

DC-Micromotors

Graphite Commutation

51 mNm
45 W

Series 2657 ... CR

Values at 22°C and nominal voltage		2657 W	012 CR	024 CR	048 CR	
1	Nominal voltage	U_N	12	24	48	V
2	Terminal resistance	R	0,71	2,84	12,5	Ω
3	Output power	$P_{2nom.}$	45,9	47,9	44,5	W
4	Efficiency, max.	$\eta_{max.}$	84	85	84	%
5	No-load speed	n_0	6 300	6 400	6 400	min ⁻¹
6	No-load current, typ. (with shaft ø 4 mm)	I_0	0,115	0,058	0,028	A
7	Stall torque	M_H	278	286	265	mNm
8	Friction torque	M_R	2	2	2	mNm
9	Speed constant	k_n	552	274	136	min ⁻¹ /V
10	Back-EMF constant	k_E	1,81	3,65	7,37	mV/min ⁻¹
11	Torque constant	k_M	17,3	34,8	70,4	mNm/A
12	Current constant	k_I	0,058	0,029	0,014	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	22,7	22,4	24,2	min ⁻¹ /mNm
14	Rotor inductance	L	95	380	1 550	μ H
15	Mechanical time constant	τ_m	3,9	3,9	3,9	ms
16	Rotor inertia	J	16	17	15	gcm ²
17	Angular acceleration	$\alpha_{max.}$	170	170	170	·10 ³ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	1,9 / 9			K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	10 / 580			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	4				mm
	– radial at 3 000 min ⁻¹ (3 mm from bearing)	20				N
	– axial at 3 000 min ⁻¹	2				N
	– axial at standstill	20				N
23	Shaft play					
	– radial	≤	0,015			mm
	– axial	=	0			mm
24	Housing material		steel, black coated			
25	Mass		156			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	45	51	50	mNm
31	Rated current (thermal limit)	I_N	3	1,8	0,86	A
32	Rated speed	n_N	5 250	5 060	4 920	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.



