

DC-Micromotors

Graphite Commutation

73 mNm
60 W

Series 3257 ... CR

Values at 22°C and nominal voltage		3257 G	012 CR	024 CR	048 CR	
1	Nominal voltage	U_N	12	24	48	V
2	Terminal resistance	R	0,41	1,63	6,56	Ω
3	Output power	$P_{2nom.}$	79,2	83,2	84,5	W
4	Efficiency, max.	$\eta_{max.}$	83	83	83	%
5	No-load speed	n_0	5 700	5 900	5 900	min ⁻¹
6	No-load current, typ. (with shaft \varnothing 5 mm)	I_0	0,258	0,129	0,064	A
7	Stall torque	M_H	531	539	547	mNm
8	Friction torque	M_R	4,9	4,9	4,9	mNm
9	Speed constant	k_n	500	253	125	min ⁻¹ /V
10	Back-EMF constant	k_E	2	3,95	7,98	mV/min ⁻¹
11	Torque constant	k_M	19,1	37,7	76,2	mNm/A
12	Current constant	k_I	0,052	0,027	0,013	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	10,7	10,9	10,8	min ⁻¹ /mNm
14	Rotor inductance	L	70	270	1 100	μ H
15	Mechanical time constant	τ_m	4,7	4,7	4,7	ms
16	Rotor inertia	J	42	41	42	gcm ²
17	Angular acceleration	$\alpha_{max.}$	130	130	130	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	2 / 8			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	17 / 810			s
20	Operating temperature range:					
	– motor		-30 ... +125			°C
	– winding, max. permissible		+155			°C
21	Shaft bearings		ball bearings, preloaded			
22	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
23	Shaft play:					
	– radial	\leq	0,015			mm
	– axial	$=$	0			mm
24	Housing material		steel, black coated			
25	Mass		242			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	7 000			min ⁻¹
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
Rated values for continuous operation						
30	Rated torque	M_N	63	71	73	mNm
31	Rated current (thermal limit)	I_N	4	2,3	1,2	A
32	Rated speed	n_N	5 150	5 210	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.



