



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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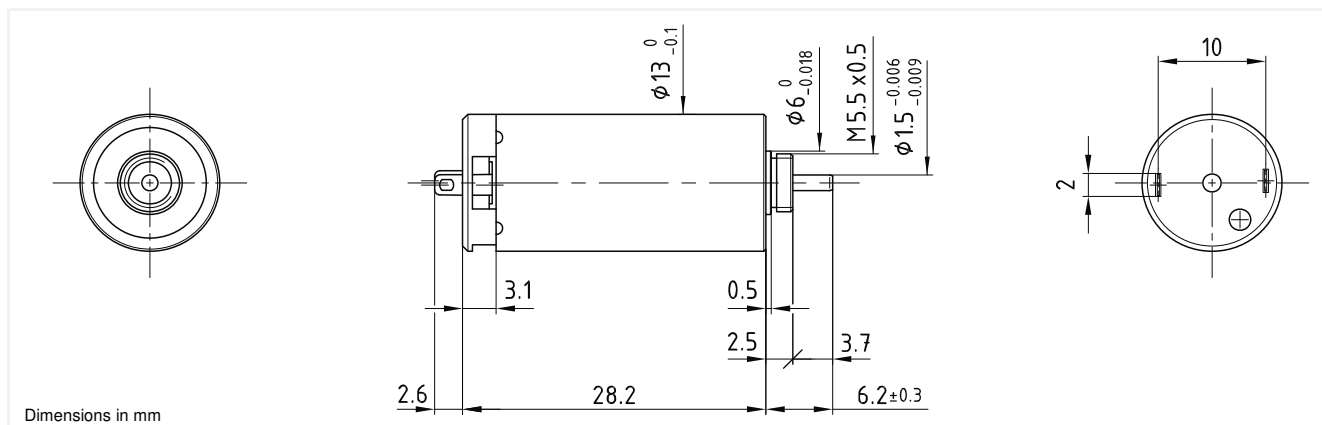


13N88

Precious metal commutation

Ø13mm

3.3 mNm

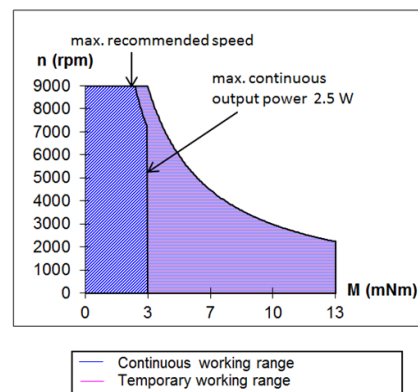


Dimensions in mm

13N88 \*\*\*\* .1

Electrical Data	****	213E	110	107	
1 Nominal Voltage	V	6	12	24	Volt
2 No-Load Speed	$n_0$	12,290	12,400	14,150	rpm
3 No-Load Current	$I_0$	25.6	13.6	8.8	mA
4 Terminal Resistance	R	4.2	13.7	47.4	$\Omega$
5 Output Power	$P_{2max}$	2.4	2.6	2.5	W
6 Stall Torque	mNm	6.5 (0.93)	8 (1.14)	8.2 (1.17)	mNm (oz-in)
7 Efficiency	$\eta_{max}$	75	77	75	%
8 Max Continuous Speed	$n_{e max}$	9,000	9,000	9,000	rpm
9 Max Continuous Torque	$M_{e max}$	3 (0.47)	3.3 (0.47)	3.2 (0.46)	mNm (oz-in)
10 Max Continuous Current	$I_{e max}$	0.69	0.38	0.21	A
11 Back-EMF Constant	$k_E$	0.48	0.95	1.67	mV/rpm
12 Torque Constant	$k_M$	4.58	9.10	15.90	mNm/A
13 Motor Regulation	$R/k^2$	200.0	165.0	185.0	$10^3/Nms$
14 Friction Torque	$T_F$	0.12 (0.02)	0.12 (0.02)	0.14 (0.02)	mNm (oz-in)
15 Rotor Inductance	L	0.07	0.25	0.80	mH
16 Mechanical Time Constant	$t_m$	5.6	5.5	5.3	ms
17 Rotor Inertia	J	0.28	0.33	0.29	$g.cm^2$
<b>General Data</b>					
18 Thermal Resistance (rotor/body)	$R_{th1} / R_{th2}$		10/40		$^{\circ}C/W$
19 Thermal Time Constant (rotor/stator)	$t_{w1}/t_{w2}$		6/300		S
20 Operating Temperature Range:	motor		-30 $^{\circ}C$ to 85 $^{\circ}C$ (-22 $^{\circ}F$ to 185 $^{\circ}F$ )		$^{\circ}C$ ( $^{\circ}F$ )
	rotor		100 $^{\circ}C$ (212 $^{\circ}F$ )		$^{\circ}C$ ( $^{\circ}F$ )
21 Shaft Load Max.:			With sleeve bearings		
(5mm from bearing)	-radial		1.5 (5.4)		N (oz)
	-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		18 (0.64)		g (oz)

Execution Table			
Gearbox	13N88	13N88D12	MR2
R13	1	3	Upon Request
R16	Upon Request	Upon Request	Upon Request



V121616