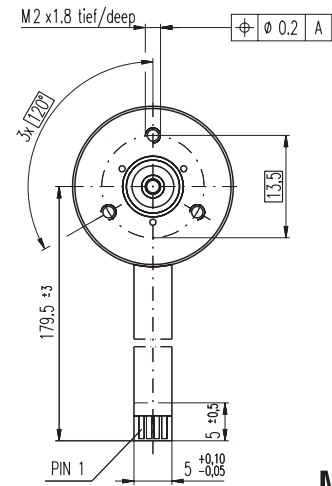
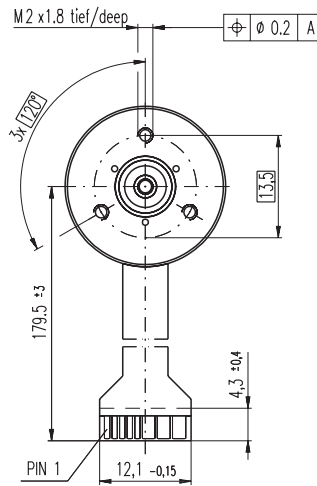
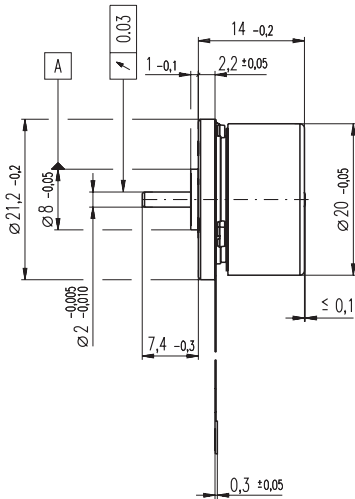


# EC 20 flat Ø20 mm, brushless, 5 Watt

**NEW**



**M 1:1**

- Stock program
- Standard program
- Special program (on request)

## Order Number

A with hall sensors  
B sensorless

351005	351006	351007	351008
351054	351055	351056	351057

## Motor Data (provisional)

Values at nominal voltage						
1	Nominal voltage	V	6.0	9.0	12.0	24.0
2	No load speed	rpm	9350	9430	9380	9300
3	No load current	mA	102	68.3	51.1	25.1
4	Nominal speed	rpm	5110	5480	5250	5250
5	Nominal torque (max. continuous torque)	mNm	7.01	8.2	7.43	7.69
6	Nominal current (max. continuous current)	A	1.22	0.934	0.642	0.327
7	Stall torque	mNm	17.2	22.4	18.9	19.9
8	Starting current	A	2.93	2.54	1.61	0.838
9	Max. efficiency	%	67	70.6	68.4	69.2
Characteristics						
10	Terminal resistance phase to phase	Ω	2.05	3.54	7.45	28.6
11	Terminal inductance phase to phase	mH	0.189	0.424	0.754	3.09
12	Torque constant	mNm / A	5.88	8.82	11.8	23.8
13	Speed constant	rpm / V	1620	1080	812	402
14	Speed / torque gradient	rpm / mNm	567	435	515	484
15	Mechanical time constant	ms	30.3	23.2	27.5	25.8
16	Rotor inertia	gcm <sup>2</sup>	5.1	5.1	5.1	5.1

## Specifications

Thermal data			
17	Thermal resistance housing-ambient	13.7 K / W	
18	Thermal resistance winding-housing	2.66 K / W	
19	Thermal time constant winding	1.77 s	
20	Thermal time constant motor	22.8 s	
21	Ambient temperature	-40 ... +100°C	
22	Max. permissible winding temperature	+125°C	
Mechanical data (preloaded ball bearings)			
23	Max. permissible speed	15000 rpm	
24	Axial play at axial load < 2.0 N	0 mm	
	> 2.0 N	0.14 mm	
25	Radial play	preloaded	
26	Max. axial load (dynamic)	1.8 N	
27	Max. force for press fits (static)	20 N	
	(static, shaft supported)	200 N	
28	Max. radial loading, 5 mm from flange	10 N	

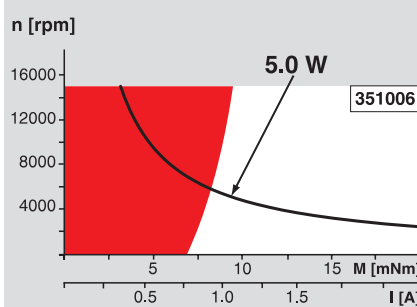
## Other specifications

29	Number of pole pairs	4
30	Number of phases	3
31	Weight of motor	22 g

Values listed in the table are nominal.

Connection	with hall sensors	sensorless
Pin 1	4.5 ... 24 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	
<b>Adapter</b>	<b>Order number</b>	<b>Order number</b>
see p. 299	220300	220310
<b>Connector</b>	<b>Article number</b>	<b>Article number</b>
AMP	1-487951-1	487951-4
MOLEX	52207-1190	52207-0490
MOLEX	52089-1110	52089-0410
Pin for design with Hall sensors:		
FPC, 11 pole, pitch 1.0 mm, top contact style		
Wiring diagram for Hall sensors see page 29		

## Operating Range



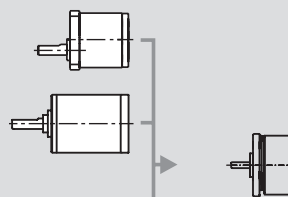
## Comments

- 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

Overview on page 16 - 21

- Spur Gearhead**  
Ø20.3 mm  
0.06 - 0.25 Nm  
Page 227
- Planetary Gearhead**  
Ø22 mm  
0.5 - 1.0 Nm  
Page 230



**Recommended Electronics:**  
DECS 50/5 Page 284  
Notes 20