

DC-Micromotors

Graphite Commutation

120 mNm
85 W

Series 3272 ... CR

| Values at 22°C and nominal voltage | 3272 G | 012 CR | 018 CR | 024 CR | 036 CR | 048 CR | | |
|---------------------------------------------------------|-------------------------|----------|---------------------------------------|--------|--------|--------|-------|---------------------------------|
| 1 Nominal voltage | U_N | | 12 | 18 | 24 | 36 | 48 | V |
| 2 Terminal resistance | R | | 0,2 | 0,42 | 0,82 | 1,67 | 3,35 | Ω |
| 3 Efficiency, max. | η_{max} | | 85 | 87 | 87 | 88 | 88 | % |
| 4 No-load speed | n_0 | | 5 400 | 5 700 | 5 500 | 5 800 | 5 500 | min ⁻¹ |
| 5 No-load current, typ. (with shaft \varnothing 5 mm) | I_0 | | 0,191 | 0,135 | 0,095 | 0,069 | 0,048 | A |
| 6 Stall torque | M_H | | 1 192 | 1 225 | 1 188 | 1 250 | 1 177 | mNm |
| 7 Friction torque | M_R | | 3,9 | 3,9 | 3,9 | 4 | 3,9 | mNm |
| 8 Speed constant | k_n | | 459 | 324 | 230 | 162 | 115 | min ⁻¹ /V |
| 9 Back-EMF constant | k_E | | 2,18 | 3,09 | 4,35 | 6,18 | 8,7 | mV/min ⁻¹ |
| 10 Torque constant | k_M | | 20,8 | 29,5 | 41,6 | 59 | 83,3 | mNm/A |
| 11 Current constant | k_I | | 0,048 | 0,034 | 0,024 | 0,017 | 0,012 | A/mNm |
| 12 Slope of n-M curve | $\Delta n / \Delta M$ | | 4,4 | 4,6 | 4,5 | 4,6 | 4,6 | min ⁻¹ /mNm |
| 13 Rotor inductance | L | | 45 | 95 | 185 | 370 | 740 | μ H |
| 14 Mechanical time constant | τ_m | | 3,1 | 3 | 3 | 3 | 2,9 | ms |
| 15 Rotor inertia | J | | 67 | 60 | 63 | 62 | 60 | gcm ² |
| 16 Angular acceleration | α_{max} | | 178 | 204 | 189 | 202 | 196 | $\cdot 10^3$ rad/s ² |
| 17 Thermal resistance | R_{th1} / R_{th2} | 2,3 / 7 | | | | | | K/W |
| 18 Thermal time constant | τ_{w1} / τ_{w2} | 40 / 850 | | | | | | s |
| 19 Operating temperature range: | | | | | | | | |
| – motor | | | -30 ... +125 | | | | | °C |
| – winding, max. permissible | | | +155 | | | | | °C |
| 20 Shaft bearings | | | ball bearings, preloaded | | | | | |
| 21 Shaft load max.: | | | | | | | | |
| – with shaft diameter | | | 5 | | | | | mm |
| – radial at 3 000 min ⁻¹ (3 mm from bearing) | | | 50 | | | | | N |
| – axial at 3 000 min ⁻¹ | | | 5 | | | | | N |
| – axial at standstill | | | 50 | | | | | N |
| 22 Shaft play: | | | | | | | | |
| – radial | \leq | 0,015 | | | | | | mm |
| – axial | $=$ | 0 | | | | | | mm |
| 23 Housing material | | | steel, black coated | | | | | |
| 24 Mass | | | 312 | | | | | g |
| 25 Direction of rotation | | | clockwise, viewed from the front face | | | | | |
| 26 Speed up to | n_{max} | | 6 000 | | | | | min ⁻¹ |
| 27 Number of pole pairs | | | 1 | | | | | |
| 28 Magnet material | | | NdFeB | | | | | |

Rated values for continuous operation

| | | | | | | | | |
|----------------------------------|-------|--|-------|-------|-------|-------|-------|-------------------|
| 29 Rated torque | M_N | | 75 | 102 | 119 | 119 | 120 | mNm |
| 30 Rated current (thermal limit) | I_N | | 4 | 4 | 3,5 | 2,4 | 1,7 | A |
| 31 Rated speed | n_N | | 5 110 | 5 470 | 5 150 | 5 560 | 5 180 | min ⁻¹ |

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



