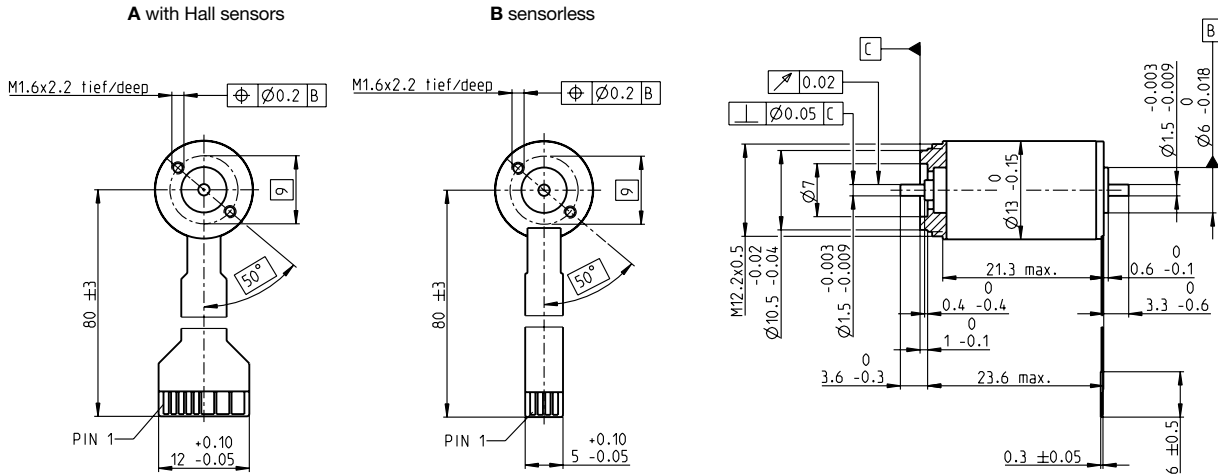


# EC 13 Ø13 mm, brushless, 6 Watt



M 1:1

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

		Part Numbers				
A with Hall sensors		416184	430152	430153	430154	430155
B sensorless		426333	430156	430157	430158	430159

### Motor Data

		Part Numbers					
<b>Values at nominal voltage</b>							
1	Nominal voltage	V	6	9	12	18	24
2	No load speed	rpm	28800	30600	27500	27900	27700
3	No load current	mA	168	121	78.6	53.5	39.8
4	Nominal speed	rpm	20200	22700	19500	19700	19400
5	Nominal torque (max. continuous torque)	mNm	2.23	2.36	2.32	2.24	2.21
6	Nominal current (max. continuous current)	A	1.31	0.976	0.646	0.425	0.312
7	Stall torque	mNm	7.79	9.53	8.27	8	7.72
8	Stall current	A	4.08	3.52	2.06	1.35	0.973
9	Max. efficiency	%	64	67	65	65	64
<b>Characteristics</b>							
10	Terminal resistance phase to phase	Ω	1.47	2.56	5.82	13.3	24.7
11	Terminal inductance phase to phase	mH	0.021	0.042	0.091	0.198	0.357
12	Torque constant	mNm/A	1.91	2.71	4.01	5.92	7.94
13	Speed constant	rpm/V	5000	3520	2380	1610	1200
14	Speed/torque gradient	rpm/mNm	3850	3330	3460	3630	3740
15	Mechanical time constant	ms	7.83	6.76	7.02	7.38	7.59
16	Rotor inertia	gcm <sup>2</sup>	0.194	0.194	0.194	0.194	0.194

### Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 32 K/W
  - 18 Thermal resistance winding-housing 2.46 K/W
  - 19 Thermal time constant winding 0.72 s
  - 20 Thermal time constant motor 188 s
  - 21 Ambient temperature -40...+100°C
  - 22 Max. winding temperature +155°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. speed 50000 rpm
  - 24 Axial play at axial load < 1.8 N 0 mm
  - > 1.8 N max. 0.05 mm
  - 25 Radial play preloaded
  - 26 Max. axial load (dynamic) 1.5 N
  - 27 Max. force for press fits (static) 18 N
  - (static, shaft supported) 250 N
  - 28 Max. radial load, 5 mm from flange 4 N

### Other specifications

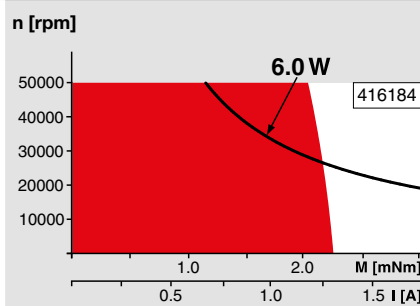
- 29 Number of pole pairs 1
- 30 Number of phases 3
- 31 Weight of motor 19 g

Values listed in the table are nominal.

Connection	with Hall sensors	sensorless
Pin 1	V <sub>Hall</sub> 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	N.C.
Pin 5	GND	
Pin 6	Motor winding 3	
Pin 7	Motor winding 2	
Pin 8	Motor winding 1	
<b>Adapter</b>	<b>Part number</b>	<b>Part number</b>
see p. 471	220300	220310
<b>Connector</b>	<b>Part number</b>	<b>Part number</b>
Tyco	1-84953-1	84953-4
Molex	52207-1133	52207-0433
Molex	52089-1119	52089-0419

Pin for design with Hall sensors:  
FPC, 11-pol, Pitch 1.0 mm, top contact style  
Wiring diagram for Hall sensors see page 41

### 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 28-36

#### Planetary Gearhead

Ø13 mm  
0.2 - 0.35 Nm  
Page 323



#### Recommended Electronics:

Notes	Page 32
ESCON Module 24/2	444
ESCON 36/3 EC	445
ESCON Mod. 50/4 EC-S	445
DEC Module 24/2	449