DC-Micromotors

Precious Metal Commutation

2,1 Watt

For combination with:
Gearheads: 20/1, 22E, 22/2, 22/5, 22/6, 23/1, 38/3
Encoders: 20/21B, 03B, 10/09B, 10/09BP, 5500, 5540

Series 2230 ... S

		2230 T	003 S	006 S	012 S	015 S	024 S	040 S	
1	Nominal voltage	U_N	3	6	12	15	24	40	Volt
2	Terminal resistance	R	0,6	3,0	10,8	21,0	50,0	193	Ω
3	Output power	$P_{2\ max.}$	3,69	2,94	3,27	2,63	2,82	2,01	W
4	Efficiency	$\eta_{max.}$	83	82	83	82	81	78	%
5	No-load speed	n_o	9 600	9 300	9 500	8 400	9 000	8 200	rpm
6	No-load current (with shaft ø 1,5 mm)	I_o	0,040	0,019	0,010	0,007	0,005	0,003	A
7	Stall torque	M_H	14,70	12,10	13,20	11,90	12,00	9,37	mNm
8	Friction torque	M_R	0,12	0,12	0,12	0,12	0,13	0,14	mNm
9	Speed constant	k_n	3 230	1 560	799	566	379	208	rpm/V
10	Back-EMF constant	k_E	0,310	0,639	1,250	1,770	2,640	4,810	mV/rpm
11	Torque constant	k_M	2,96	6,10	12,00	16,90	25,20	45,90	mNm/A
12	Current constant	k_I	0,338	0,164	0,084	0,059	0,040	0,022	A/mNm
13	Slope of n-M curve	Δn/ΔM	653	769	720	706	750	875	rpm/mNm
14	Rotor inductance	L	35	150	420	900	2 200	8 000	µH
15	Mechanical time constant	τ_m	25	20	20	20	19	22	ms
16	Rotor inertia	J	3,70	2,50	2,70	2,70	2,40	2,40	gcm²
17	Angular acceleration	$\alpha_{max.}$	40	49	50	44	50	39	$\cdot 10^3$rad/s²
18	Thermal resistance	$R_{th\,1}$ / $R_{th\,2}$	4 / 28						K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	4,5 / 602						s
20	Operating temperature range:								
	– motor		– 30 ... + 85 (optional – 55 ... + 125)						°C
	– rotor, max. permissible		+ 125						°C
21	Shaft bearings		sintered bronze sleeves		ball bearings		ball bearings, preloaded		
22	Shaft load max.:		(standard)		(optional)		(optional)		
	– with shaft diameter		1,5		2,0		2,0		mm
	– radial at 3000 rpm (3 mm from bearing)		1,2		8		8		N
	– axial at 3000 rpm		0,2		0,8		0,8		N
	– axial at standstill		20		10		10		N
23	Shaft play:								
	– radial	≤	0,03		0,015		0,015		mm
	– axial	≤	0,2		0,2		0		mm
24	Housing material		steel, zinc galvanized and passivated						
25	Weight		50						g
26	Direction of rotation		clockwise, viewed from the front face						
Recommended values									
27	Speed up to	$n_{e\ max.}$	8 000	8 000	8 000	8 000	8 000	8 000	rpm
28	Torque up to	$M_{e\ max.}$	2,5	2,5	2,5	2,5	2,5	2,5	mNm
29	Current up to (thermal limits)	$I_{e\ max.}$	1,940	0,870	0,450	0,320	0,210	0,100	A

Orientation with respect to motor terminals not defined