

# DC-Micromotors

## Graphite Commutation

### 40 mNm

For combination with  
Gearheads:  
30/1, 32/3, 38A, 38/1, 38/2  
Encoders:  
5500, 5540

### Series 3557 ... C

	3557 K	006 C	009 C	012 C	020 C	024 C	032 C	
1 Nominal voltage	$U_N$	6	9	12	20	24	32	Volt
2 Terminal resistance	$R$	0,6	1,3	2,4	6,6	10,5	18,0	$\Omega$
3 Output power	$P_2 \text{ max.}$	14,5	15,0	14,5	14,7	13,2	13,7	W
4 Efficiency	$\eta \text{ max.}$	77	77	76	77	75	76	%
5 No-load speed	$n_o$	4 700	5 000	4 800	4 600	4 800	4 700	rpm
6 No-load current (with shaft $\varnothing$ 4,0 mm)	$I_o$	0,170	0,120	0,090	0,050	0,045	0,033	A
7 Stall torque	$M_H$	118	115	115	122	105	111	mNm
8 Friction torque	$M_R$	2,00	2,00	2,10	2,00	2,10	2,10	mNm
9 Speed constant	$k_n$	797	565	407	234	204	150	rpm/V
10 Back-EMF constant	$k_E$	1,250	1,770	2,450	4,280	4,900	6,680	mV/rpm
11 Torque constant	$k_M$	12,00	16,90	23,40	40,80	46,80	63,80	mNm/A
12 Current constant	$k_I$	0,083	0,059	0,043	0,024	0,021	0,016	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$	39,8	43,5	41,7	37,7	45,7	42,3	rpm/mNm
14 Rotor inductance	$L$	65	130	230	650	940	1 200	$\mu$ H
15 Mechanical time constant	$\tau_m$	15	14	13	13	13	13	ms
16 Rotor inertia	$J$	36	31	30	33	27	29	gcm <sup>2</sup>
17 Angular acceleration	$\alpha \text{ max.}$	33	37	39	37	39	38	$\cdot 10^3 \text{ rad/s}^2$
18 Thermal resistance	$R_{th1} / R_{th2}$	1,5 / 9						K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	8,5 / 1000						s
20 Operating temperature range:		- 30 ... +125						$^{\circ}$ C
- motor								$^{\circ}$ C
- rotor, max. permissible		+125						$^{\circ}$ C
21 Shaft bearings		ball bearings, preloaded						
22 Shaft load max.:								
- with shaft diameter		4,0						mm
- radial at 3 000 rpm (3 mm from bearing)		30						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, zinc galvanized and passivated						
25 Weight		275						g
26 Direction of rotation		clockwise, viewed from the front face						
<b>Recommended values - mathematically independent of each other</b>								
27 Speed up to	$n_{e \text{ max.}}$	5 000	5 000	5 000	5 000	5 000	5 000	rpm
28 Torque up to <sup>1)</sup>	$M_{e \text{ max.}}$	40	40	40	40	40	40	mNm
29 Current up to (thermal limits)	$I_{e \text{ max.}}$	3,400	2,300	1,700	1,000	0,810	0,620	A

<sup>1)</sup> thermal resistance  $R_{th2}$  by 40% reduced

