

# DC-Micromotors

## Graphite Commutation

# 110 mNm

For combination with

Gearheads:  
38/1(S), 38/2(S), 38A, 44/1

Encoders:  
HEDL 5540, HEDM 5500, HEDS 5500, HEDS 5540,  
IE2-1024, IE2-16

### Series 3863 ... C

	3863 H	012 C	018 C	024 C	036 C	048 C	
1 Nominal voltage	$U_N$	12	18	24	36	48	V
2 Terminal resistance	R	0,16	0,4	0,62	1,58	2,47	$\Omega$
3 Output power	$P_{2 \max}$	204	189	220	197	226	W
4 Efficiency, max.	$\eta_{\max}$	85	84	85	85	85	%
5 No-load speed	$n_0$	6 500	6 600	6 700	6 400	6 700	rpm
6 No-load current (with shaft $\varnothing$ 6 mm)	$I_0$	0,48	0,32	0,24	0,15	0,12	A
7 Stall torque	$M_H$	1 200	1 090	1 250	1 170	1 290	mNm
8 Friction torque	$M_R$	8,1	8	8	7,9	8,1	mNm
9 Speed constant	$k_n$	569	380	287	181	142	rpm/V
10 Back-EMF constant	$k_E$	1,76	2,63	3,49	5,51	7,05	mV/rpm
11 Torque constant	$k_M$	16,8	25,1	33,3	52,6	67,3	mNm/A
12 Current constant	$k_i$	0,06	0,04	0,03	0,019	0,015	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$	5,4	6,1	5,4	5,5	5,2	rpm/mNm
14 Rotor inductance	L	30	70	130	280	500	$\mu$ H
15 Mechanical time constant	$\tau_m$	6	6,5	6	6	6	ms
16 Rotor inertia	J	110	100	110	100	110	gcm <sup>2</sup>
17 Angular acceleration	$\alpha_{\max}$	110	110	120	110	120	$\cdot 10^3 \text{rad/s}^2$
18 Thermal resistance	$R_{th 1} / R_{th 2}$	1,5 / 6					K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	33 / 843					s
20 Operating temperature range:							
- motor		-30 ... +125					$^{\circ}\text{C}$
- rotor, max. permissible		+155					$^{\circ}\text{C}$
21 Shaft bearings		ball bearings, preloaded					
22 Shaft load max.:							
- with shaft diameter		6					mm
- radial at 3 000 rpm (3 mm from bearing)		60					N
- axial at 3 000 rpm		6					N
- axial at standstill		50					N
23 Shaft play							
- radial	$\Delta$	0,015					mm
- axial	$\parallel$	0					mm
24 Housing material		steel, black coated					
25 Weight		400					g
26 Direction of rotation		clockwise, viewed from the front face					

### Recommended values - mathematically independent of each other

27 Speed up to	$n_{e \max}$	8 000	8 000	8 000	8 000	8 000	rpm
28 Torque up to	$M_{e \max}$	110	110	110	110	110	mNm

