

# DC-Micromotors

## Graphite Commutation

### 41 mNm

For combination with

Gearheads:  
32/3, 32/3 S, 32A, 32ALN, 38/1, 38/1 S, 38/2, 38/2 S, 38A

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

## Series 3242 ... CR

Values at 22°C and nominal voltage		3242 G	012 CR	024 CR	048 CR	
1	Nominal voltage	$U_N$	12	24	48	V
2	Terminal resistance	R	1,27	5	19,7	$\Omega$
3	Output power	$P_{2nom.}$	24,7	26,3	27,3	W
4	Efficiency, max.	$\eta_{max.}$	72	73	73	%
5	No-load speed	$n_0$	5 200	5 300	5 400	rpm
6	No-load current, typ. (with shaft $\varnothing$ 5 mm)	$I_0$	0,234	0,117	0,058	A
7	Stall torque	$M_H$	181	189	193	mNm
8	Friction torque	$M_R$	4,8	4,8	4,8	mNm
9	Speed constant	$k_n$	464	231	116	rpm/V
10	Back-EMF constant	$k_E$	2,15	4,33	8,58	mV/rpm
11	Torque constant	$k_M$	20,6	41,3	82	mNm/A
12	Current constant	$k_I$	0,049	0,024	0,012	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	28,7	28	28	rpm/mNm
14	Rotor inductance	L	135	540	2 200	$\mu H$
15	Mechanical time constant	$\tau_m$	7,5	7,5	7,5	ms
16	Rotor inertia	J	25	26	26	gcm <sup>2</sup>
17	Angular acceleration	$\alpha_{max.}$	73	74	75	$\cdot 10^3 \text{rad/s}^2$
18	Thermal resistance	$R_{th1} / R_{th2}$	2,5 / 9			K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	17 / 660			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 rpm (3 mm from bearing)		50			N
	– axial at 3 000 rpm		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		175			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	6 000			rpm
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
30	Rated torque	$M_N$	40	41	41	mNm
31	Rated current (thermal limit)	$I_N$	2,5	1,3	0,65	A
32	Rated speed	$n_N$	3 580	3 690	3 780	rpm

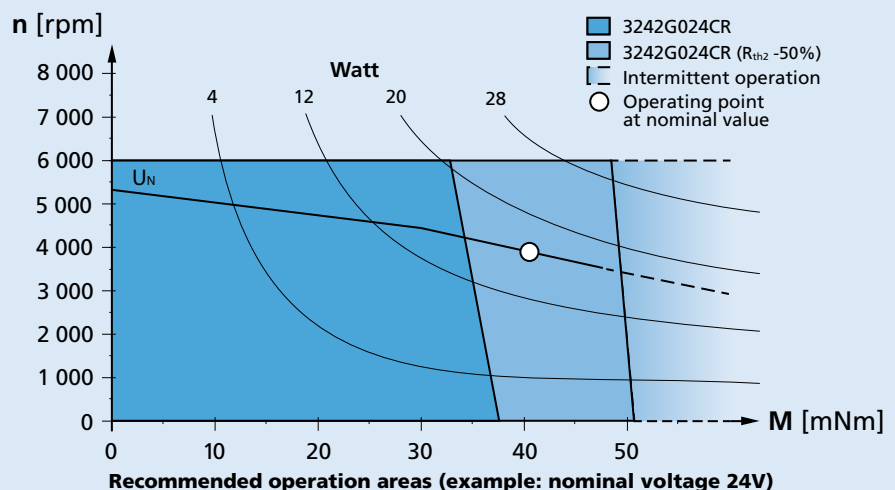
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

### 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).

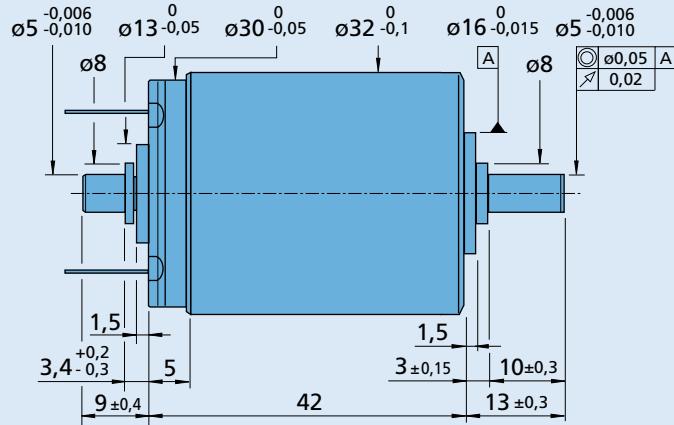
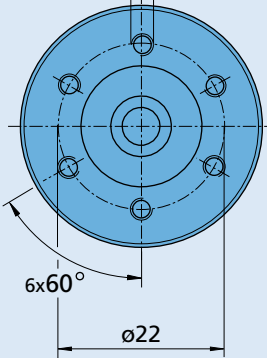
The nominal voltage ( $U_N$ ) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



**Dimensional drawing**

Orientation with respect to motor terminals not defined

6x  $\oplus \varnothing 0,3 \text{ A}$  M3 3 deep



**3242 G ... CR**

