SMART EC LINEUP

MANUAL

Contents

DSM70 Series

The Smart EC motor is a high-performance BLDC motor with a hollow shaft and an electronic commutation circuit.
The use of existing DSM series products with an adapted design results in robust, space-saving drive solution with high power density.
Configured, combine and order EC motors(DSM), driver(ECIP), gearheads(ECG), brakes(BXW) and encoders(ECM) that match your individual needs.
Smart EC motors can be configured and ordered online. Fast , easy and online : **www.dnj.co.kr (dnj@dnj.co.kr)**

[DSM 701 24V 30P]

DSM Smart EC Motor

DSM EC MOTOR

Ø70 mm, 24VDC, Brushless, 30 Watt, Hollow shaft

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

with Hall sensors

Motor data		Part numbers					
		701-24V-30P	701-24V-40P	701-24V-50P	701-24V-60P		
Ratings							
1 Nominal Voltage	V	24	24	24	24		
2 Current	A	1.9	2.5	3.3	3.6		
3 Power	W	30	40	50	60		
4 Speed	RPM	1,800	2,300	3,500	2,900		
5 Torque	N.m	0.11	0.18	0.14	0.19		
Electrical characteristics							
1 Maximum Operating Voltage	V	30	30	30	30		
2 Maximum Output Power	W	67	74	96	110		
3 No Load Speed	RPM	3,300	2,800	4,300	3,600		
4 No Load Current	mA	400	350	500	500		
5 Stall Torque	N.m	0.66	0.85	0.70	1.02		
6 Torque Constant	mN.m/A	64	79	47	58		
7 Back EMF Constant	mV/RPM	7.00	8.25	5.37	6.42		
8 Terminal resistance phase to phase	Ω	1.45	1.45	0.82	0.82		
9 Terminal inductance phase to phase	mH	2.15	2.15	1.27	1.27		
10 Minimum Insulation resistance (dc 500V)	MΩ	10	10	10	10		
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB	50	52	50	52		

Specifications

Thermal data

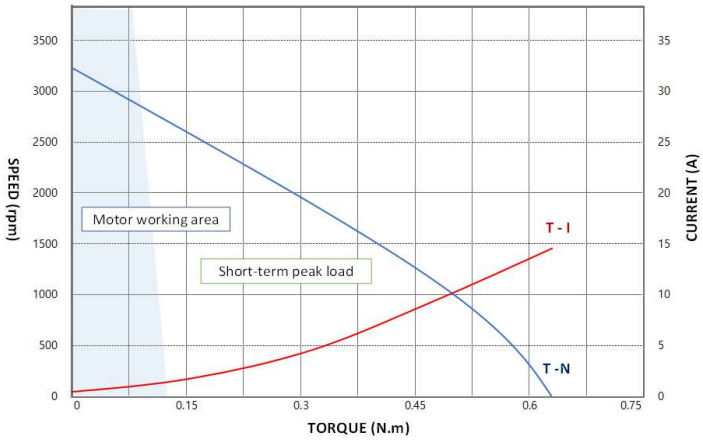
Temperature ratings		
1 Max. permissible winding temp.	℃	+160
2 Max. permissible bearing temp.	℃	+110
Ambient condition		
1 Operation condition	℃	-10~50
2 Storage condition	℃	-10~60

Other specifications

1 Number of pole pairs	pole	8
2 Number of phases	phase	3
3 Weight	gram	400

Characteristic Curves

701-24V-30P T-N-I curve

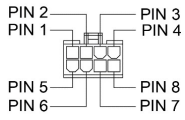


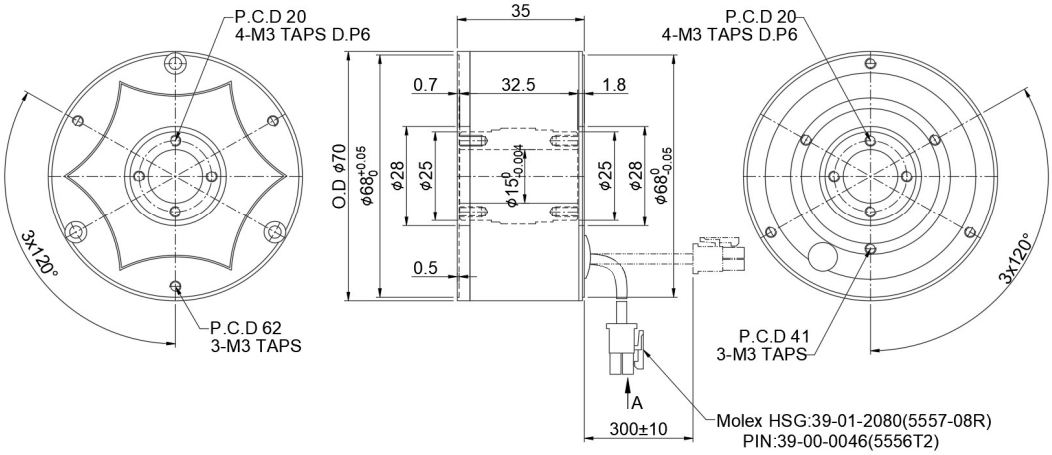
Pin Allocation

(Molex 5557-08R)

1	Black	Hall GND	Motor UL1061 AWG 22
2	Blue	Motor winding W	Hall sensor UL1061 AWG 26
3	Green	Motor winding V	
4	Yellow	Motor winding U	
5	Red	Hall Vcc 5 ... 24Vdc	
6	Brown	Hall sensor C	
7	Gray	Hall sensor B	
8	White	Hall sensor A	

A Fig.1 Conncetor





[DSM 701 24V 40P]

DSM Smart EC Motor

Ø70 mm, 24VDC, Brushless, 40 Watt, Hollow shaft

DSM EC MOTOR

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

Motor data (with Hall sensors)		Part numbers					
		701-24V-30P	701-24V-40P	701-24V-50P	701-24V-60P		
Ratings							
1 Nominal Voltage	V	24	24	24	24		
2 Current	A	1.9	2.5	3.3	3.6		
3 Power	W	30	40	50	60		
4 Speed	RPM	1,800	2,300	3,500	2,900		
5 Torque	N.m	0.11	0.18	0.14	0.19		
Electrical characteristics							
1 Maximum Operating Voltage	V	30	30	30	30		
2 Maximum Output Power	W	67	74	96	110		
3 No Load Speed	RPM	3,300	2,800	4,300	3,600		
4 No Load Current	mA	400	350	500	500		
5 Stall Torque	N.m	0.66	0.85	0.70	1.02		
6 Torque Constant	mN.m/A	64	79	47	58		
7 Back EMF Constant	mV/RPM	7.00	8.25	5.37	6.42		
8 Terminal resistance phase to phase	Ω	1.45	1.45	0.82	0.82		
9 Terminal inductance phase to phase	mH	2.15	2.15	1.27	1.27		
10 Minimum Insulation resistance (dc 500V)	MΩ	10	10	10	10		
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB	50	52	50	52		

Specifications

Thermal data

Temperature ratings

1	Max. permissible winding temp.	℃	+160
2	Max. permissible bearing temp.	℃	+110

Ambient condition

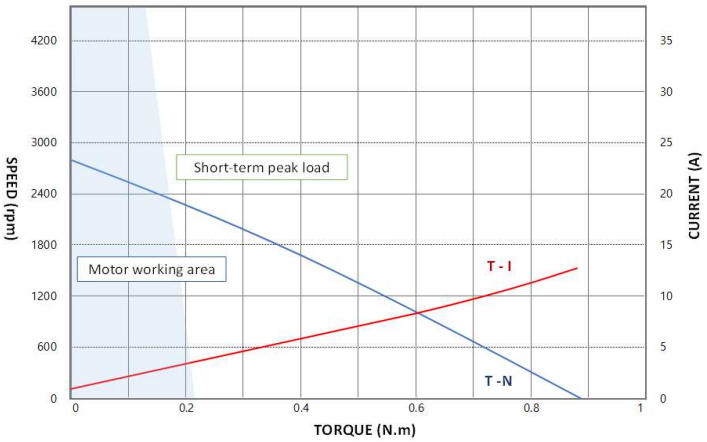
1	Operation condition	℃	-10~50
2	Storage condition	℃	-10~60

Other specifications

1	Number of pole pairs	pole	8
2	Number of phases	phase	3
3	Weight	gram	400

Characteristic Curves

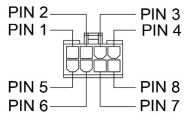
701-24V-40P T-N-I curve

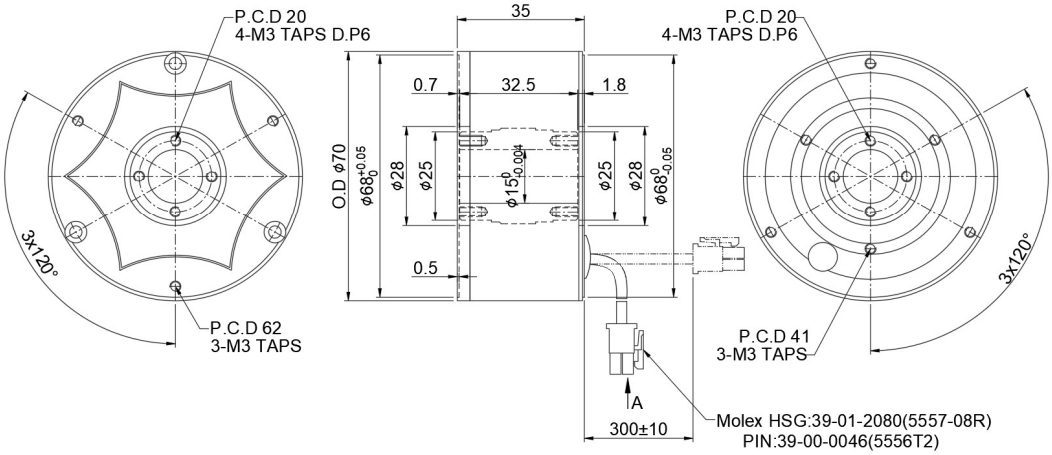


Pin Allocation (Molex 5557-08R)

1	Black	Hall GND	Motor	UL1061 AWG 22
2	Blue	Motor winding W	Hall sensor	UL1061 AWG 26
3	Green	Motor winding V		
4	Yellow	Motor winding U		
5	Red	Hall Vcc 5 ... 24Vdc		
6	Brown	Hall sensor C		
7	Gray	Hall sensor B		
8	White	Hall sensor A		

A Fig.1 Conncetor





[DSM 701 24V 50P]

DSM Smart EC Motor

Ø70 mm, 24VDC, Brushless, 50 Watt, Hollow shaft

DSM EC MOTOR

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

Motor data		with Hall sensors	Part numbers					
			701-24V-30P	701-24V-40P	701-24V-50P	701-24V-60P		
Ratings								
1 Nominal Voltage	V		24	24	24	24		
2 Current	A		1.9	2.5	3.3	3.6		
3 Power	W		30	40	50	60		
4 Speed	RPM		1,800	2,300	3,500	2,900		
5 Torque	N.m		0.11	0.18	0.14	0.19		
Electrical characteristics								
1 Maximum Operating Voltage	V		30	30	30	30		
2 Maximum Output Power	W		67	74	96	110		
3 No Load Speed	RPM		3,300	2,800	4,300	3,600		
4 No Load Current	mA		400	350	500	500		
5 Stall Torque	N.m		0.66	0.85	0.70	1.02		
6 Torque Constant	mN.m/A		64	79	47	58		
7 Back EMF Constant	mV/RPM		7.00	8.25	5.37	6.42		
8 Terminal resistance phase to phase	Ω		1.45	1.45	0.82	0.82		
9 Terminal inductance phase to phase	mH		2.15	2.15	1.27	1.27		
10 Minimum Insulation resistance (dc 500V)	MΩ		10	10	10	10		
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB		50	52	50	52		

Specifications

Thermal data

Temperature ratings		
1 Max. permissible winding temp.	℃	+160
2 Max. permissible bearing temp.	℃	+110
Ambient condition		
1 Operation condition	℃	-10~50
2 Storage condition	℃	-10~60

Other specifications

1 Number of pole pairs	pole	8
2 Number of phases	phase	3
3 Weight	gram	400

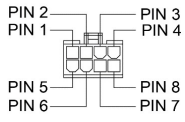
Pin Allocation

(Molex 5557-08R)

1 Black	Hall GND	
2 Blue	Motor winding W	
3 Green	Motor winding V	
4 Yellow	Motor winding U	
5 Red	Hall Vcc 5 ... 24Vdc	
6 Brown	Hall sensor C	
7 Gray	Hall sensor B	
8 White	Hall sensor A	

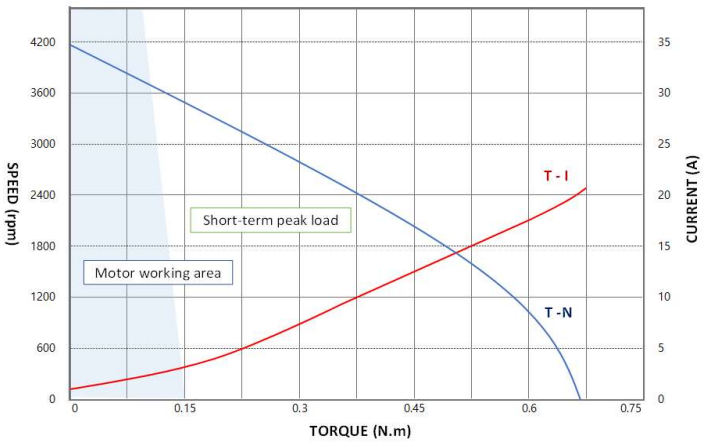
Motor	UL1061 AWG 22
Hall sensor	UL1061 AWG 26

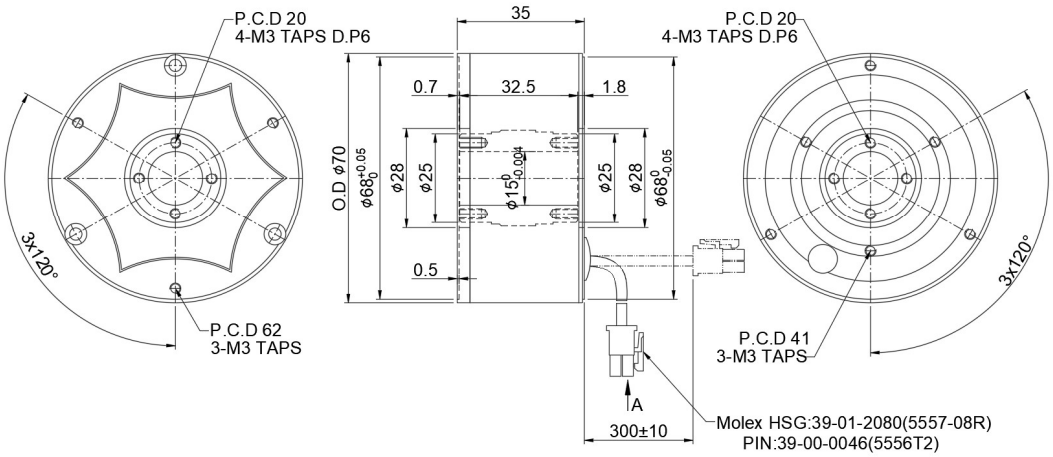
A Fig.1 Conncetor



Characteristic Curves

701-24V-50P T-N-I curve





[DSM 701 24V 60P]

DSM Smart EC Motor

Ø70 mm, 24VDC, Brushless, 60 Watt, Hollow shaft

DSM EC MOTOR

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

Motor data (with Hall sensors)		Part numbers					
		701-24V-30P	701-24V-40P	701-24V-50P	701-24V-60P		
Ratings							
1 Nominal Voltage	V	24	24	24	24		
2 Current	A	1.9	2.5	3.3	3.6		
3 Power	W	30	40	50	60		
4 Speed	RPM	1,800	2,300	3,500	2,900		
5 Torque	N.m	0.11	0.18	0.14	0.19		
Electrical characteristics							
1 Maximum Operating Voltage	V	30	30	30	30		
2 Maximum Output Power	W	67	74	96	110		
3 No Load Speed	RPM	3,300	2,800	4,300	3,600		
4 No Load Current	mA	400	350	500	500		
5 Stall Torque	N.m	0.66	0.85	0.70	1.02		
6 Torque Constant	mN.m/A	64	79	47	58		
7 Back EMF Constant	mV/RPM	7.00	8.25	5.37	6.42		
8 Terminal resistance phase to phase	Ω	1.45	1.45	0.82	0.82		
9 Terminal inductance phase to phase	mH	2.15	2.15	1.27	1.27		
10 Minimum Insulation resistance (dc 500V)	MΩ	10	10	10	10		
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB	50	52	50	52		

Specifications

Thermal data

Temperature ratings

1 Max. permissible winding temp.	℃	+160
2 Max. permissible bearing temp.	℃	+110

Ambient condition

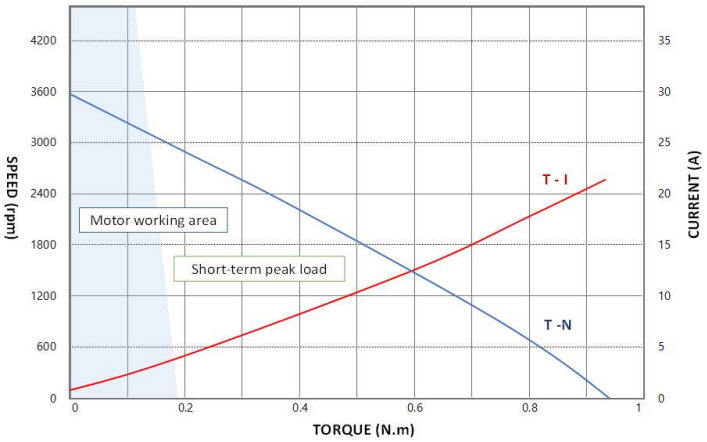
1 Operation condition	℃	-10~50
2 Storage condition	℃	-10~60

Other specifications

1 Number of pole pairs	pole	8
2 Number of phases	phase	3
3 Weight	gram	400

Characteristic Curves

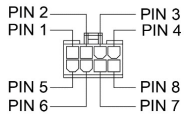
701-24V-60P T-N-I curve

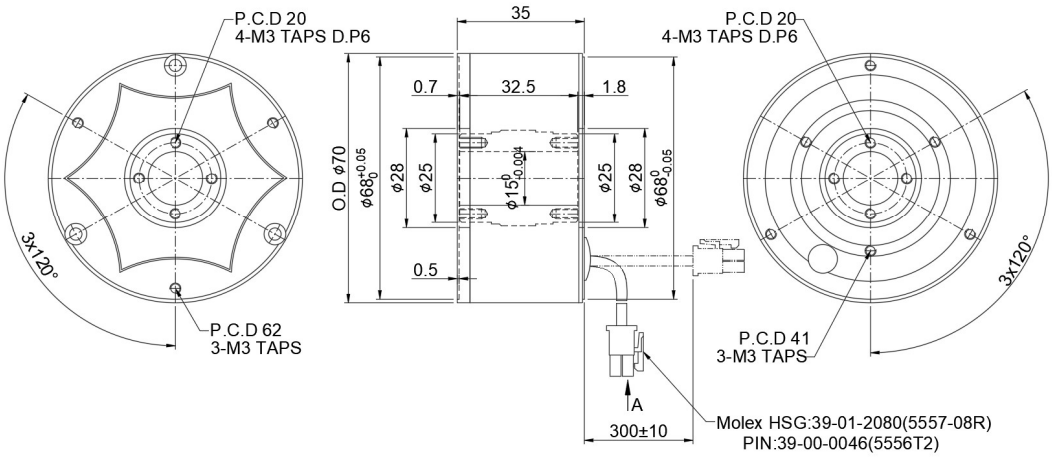


Pin Allocation (Molex 5557-08R)

1	Black	Hall GND	Motor	UL1061 AWG 22
2	Blue	Motor winding W	Hall sensor	UL1061 AWG 26
3	Green	Motor winding V		
4	Yellow	Motor winding U		
5	Red	Hall Vcc 5 ... 24Vdc		
6	Brown	Hall sensor C		
7	Gray	Hall sensor B		
8	White	Hall sensor A		

A Fig.1 Conncetor





[DSM 702 24V 70P]

DSM Smart EC Motor

Ø70 mm, 24VDC, Brushless, 70 Watt, Hollow shaft

DSM EC MOTOR

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

with Hall sensors

Motor data		Part numbers		
		702-24V-70P	702-24V-80P	702-24V-100P
Ratings				
1 Nominal Voltage	V	24	24	24
2 Current	A	3.9	4.4	6.2
3 Power	W	70	80	100
4 Speed	RPM	2,800	3,900	3,000
5 Torque	N.m	0.24	0.20	0.29
Electrical characteristics				
1 Maximum Operating Voltage	V	30	30	30
2 Maximum Output Power	W	143	184	208
3 No Load Speed	RPM	3,400	3,900	3,600
4 No Load Current	mA	400	750	700
5 Stall Torque	N.m	1.33	1.26	1.80
6 Torque Constant	mN.m/A	68	50	53
7 Back EMF Constant	mV/RPM	6.79	5.92	6.42
8 Terminal resistance phase to phase	Ω	0.50	0.50	0.30
9 Terminal inductance phase to phase	mH	0.98	0.98	0.54
10 Minimum Insulation resistance (dc 500V)	MΩ	10	10	10
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB	52	54	52

Specifications

Thermal data

Temperature ratings		
1 Max. permissible winding temp.	℃	+160
2 Max. permissible bearing temp.	℃	+110
Ambient condition		
1 Operation condition	℃	-10~50
2 Storage condition	℃	-10~60

Other specifications

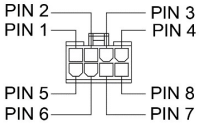
1 Number of pole pairs	pole	8
2 Number of phases	phase	3
3 Weight	gram	590

Pin Allocation

(Molex 5557-08R)

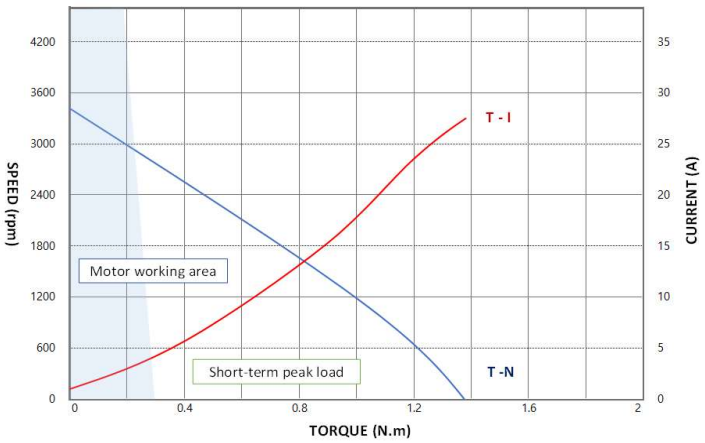
1	Black	Hall GND	Motor UL1061 AWG 22
2	Blue	Motor winding W	Hall sensor UL1061 AWG 26
3	Green	Motor winding V	
4	Yellow	Motor winding U	
5	Red	Hall Vcc 5 ... 24Vdc	
6	Brown	Hall sensor C	
7	Gray	Hall sensor B	
8	White	Hall sensor A	

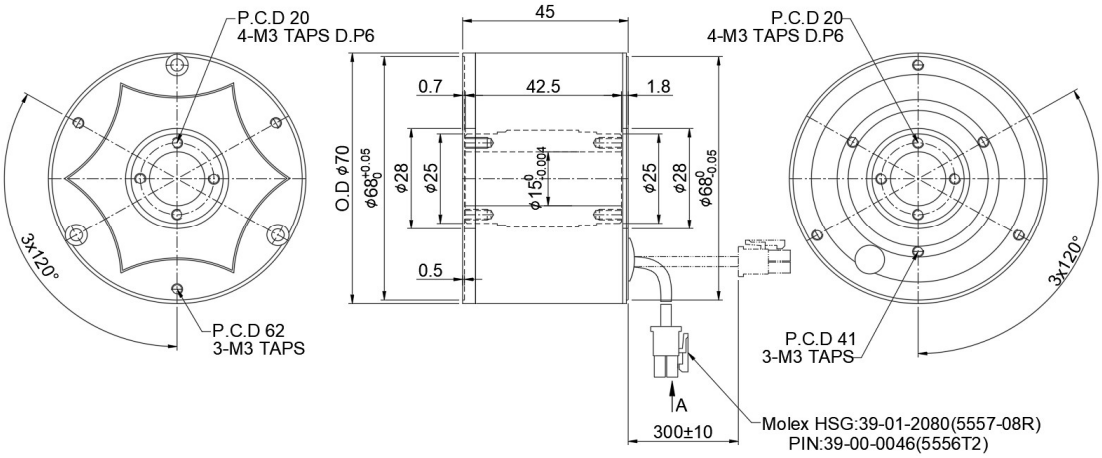
A Fig.1 Conncetor



Characteristic Curves

702-24V-70P T-N-I curve





[DSM 702 24V 80P]

DSM Smart EC Motor

DSM EC MOTOR

Ø70 mm, 24VDC, Brushless, 80 Watt, Hollow shaft

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

with Hall sensors

Motor data		Part numbers					
		702-24V-70P	702-24V-80P	702-24V-100P			
Ratings							
1 Nominal Voltage	V	24	24	24			
2 Current	A	3.9	4.4	6.2			
3 Power	W	70	80	100			
4 Speed	RPM	2,800	3,900	3,000			
5 Torque	N.m	0.24	0.20	0.29			
Electrical characteristics							
1 Maximum Operating Voltage	V	30	30	30			
2 Maximum Output Power	W	143	184	208			
3 No Load Speed	RPM	3,400	3,900	3,600			
4 No Load Current	mA	400	750	700			
5 Stall Torque	N.m	1.33	1.26	1.80			
6 Torque Constant	mN.m/A	68	50	53			
7 Back EMF Constant	mV/RPM	6.79	5.92	6.42			
8 Terminal resistance phase to phase	Ω	0.50	0.50	0.30			
9 Terminal inductance phase to phase	mH	0.98	0.98	0.54			
10 Minimum Insulation resistance (dc 500V)	MΩ	10	10	10			
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB	52	54	52			

Specifications

Thermal data

Temperature ratings		
1 Max. permissible winding temp.	℃	+160
2 Max. permissible bearing temp.	℃	+110
Ambient condition		
1 Operation condition	℃	-10~50
2 Storage condition	℃	-10~60

Other specifications

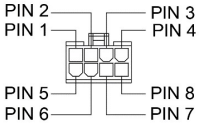
1 Number of pole pairs	pole	8
2 Number of phases	phase	3
3 Weight	gram	590

Pin Allocation

(Molex 5557-08R)

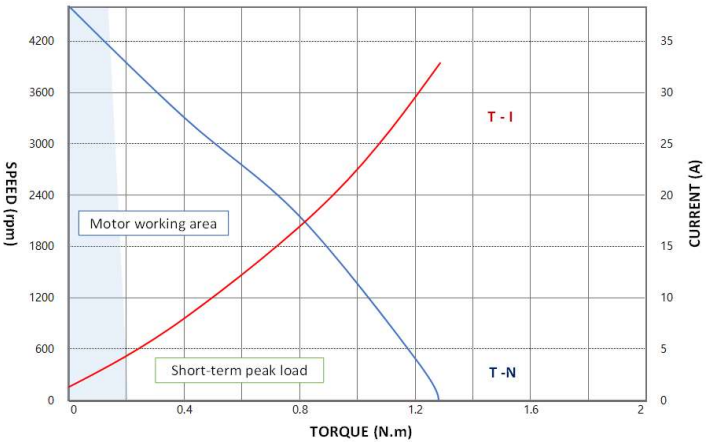
1	Black	Hall GND	Motor UL1061 AWG 22
2	Blue	Motor winding W	Hall sensor UL1061 AWG 26
3	Green	Motor winding V	
4	Yellow	Motor winding U	
5	Red	Hall Vcc 5 ... 24Vdc	
6	Brown	Hall sensor C	
7	Gray	Hall sensor B	
8	White	Hall sensor A	

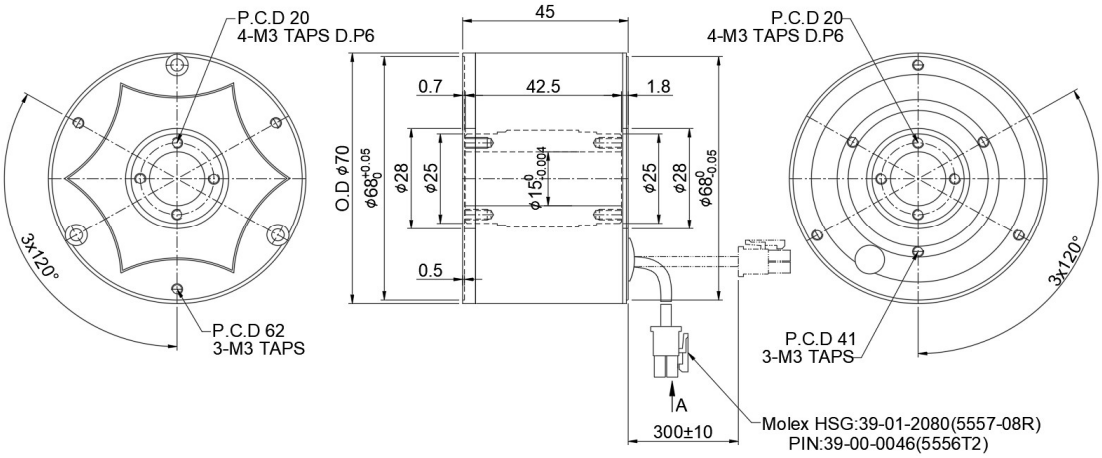
A Fig.1 Conncetor



Characteristic Curves

702-24V-80P T-N-I curve

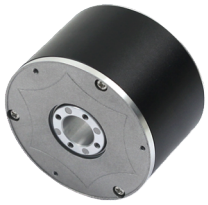




[DSM 702 24V 100P]

DSM Smart EC Motor

Ø70 mm, 24VDC, Brushless, 100 Watt, Hollow shaft



DSM EC MOTOR

The electronically commutated Smart EC Motors are characterized especially by their favorable torque characterisrics, high power, extremely broad speed range and of course, by their unsurpassed service life.

- External diameter Ø70
- Brushless DC(BLDC) motor
- Robust ball bearing system for long service life
- High torque density
- Insulation class F
- Multipole permanent magnet
- Hall sensor (5~24Vdc, open-collector)

Motor data		with Hall sensors	Part numbers		
			702-24V-70P	702-24V-80P	702-24V-100P
Ratings					
1 Nominal Voltage	V		24	24	24
2 Current	A		3.9	4.4	6.2
3 Power	W		70	80	100
4 Speed	RPM		2,800	3,900	3,000
5 Torque	N.m		0.24	0.20	0.29
Electrical characteristics					
1 Maximum Operating Voltage	V		30	30	30
2 Maximum Output Power	W		143	184	208
3 No Load Speed	RPM		3,400	3,900	3,600
4 No Load Current	mA		400	750	700
5 Stall Torque	N.m		1.33	1.26	1.80
6 Torque Constant	mN.m/A		68	50	53
7 Back EMF Constant	mV/RPM		6.79	5.92	6.42
8 Terminal resistance phase to phase	Ω		0.50	0.50	0.30
9 Terminal inductance phase to phase	mH		0.98	0.98	0.54
10 Minimum Insulation resistance (dc 500V)	MΩ		10	10	10
11 Noise (Rad.30cm DC24V, Noload, background 17dB	dB		52	54	52

Specifications

Thermal data

Temperature ratings

1	Max. permissible winding temp.	℃	+160
2	Max. permissible bearing temp.	℃	+110

Ambient condition

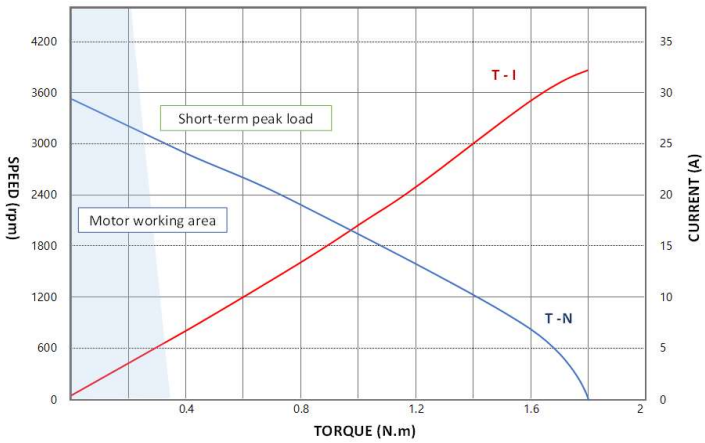
1	Operation condition	℃	-10~50
2	Storage condition	℃	-10~60

Other specifications

1	Number of pole pairs	pole	8
2	Number of phases	phase	3
3	Weight	gram	590

Characteristic Curves

702-24V-100P T-N-I curve



Pin Allocation

(Molex 5557-08R)

			Motor	UL1061 AWG 22
1	Black	Hall GND	Hall sensor	UL1061 AWG 26
2	Blue	Motor winding W		
3	Green	Motor winding V		
4	Yellow	Motor winding U		
5	Red	Hall Vcc 5 ... 24Vdc		
6	Brown	Hall sensor C		
7	Gray	Hall sensor B		
8	White	Hall sensor A		

A Fig.1 Conncetor