

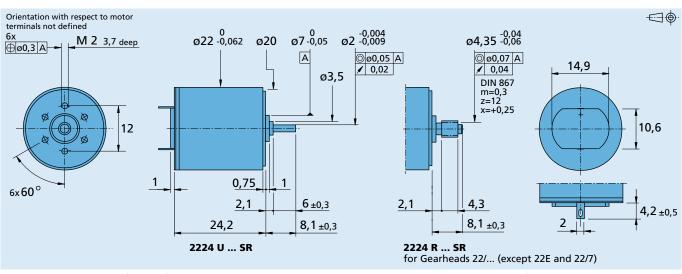
## **DC-Micromotors**

## **Precious Metal Commutation**

## 5 mNm

For combination with Gearheads: 20/1, 22E, 22F, 22/2, 22/5, 22/6, 22/7, 23/1, 38/3 Encoders: IE2 – 16 ... 512

## Series 2224 ... SR 024 SR 003 SR 006 SR 012 SR 018 SR 036 SR Nominal voltage 12 8,71 Volt $U_N$ 18 24 36 6 17,50 4,54 2 Terminal resistance 1.94 36.30 91.40 R 0,56 Ω 3 W Output power P<sub>2 max</sub>. 3,92 4.55 4.05 3.88 3.46 4 Efficiency 80 82 % 82 82 80 81 η max 5 No-load speed 8 200 7 800 8 100 7 800 7 800 8 100 rpm no No-load current (with shaft ø 2,0 mm) 6 0.066 0.029 0.014 0.010 0.007 0.005 Α Мн mNm Stall torque 19.8 19,0 18.5 21,2 21.4 16.9 Friction torque mNm MR 0,23 0.2 0.2 0.21 0.2 0,22 9 Speed constant10 Back-EMF constant 2 730 657 328 rpm/V 1 380 219 $k_n$ 454 1,520 2,200 3,040 4,560 0,366 mV/rpm k<sub>F</sub> 0.725 Torque constant kм 3,49 6,92 14,50 21,00 29,10 43,50 mNm/A 12 Current constant kι 0,286 0,144 0.069 0,048 0.034 0,023 A/mNm rpm/mNm 13 Slope of n-M curve 462 $\Delta n/\Delta M$ 438 387 394 379 411 14 Rotor inductance 11 45 200 450 800 1 800 μΗ 15 Mechanical time constant 11 11 11 ms 11 11 11 2,4 77 gcm<sup>2</sup> 16 Rotor inertia 2,7 2,8 2,6 2,3 77 Angular acceleration 78 74 ·10³rad/s² 18 Thermal resistance Rth 1 / Rth 2 5/20 K/W 19 Thermal time constant au w1 / au w2 6,8 / 440 Operating temperature range: – motor - 30 ... + 85 (optional - 55 ... + 125) °C - rotor, max. permissible °C 21 Shaft bearings ball bearings ball bearings, preloaded sintered bronze sleeves Shaft load max.: (standard) (optional) (optional) – with shaft diameter 2,0 2,0 2,0 mm - radial at 3 000 rpm (3 mm from bearing) 1,5 8 - axial at 3 000 rpm 0,2 0,8 0,8 Ν - axial at standstill Ν 20 10 10 23 Shaft play: – radial 0.03 0.015 0.015 mm – axial 0.2 0,2 mm steel, black coated 24 Housing material 25 Weight 46 g 26 Direction of rotation clockwise, viewed from the front face **Recommended values** - mathematically independent of ea h other 27 Speed up to 8 000 ne max 8 000 8 000 8 000 8 000 8 000 rpm mNm 28 Torque up to Me max 5



1,200

2,200

le max.

0,570

0,400

0,280

0,180

Α

29 Current up to (thermal limits)