

# DC-Micromotors

## Graphite Commutation

5,1 mNm  
5,5 W

### 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	$\Omega$
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	min <sup>-1</sup>
6	No-load current, typ. (with shaft $\varnothing$ 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	min <sup>-1</sup> /V
10	Back-EMF constant	$k_E$	0,684	1,43	2,92	mV/min <sup>-1</sup>
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	min <sup>-1</sup> /mNm
14	Rotor inductance	L	80	320	1 440	$\mu$ H
15	Mechanical time constant	$\tau_m$	9	9	9	ms
16	Rotor inertia	J	1,3	1,2	1,2	gcm <sup>2</sup>
17	Angular acceleration	$\alpha_{max.}$	91	91	91	$\cdot 10^3$ rad/s <sup>2</sup>
18	Thermal resistance	$R_{th1} / R_{th2}$	5 / 24			K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	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 min <sup>-1</sup> (3 mm from bearing)		8			N
	– axial at 3 000 min <sup>-1</sup>		0,8			N
	– axial at standstill		10			N
23	Shaft play					
	– radial	$\leq$	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			min <sup>-1</sup>
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
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	min <sup>-1</sup>

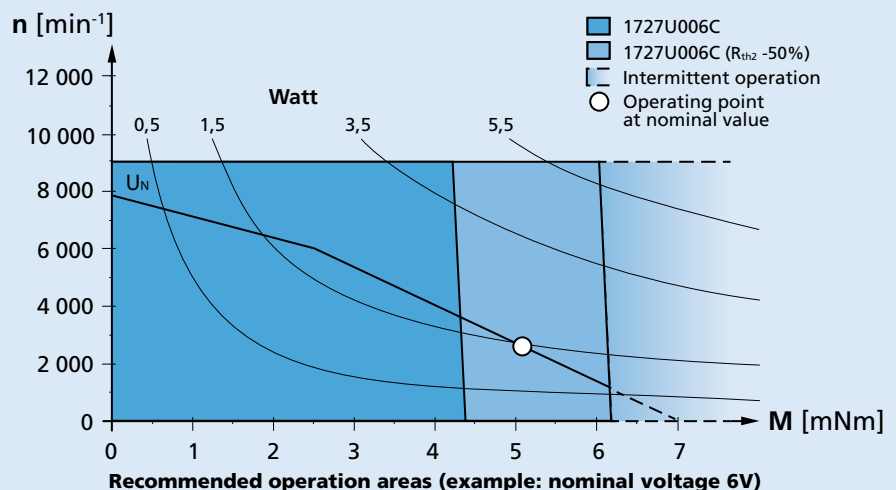
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**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.

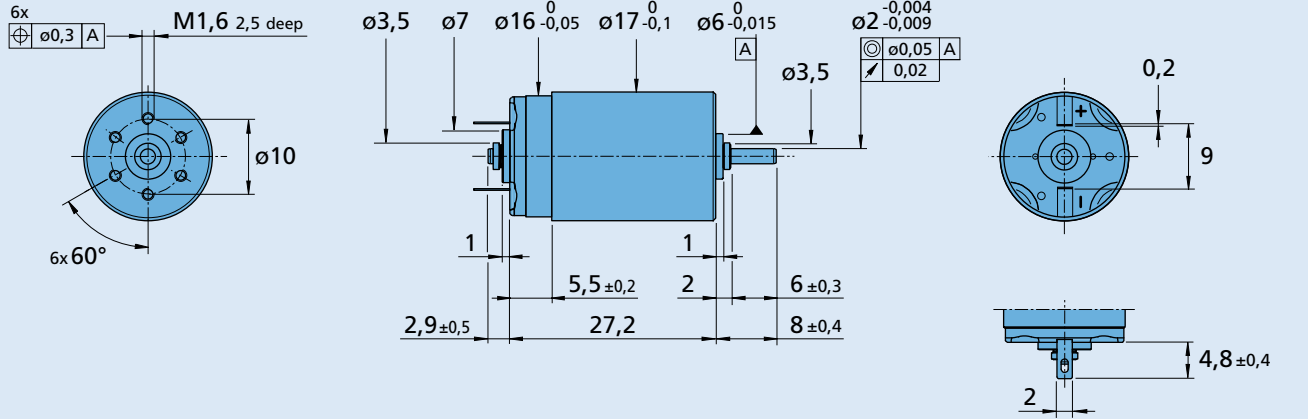
The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th2}$  50% reduced).

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.



### Dimensional drawing

Orientation with respect to motor terminals not defined



1727 U ... C

### Options

Example product designation: **1727U012C-217**

Option	Type	Description
L	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-)
4924	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-)
X4924	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-)
4925	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-), with connector AMP 179228-2
X4925	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-), with connector AMP 179228-2
Y4925	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-), with connector AMP 179228-2
F	Single Leads	For motors with single leads (PTFE), length 150 mm, red (+) / black (-)
123	Encoder combination	Second shaft end for combination with encoder IE2
217	Bearings	Motor with sintered bearings

### Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics
15/10 16/7 17/1 20/1	IE2-16 IE2-1024	SC 1801 MCDC 3002