DC-Micromotors

Precious Metal Commutation

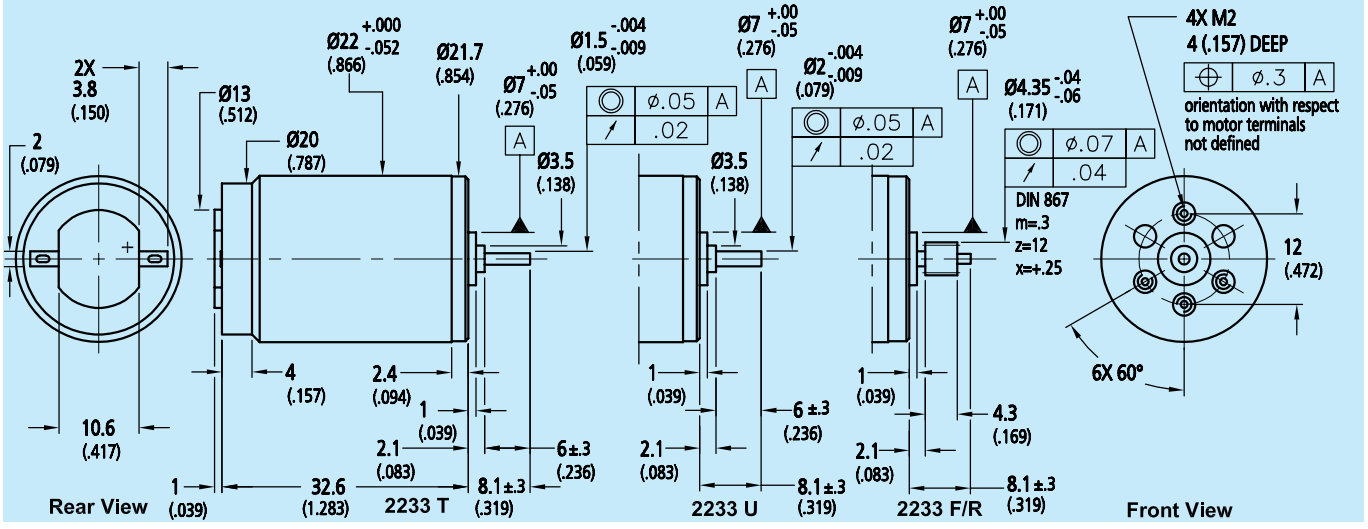
2.5 Watt

For combination with:
Gearheads: 20/1, 22E, 22/2, 22/5, 22/6, 23/1, 38/3
Encoders: HE, 5500, 5540
DC-Motor-Tacho Combinations: 2251 ... S

Series 2233 ... S

See beginning of the Motor Section for Ordering Information

		2233 T	4.5 S	006 S	012 S	018 S	024 S	030 S	
1	Nominal voltage	U_N	4.5	6	12	18	24	30	Volt
2	Terminal resistance	R	1.3	2.9	9.7	25.0	57.0	105	Ω
3	Output power	$P_{2\ max.}$	3.85	3.06	3.66	3.18	2.47	2.08	W
4	Efficiency	$\eta_{max.}$	86	85	84	82	80	79	%
5	No-load speed	n_o	8,000	8,000	8,500	8,700	8,800	9,300	rpm
6	No-load current (with shaft ø 0.06 in)	I_o	0.020	0.013	0.009	0.007	0.005	0.004	A
7	Stall torque	M_H	2.61	2.07	2.32	1.97	1.52	1.21	oz-in
8	Friction torque	M_R	0.016	0.013	0.017	0.020	0.018	0.017	oz-in
9	Speed constant	k_n	1,790	1,340	714	488	371	314	rpm/V
10	Back-EMF constant	k_E	0.559	0.745	1.400	2.050	2.690	3.180	mV/rpm
11	Torque constant	k_M	0.756	1.008	1.898	2.776	3.639	4.305	oz-in/A
12	Current constant	k_I	1.323	0.992	0.527	0.360	0.275	0.232	A/oz-in
13	Slope of n-M curve	$\Delta n/\Delta M$	3,065	3,865	3,664	4,416	5,789	7,686	rpm/oz-in
14	Rotor inductance	L	70	130	400	600	1,600	2,200	µH
15	Mechanical time constant	τ_m	12	11	12	14	11	12	ms
16	Rotor inertia	J	$3.682 \cdot 10^{-5}$	$2.691 \cdot 10^{-5}$	$3.115 \cdot 10^{-5}$	$2.974 \cdot 10^{-5}$	$1.841 \cdot 10^{-5}$	$1.558 \cdot 10^{-5}$	oz-in-sec²
17	Angular acceleration	$\alpha_{max.}$	70	76	74	65	84	81	$\cdot 10^3$rad/s²
18	Thermal resistance	$R_{th\,1}$ / $R_{th\,2}$	4 / 27						°C/W
19	Thermal time constant	τ_{w1} / τ_{w2}	4 / 660						s
20	Operating temperature range:								
	– motor		– 30 to +85 (– 22 to +185)						°C (°F)
	– rotor, max. permissible		+125 (+257)						°C (°F)
	Note: Special operating temperature models for		–55°C to +125°C (– 67°F to +257°F) available on request.						
21	Shaft bearings		sintered bronze sleeves		ball bearings		ball bearings, preloaded		
22	Shaft load max.:		(standard)		(optional)		(optional)		
	– with shaft diameter		0.0591		0.0787		0.0787		in
	– radial at 3,000 rpm (0.12 in from bearing)		4.32		28.80		28.80		oz
	– axial at 3,000 rpm		0.72		2.88		2.88		oz
	– axial at standstill		72		36		36		oz
23	Shaft play:								
	– radial	≤	0.0012		0.0006		0.0006		in
	– axial	≤	0.0079		0.0079		0		in
24	Housing material		steel, zinc galvanized and passivated						
25	Weight		2.15						oz
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	$M_{e\ max.}$	0.425	0.425	0.425	0.425	0.425	0.425	oz-in
29	Current up to (thermal limits)	$I_{e\ max.}$	1.340	0.900	0.490	0.300	0.200	0.140	A



For notes on technical data refer to "Technical Information". Specifications subject to change without notice. MME0701