

# DC-Micromotors

## Graphite Commutation

# 51 mNm

For combination with

Gearheads:

26/1, 26/1 S, 26A, 30/1, 30/1 S, 32A, 32ALN

Encoders:

HEDL 5540, HEDM 5500, HEDS 5500, HEDS 5540, IE3-1024, IE3-1024 L

### 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	$\Omega$
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	rpm
6	No-load current, typ. (with shaft $\varnothing$ 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	rpm/V
10	Back-EMF constant	$k_E$	1,81	3,65	7,37	mV/rpm
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	rpm/mNm
14	Rotor inductance	L	95	380	1 550	$\mu H$
15	Mechanical time constant	$\tau_m$	3,9	3,9	3,9	ms
16	Rotor inertia	J	16	17	15	gcm <sup>2</sup>
17	Angular acceleration	$\alpha_{max.}$	170	170	170	$\cdot 10^3 \text{rad/s}^2$
18	Thermal resistance	$R_{th1} / R_{th2}$	1,9 / 9			K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	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 rpm (3 mm from bearing)		20			N
	– axial at 3 000 rpm		2			N
	– axial at standstill		20			N
23	Shaft play					
	– radial	$\leq$	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			rpm
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
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	rpm

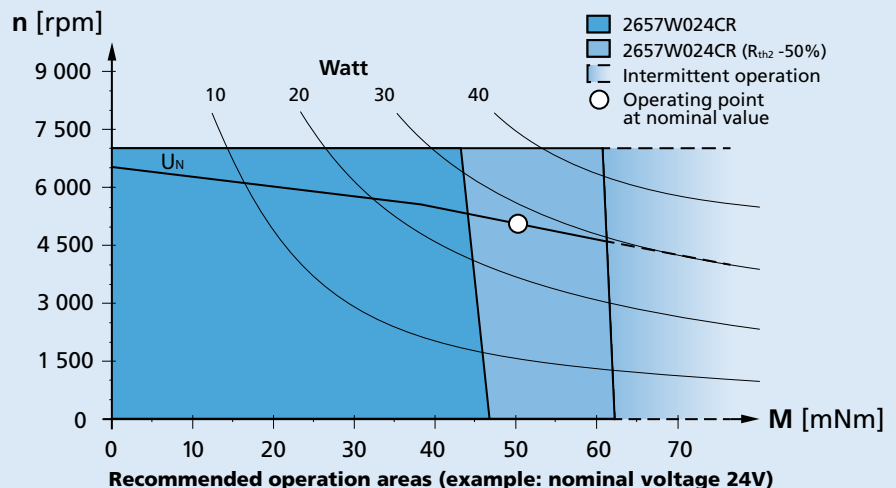
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**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.



**Dimensional drawing**

