

DC-Micromotors

2 mNm

Precious Metal Commutation

For combination with:
 Gearheads: 20/1, 22E, 22/2, 22/5, 22/6, 23/1
 Encoders: 20/21B, 03A, 03B, 10/09A, 10/09B,
 10/09BP, 5500, 5540

Series 2225 ... S

| | 2225 T | 003 S | 006 S | 009 S | 012 S | 024 S | |
|---|-------------------------------------|---|---------------|--------------------------|-------|-------|------------------------------|
| 1 Nominal voltage | U_N | 3 | 6 | 9 | 12 | 24 | Volt |
| 2 Terminal resistance | R | 1,3 | 9,0 | 12,0 | 27,0 | 102 | Ω |
| 3 Output power | $P_{2 \text{ max.}}$ | 1,69 | 0,97 | 1,64 | 1,29 | 1,36 | W |
| 4 Efficiency | $\eta_{\text{ max.}}$ | 79 | 78 | 79 | 76 | 77 | % |
| 5 No-load speed | n_o | 8 000 | 6 200 | 9 500 | 8 400 | 9 500 | rpm |
| 6 No-load current (with shaft \varnothing 1,5 mm) | I_o | 0,030 | 0,010 | 0,010 | 0,008 | 0,004 | A |
| 7 Stall torque | M_H | 8,05 | 5,98 | 6,60 | 5,84 | 5,49 | mNm |
| 8 Friction torque | M_R | 0,11 | 0,09 | 0,09 | 0,11 | 0,09 | mNm |
| 9 Speed constant | k_n | 2 700 | 1 050 | 1 070 | 713 | 403 | rpm/V |
| 10 Back-EMF constant | k_E | 0,370 | 0,953 | 0,935 | 1,400 | 2,480 | mV/rpm |
| 11 Torque constant | k_M | 3,53 | 9,10 | 8,93 | 13,40 | 23,70 | mNm/A |
| 12 Current constant | k_I | 0,283 | 0,110 | 0,112 | 0,075 | 0,042 | A/mNm |
| 13 Slope of n-M curve | $\Delta n/\Delta M$ | 994 | 1 040 | 1 440 | 1 440 | 1 730 | rpm/mNm |
| 14 Rotor inductance | L | 50 | 350 | 350 | 700 | 2 000 | μH |
| 15 Mechanical time constant | τ_m | 20 | 19 | 18 | 22 | 21 | ms |
| 16 Rotor inertia | J | 1,90 | 1,80 | 1,20 | 1,50 | 1,20 | gcm^2 |
| 17 Angular acceleration | $\alpha_{\text{ max.}}$ | 42 | 34 | 55 | 40 | 47 | $\cdot 10^3 \text{ rad/s}^2$ |
| 18 Thermal resistance | $R_{\text{th 1}} / R_{\text{th 2}}$ | 5 / 30 | | | | | K/W |
| 19 Thermal time constant | τ_{w1} / τ_{w2} | 3,7 / 545 | | | | | s |
| 20 Operating temperature range: | | | | | | | |
| – motor | | – 30 ... + 85 (optional – 55 ... + 125) | | | | | $^{\circ}\text{C}$ |
| – rotor, max. permissible | | +125 | | | | | $^{\circ}\text{C}$ |
| 21 Shaft bearings | | sintered bronze sleeves | ball bearings | ball bearings, preloaded | | | |
| 22 Shaft load max.: | | (standard) | (optional) | (optional) | | | |
| – with shaft diameter | | 1,5 | 2,0 | 2,0 | | mm | |
| – radial at 3000 rpm (3 mm from bearing) | | 1,2 | 8 | 8 | | N | |
| – axial at 3000 rpm | | 0,2 | 0,8 | 0,8 | | N | |
| – axial at standstill | | 20 | 10 | 10 | | N | |
| 23 Shaft play: | | | | | | | |
| – radial | \leq | 0,03 | 0,015 | 0,015 | | mm | |
| – axial | \leq | 0,2 | 0,2 | 0 | | mm | |
| 24 Housing material | | steel, zinc galvanized and passivated | | | | | |
| 25 Weight | | 44 | | | | | g |
| 26 Direction of rotation | | clockwise, viewed from the front face | | | | | |
| Recommended values | | | | | | | |
| 27 Speed up to | $n_{e \text{ max.}}$ | 8 000 | 8 000 | 8 000 | 8 000 | 8 000 | rpm |
| 28 Torque up to | $M_{e \text{ max.}}$ | 2 | 2 | 2 | 2 | 2 | mNm |
| 29 Current up to (thermal limits) | $I_{e \text{ max.}}$ | 1,250 | 0,450 | 0,400 | 0,250 | 0,140 | A |

Orientation with respect to motor terminals not defined

