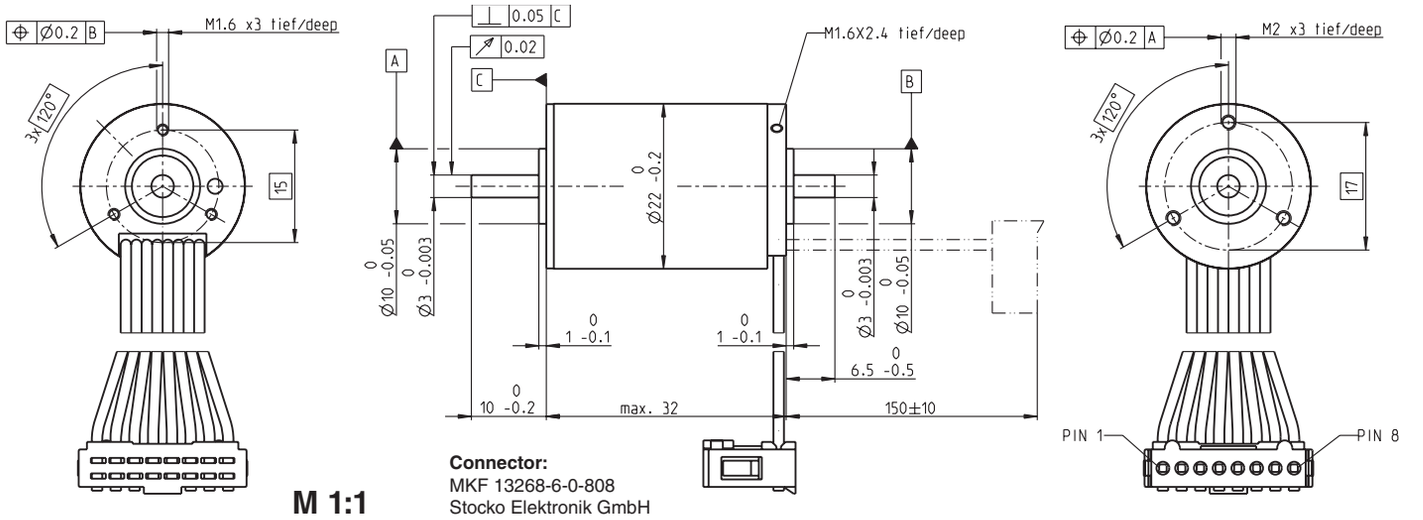
# EC-max 22 ∅22 mm, brushless, 12 Watt




M 1:1

**Connector:**
MKF 13268-6-0-808
Stocko Elektronik GmbH

Stock program
Standard program
Special program (on request)

## Part Numbers

| | | 283837 | 283838 | 283839 | 283840 | 283841 |
|---|---|---|---|---|---|---|
| **Motor Data** | | | | | | |
| | **Values at nominal voltage** | | | | | |
| 1 | Nominal voltage | V | 6 | 12 | 18 | 24 | 36 |
| 2 | No load speed | rpm | 11400 | 12100 | 12100 | 12100 | 12100 |
| 3 | No load current | mA | 282 | 155 | 103 | 77.3 | 51.6 |
| 4 | Nominal speed | rpm | 7230 | 8040 | 8250 | 8250 | 8210 |
| 5 | Nominal torque (max. continuous torque) | mNm | 10.5 | 10.2 | 10.9 | 10.8 | 10.6 |
| 6 | Nominal current (max. continuous current) | A | 2.41 | 1.25 | 0.88 | 0.657 | 0.432 |
| 7 | Stall torque | mNm | 30 | 31.3 | 35.4 | 35.1 | 34.1 |
| 8 | Starting current | A | 6.23 | 3.47 | 2.6 | 1.94 | 1.25 |
| 9 | Max. efficiency | % | 63 | 63 | 65 | 65 | 65 |
| | **Characteristics** | | | | | | |
| 10 | Terminal resistance phase to phase | Ω | 0.963 | 3.46 | 6.93 | 12.4 | 28.7 |
| 11 | Terminal inductance phase to phase | mH | 0.0343 | 0.121 | 0.275 | 0.488 | 1.09 |
| 12 | Torque constant | mNm/A | 4.81 | 9.02 | 13.6 | 18.1 | 27.2 |
| 13 | Speed constant | rpm/V | 1990 | 1060 | 701 | 526 | 352 |
| 14 | Speed/torque gradient | rpm/mNm | 397 | 406 | 356 | 360 | 371 |
| 15 | Mechanical time constant | ms | 9.36 | 9.56 | 8.39 | 8.47 | 8.75 |
| 16 | Rotor inertia | gcm² | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 |

## Specifications

**Thermal data**

| | | |
|---|---|---|
| 17 | Thermal resistance housing-ambient | 13.5 K/W |
| 18 | Thermal resistance winding-housing | 1.72 K/W |
| 19 | Thermal time constant winding | 1.69 s |
| 20 | Thermal time constant motor | 567 s |
| 21 | Ambient temperature | -40…+100°C |
| 22 | Max. permissible winding temperature | +155°C |

**Mechanical data (preloaded ball bearings)**

| | | | |
|---|---|---|---|
| 23 | Max. permissible speed | | 18000 rpm |
| 24 | Axial play at axial load | < 5 N | 0 mm |
| | | > 5 N | 0.14 mm |
| 25 | Radial play | | preloaded |
| 26 | Max. axial load (dynamic) | | 4 N |
| 27 | Max. force for press fits (static) | | 53 N |
| | (static, shaft supported) | | 1400 N |
| 28 | Max. radial loading, 5 mm from flange | | 16 N |

**Other specifications**

| | | |
|---|---|---|
| 29 | Number of pole pairs | 1 |
| 30 | Number of phases | 3 |
| 31 | Weight of motor | 83 g |

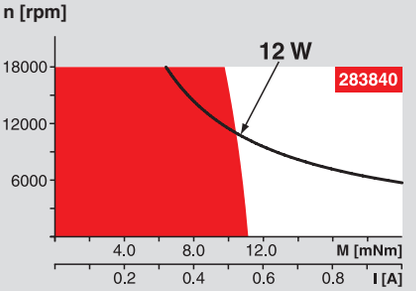
Values listed in the table are nominal.

**Connection** (Cable AWG 24)

| | | |
|---|---|---|
| brown | Motor winding 1 | Pin 1 |
| red | Motor winding 2 | Pin 2 |
| orange | Motor winding 3 | Pin 3 |
| yellow | $V_{Hall}$ 3…24 VDC | Pin 4 |
| green | GND | Pin 5 |
| blue | Hall sensor 1 | Pin 6 |
| violet | Hall sensor 2 | Pin 7 |
| grey | Hall sensor 3 | Pin 8 |

Wiring diagram for Hall sensors see p. 35

## 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**

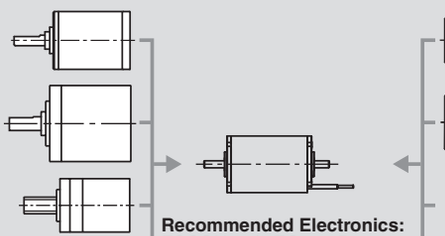
## maxon Modular System

Overview on page 20 - 25

**Planetary Gearhead**
∅22 mm
0.5 - 3.4 Nm
Page 252/253

**Koaxdrive**
∅32 mm
1.0 - 4.5 Nm
Page 268

**Spindle Drive**
∅22 mm
Page 284/285



**Encoder MR**
128/256/512 CPT,
2/3 channels
Page 301

**Brake AB 20**
24 VDC
0.1 Nm
Page 346

**Recommended Electronics:**

| | |
|---|---|
| ESCON 36/3 EC | Page 320 |
| ESCON Module 50/5 | 321 |
| ESCON 50/5 | 321 |
| DECS 50/5 | 324 |
| DEC Module 24/2, 50/5 | 325 |
| EPOS2 24/2, Module 36/2 | 330 |
| EPOS2 24/5, 50/5 | 331 |
| EPOS2 P 24/5 | 334 |
| EPOS3 70/10 EtherCAT | 337 |
| **Notes** | **24** |