

## E 30 Ø30 brushless 50W 无刷 50W

				Order number			
				100345	100346	100347	100348
<b>Motor parameters</b>							
1	Nominal voltage 额定电压	$U_N$	V	12	24	36	48
2	Terminal resistance, phase to phase 相间电阻	R	$\Omega$	1.6	6.6	13.7	26.5
3	Output power 最大输出功率	$P_{2max}$	W	48	50	49	50
4	Efficiency 最大效率	$\eta_{max}$	%	72	73	74	72
5	No-load speed 空载转速	$n_0$	rpm	8790	8200	8840	8740
6	No-load current 空载电流	$I_0$	A	0.168	0.076	0.053	0.042
7	Stall torque 堵转转矩	$M_H$	mNm	95	97	99	100
8	Friction torque 摩擦转矩	$M_F$	mNm	0.91	0.91	0.91	0.91
9	Friction torque coefficient 摩擦转矩系数	$C_F$	mNm/rpm	1.4E-04	1.4E-04	1.4E-04	1.4E-04
10	Speed constant 速度常数	$k_n$	rpm/V	749	349	251	186
11	Back-EMF constant 反电动势常数	$k_E$	mV/rpm	1.33	2.87	3.99	5.36
12	Torque constant 转矩常数	$k_M$	mNm/A	12.74	27.37	38.10	51.23
13	Current constant 电流常数	$k_I$	A/mNm	0.078	0.037	0.026	0.020
14	Slope of n-M curve 转速-转矩曲线斜率	$\Delta n / \Delta M$	rpm/mNm	94.1	84.2	90.1	96.4
15	Mechanical time constant 机械时间常数	$\tau_m$	ms	13	12	12	12
16	Rotor inertia 转子惯量	J	gcm <sup>2</sup>	13.6	13.6	13.6	13.6
17	Angular acceleration 最大角加速度	$\alpha_{max}$	10 <sup>3</sup> rad/s <sup>2</sup>	69	71	72	73
18	Thermal resistance 热阻	$R_{th1} / R_{th2}$	K/W	23 / 1175			
19	Thermal time constant 热时间常数	$\tau_{w1} / \tau_{w2}$	s	-30 ... +85			
20	Operating temperature range 工作温度范围		°C	-30 ... +85			
21	Shaft bearings 轴承			ball bearing, preloaded			
22	Shaft load max 轴载荷						
	- radial at 3,000/20,000rpm (4.5mm from bearing)		N	72 / 51			
	- axial at 3,000/20,000rpm (axial push-on only)		N	18 / 12			
	- axial at standstill (axial push-on only)		N	62			
23	Shaft play 轴间隙						
	- radial 径向	$\leq$	mm	0.015			
	- axial 轴向	$\leq$	mm	0.2			
24	Magnet material 永磁材料			Sintered Nd-Fe-B			
25	Housing material 外壳材料			Aluminum, back anodized			
26	Pole pairs 极对数		p	1			
27	Weight 重量		g	190			
28	Direction of rotation 旋转方向			Electronically reversible			
<b>Operating Data for <math>\eta_{max}</math> of Customer's Specifications</b>							
29	Output power 输出功率	$P_{2opt}$	W	47	47	47	48
30	Efficiency 效率	$\eta_{opt}$	%	68	72	67	68
31	Speed 转速	$n_{opt}$	rpm	6250	6170	6200	6230
32	Load current 电流	$I_{opt}$	A	5.75	2.73	1.94	1.46
33	Operating torque 转矩	$M_{opt}$	mNm	71.5	72.8	72.2	73.2

**Recommended values - mathematically independent of each other**

34	max. operation speed 最高转速	$n_{e\ max}$	rpm	22000	22000	22000	22000
35	max. operation torque 最大转矩	$M_{e\ max}$	mNm	20.7	21.8	21.2	21.5
36	max. operation current 最大电流	$I_{e\ max}$	A	1.94	0.94	0.66	0.50

**Recommended areas for continuous operation**

