Electrical Specifications	Symbol	Units	05SL12	05SM12	05SH48	05LL24	05LM24	05LH24	08SM12	08SH24	08SH48	08LL12	08LH24	08LH48	10SL24	10SM24	10SH24	14SL24	14SM24	14SH24
Nominal Supply Voltage	E	Volts	12.0	12.0	48.0	24.0	24.0	24.0	12.0	24.0	48.0	12.0	24.0	48.0	24.0	24.0	24.0	24.0	24.0	24.0
No-Load Speed	S_{NL}	rpm	18,317	47,625	89,414	19,888	49,720	99,441	13,566	32,341	32,685	12,961	33,106	44,611	4,497	11,618	19,917	4,742	8,891	17,781
		(rad/s)	(1,918)	(4,987)	(9,363)	(2,083)	(5,207)	(10,413)	(1,421)	(3,387)	(3,423)	(1,357)	(3,467)	(4,672)	(471)	(1,217)	(2,086)	(497)	(931)	(1,862)
Resistance (phase-phase)	R_C	Ohms	9.22	1.43	6.32	20.46	3.30	0.83	1.24	1.06	4.23	0.74	0.46	1.12	11.69	1.79	0.65	1.91	0.51	0.21
No-Load Current	I_{NL}	Amps	0.195	0.348	0.217	0.216	0.314	0.478	0.320	0.349	0.286	0.477	0.559	0.485	0.332	0.382	0.436	0.594	0.773	1.020
Friction Torque	Tf	oz-in	0.08	0.08	0.08	0.10	0.10	0.10	0.13	0.13	0.13	0.25	0.25	0.25	0.13	0.13	0.13	0.75	0.75	0.75
		(N-m)	(5.65E-04)	(5.65E-04)	(5.65E-04)	(7.06E-04)	(7.06E-04)	(7.06E-04)	(8.83E-04)	(8.83E-04)	(8.83E-04)	(1.77E-03)	(1.77E-03)	(1.77E-03)	(8.83E-04)	(8.83E-04)	(8.83E-04)	(5.30E-03)	(5.30E-03)	(5.30E-03)
Peak Torque (At Nominal Supply Voltage)	Tstall	oz-in	1.06	2.63	5.40	1.76	4.36	8.70	10.67	21.79	22.08	18.71	48.81	61.22	14.20	35.88	57.82	82.49	163.29	200.27
		(N-m)	(7.48E-03)	(1.86E-02)	(3.81E-02)	(1.24E-02)	(3.08E-02)	(6.14E-02)	(7.53E-02)	(1.54E-01)	(1.56E-01)	(1.32E-01)	(3.45E-01)	(4.32E-01)	(1.00E-01)	(2.53E-01)	(4.08E-01)	(5.82E-01)	(1.15E+00)	(1.41E+00)
Continuous Torque, motor (Max.) [1]	Tcs_M	oz-in	0.56	0.55	0.57	0.75	0.74	0.74	2.36	2.19	2.19	3.72	3.76	3.63	6.45	6.38	6.19	18.13	18.63	14.59
		(N-m)	(3.94E-03)	(3.86E-03)	(4.03E-03)	(5.27E-03)	(5.25E-03)	(5.24E-03)	(1.67E-02)	(1.54E-02)	(1.54E-02)	(2.63E-02)	(2.66E-02)	(2.56E-02)	(4.56E-02)	(4.51E-02)	(4.37E-02)	(1.28E-01)	(1.32E-01)	(1.03E-01)
Continuous Torque, with heat sink (Max.) [2]	Tcs_{HS}	oz-in	0.60	0.59	0.62	0.82	0.81	0.81	2.62	2.42	2.43	4.31	4.36	4.20	7.36	7.28	7.06	20.93	21.51	16.84
		(N-m)	(4.26E-03)	(4.17E-03)	(4.35E-03)	(5.77E-03)	(5.75E-03)	(5.74E-03)	(1.85E-02)	(1.71E-02)	(1.71E-02)	(3.04E-02)	(3.08E-02)	(2.97E-02)	(5.20E-02)	(5.14E-02)	(4.99E-02)	(1.48E-01)	(1.52E-01)	(1.19E-01)
Back EMF Constant	K_E	V/krpm	0.628	0.241	0.531	1.156	0.463	0.231	0.848	0.727	1.453	0.887	0.710	1.065	5.225	2.023	1.180	4.956	2.643	1.322
		(V/rad/s)	(6.00E-03)	(2.30E-03)	(5.10E-03)	(1.10E-02)	(4.40E-03)	(2.20E-03)	(8.10E-03)	(6.90E-03)	(1.39E-02)	(8.50E-03)	(6.80E-03)	(1.02E-02)	(4.99E-02)	(1.93E-02)	(1.13E-02)	(4.73E-02)	(2.52E-02)	(1.26E-02)
Torque Constant	K_T	oz-in/A	0.849	0.327	0.718	1.564	0.626	0.313	1.146	0.983	1.965	1.200	0.960	1.440	7.067	2.735	1.596	6.703	3.575	1.787
		(N-m/A)	(6.01E-03)	(2.31E-03)	(5.09E-03)	(1.11E-02)	(4.43E-03)	(2.22E-03)	(8.12E-03)	(6.96E-03)	(1.39E-02)	(8.50E-03)	(6.80E-03)	(1.02E-02)	(5.01E-02)	(1.94E-02)	(1.13E-02)	(4.75E-02)	(2.53E-02)	(1.27E-02)
Velocity Constant	$1/K_E$	krpm/V	1.593	4.141	1.882	0.865	2.162	4.324	1.180	1.376	0.688	1.127	1.409	0.939	0.191	0.494	0.848	0.202	0.378	0.757
		(rad/s/V)	(1.67E+02)	(4.35E+02)	(1.96E+02)	(9.09E+01)	(2.27E+02)	(4.55E+02)	(1.23E+02)	(1.45E+02)	(7.19E+01)	(1.18E+02)	(1.47E+02)	(9.80E+01)	(2.00E+01)	(5.18E+01)	(8.85E+01)	(2.11E+01)	(3.97E+01)	(7.94E+01)
Motor Constant [3]	Km	oz-in watts	0.280	0.274	0.286	0.346	0.344	0.344	1.031	0.955	0.956	1.397	1.412	1.362	2.067	2.044	1.981	4.851	4.984	3.903
Peak Current (At Nominal Supply Voltage) [3]	Ipk	Amps	1.247	8.067	7.515	1.124	6.969	27.809	9.303	22.179	11.233	15.590	50.841	42.513	2.010	13.116	36.233	12.308	45.680	112.046
Max. Continuous Current, motor [1]	Ics_M	Amps	0.658	1.673	0.795	0.477	1.188	2.373	2.059	2.224	1.113	3.103	3.920	2.521	0.913	2.332	3.877	2.705	5.211	8.161
Max. Continuous Current, with heat sink [2]	Ics_{HS}	Amps	0.711	1.807	0.858	0.523	1.301	2.599	2.284	2.467	1.235	3.593	4.540	2.920	1.042	2.662	4.425	3.123	6.017	9.424
Inductance	L	mH	0.373	0.055	0.267	0.474	0.076	0.019	0.100	0.073	0.294	0.078	0.050	0.113	1.884	0.282	0.096	0.745	0.212	0.053
Electrical Time Constant	τ_E	ms	0.040	0.039	0.042	0.023	0.023	0.023	0.081	0.069	0.069	0.106	0.108	0.101	0.161	0.158	0.148	0.390	0.412	0.253
Mechanical Specifications	**Symbol**	**Units**	**05SL12**	**05SM12**	**05SH48**	**05LL24**	**05LM24**	**05LH24**	**08SM12**	**08SH24**	**08SH48**	**08LL12**	**08LH24**	**08LH48**	**10SL24**	**10SM24**	**10SH24**	**14SL24**	**14SM24**	**14SH24**
Rotor Inertia	Jm	oz-in/s^2	4.00E-06	4.00E-06	4.00E-06	5.00E-06	5.00E-06	5.00E-06	2.80E-05	2.80E-05	2.80E-05	3.70E-05	3.70E-05	3.70E-05	7.00E-05	7.00E-05	7.00E-05	2.90E-04	2.90E-04	2.90E-04
		(kg-m^2)	(2.82E-08)	(2.82E-08)	(2.82E-08)	(3.53E-08)	(3.53E-08)	(3.53E-08)	(1.98E-07)	(1.98E-07)	(1.98E-07)	(2.61E-07)	(2.61E-07)	(2.61E-07)	(4.94E-07)	(4.94E-07)	(4.94E-07)	(2.05E-06)	(2.05E-06)	(2.05E-06)
Mechanical Time Constant	τ_M	ms	7.248	7.572	6.937	5.923	5.971	5.986	3.729	4.351	4.341	2.684	2.628	2.824	2.321	2.374	2.525	1.746	1.653	2.696
Thermal Impedance, motor [1]	Rth_M	°F/watt	69.80	69.80	69.80	64.40	64.40	64.40	60.80	60.80	60.80	53.24	53.24	53.24	47.48	47.48	47.48	42.80	42.80	42.80
		(°C/watt)	(21.00)	(21.00)	(21.00)	(18.00)	(18.00)	(18.00)	(16.00)	(16.00)	(16.00)	(11.80)	(11.80)	(11.80)	(8.60)	(8.60)	(8.60)	(6.00)	(6.00)	(6.00)
Thermal Impedance, with heat sink [2]	Rth_{HS}	°F/watt	64.40	64.40	64.40	59.00	59.00	59.00	55.40	55.40	55.40	47.84	47.84	47.84	43.88	43.88	43.88	40.10	40.10	40.10
		(°C/watt)	(18.00)	(18.00)	(18.00)	(15.00)	(15.00)	(15.00)	(13.00)	(13.00)	(13.00)	(8.80)	(8.80)	(8.80)	(6.60)	(6.60)	(6.60)	(4.50)	(4.50)	(4.50)
Motor Weight	W_M	oz	1.02	1.02	1.02	1.27	1.27	1.27	2.40	2.40	2.40	3.07	3.07	3.07	3.53	3.53	3.53	10.30	10.30	10.30
		(g)	(28.92)	(28.92)	(28.92)	(36.00)	(36.00)	(36.00)	(68.04)	(68.04)	(68.04)	(87.03)	(87.03)	(87.03)	(100.07)	(100.07)	(100.07)	(292.00)	(292.00)	(292.00)
Motor Length	L1	In	1.50	1.50	1.50	2.00	2.00	2.00	1.80	1.80	1.80	2.20	2.20	2.20	1.90	1.90	1.90	2.93	2.93	2.93
		(mm)	(38.10)	(38.10)	(38.10)	(50.80)	(50.80)	(50.80)	(45.72)	(45.72)	(45.72)	(55.88)	(55.88)	(55.88)	(48.26)	(48.26)	(48.26)	(74.42)	(74.42)	(74.42)
Damping Constant – Zero Source Impedance	Kd	oz-in/krpm	5.78E-05	5.53E-05	6.04E-05	8.84E-05	8.77E-05	8.75E-05	7.86E-04	6.74E-04	6.75E-04	1.44E-03	1.47E-03	1.37E+00	3.16E-03	3.09E-03	2.90E-03	1.74E-02	1.84E-02	1.13E-02
		(N-m/rad/s)	(3.90E-09)	(3.73E-09)	(4.08E-09)	(5.97E-09)	(5.92E-09)	(5.90E-09)	(5.31E-08)	(4.55E-08)	(4.56E-08)	(9.72E-08)	(9.95E-08)	(9.26E-05)	(2.13E-07)	(2.08E-07)	(1.96E-07)	(1.17E-06)	(1.24E-06)	(7.63E-07)
Maximum Winding Temperature	θ_M	°F	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302	302
		(°C)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)	(150)
Chart Line			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

1 - Specified at max. winding temperature at 25C ambient, motor only. 2 - Specified at max. winding temperature at 25C ambient, with a 4" x 4" x 0.125" Aluminum heat sink. 3 - Theoretical values for reference only, at 25C ambient.