

DC-Micromotors

Graphite Commutation

73 mNm
60 W

Series 3257 ... CR

Values at 22°C and nominal voltage		3257 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	0,41	0,84	1,63	4,15	6,56	Ω
3	Efficiency, max.	η_{max}	83	83	83	80	83	%
4	No-load speed	n_0	5 700	6 100	5 900	5 600	5 900	min ⁻¹
5	No-load current, typ. (with shaft ø 5 mm)	I_0	0,258	0,18	0,129	0,082	0,064	A
6	Stall torque	M_H	531	561	539	518	547	mNm
7	Friction torque	M_R	4,9	4,9	4,9	4,9	4,9	mNm
8	Speed constant	k_n	500	352	253	156	125	min ⁻¹ /V
9	Back-EMF constant	k_E	2	2,84	3,95	6,4	7,98	mV/min ⁻¹
10	Torque constant	k_M	19,1	27,2	37,7	61,1	76,2	mNm/A
11	Current constant	k_I	0,052	0,037	0,027	0,016	0,013	A/mNm
12	Slope of n-M curve	$\Delta n / \Delta M$	10,7	10,9	10,9	10,6	10,8	min ⁻¹ /mNm
13	Rotor inductance	L	70	140	270	700	1 100	μ H
14	Mechanical time constant	τ_m	4,7	4,7	4,7	4,7	4,7	ms
15	Rotor inertia	J	42	41	41	42	42	gcm ²
16	Angular acceleration	α_{max}	130	140	130	120	130	·10 ³ rad/s ²
17	Thermal resistance	R_{th1} / R_{th2}	2 / 8					K/W
18	Thermal time constant	τ_{w1} / τ_{w2}	17 / 810					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		242					g
25	Direction of rotation		clockwise, viewed from the front face					
26	Speed up to	n_{max}	7 000					min ⁻¹
27	Number of pole pairs		1					
28	Magnet material		NdFeB					
Rated values for continuous operation								
29	Rated torque	M_N	63	70	71	73,1	73	mNm
30	Rated current (thermal limit)	I_N	4	3,2	2,3	1,49	1,2	A
31	Rated speed	n_N	5 150	5 470	5 210	4 770	5 190	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.



