



Dimensions in mm.

Electrical Data	Symbol	21BF 3C-K.02	Unit
1 Nominal Voltage	$U_N$	5	Volt
2 Optimization Direction	-	n.a.	-
3 No Load Speed	$n_0$	3,900	rpm
4 Typical No Load Current	$I_0$	28.0	mA
5 Max Continuous Mechanical Power (@25°C)	$P_{max}$	4.0	W
6 Max Continuous Current	$I_{e,max}$	0.3	A
7 Max Continuous Torque	$M_{e,max}$	2.7 (0.39)	mNm (oz-in)
8 Back EMF Constant	$k_E$	0.89	V/1000 rpm
9 Torque Constant	$k_M$	8.5	mNm/A
10 Motor Regulation	$R/k^2$	784.0	10 <sup>3</sup> /Nms
11 Motor Regulation	$k/R^{1/2}$	1.1 (0.16)	mNm/W <sup>1/2</sup> (oz-in/W <sup>1/2</sup> )
12 Internal Resistance - phase to phase	$R_i$	56.30	ohms
13 Line to Line Resistance at Connectors	$R_L$	56.30	ohms
14 Inductance Phase to Phase	$L$	1.22	mH
15 Mechanical Time Constant	$\tau_m$	141.2	ms
16 Electrical Time Constant	$\tau_e$	0.02	ms

General Data			
17 Maximum Motor Speed	$n_{max}$	25000	rpm
18 Ambient Working Temperature Range	-	-30 to +80 (-22 to +176)	°C (°F)
19 Ambient Storage Temperature Range	-	-40 to +80 (-40 to +176)	°C (°F)
20 Ball Bearings Preload	-	2.70	N
21 Axial Static Force w/o Shaft Support (max)	-	27.00	N
22 Maximum Winding Temperature	-	125 (257)	°C (°F)
23 Thermal Resistance	$R_{th}$	12.00	°C/W
24 Thermal Time Constant	$\tau_w$	200.00	s
25 Weight	-	10 (0.36)	g (oz)
26 Rotor Inertia	$J$	1.80	g-cm <sup>2</sup>
27 Hall Sensor Electrical Phasing (Sensorless)	-	NA	Electrical °

Wire	Description
1	center point of Y winding
2	Phase 1
3	Phase 2
4	Phase 3
<b>sensorless (3C)</b>	

