



22N28 \*\*\*\* .286

Electrical Data	****	216P	216E	213E	210E	208E	105	
1 Nominal Voltage	V	3	6	9	12	18	18	Volt
2 No-Load Speed	$n_0$	5,275	5,580	7,000	5,880	6,300	3,580	rpm
3 No-Load Current	$I_0$	12.6	7.0	6.0	4.5	3.5	1.4	mA
4 Terminal Resistance	R	1.5	5.8	10.3	27.0	59.0	200.0	$\Omega$
5 Output Power	$P_{2max.}$	4.3	4.2	3.8	3.7	3.5	3.3	W
6 Stall Torque	mNm	10.9 (1.55)	10.5 (1.49)	10.7 (1.52)	8.6 (1.22)	8.2 (1.17)	4.3 (0.61)	mNm (oz-in)
7 Efficiency	$\eta_{max.}$	85	84	84	81	80	77	%
8 Max continuous speed	$n_{e max.}$	12,000	12,000	12,000	12,000	12,000	12,000	rpm
9 Max continuous torque	$M_{e max.}$	8.8 (1.19)	8.4 (1.19)	7.5 (1.07)	7.3 (1.04)	6.9 (0.98)	6.5 (0.93)	mNm (oz-in)
10 Max continuous current	$I_{e max.}$	1.63	0.83	0.62	0.38	0.26	0.14	A
11 Back-EMF Constant	$k_E$	0.57	1.07	1.28	2.02	2.83	4.95	mV/rpm
12 Torque Constant	$k_M$	5.40	10.20	12.20	19.30	27.00	47.30	mNm/A
13 Motor Regulation	$R/k^2$	51.4	55.7	69.2	72.49	80.93	89.39	$10^3/Nms$
14 Friction Torque	$T_F$	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	0.07 (0.01)	mNm (oz-in)
15 Rotor Inductance	L	0.10	0.35	0.50	1.20	2.30	7.00	mH
16 Mechanical Time Constant	$\tau_m$	18.0	19.5	19.4	21.7	23.5	17.9	ms
17 Rotor Inertia	J	3.50	3.50	2.80	3.00	2.90	2.00	$g.cm^2$
18 Thermal Resistance (rotor/body)	$R_{th1} / R_{th2}$	5/20	5/20	5/20	5/20	5/20	5/20	$^{\circ}C/W$
19 Thermal Time Constant (rotor/stator)	$\tau_{w1}/\tau_{w2}$	5/550	5/550	5/550	5/550	5/550	5/550	$^{\circ}C/W$
20 Operating Temperature Range:	motor	-30°C to 85°C (-22°F to 185°F)						$^{\circ}C (^{\circ}F)$
	rotor	100°C (212°F)						$^{\circ}C (^{\circ}F)$
21 Shaft Load max.:		With sleeve bearings						
	at 3,000 rpm (5mm from bearing)	-radial	3.0 (10.8)				N (oz)	
	at 3,000 rpm	-axial	150 (539.5)				N (oz)	
22 Shaft play:	-radial	<0.03 (0.0012)				mm (inch)		
	-axial	0.15 (0.0059)				mm (inch)		
23 Weight	g	53 (1.87)				g (oz)		

		Execution		
Gearbox	Single Shaft	F16	E9	MR2
	22N28	22N28	22N48	22N48
R22	286	286	309	Contact Us
M22	286	286	308	483
K24	286	286	308	Contact Us
K27	286	286	308	Contact Us

Max. Recommended Speed

