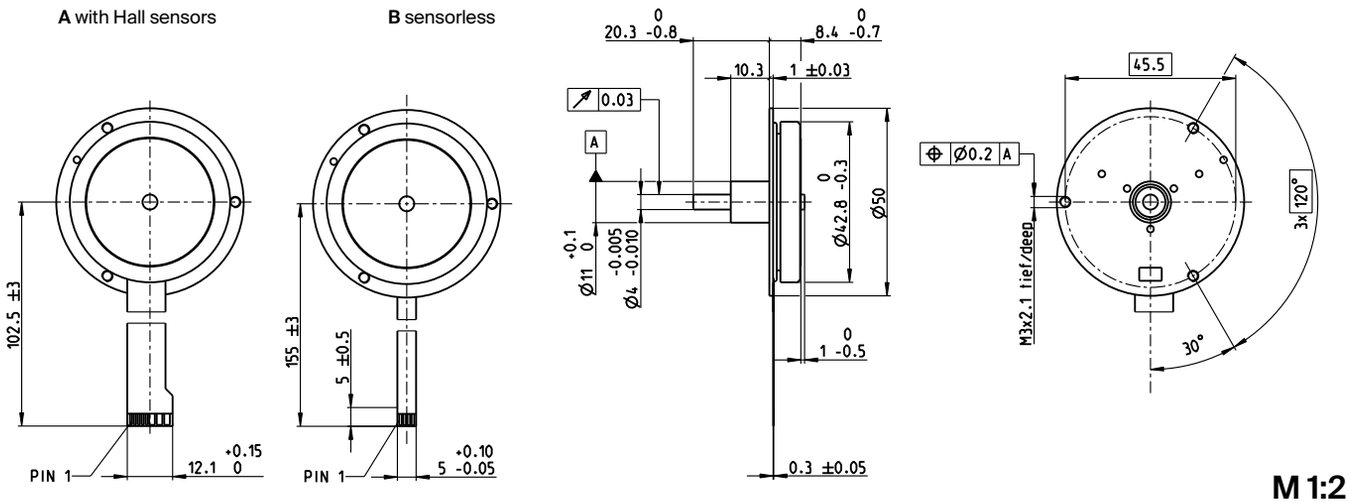
EC 45 flat ∅42.8 mm, brushless, 12 watt



Stock program
Standard program
Special program (on request)

Part Numbers

A with Hall sensors	200188		339275		339276							
B sensorless		200141		339277		339278						
Motor Data												
Values at nominal voltage												
1 Nominal voltage	V	9	9	12	12	24	24					
2 No load speed	rpm	8000	7980	8160	8150	7310	7300					
3 No load current	mA	147	147	115	115	47.6	47.6					
4 Nominal speed	rpm	4780	4540	4840	4720	4390	4360					
5 Nominal torque (max. continuous torque)	mNm	23.8	23.6	20.1	20	27	27.1					
6 Nominal current (max. continuous current)	A	2.04	2.04	1.37	1.37	0.766	0.768					
7 Stall torque[1]	mNm	92.6	80.6	70.8	66.5	114	112					
8 Stall current	A	8.9	7.75	5.24	4.92	3.74	3.67					
9 Max. efficiency	%	77	75	73	73	79	79					
Characteristics												
10 Terminal resistance phase to phase	Ω	1.01	1.16	2.29	2.44	6.42	6.54					
11 Terminal inductance phase to phase	mH	0.32	0.32	0.541	0.541	2.75	2.75					
12 Torque constant	mNm/A	10.4	10.4	13.5	13.5	30.5	30.5					
13 Speed constant	rpm/V	918	918	706	706	313	313					
14 Speed/torque gradient	rpm/mNm	89.3	103	120	128	65.9	67.1					
15 Mechanical time constant	ms	48.9	56.1	65.5	69.8	36.1	36.8					
16 Rotor inertia	gcm²	52.3	52.3	52.3	52.3	52.3	52.3					

Specifications

Thermal data

17	Thermal resistance housing-ambient	6.59 K/W
18	Thermal resistance winding-housing	5.56 K/W
19	Thermal time constant winding	8.36 s
20	Thermal time constant motor	188 s
21	Ambient temperature	-40...+100°C
22	Max. winding temperature	+125°C

Mechanical data (preloaded ball bearings)

23	Max. speed		10000 rpm
24	Axial play at axial load	< 5.0 N	0 mm
		> 5.0 N	typ. 0.6 mm
25	Radial play		preloaded
26	Max. axial load (dynamic)		4.8 N
27	Max. force for press fits (static)		45 N
	(static, shaft supported)		1000 N
28	Max. radial load, 15 mm from flange		12.5 N

Other specifications

29	Number of pole pairs	8
30	Number of phases	3
31	Weight of motor	57 g

Values listed in the table are nominal.

Connection	with Hall sensors	sensorless
Pin 1	V_{Hall} 4.5...18 VDC	Motor winding 1
Pin 2	Hall sensor 3*	Motor winding 2
Pin 3	Hall sensor 1*	Motor winding 3
Pin 4	Hall sensor 2*	⅄ neutral point
Pin 5	GND	
Pin 6	Motor winding 3	
Pin 7	Motor winding 2	
Pin 8	Motor winding 1	

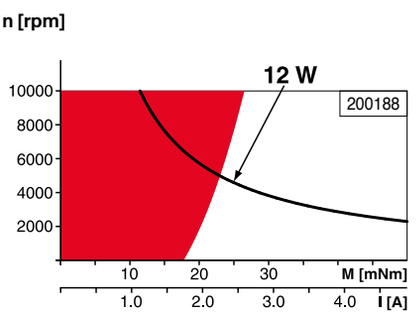
*Internal pull-up (7...13 kΩ) on V_{Hall}
Wiring diagram for Hall sensors see p. 59

Adapter	Part number	Part number
see p. 529	220300	220310
Connector	**Part number**	**Part number**
TE	1-84953-1	84953-4
Molex	52207-1133	52207-0433

Pin for design with Hall sensors:
FPC, 11-pol, Pitch 1.0 mm, top contact style

[1]Calculation does not include saturation effect (p. 71/178)

Operating Range



Comments

Continuous operation
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.
= Thermal limit.

Short term operation
The motor may be briefly overloaded (recurring).

Assigned power rating

maxon Modular System

Details on catalog page 46

Recommended Electronics:

Notes	Page 46
ESCON Module 24/2	500
ESCON 36/3 EC	501
ESCON Mod. 50/4 EC-S	501
DEC Module 24/2	505
EPOS4 Micro 24/5	509
EPOS4 Mod./Comp. 24/1.5	510
EPOS4 Mod./Comp. 50/5	510
EPOS4 Comp. 24/5 3-axes	511
EPOS4 50/5	515