

DC-Micromotors

Graphite Commutation

19 mNm
24 W

Series 2342 ... CR

| Values at 22°C and nominal voltage | 2342 S | 006 CR | 012 CR | 018 CR | 024 CR | 036 CR | 048 CR | |
|---|-------------------------|---------------------------------------|--------|--------|--------|--------|--------|---------------------------------|
| 1 Nominal voltage | U_N | 6 | 12 | 18 | 24 | 36 | 48 | V |
| 2 Terminal resistance | R | 0,4 | 1,9 | 4,1 | 7,1 | 15,9 | 31,2 | Ω |
| 3 Efficiency, max. | η_{max} | 81 | 80 | 81 | 81 | 81 | 81 | % |
| 4 No-load speed | n_0 | 9 000 | 8 100 | 8 000 | 8 500 | 8 100 | 8 000 | min ⁻¹ |
| 5 No-load current, typ. (with shaft \varnothing 3 mm) | I_0 | 0,17 | 0,075 | 0,048 | 0,038 | 0,024 | 0,017 | A |
| 6 Stall torque | M_H | 87,2 | 80 | 86,5 | 85,4 | 91,4 | 84,4 | mNm |
| 7 Friction torque | M_R | 0,98 | 1 | 0,99 | 0,99 | 0,99 | 0,95 | mNm |
| 8 Speed constant | k_n | 1 650 | 713 | 462 | 366 | 231 | 170 | min ⁻¹ /V |
| 9 Back-EMF constant | k_E | 0,604 | 1,4 | 2,16 | 2,73 | 4,34 | 5,87 | mV/min ⁻¹ |
| 10 Torque constant | k_M | 5,77 | 13,4 | 20,7 | 26,1 | 41,4 | 56,1 | mNm/A |
| 11 Current constant | k_I | 0,173 | 0,075 | 0,048 | 0,038 | 0,024 | 0,018 | A/mNm |
| 12 Slope of n-M curve | $\Delta n / \Delta M$ | 103 | 101 | 92,5 | 99,5 | 88,6 | 94,8 | min ⁻¹ /mNm |
| 13 Rotor inductance | L | 13,5 | 65 | 150 | 265 | 590 | 1 050 | μ H |
| 14 Mechanical time constant | τ_m | 6 | 6 | 6 | 6 | 6 | 6 | ms |
| 15 Rotor inertia | J | 5,6 | 5,7 | 6,2 | 5,8 | 6,5 | 6 | gcm ² |
| 16 Angular acceleration | α_{max} | 160 | 140 | 140 | 150 | 140 | 140 | $\cdot 10^3$ rad/s ² |
| 17 Thermal resistance | R_{th1} / R_{th2} | 3 / 15 | | | | | | K/W |
| 18 Thermal time constant | τ_{w1} / τ_{w2} | 6,5 / 490 | | | | | | s |
| 19 Operating temperature range: | | | | | | | | |
| – motor | | -30 ... +100 | | | | | | °C |
| – winding, max. permissible | | +125 | | | | | | °C |
| 20 Shaft bearings | | ball bearings, preloaded | | | | | | |
| 21 Shaft load max.: | | | | | | | | |
| – with shaft diameter | | 3 | | | | | | mm |
| – radial at 3 000 min ⁻¹ (3 mm from bearing) | | 20 | | | | | | N |
| – axial at 3 000 min ⁻¹ | | 2 | | | | | | N |
| – axial at standstill | | 20 | | | | | | N |
| 22 Shaft play: | | | | | | | | |
| – radial | \leq | 0,015 | | | | | | mm |
| – axial | $=$ | 0 | | | | | | mm |
| 23 Housing material | | steel, black coated | | | | | | |
| 24 Mass | | 88 | | | | | | g |
| 25 Direction of rotation | | clockwise, viewed from the front face | | | | | | |
| 26 Speed up to | n_{max} | 11 000 | | | | | | min ⁻¹ |
| 27 Number of pole pairs | | 1 | | | | | | |
| 28 Magnet material | | NdFeB | | | | | | |
| Rated values for continuous operation | | | | | | | | |
| 29 Rated torque | M_N | 14 | 17 | 18 | 17 | 19 | 18 | mNm |
| 30 Rated current (thermal limit) | I_N | 2,9 | 1,5 | 1 | 0,78 | 0,53 | 0,38 | A |
| 31 Rated speed | n_N | 7 140 | 6 090 | 6 040 | 6 470 | 6 160 | 5 910 | 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.



