

DC-Micromotors

Graphite Commutation

4,9 mNm
5,3 W

Series 1727 ... CXR

Values at 22°C and nominal voltage		1727 U	006 CXR	012 CXR	024 CXR	
1	Nominal voltage	U_N	6	12	24	V
2	Terminal resistance	R	3,06	13,78	57,6	Ω
3	Efficiency, max.	η_{max}	63	65	66	%
4	No-load speed	n_0	7 300	7 600	7 600	min ⁻¹
5	No-load current, typ. (with shaft \varnothing 2 mm)	I_0	0,052	0,026	0,013	A
6	Stall torque	M_H	12,2	11,4	11,4	mNm
7	Friction torque	M_R	0,36	0,36	0,36	mNm
8	Speed constant	k_n	1 362	681	332	min ⁻¹ /V
9	Back-EMF constant	k_E	0,734	1,47	3,01	mV/min ⁻¹
10	Torque constant	k_M	7,01	14,03	28,73	mNm/A
11	Current constant	k_I	0,143	0,071	0,035	A/mNm
12	Slope of n-M curve	$\Delta n / \Delta M$	595	668	666	min ⁻¹ /mNm
13	Rotor inductance	L	80	320	1 440	μ H
14	Mechanical time constant	τ_m	8,1	8,4	8,4	ms
15	Rotor inertia	J	1,3	1,2	1,2	gcm ²
16	Angular acceleration	α_{max}	94	95	95	$\cdot 10^3$ rad/s ²
17	Thermal resistance	R_{th1} / R_{th2}	9,1 / 28,3			K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	7 / 340			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		2			mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		8			N
	– axial at 3 000 min ⁻¹		0,8			N
	– axial at standstill		10			N
22	Shaft play:					
	– radial	\leq	0,015			mm
	– axial	$=$	0			mm
23	Housing material		steel, nickel plated			
24	Mass		28			g
25	Direction of rotation		clockwise, viewed from the front face			
26	Speed up to	n_{max}	9 000			min ⁻¹
27	Number of pole pairs		1			
28	Magnet material		NdFeB			

Rated values for continuous operation

29	Rated torque	M_N	4,9	4,7	4,7	mNm
30	Rated current (thermal limit)	I_N	0,84	0,41	0,2	A
31	Rated speed	n_N	2 910	2 810	2 730	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.



