

DC-Micromotors

Precious Metal Commutation

0,72 mNm
2 W

Series 1219 ... G

Values at 22°C and nominal voltage	1219 N	4,5 G	006 G	012 G	015 G	
1 Nominal voltage	U_N	4,5	6	12	15	V
2 Terminal resistance	R	10,7	17,6	69	131	Ω
3 Efficiency, max.	η_{max}	74	73	72	70	%
4 No-load speed	n_0	15 300	16 000	16 000	16 200	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 0,8 mm)	I_0	0,008	0,007	0,004	0,003	A
6 Stall torque	M_H	1,14	1,17	1,19	0,96	mNm
7 Friction torque	M_R	0,02	0,02	0,03	0,03	mNm
8 Speed constant	k_n	3 460	2 721	1 364	1 109	min ⁻¹ /V
9 Back-EMF constant	k_E	0,289	0,368	0,733	0,902	mV/min ⁻¹
10 Torque constant	k_M	2,76	3,51	7	8,61	mNm/A
11 Current constant	k_I	0,362	0,285	0,143	0,116	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	13 413	13 642	13 447	16 875	min ⁻¹ /mNm
13 Rotor inductance	L	150	300	1 200	1 600	μ H
14 Mechanical time constant	τ_m	20	20	18	19	ms
15 Rotor inertia	J	0,14	0,14	0,13	0,11	gcm ²
16 Angular acceleration	α_{max}	81	84	92	87	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	17 / 48				K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	3,5 / 386				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		0,8				mm
– radial at 3 000 min ⁻¹ (1,5 mm from bearing)		0,5				N
– axial at 3 000 min ⁻¹		0,1				N
– axial at standstill		20				N
22 Shaft play:						
– radial	\leq	0,03				mm
– axial	\leq	0,2				mm
23 Housing material		steel, nickel plated				
24 Mass		11				g
25 Direction of rotation		clockwise, viewed from the front face				
26 Speed up to	n_{max}	19 000				min ⁻¹
27 Number of pole pairs		1				
28 Magnet material		AlNiCo				
Rated values for continuous operation						
29 Rated torque	M_N	0,72	0,71	0,7	0,62	mNm
30 Rated current (thermal limit)	I_N	0,27	0,21	0,11	0,077	A
31 Rated speed	n_N	3 120	3 870	4 040	2 770	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.



