

DC-Micromotors

Precious Metal Commutation

2.5 Watt

For combination with:
Gearheads: 23/1, 30/1, 32PG, 38/3
Encoders: HE, 5500, 5540

Series 2338 ... S

See beginning of the Motor Section for Ordering Information

	2338 S	4.5 S	006 S	009 S	012 S	018 S	024 S	
1 Nominal voltage	U_N	4.5	6	9	12	18	24	Volt
2 Terminal resistance	$R \pm 12\%$	1.4	2.6	5.7	10.0	23.5	38.0	Ω
3 Output power	$P_{2 \text{ max.}}$	3.39	3.23	3.29	3.31	3.18	3.50	W
4 Efficiency	$\eta_{\text{max.}}$	70	69	67	66	67	67	%
5 No-load speed	$n_o \pm 12\%$	7,200	7,200	7,400	7,800	7,400	7,600	rpm
6 No-load current (with shaft \varnothing 0.12 in)	$I_o \pm 50\%$	0.100	0.080	0.060	0.050	0.030	0.025	A
7 Stall torque	M_H	2.55	2.42	2.41	2.29	2.32	2.49	oz-in
8 Friction torque	M_R	0.082	0.086	0.095	0.099	0.095	0.102	oz-in
9 Speed constant	k_n	1,650	1,240	855	678	428	330	rpm/V
10 Back-EMF constant	k_E	0.606	0.804	1.170	1.470	2.340	3.030	mV/rpm
11 Torque constant	k_M	0.818	1.088	1.586	1.997	3.158	4.107	oz-in/A
12 Current constant	k_I	1.222	0.919	0.630	0.501	0.317	0.244	A/oz-in
13 Slope of n-M curve	$\Delta n / \Delta M$	2,824	2,975	3,071	3,406	3,190	3,052	rpm/oz-in
14 Rotor inductance	L	100	180	380	630	1,400	2,600	μH
15 Mechanical time constant	τ_m	20	17	17	17	17	17	ms
16 Rotor inertia	J	$6.797 \cdot 10^{-5}$	$5.523 \cdot 10^{-5}$	$5.240 \cdot 10^{-5}$	$4.815 \cdot 10^{-5}$	$5.098 \cdot 10^{-5}$	$5.381 \cdot 10^{-5}$	oz-in-sec ²
17 Angular acceleration	$\alpha_{\text{max.}}$	38	44	46	48	46	47	$\cdot 10^3 \text{ rad/s}^2$
18 Thermal resistance	R_{th1} / R_{th2}	3 / 24						$^{\circ}C/W$
19 Thermal time constant	τ_{w1} / τ_{w2}	5.7 / 645						s
20 Operating temperature range:								
– motor		– 30 to +85 (– 22 to +185)						$^{\circ}C$ ($^{\circ}F$)
– rotor, max. permissible		+125 (+257)						$^{\circ}C$ ($^{\circ}F$)
Note: Special operating temperature models for –55 $^{\circ}C$ to +125 $^{\circ}C$ (– 67 $^{\circ}F$ to +257 $^{\circ}F$) available on request.								
21 Shaft bearings		sintered bronze sleeves	ball bearings	ball bearings, preloaded				
22 Shaft load max.:		(standard)	(optional)	(optional)				
– with shaft diameter		0.1181	0.1181	0.1181				in
– radial at 3,000 rpm (0.12 in from bearing)		9	72	72				oz
– axial at 3,000 rpm		1.08	7.2	7.2				oz
– axial at standstill		72	72	72				oz
23 Shaft play:								
– radial	\leq	0.0012	0.0006	0.0006				in
– axial	\leq	0.0079	0.0079	0				in
24 Housing material		steel, zinc galvanized and passivated						
25 Weight		2.47						oz
26 Direction of rotation		clockwise, viewed from the front face						

Recommended values

27 Speed up to	$n_{e \text{ max.}}$	6,000	6,000	6,000	6,000	6,000	6,000	rpm
28 Torque up to	$M_{e \text{ max.}}$	0.566	0.566	0.566	0.566	0.566	0.566	oz-in
29 Current up to (thermal limits)	$I_{e \text{ max.}}$	1.380	1.000	0.680	0.510	0.330	0.260	A

