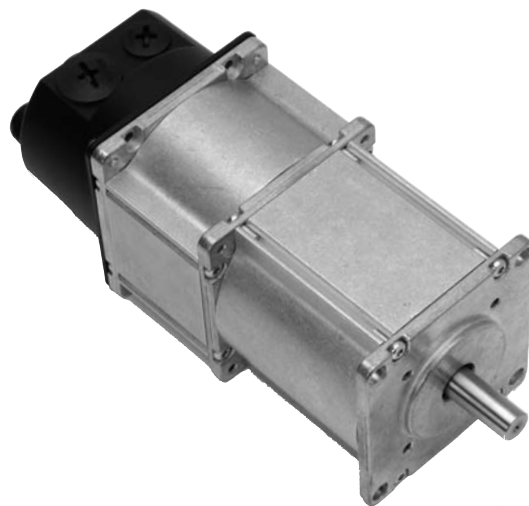


MOTORS

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.

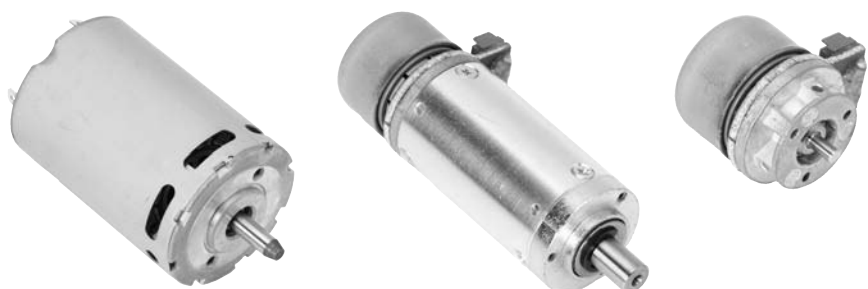


Table of Contents

[illegible]

Key

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

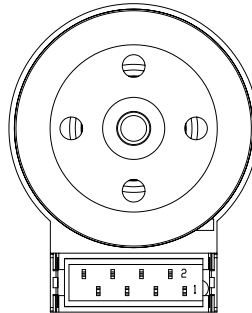
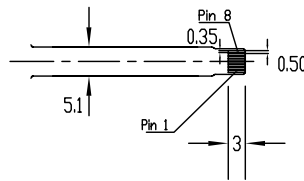
Pin	Function
1	H1
2	Vcc
3	H3
4	W
5	GND
6	U
7	H2
8	V

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

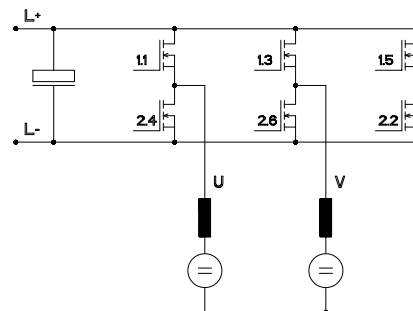


Connector AMP Micromatch
female 0-338068-8

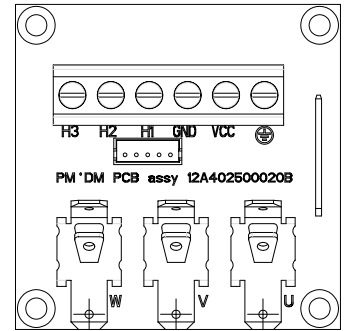
BLDC20-OR

matching connector:
Tyco 215083-08

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



BLDC65



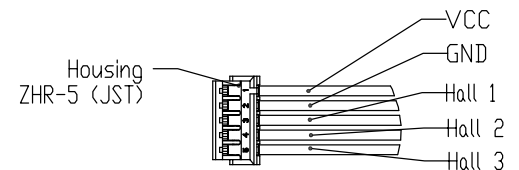
BLDC40

Hall ICs

matching connector:
JST S5B-ZR-SM3A-TF

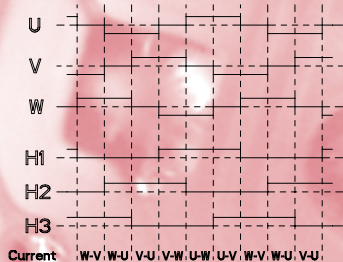
min.Vcc: 3.5V
max. Vcc: 20V

Phases: Terminals 4.8mm x 0.8 mm



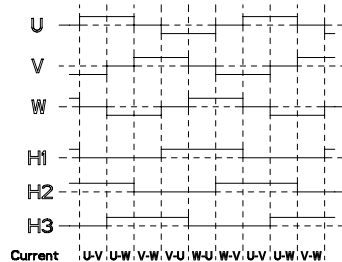
BLDC15

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

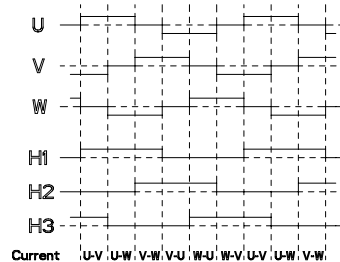


BLDC20-OR

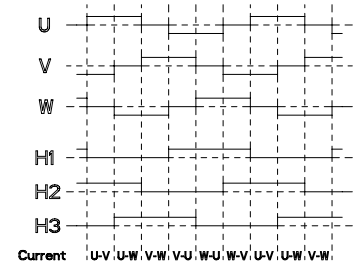
Direction CW: (View on the motor shaft clockwise)



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

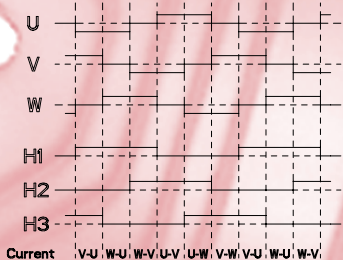


Direction CW: (View on the motor shaft clockwise)



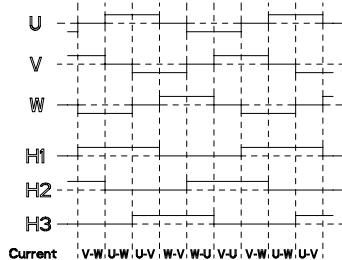
BLDC40 8-pol

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



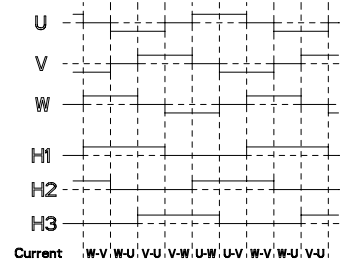
BLDC65

Direction CW: (View on the motor shaft clockwise)

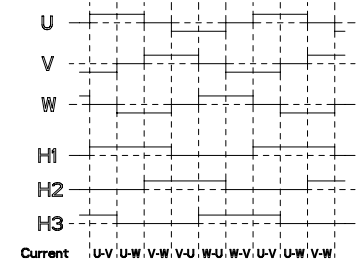


BLDC40 16-pol

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.

Conversion Tables

Torque conversion factors

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

Moment of inertia conversion factors

	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	$1.01972 \cdot 10^4$	$5.46745 \cdot 10^4$	$1.41612 \cdot 10^2$
kgcm ²	10^{-4}	1	10^3	$1.01972 \cdot 10^{-5}$	$1.01972 \cdot 10^{-3}$	1.01972	5.46745	$1.41612 \cdot 10^{-2}$
gcm ²	10^{-7}	10^{-3}	1	$1.01972 \cdot 10^{-8}$	$1.01972 \cdot 10^{-6}$	$1.01972 \cdot 10^{-3}$	$5.46745 \cdot 10^{-3}$	$1.41612 \cdot 10^{-5}$
kgm s ²	9.80665	$9.80665 \cdot 10^4$	$9.80665 \cdot 10^7$	1	10^2	10^5	$5.36174 \cdot 10^5$	$1.38874 \cdot 10^3$
kgcm s ²	$9.80665 \cdot 10^{-2}$	$9.80665 \cdot 10^2$	$9.80665 \cdot 10^5$	10	1	10^3	$5.36174 \cdot 10^3$	13.8874
gcm s ²	$9.80665 \cdot 10^{-5}$	0.980665	$9.80665 \cdot 10^2$	10^{-5}	10^{-3}	1	5.36174	$1.38874 \cdot 10^{-2}$
oz in ²	$1.82901 \cdot 10^{-5}$	0.182901	$1.82901 \cdot 10^2$	$1.86506 \cdot 10^{-6}$	$1.86506 \cdot 10^{-4}$	0.186506	1	$2.59008 \cdot 10^{-3}$
oz in s ²	$7.06154 \cdot 10^{-3}$	70.6154	$7.06154 \cdot 10^4$	$7.20077 \cdot 10^{-4}$	$7.20077 \cdot 10^{-2}$	72.00766	$3.86089 \cdot 10^2$	1

BLDC20-OR

General Specification

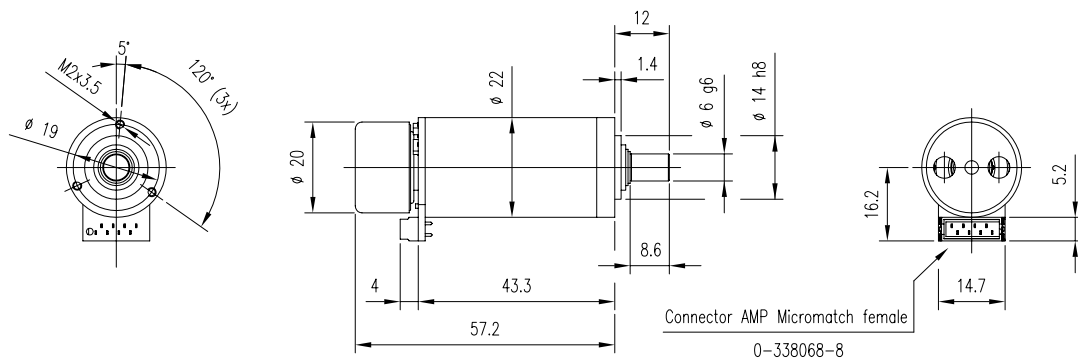
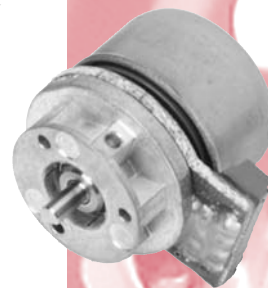
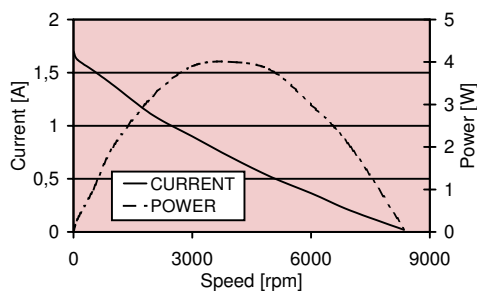
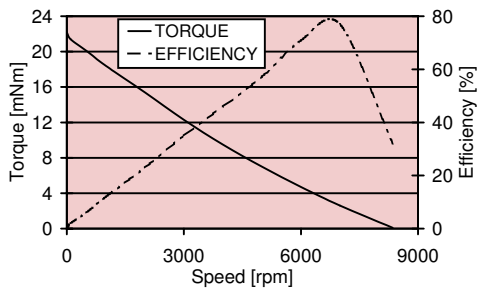
Insulation class B
Protection IP20
Operating temperature – 20 °C ... + 70°C
2 NMB ballbearings for high lifetime
Max. radial load 2 N (5mm from flange)
Max. axial load 2 N
12 pole design
Rated voltage 12V

Features

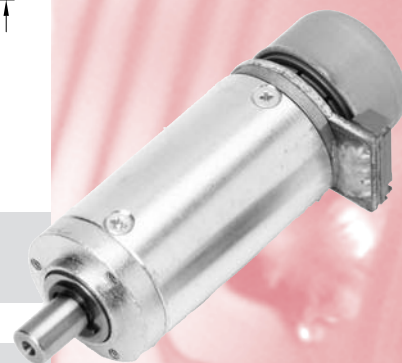
Excellent power to volume ratio
High efficiency at operating point
High reliability

Options

Prepared for planetary gearbox,
e.g. IMS Gear



BLDC20-OR-GB



NMB-Partnumber

BLDC20-OR-GB169
46.1.014

Rated Voltage	[V]	12
Rated Speed	[rpm]	41.4
Continuous Torque	[mNm]	314
Resistance per Phase *1)	[Ω]	7.4
Inductance per Phase	[mH]	0.97
Rotor Inertia	[gcm ²]	6.1
Number of Poles		12
Max. Radial Play	[°]	2.5
Max. Radial Load	[N]	80
Max. Axial Load	[N]	30
Weight	[g]	130

*1) resistance phase to phase at 20°C



Housing protection IP30

2 NMB ballbearings for high lifetime

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

Max. axial load 2 N

Excellent power to volume ratio

High efficiency at operating point

High reliability

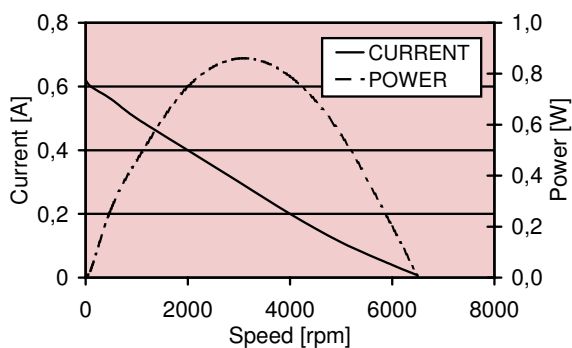
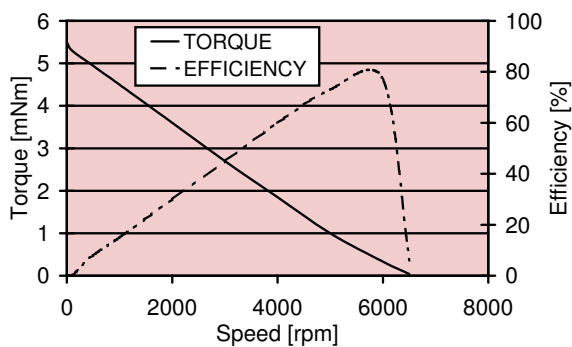
Without rear shaft

*1) resistance phase to phase at 20°C

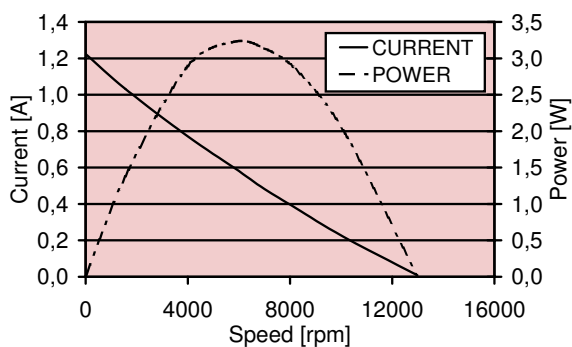
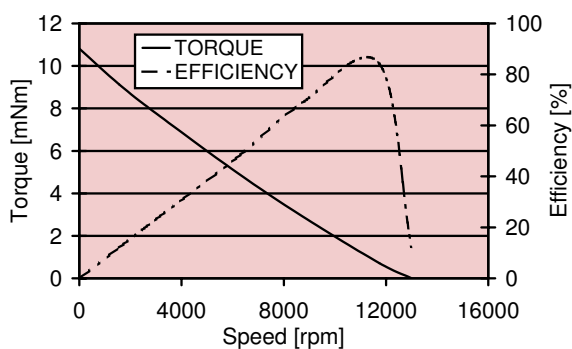
*2) thermal resistance winding to ambient

Torque Speed Characteristics

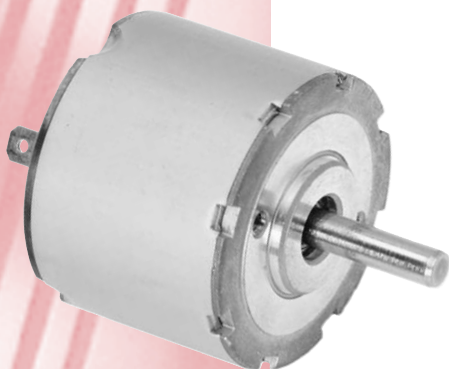
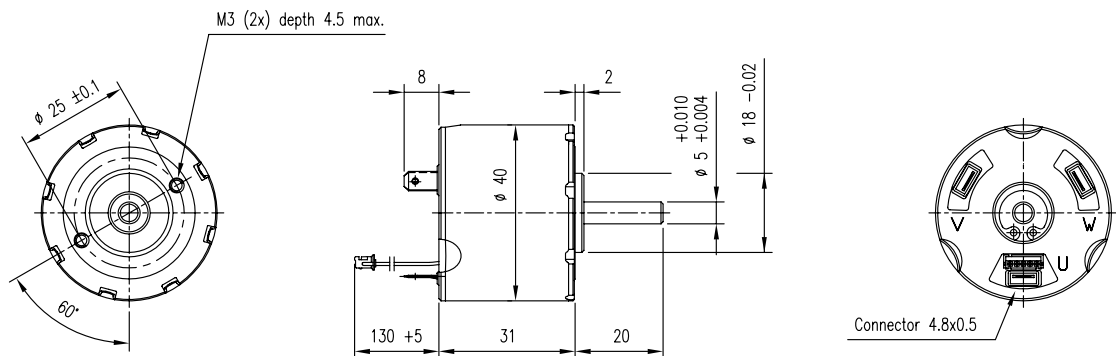
BLDC15P06-6V



BLDC15P06-12V



BLDC40P10



General Specification

Insulation class F
Protection IP20
Operating temperature – 20 ° C ... + 70°C
2 NMB ballbearings for high 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 38.1.040	BLDC40P10A-24V 38.1.040
Rated Voltage	[V]	12	24
Rated Speed	[rpm]	3000	6000
Continuous Power	[W]	12	26.8
Continuous 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

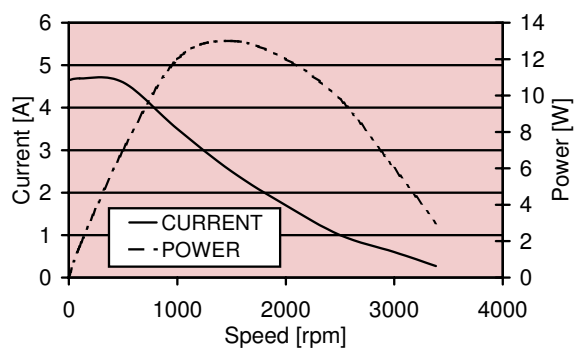
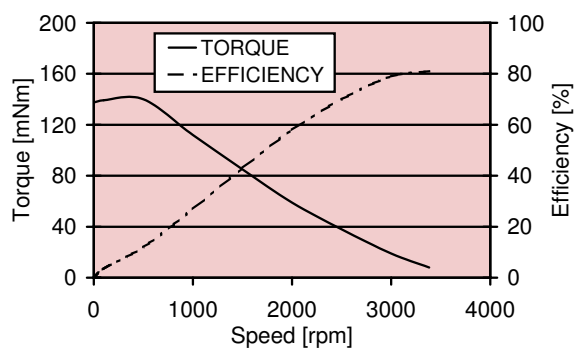
*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

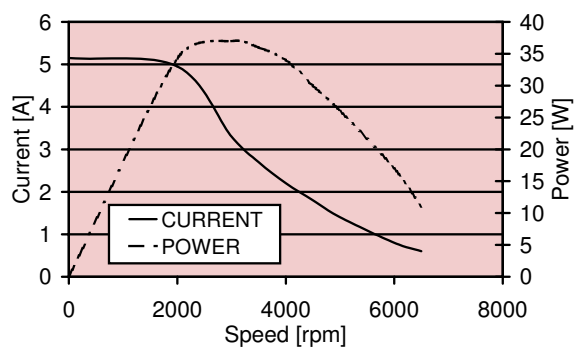
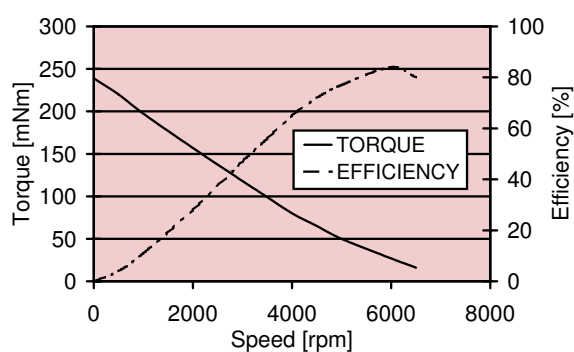
*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

Torque Speed Characteristics

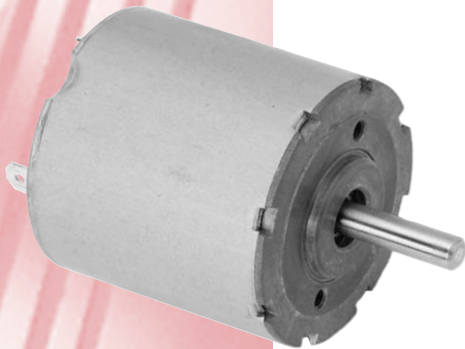
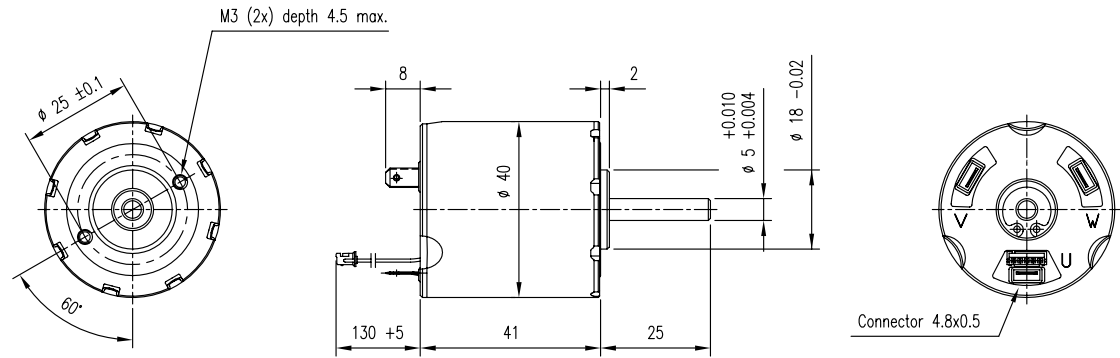
BLDC40P10A-12V



BLDC40P10A-24V



BLDC40P20A BLDC40S20A



General Specification

Insulation class F

Housing protection IP20

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

2 NMB ballbearings for high 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
Continuous 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

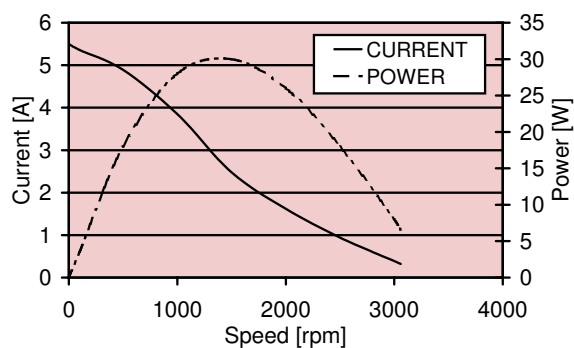
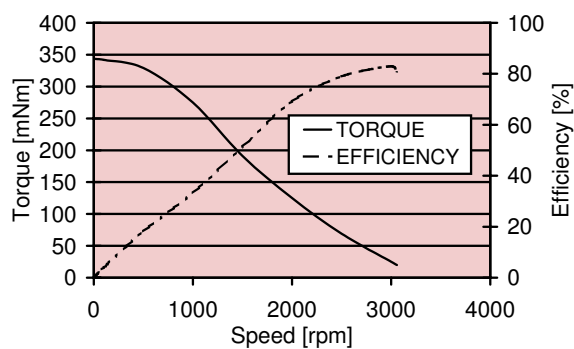
*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

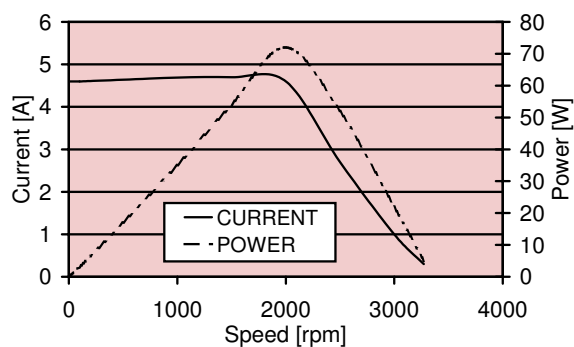
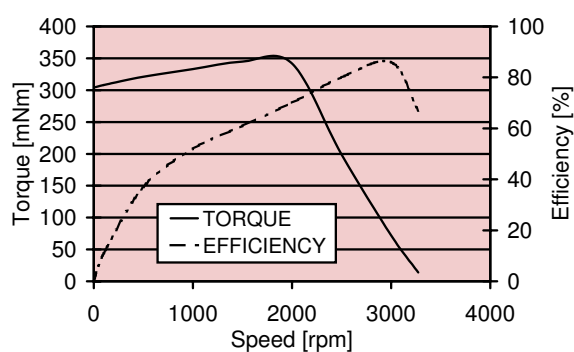
*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

Torque Speed Characteristics

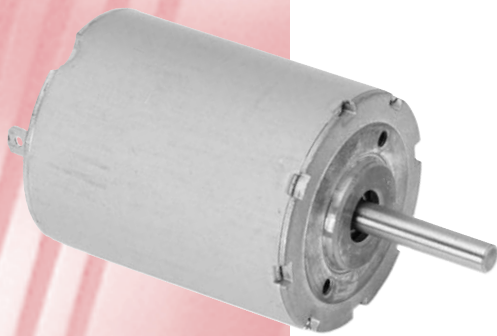
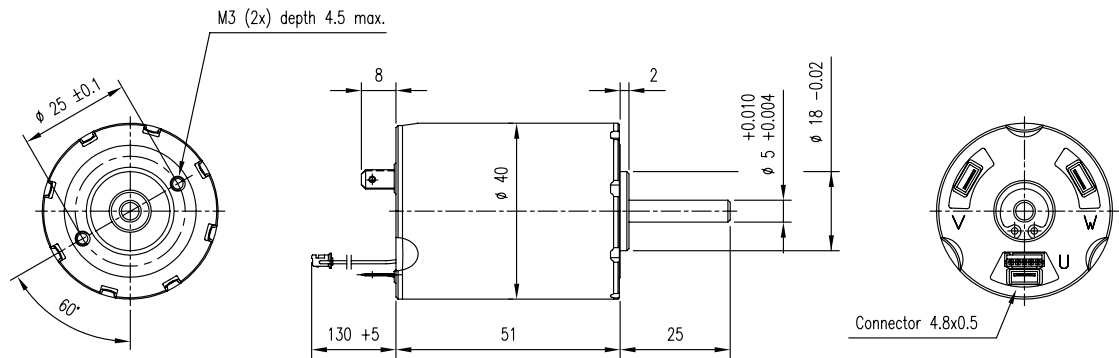
BLDC40P20A-24V



BLDC40S20A-24V



BLDC40P30A BLDC40S30A



General Specification

Insulation class F

Protection IP20

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

2 NMB ballbearings for high 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
Continuous 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

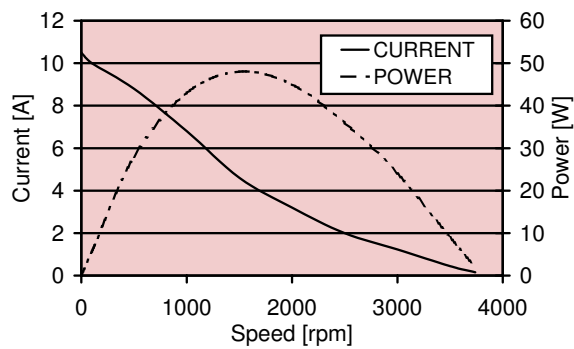
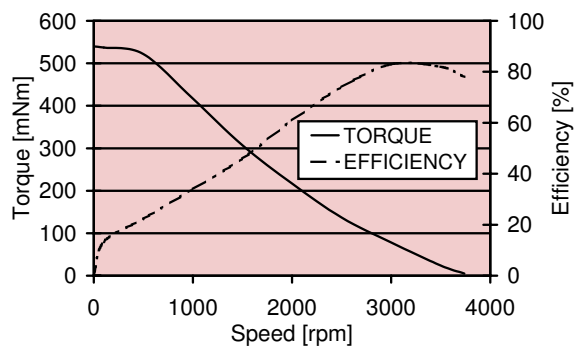
*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

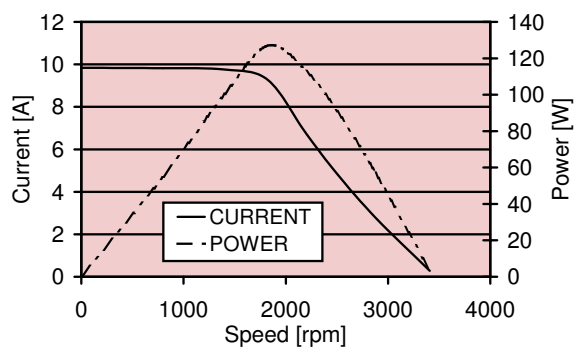
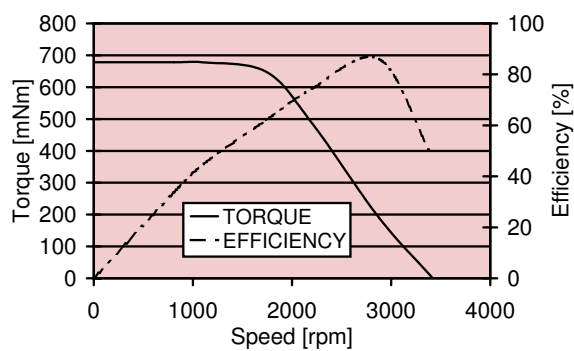
*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

Torque Speed Characteristics

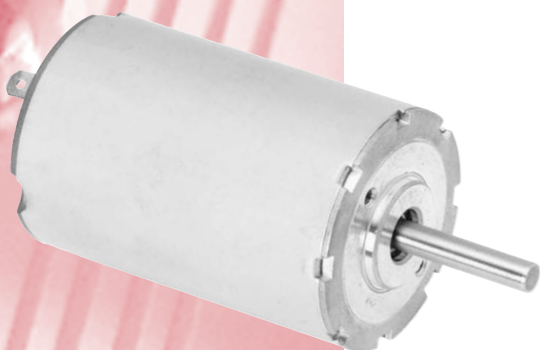
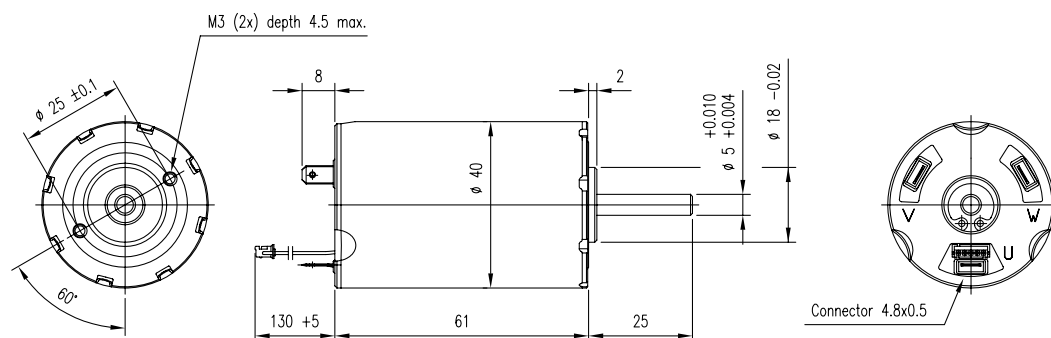
BLDC40P30A



BLDC40S30A



BLDC40S40A



General Specification

Insulation class F
Protection IP20
Operating temperature – 20 °C ... + 70°C
2 NMB ballbearings for high 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
Continuous 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	[gcm²]	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

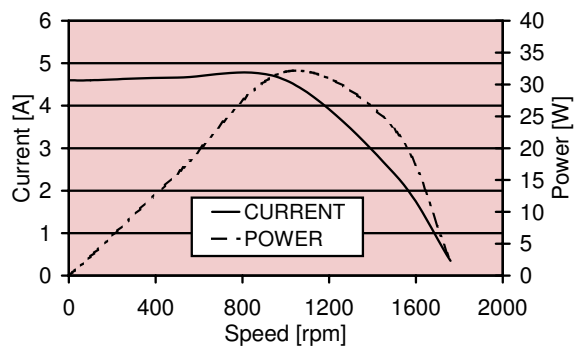
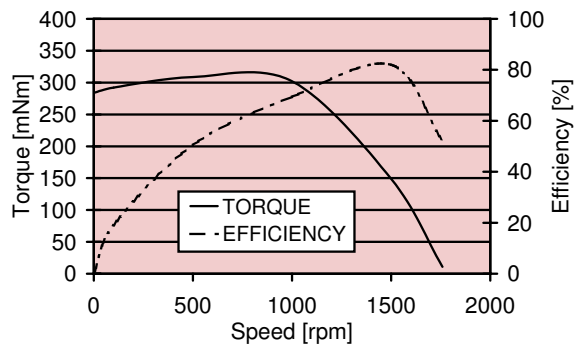
*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

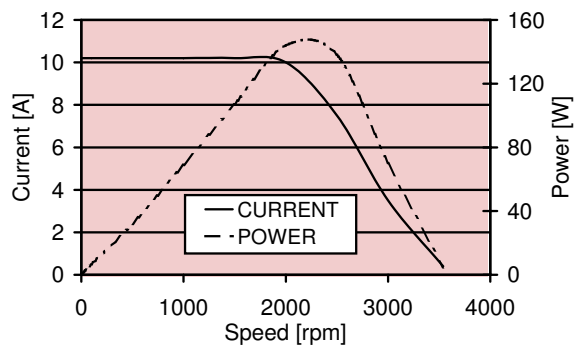
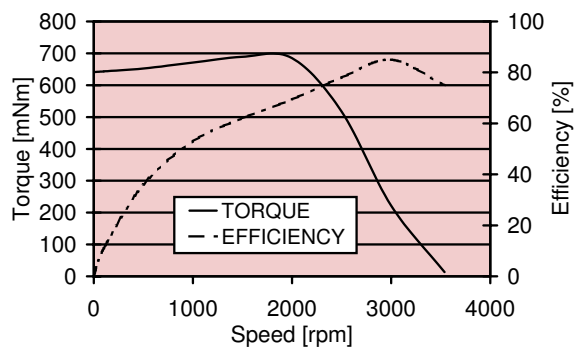
*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

Torque Speed Characteristics

BLDC40S40A-12V

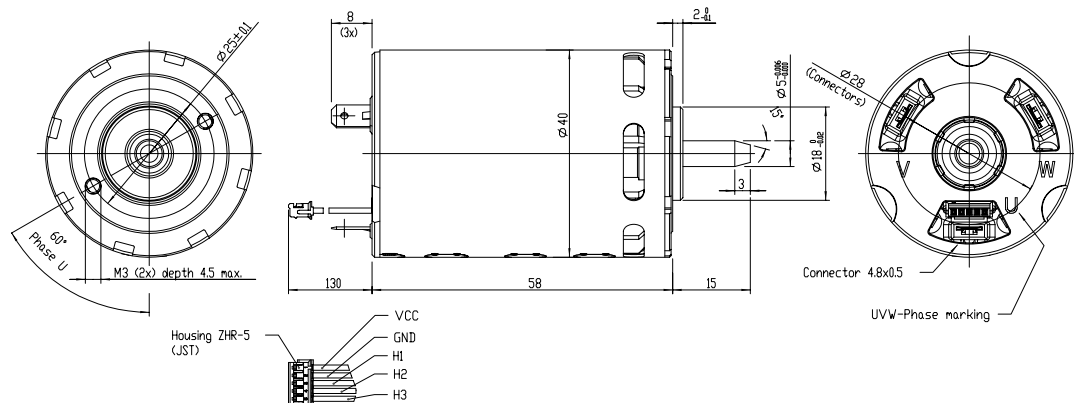


BLDC40S40A-24V



BLDC40P30F

High Speed



General Specification

Insulation class F
Protection IP20
Cooling fan included
Operating temperature – 20 °C ... + 70°C
2 NMB ballbearings for high 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		BLDC40P30F-12V 10P2.071D	BLDC40P30F-18V 16P2.063D
Rated Voltage	[V]	12	18
Rated Speed	[rpm]	14500	15000
Continuous Power	[W]	238	199
Continuous Torque *1)	[mNm]	157	126
Continuous Stall Torque	[mNm]	155	155
Efficiency at Rated Speed	[%]	84.7	80.4
Current at Rated Speed	[A]	25.2	14.7
No Load Speed	[rpm]	18500	18500
Resistance per Phase *2)	[Ω]	0.026	0.050
Inductance per Phase	[mH]	0.016	0.042
Torque Constant	[mNm/A]	6	9.1
Speed Constant	[rpm/V]	1592	1049
Mech. Time Constant	[ms]	3.3	2.8
Rotor Inertia	[gcm ²]	46	46
Number of Poles		8	8
Weight	[g]	290	290
Thermal Resistance *3) *4)	[K/W]	3	3

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

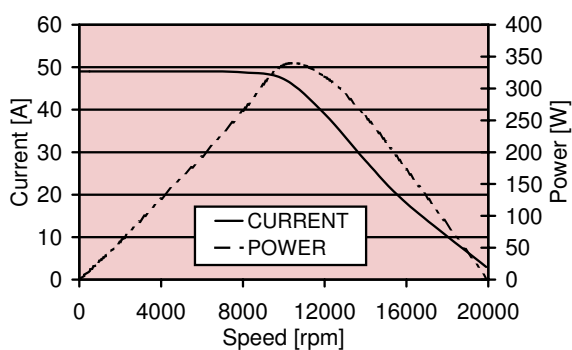
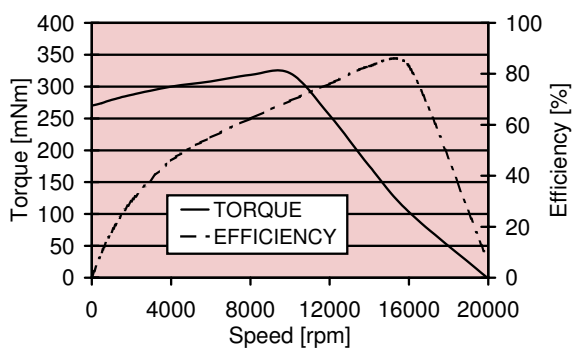
*2) resistance phase to phase at 20°C

*3) thermal resistance winding to ambient

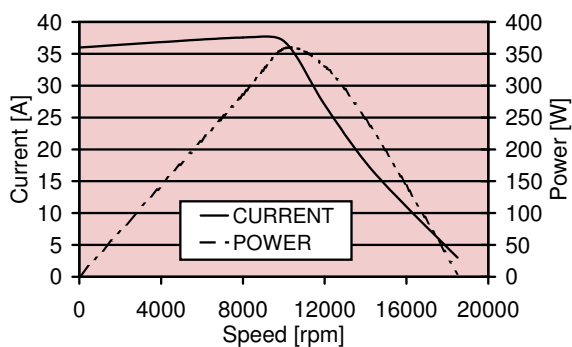
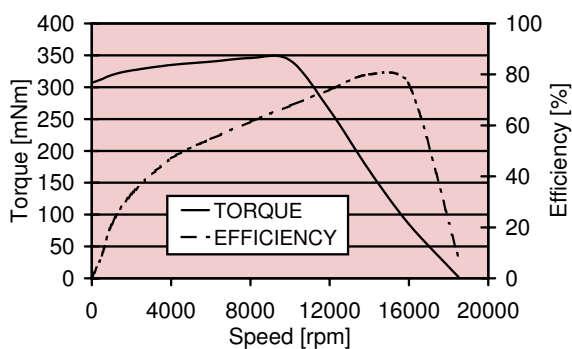
*4) motor is mounted on a sheet metal 210 mm x 40 mm x 0.8 mm

Torque Speed Characteristics

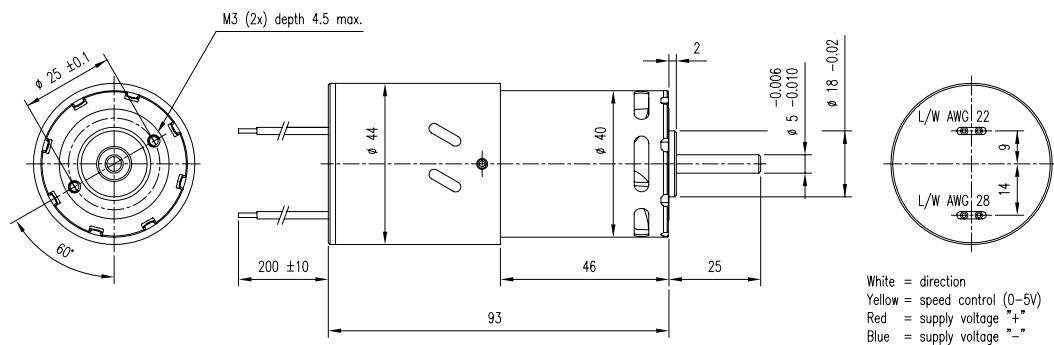
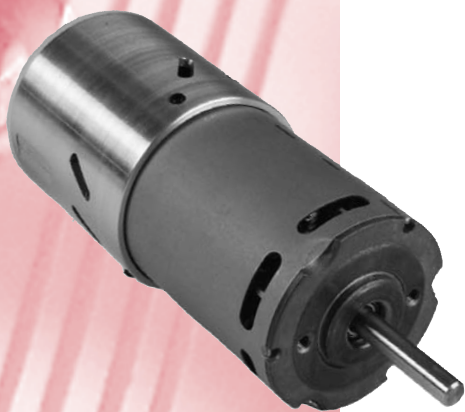
BLDC40P30F-12V



BLDC40P30F-18V



BLDC40X-DRV-F



General Specification

Insulation class F
Protection IP20
Cooling fan included
Operating temperature - 10 ° C ... + 70°C
2 NMB ballbearings for high lifetime
Max. radial load 80 N (5mm from flange)
Max. axial load 50 N

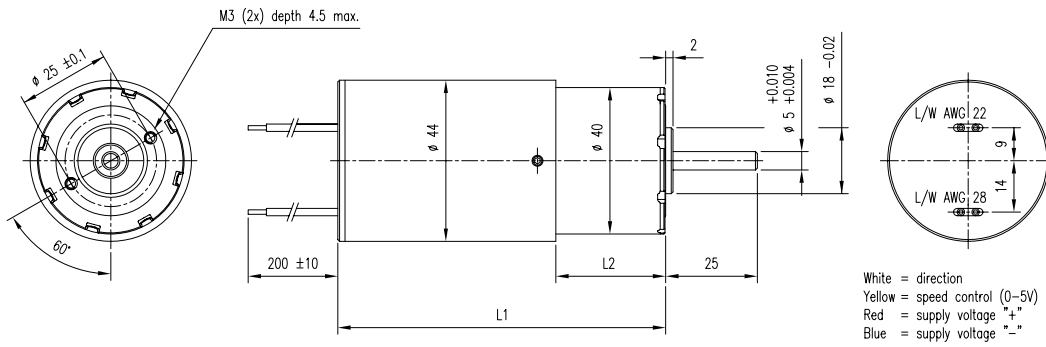
Features

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		BLDC40P30F DRV-A2 10P2.071D	BLDC40P30F DRV-A2 16P2.063D
Rated Voltage	[V]	12	18
Rated Speed	[rpm]	14500	15000
Continuous Power	[W]	238	199
Continuous Torque *1)	[mNm]	157	126
No Load Speed	[rpm]	18500	18500
Torque Constant	[mNm/A]	6	9.1
Speed Constant	[rpm/V]	1592	1049
Rotor Inertia	[gcm ²]	46	46
Weight	[g]	330	330
L1	[mm]	93	93
L2	[mm]	46	46

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

BLDC40X-DRV



General Specification

Insulation class F

Protection IP32

Operating temperature – 10 ° C ... + 70°C

2 NMB ballbearings for high 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

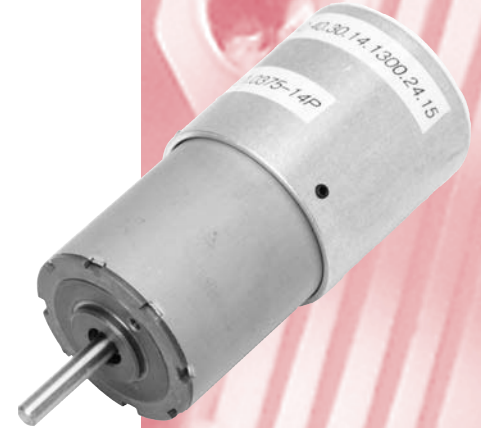
Temperature sensor integrated

Low cogging torque

High power to volume ratio

High efficiency at operating point

High reliability

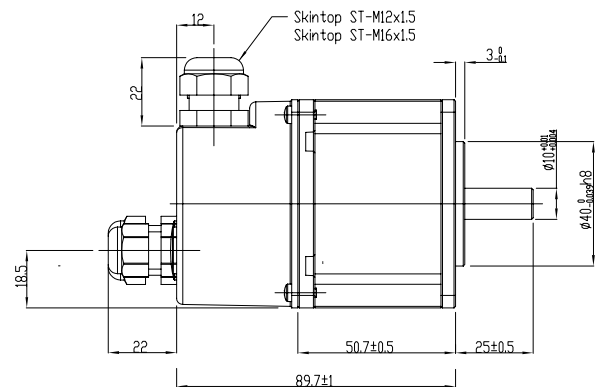
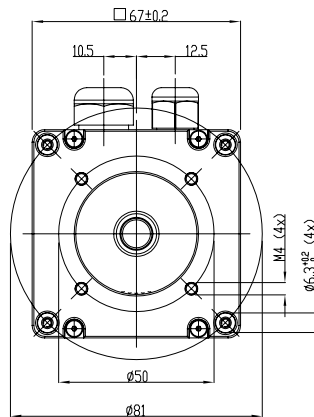
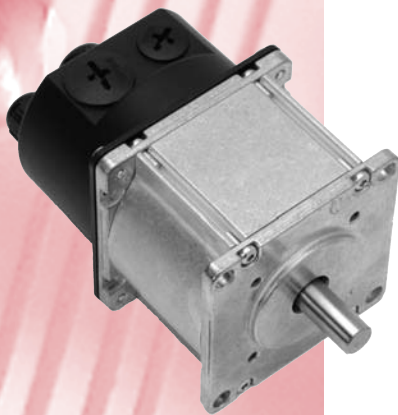


NMB-Partnumber	BLDC40P10A	BLDC40P20A	BLDC40P30A	BLDC40S40A
	DRV-A2	DRV-A2	DRV-A2	DRV-A2
	38.1.040	40.1.040	25.1.050	18.1.056D

Rated Voltage	[V]	24	24	24	24
Rated Speed	[rpm]	6000	3000	3000	3000
Continuous Power	[W]	26.8	31	44	79
Continuous 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 high 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

Options

Integrated driver

NMB-Partnumber		BLDC65S18A 81P040	BLDC65S18A 40.1.063
Rated Voltage	[V]	24	48
Rated Speed	[rpm]	3000	3000
Continuous Power	[W]	97.5	108.8
Continuous Torque *1)	[mNm]	310	346
Continuous Stall Torque	[mNm]	528	538
Efficiency at Rated Speed	[%]	85.9	85
Current at Rated Speed	[A]	4.7	2.7
No Load Speed	[rpm]	3550	3580
Resistance per Phase *2)	[Ω]	0.313	1.18
Inductance per Phase	[mH]	0.44	1.72
Torque Constant	[mNm/A]	66.1	130.7
Speed Constant	[rpm/V]	144.5	73.06
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]	4	4

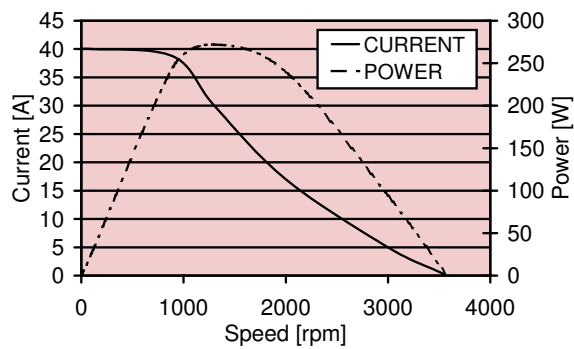
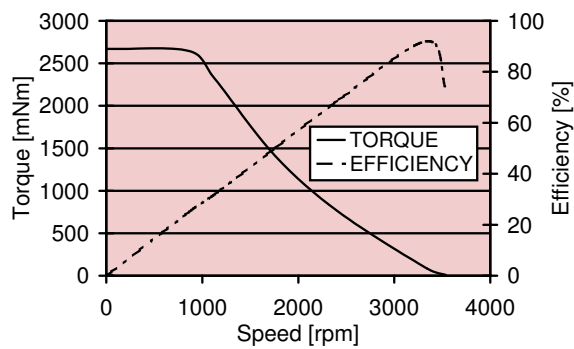
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

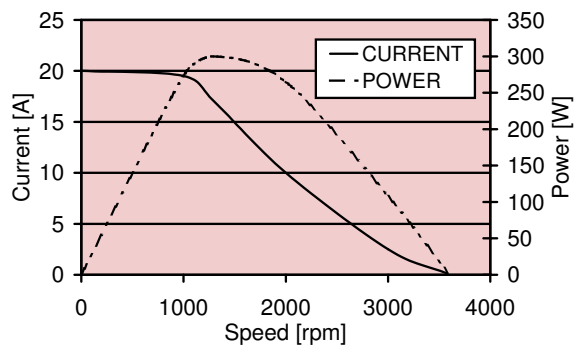
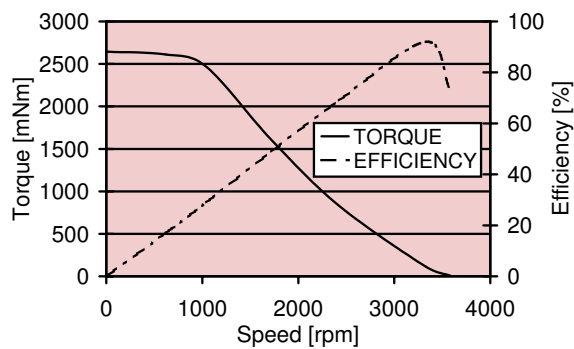
*3) thermal resistance winding to ambient

Torque Speed Characteristics

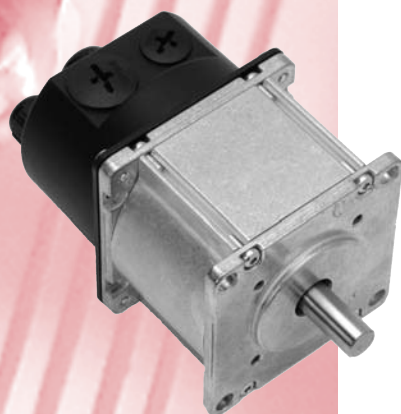
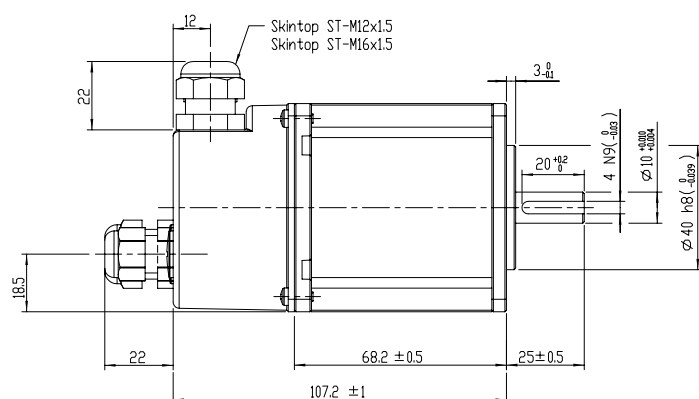
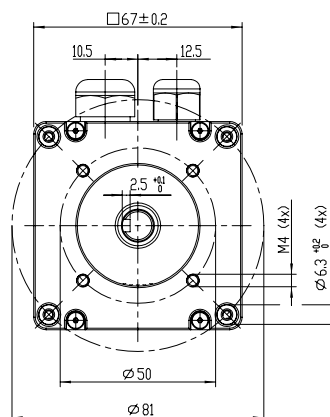
BLDC65S18A-24V



BLDC65S18A-48V



BLDC65S35



General Specification

Insulation class F

Protection IP54

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

2 NMB ballbearings for high 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

Options

Integrated driver

NMB-Partnumber		BLDC65S35A 41P063	BLDC65S35A 82P040
Rated Voltage	[V]	24	48
Rated Speed	[rpm]	3000	3000
Continuous Power	[W]	234.7	213.1
Continuous Torque *1)	[mNm]	747	678
Continuous Stall Torque	[mNm]	1023	917
Efficiency at Rated Speed	[%]	86.6	86.7
Current at Rated Speed	[A]	11.3	5.1
No Load Speed	[rpm]	3530	3550
Resistance per Phase *2)	[Ω]	0.105	0.525
Inductance per Phase	[mH]	0.19	0.83
Torque Constant	[mNm/A]	66.4	132.9
Speed Constant	[rpm/V]	143.8	71.85
Mech. Time Constant	[ms]	0.71	0.9
Rotor Inertia	[gcm ²]	300	300
Number of Poles		8	8
Weight	[g]	1120	1120
Thermal Resistance *3)	[K/W]	3.5	3.5

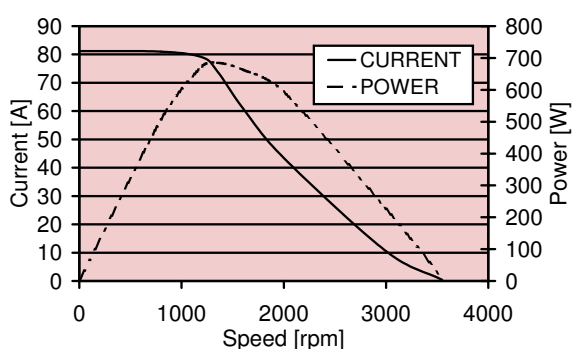
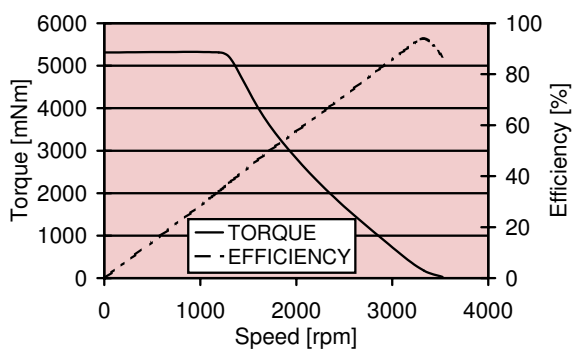
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

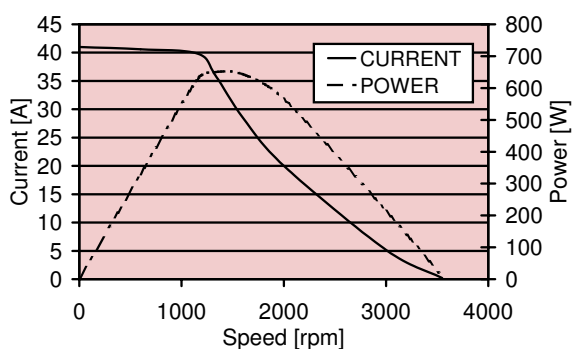
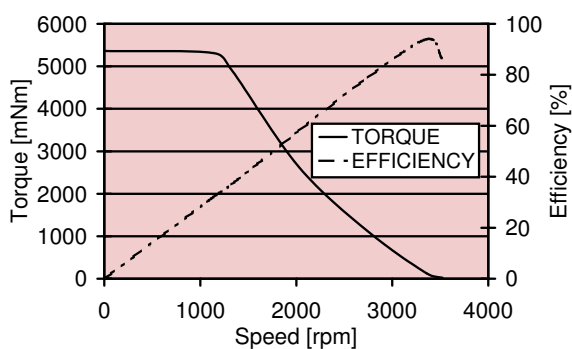
*3) thermal resistance winding to ambient

Torque Speed Characteristics

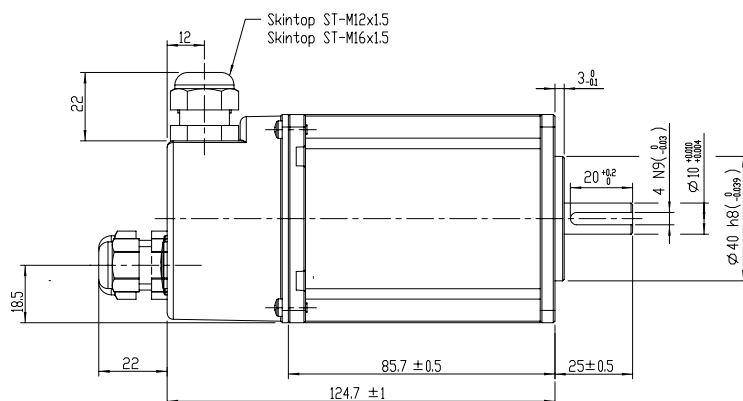
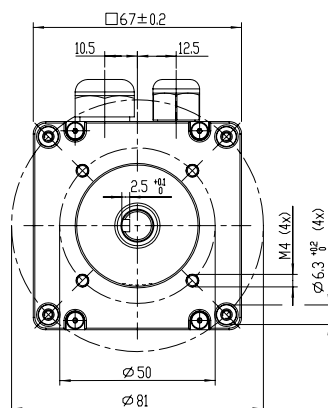
BLDC65S35A-24V



BLDC65S35A-48V



BLDC65S53



General Specification

Insulation class F

Protection IP54

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

2 NMB ballbearings for high 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

Options

Integrated driver

NMB-Partnumber		BLDC65S53A 27P075	BLDC65S53A 55P050
Rated Voltage	[V]	24	48
Rated Speed	[rpm]	3000	3000
Continuous Power	[W]	347.8	323.5
Continuous Torque *1)	[mNm]	1107	1029
Continuous Stall Torque	[mNm]	1274	1258
Efficiency at Rated Speed	[%]	86	87.5
Current at Rated Speed	[A]	16.9	7.7
No Load Speed	[rpm]	3590	3525
Resistance per Phase *2)	[Ω]	0.074	0.32
Inductance per Phase	[mH]	0.13	0.54
Torque Constant	[mNm/A]	65.7	133.9
Speed Constant	[rpm/V]	145.35	71.32
Mech. Time Constant	[ms]	0.74	0.77
Rotor Inertia	[gcm ²]	430	430
Number of Poles		8	8
Weight	[g]	1440	1440
Thermal Resistance *3)	[K/W]	3	3

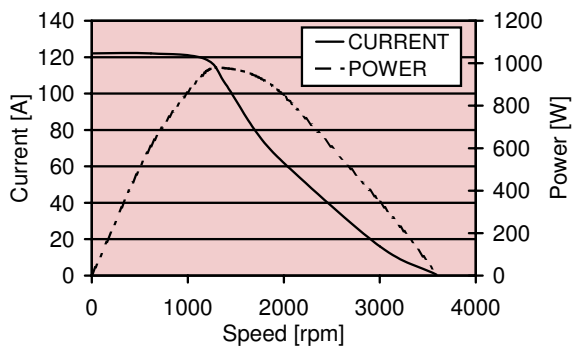
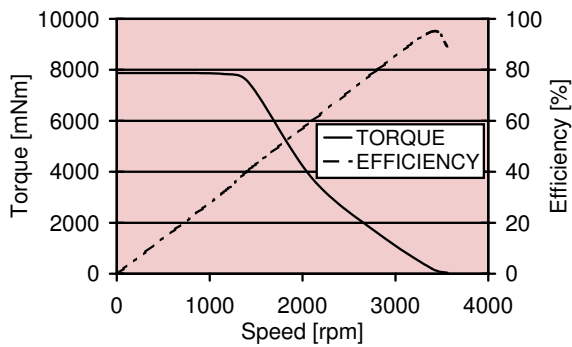
*1) motor torque at 70K temperature rising of winding

*2) resistance phase to phase at 20°C

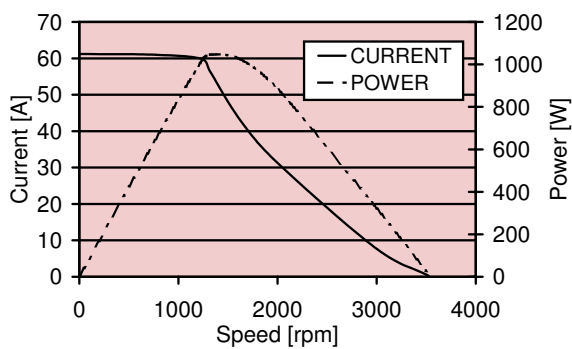
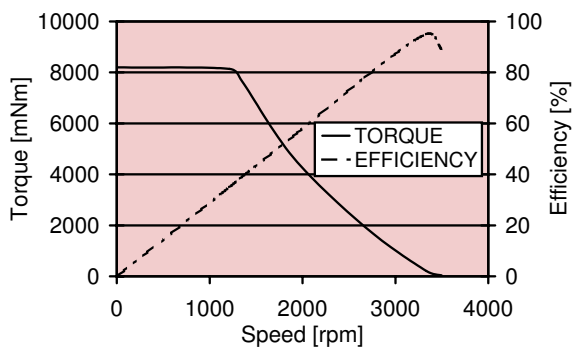
*3) thermal resistance winding to ambient

Torque Speed Characteristics

BLDC65S53A-24V

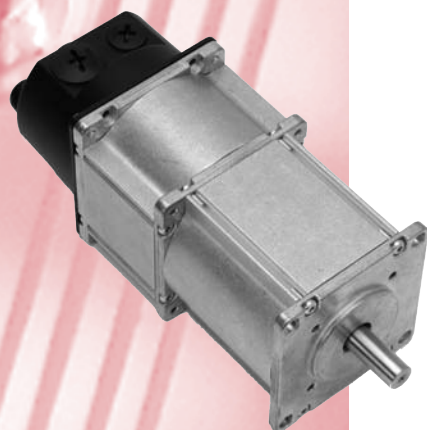
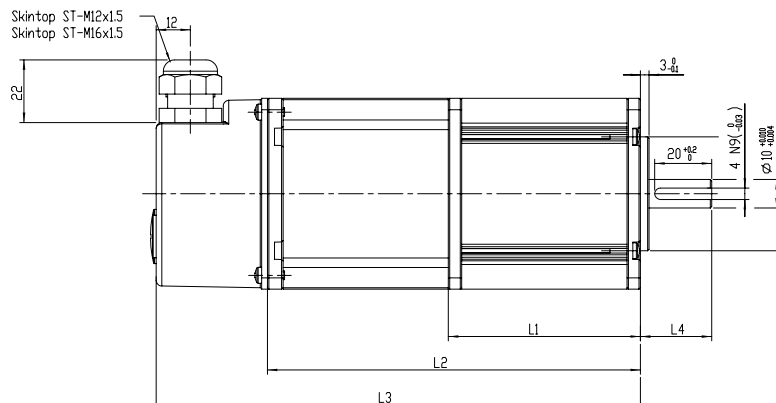
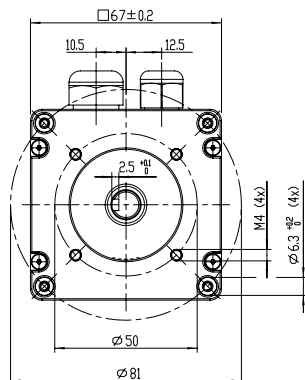


BLDC65S53A-48V



BLDC65SX0X-DRV

Brushless DC Motor with integrated Driver



Features

Supply Voltage 12-48 V DC

Bidirectional Drive

Operating Temperature -20 °C to ... + 70°C

Remote controlled or stand-alone operation

Insulation Class F

2 x Ball Bearings for high lifetime

Positioning mode

Typical Applications

Textile Machines, Pump Drive, Packaging Machines, Factory Automation, Belt Drives, Robots, Office Automation, Power Tools

Options

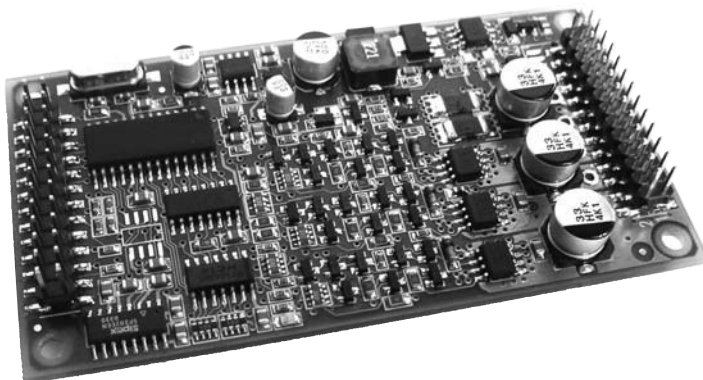
Encoder, Gearbox, Customised Shaft, Brake, Customised Winding

Basic Motor Variations

Motor	Drive	Torque	Speed	Power	Speed	Speed	Brake	Torque	Position	RS232	RS485	L1	L2	L3	L4
Type	Voltage	Nominal	Nominal	Nominal	Control	Loop	Function	Control	Control						
	[V DC]	[Ncm]	[rpm]	[W]								[mm]	[mm]	[mm]	[mm]
BLDC65S18A- DRV-A2*	12 - 48	31	3.000	98	X							51	97	136	25
BLDC65S18A- DRV-A4*	12 - 48	31	3.000	98		X	X					51	97	136	25
BLDC65S18A- DRV-T170A*	24 - 48	31	3.000	98		X	X	X	X	X		51	114	154	25
BLDC65S18A- DRV-T170B*	24 - 48	31	3.000	98		X	X	X	X		X	51	114	154	25
BLDC65S35A-DRV-A2	12 - 48	75	3.000	235	X							68	114	154	25
BLDC65S35A-DRV-A4	12 - 48	75	3.000	235		X	X					68	114	154	25
BLDC65S35A-DRV-T170A	24 - 48	75	3.000	235		X	X	X	X	X		68	132	171	25
BLDC65S35A-DRV-T170B	24 - 48	75	3.000	235		X	X	X	X		X	68	132	171	25
BLDC65S53A-DRV-A2	12 - 48	119	3.000	348	X							86	132	171	25
BLDC65S53A-DRV-A4	12 - 48	119	3.000	348		X	X					86	132	171	25
BLDC65S53A-DRV-T170A	24 - 48	119	3.000	348		X	X	X	X	X		86	149	189	25
BLDC65S53A-DRV-T170B	24 - 48	119	3.000	348		X	X	X	X		X	86	149	189	25

* Shaft without feather key groove

BLDC Motor Module TMCM-160-NMB



Features:

- Intelligent economic controller/ driver for BLDC Motors
- Daughterboard/ mezzanine style
- High efficiency/ low heat/ low EMC power stage
- RS-485, RS-232 bus interfaces
- Analog and digital control I/Os
- Powerful TRINAMIC BLDC control firmware
- Stand alone operation or remote controlled operation
- Interactive TMCL language for stand alone user program
- Easy to combine with TMCM stepper motor modules
- Motor stop at desired position by switching off commutation
- Various commutation schemes supported
- Customised OEM versions available upon request
- Evaluation kit available

Technical Data:

- Size: 92.5 x 50 mm²
- Supply Voltage: 9...40 V DC
- Current per phase: 3 A
- Two dual row 2,54 mm grid headers
- Overcurrent protection
- Overtemperature protection/ diagnostics
- Drives BLDC motors from 5 W to 100 W
- Optional: evalboard connectors

Applications:

Textile Machines, Packing Machines, Fans, Pumps, Office Automation, Power Tools, Industrial and Laboratory Automation, Highly dynamic positioning applications, Constant velocity and/ or Constant torque drives.