

Brushless DC-Servomotors

2 Pole Technology, sensorless

18 μNm

0,065 W

Series 0308 ... B

Values at 22°C and nominal voltage		0308 H	003 B	
1	Nominal voltage	U_N	3	V
2	Terminal resistance, phase-phase	R	34	Ω
3	Efficiency, max.	η_{max}	20	%
4	No-load speed	n_0	61 000	min^{-1}
5	No-load current, typ. (with shaft \varnothing 0,6 mm)	I_0	0,027	A
6	Stall torque	M_H	0,026	mNm
7	Friction torque, static	C_0	$1,77 \cdot 10^{-3}$	mNm
8	Friction torque, dynamic	C_V	$1,09 \cdot 10^{-7}$	$\text{mNm}/\text{min}^{-1}$
9	Speed constant	k_n	29 800	min^{-1}/V
10	Back-EMF constant	k_E	0,033	$\text{mV}/\text{min}^{-1}$
11	Torque constant	k_M	0,32	mNm/A
12	Current constant	k_I	3,12	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	$3,2 \cdot 10^6$	$\text{min}^{-1}/\text{mNm}$
14	Terminal inductance, phase-phase	L	60	μH
15	Mechanical time constant	τ_m	7	ms
16	Rotor inertia	J	$2 \cdot 10^{-4}$	gcm^2
17	Angular acceleration	α_{max}	1 323	$\cdot 10^3 \text{rad}/\text{s}^2$
18	Thermal resistance	R_{th1} / R_{th2}	60 / 300	K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	0,5 / 45	s
20	Operating temperature range:			
	– motor		-30 ... +60	$^{\circ}\text{C}$
	– winding, max. permissible		+60	$^{\circ}\text{C}$
21	Shaft bearings		jewel bearings	
22	Shaft load max.:			
	– with shaft diameter		0,6	mm
	– radial at 3 000 min^{-1} (1 mm from mounting flange)		0,2	N
	– axial at 3 000 min^{-1} (push only)		0,2	N
	– axial at standstill (push only)		2	N
23	Shaft play:			
	– radial	\leq	0,03	mm
	– axial	\leq	0,15	mm
24	Housing material		Nickel alloy	
25	Mass		0,35	g
26	Direction of rotation		electronically reversible	
27	Speed up to	n_{max}	96 000	min^{-1}
28	Number of pole pairs		1	
29	Hall sensors		without	
30	Magnet material		NdFeB	
Rated values for continuous operation				
31	Rated torque	M_N	0,013	mNm
32	Rated current (thermal limit)	I_N	0,056	A
33	Rated speed	n_N	24 820	min^{-1}

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



