

# DC-Micromotors

## Graphite Commutation

### 50 mNm

For combination with

Gearheads:  
30/1(S), 32/3(S), 38/1(S), 38/2(S), 38A

Encoders:  
HEDL 5540, HEDM 5500, HEDS 5500, HEDS 5540

## Series 3557 ... CS

	3557 K	009 CS	012 CS	020 CS	024 CS	048 CS	
1 Nominal voltage	$U_N$	9	12	20	24	48	V
2 Terminal resistance	R	0,7	1,34	4	5,5	23	$\Omega$
3 Output power	$P_{2 \max}$	28,1	26,1	24,3	25,4	24,1	W
4 Efficiency, max.	$\eta_{\max}$	78	79	79	78	76	%
5 No-load speed	$n_0$	5 700	5 400	5 500	5 500	5 200	rpm
6 No-load current (with shaft $\varnothing$ 4 mm)	$I_0$	0,19	0,125	0,07	0,065	0,04	A
7 Stall torque	$M_H$	188	185	169	176	177	mNm
8 Friction torque	$M_R$	2,8	2,6	2,4	2,7	3,5	mNm
9 Speed constant	$k_n$	643	456	279	233	110	rpm/V
10 Back-EMF constant	$k_E$	1,56	2,19	3,59	4,3	9,05	mV/rpm
11 Torque constant	$k_M$	14,9	20,9	34,2	41	86,5	mNm/A
12 Current constant	$k_i$	0,067	0,048	0,029	0,024	0,012	A/mNm
13 Slope of n-M curve	$\Delta n / \Delta M$	30,3	29,2	32,5	31,3	29,4	rpm/mNm
14 Rotor inductance	L	100	220	630	850	3 400	$\mu$ H
15 Mechanical time constant	$\tau_m$	16	16	16	16	16	ms
16 Rotor inertia	J	50	52	47	49	52	gcm <sup>2</sup>
17 Angular acceleration	$\alpha_{\max}$	37	35	36	36	34	$\cdot 10^3 \text{ rad/s}^2$
18 Thermal resistance	$R_{th1} / R_{th2}$	1,5 / 9					K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	15 / 900					s
20 Operating temperature range:							
– motor		-30 ... +125					°C
– rotor, 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)		30					N
– axial at 3 000 rpm		5					N
– axial at standstill		50					N
23 Shaft play							
– radial	$\Delta$	0,015					mm
– axial	$\parallel$	0					mm
24 Housing material		steel, zinc galvanized and passivated					
25 Weight		275					g
26 Direction of rotation		clockwise, viewed from the front face					

### Recommended values - mathematically independent of each other

27 Speed up to	$n_{e \max}$	5 000	5 000	5 000	5 000	5 000	rpm
28 Torque up to <sup>1)</sup>	$M_{e \max}$	50	50	50	50	50	mNm

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

