

DC-Micromotors

Graphite Commutation

12 mNm
11 W

Series 2237 ... CXR

Values at 22°C and nominal voltage	2237 S	006 CXR	012 CXR	018 CXR	024 CXR	036 CXR	048 CXR		
1 Nominal voltage	U_N	6	12	18	24	36	48	V	
2 Terminal resistance	R	0,85	3,92	8,5	15,7	33	62,8	Ω	
3 Efficiency, max.	η_{max}	68,1	70,8	72,2	72,6	73,6	73,5	%	
4 No-load speed	n_0	6 900	6 800	7 000	6 900	7 200	7 000	min ⁻¹	
5 No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,124	0,058	0,039	0,029	0,02	0,015	A	
6 Stall torque	M_H	47,2	45,7	47,1	46,6	48,7	47,1	mNm	
7 Friction torque	M_R	0,92	0,92	0,92	0,92	0,92	0,92	mNm	
8 Speed constant	k_n	1 283	601	409	301	207	150	min ⁻¹ /V	
9 Back-EMF constant	k_E	0,78	1,66	2,44	3,33	4,83	6,65	mV/min ⁻¹	
10 Torque constant	k_M	7,44	15,9	23,3	31,8	46,2	63,5	mNm/A	
11 Current constant	k_I	0,134	0,063	0,043	0,032	0,022	0,016	A/mNm	
12 Slope of n-M curve	$\Delta n / \Delta M$	146	148	149	149	148	149	min ⁻¹ /mNm	
13 Rotor inductance	L	35	150	320	590	1 240	2 340	μ H	
14 Mechanical time constant	τ_m	5	5	5	5	5	5	ms	
15 Rotor inertia	J	3,1	3,1	3,1	3,1	3,1	3,1	gcm ²	
16 Angular acceleration	α_{max}	152	147	152	150	157	152	$\cdot 10^3$ rad/s ²	
17 Thermal resistance	R_{th1} / R_{th2}	8 / 17						K/W	
18 Thermal time constant	τ_{w1} / τ_{w2}	13 / 500						s	
19 Operating temperature range:									
– motor		-30 ... +100						°C	
– winding, max. permissible		+125						°C	
20 Shaft bearings		sintered bearings			ball bearings, preloaded				
21 Shaft load max.:		(standard)			(optional version)				
– with shaft diameter		3			3				mm
– radial at 3 000 min ⁻¹ (3 mm from bearing)		2,5			15				N
– axial at 3 000 min ⁻¹		0,3			2				N
– axial at standstill		20			20				N
22 Shaft play:									
– radial	\leq	0,03			0,015				mm
– axial	\leq	0,15			0				mm
23 Housing material		steel, zinc galvanized and passivated							
24 Mass		68						g	
25 Direction of rotation		clockwise, viewed from the front face							
26 Speed up to	n_{max}	8 000						min ⁻¹	
27 Number of pole pairs		1							
28 Magnet material		NdFeB							

Rated values for continuous operation

29 Rated torque	M_N	11	12	12	12	12	12	mNm
30 Rated current (thermal limit)	I_N	1,9	0,9	0,61	0,46	0,31	0,23	A
31 Rated speed	n_N	4 750	4 450	4 700	4 560	4 880	4 630	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.



