

DC-Micromotors

Precious Metal Commutation

0,7 mNm
1,2 W

Series 0816 ... SR

Values at 22°C and nominal voltage	0816 K	003 SR	006 SR	009 SR	012 SR	
1 Nominal voltage	U_N	3	6	9	12	V
2 Terminal resistance	R	5,4	21,2	47	101,8	Ω
3 Efficiency, max.	η_{max}	69	69	69	67	%
4 No-load speed	n_0	13 250	13 500	13 500	12 600	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 1 mm)	I_0	0,016	0,0083	0,0057	0,0039	A
6 Stall torque	M_H	1,15	1,13	1,15	1	mNm
7 Friction torque	M_R	0,034	0,034	0,035	0,034	mNm
8 Speed constant	k_n	4 526	2 318	1 543	1 085	min ⁻¹ /V
9 Back-EMF constant	k_E	0,221	0,431	0,648	0,922	mV/min ⁻¹
10 Torque constant	k_M	2,11	4,12	6,19	8,8	mNm/A
11 Current constant	k_I	0,474	0,243	0,162	0,114	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	11 475	11 904	11 714	12 553	min ⁻¹ /mNm
13 Rotor inductance	L	53	217	507	1 033	μ H
14 Mechanical time constant	τ_m	6,1	6,5	6,2	6,5	ms
15 Rotor inertia	J	0,051	0,052	0,051	0,049	gcm ²
16 Angular acceleration	α_{max}	229	219	227	203	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	20 / 48				K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	4,2 / 242				s
19 Operating temperature range:						
– motor		-30 ... +85 (optional version	-30 ... +125)			°C
– winding, max. permissible		+85 (optional version	+125)			°C
20 Shaft bearings		sintered bearings				
21 Shaft load max.:						
– with shaft diameter		1				mm
– radial at 3 000 min ⁻¹ (1,5 mm from bearing)		0,7				N
– axial at 3 000 min ⁻¹		0,1				N
– axial at standstill		20				N
22 Shaft play:						
– radial	\leq	0,02				mm
– axial	\leq	0,2				mm
23 Housing material		steel, nickel plated				
24 Mass		4,5				g
25 Direction of rotation		clockwise, viewed from the front face				
26 Speed up to	n_{max}	16 000				min ⁻¹
27 Number of pole pairs		1				
28 Magnet material		NdFeB				
Rated values for continuous operation						
29 Rated torque	M_N	0,7	0,69	0,69	0,61	mNm
30 Rated current (thermal limit)	I_N	0,37	0,19	0,13	0,077	A
31 Rated speed	n_N	2 540	2 660	2 790	2 500	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 0%.

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.



