

DC-Micromotors

Graphite Commutation

51 mNm
45 W

Series 2657 ... CR

Values at 22°C and nominal voltage	2657 W	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	0,71	1,7	2,84	6,78	12,5	Ω
3 Efficiency, max.	η_{max}	84	81	85	82	84	%
4 No-load speed	n_0	6 300	6 300	6 400	6 480	6 400	min ⁻¹
5 No-load current, typ. (with shaft \varnothing 4 mm)	I_0	0,115	0,077	0,058	0,039	0,028	A
6 Stall torque	M_H	278	269	286	273	265	mNm
7 Friction torque	M_R	2	2	2	2	2	mNm
8 Speed constant	k_n	552	363	274	182	136	min ⁻¹ /V
9 Back-EMF constant	k_E	1,81	2,75	3,65	5,51	7,37	mV/min ⁻¹
10 Torque constant	k_M	17,3	26,3	34,8	52,6	70,4	mNm/A
11 Current constant	k_I	0,058	0,038	0,029	0,019	0,014	A/mNm
12 Slope of n-M curve	$\Delta n / \Delta M$	22,7	23,5	22,4	23,4	24,2	min ⁻¹ /mNm
13 Rotor inductance	L	95	210	380	850	1 550	μ H
14 Mechanical time constant	τ_m	3,9	3,9	3,9	3,9	3,9	ms
15 Rotor inertia	J	16	16	17	16	15	gcm ²
16 Angular acceleration	α_{max}	170	170	170	170	170	$\cdot 10^3$ rad/s ²
17 Thermal resistance	R_{th1} / R_{th2}	1,9 / 9					K/W
18 Thermal time constant	τ_{w1} / τ_{w2}	10 / 580					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		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
22 Shaft play:							
– radial	\leq	0,015					mm
– axial	$=$	0					mm
23 Housing material		steel, black coated					
24 Mass		156					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	45	49	51	50	50	mNm
30 Rated current (thermal limit)	I_N	3	2,3	1,8	1,2	0,86	A
31 Rated speed	n_N	5 250	4 960	5 060	5 020	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.



