

DC-Micromotors

Graphite Commutation

73,1 mNm
52,2 W

Series 3257 ... CR

Values at 22°C and nominal voltage	3257 G	012 CR	018 CR	024 CR	036 CR	048 CR			
Nominal voltage	U_N		12	18	24	36	48	V	
Terminal resistance	R		0,407	0,837	1,63	4,15	6,56	Ω	
Rotor inductance	L		68,6	142	274	697	1 100	μH	
Efficiency, max.	η_{max}		79	80	80	80	81	%	
No-load current, typ.	I_0		0,265	0,185	0,133	0,083	0,0663	A	
No-load speed	n_0		5 880	6 240	6 010	5 680	6 070	min^{-1}	
Stall torque	M_H		536	570	548	517	549	mNm	
Rotor inertia	J		42	41	41	42	42	gcm^2	
Friction torque	M_R		4,9	4,9	4,9	4,9	4,9	mNm	
Torque constant	k_M		19,1	27,5	38,3	61,1	76,6	mNm/A	
Speed constant	k_n		499	347	250	157	125	min^{-1}/V	
Slope of n-M curve	$\Delta n/\Delta M$		10,6	10,6	10,6	10,6	10,7	$\text{min}^{-1}/\text{mNm}$	
Thermal resistance:									
- winding to housing	R_{th1}	3,4						K/W	
- housing to ambient (external plastic flange)	R_{th2p}	9,8						K/W	
- housing to ambient (external metal flange)	R_{th2m}	1,5						K/W	
Thermal time constant:									
- winding	τ_{w1}	36						s	
- housing (external plastic flange)	τ_{w2p}	970						s	
- housing (external metal flange)	τ_{w2m}	150						s	
Operating temperature range:									
- motor		-30 ... +125						$^{\circ}\text{C}$	
- winding, max. permissible		+155						$^{\circ}\text{C}$	
Shaft bearings								ball bearings, preloaded	
Shaft diameter								5	mm
Radial shaft load max.:									
- dynamic at 3 000 min^{-1} (3 mm from bearing)		50						N	
Axial shaft load max.:									
- dynamic at 3 000 min^{-1}		5						N	
- static (shaft unsupported)		50						N	
- static (shaft supported)		2 000						N	
Shaft play, max.:									
- radial		0,015						mm	
- axial		0						mm	
Speed up to	n_{max}	7 000						min^{-1}	
Number of pole pairs		1							
Mass		242						g	
Housing material		steel, nickel plated							
Magnet material		NdFeB							

Rated values for continuous operation

Rated torque	M_N		63,4	71,3	72,2	73,1	72,8	mNm
Rated current (thermal limit)	I_N		4	3,24	2,36	1,5	1,19	A
Rated speed	n_N		5 170	5 430	5 160	4 780	5 210	min^{-1}

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2p} value has been reduced by 50%.

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 different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

The nominal voltage (U_N) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

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.



