

DC-Micromotors

Graphite Commutation

41 mNm
30 W

Series 3242 ... CR

Values at 22°C and nominal voltage		3242 G	012 CR	018 CR	024 CR	036 CR	048 CR	
1	Nominal voltage	U_N	12	18	24	36	48	V
2	Terminal resistance	R	1,27	2,73	5	10,5	19,7	Ω
3	Efficiency, max.	η_{max}	72	70	73	71	73	%
4	No-load speed	n_0	5 200	5 300	5 300	5 500	5 400	min ⁻¹
5	No-load current, typ. (with shaft ø 5 mm)	I_0	0,234	0,157	0,117	0,081	0,058	A
6	Stall torque	M_H	181	196	189	202	193	mNm
7	Friction torque	M_R	4,8	4,8	4,8	4,8	4,8	mNm
8	Speed constant	k_n	464	304	231	156	116	min ⁻¹ /V
9	Back-EMF constant	k_E	2,15	3,29	4,33	6,42	8,58	mV/min ⁻¹
10	Torque constant	k_M	20,6	31,4	41,3	61,3	82	mNm/A
11	Current constant	k_I	0,049	0,032	0,024	0,016	0,012	A/mNm
12	Slope of n-M curve	$\Delta n/\Delta M$	28,7	26,4	28	26,7	28	min ⁻¹ /mNm
13	Rotor inductance	L	135	310	540	1 220	2 200	μ H
14	Mechanical time constant	τ_m	7,5	7,5	7,5	7,5	7,5	ms
15	Rotor inertia	J	25	27	26	27	26	gcm ²
16	Angular acceleration	α_{max}	73	73	74	75	75	·10 ³ rad/s ²
17	Thermal resistance	R_{th1} / R_{th2}	2,5 / 9					K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	17 / 660					s
19	Operating temperature range:							
	– motor		-30 ... +125					°C
	– winding, max. permissible		+155					°C
20	Shaft bearings		ball bearings, preloaded					
21	Shaft load max.:							
	– with shaft diameter		5					mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)		50					N
	– axial at 3 000 min ⁻¹		5					N
	– axial at standstill		50					N
22	Shaft play:							
	– radial	≤	0,015					mm
	– axial	=	0					mm
23	Housing material		steel, black coated					
24	Mass		175					g
25	Direction of rotation		clockwise, viewed from the front face					
26	Speed up to	n_{max}	6 000					min ⁻¹
27	Number of pole pairs		1					
28	Magnet material		NdFeB					
Rated values for continuous operation								
29	Rated torque	M_N	40	41	41	41,7	41	mNm
30	Rated current (thermal limit)	I_N	2,5	1,7	1,3	0,89	0,65	A
31	Rated speed	n_N	3 580	3 690	3 690	3 900	3 780	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.



