DC-Micromotors

Graphite Commutation

5,1 mNm

For combination with
Gearheads:
15/10, 16/7, 17/1, 20/1
Encoders:
IE2-1024, IE2-16

Series 1727 ... C

Values at 22°C and nominal voltage		1727 U		006 C	012 C	024 C	
1	Nominal voltage	U_N		6	12	24	V
2	Terminal resistance	R		3	13,8	57,6	Ω
3	Output power	$P_{2nom.}$		2,37	2,25	2,25	W
4	Efficiency, max.	$\eta_{max.}$		70	70	70	%
5	No-load speed	n_0		7 800	7 800	7 800	rpm
6	No-load current, typ. (with shaft ø 2 mm)	I_0		0,055	0,026	0,013	A
7	Stall torque	M_H		11,6	11	11	mNm
8	Friction torque	M_R		0,36	0,35	0,36	mNm
9	Speed constant	k_n		1 460	700	343	rpm/V
10	Back-EMF constant	k_E		0,684	1,43	2,92	mV/rpm
11	Torque constant	k_M		6,53	13,6	27,9	mNm/A
12	Current constant	k_I		0,153	0,073	0,036	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$		672	709	709	rpm/mNm
14	Rotor inductance	L		80	320	1 440	µH
15	Mechanical time constant	τ_m		9	9	9	ms
16	Rotor inertia	J		1,3	1,2	1,2	gcm²
17	Angular acceleration	$\alpha_{max.}$		91	91	91	·10³rad/s²
18	Thermal resistance	R_{th1} / R_{th2}	5 / 24				K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	4,2 / 254				s
20	Operating temperature range:						
	– motor		-30 ... +100				°C
	– winding, max. permissible		+125				°C
21	Shaft bearings		ball bearings, preloaded				
22	Shaft load max.:						
	– with shaft diameter		2				mm
	– radial at 3 000 rpm (3 mm from bearing)		8				N
	– axial at 3 000 rpm		0,8				N
	– axial at standstill		10				N
23	Shaft play						
	– radial	≤	0,015				mm
	– axial	=	0				mm
24	Housing material		steel, black coated				
25	Mass		28				g
26	Direction of rotation		clockwise, viewed from the front face				
27	Speed up to	$n_{max.}$	9 000				rpm
28	Number of pole pairs		1				
29	Magnet material		NdFeB				

Rated values for continuous operation							
30	Rated torque	M_N		5,1	5	5	mNm
31	Rated current (thermal limit)	I_N		0,95	0,45	0,22	A
32	Rated speed	n_N		2 600	2 500	2 500	rpm

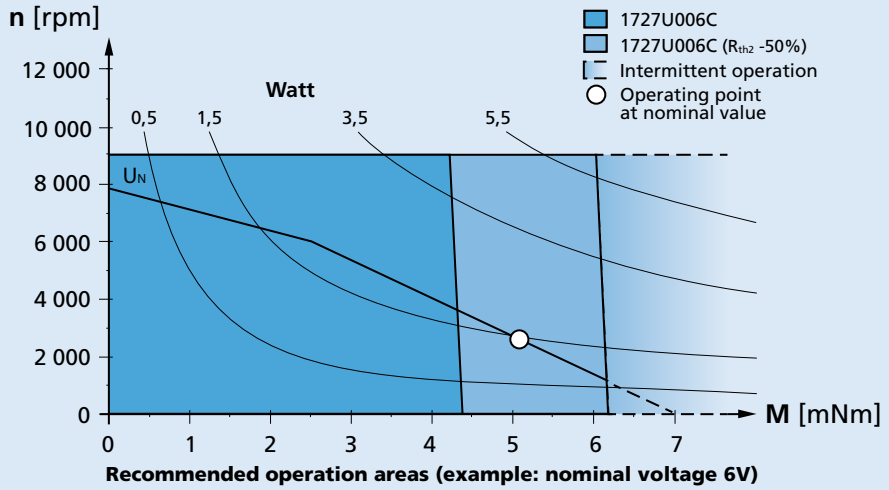
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

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.

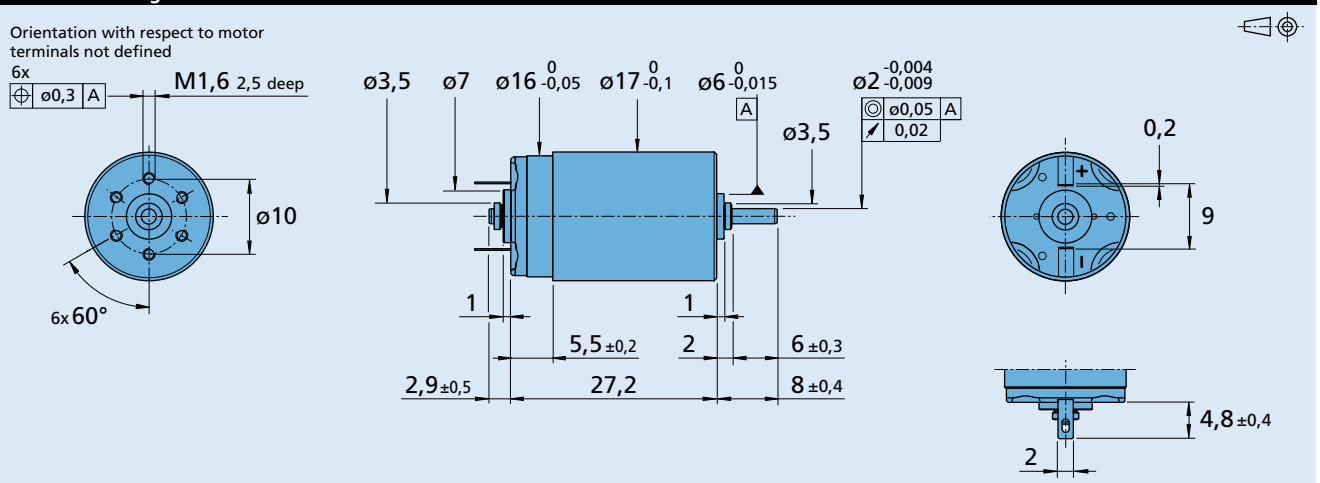
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

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.



Recommended operation areas (example: nominal voltage 6V)

Dimensional drawing



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