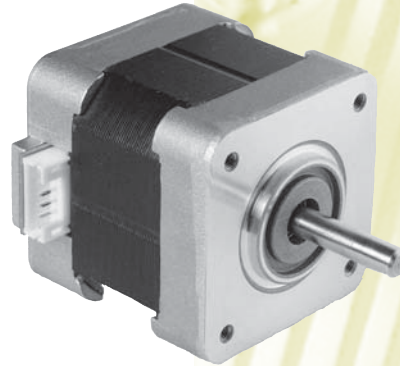
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