

# DC-Micromotor

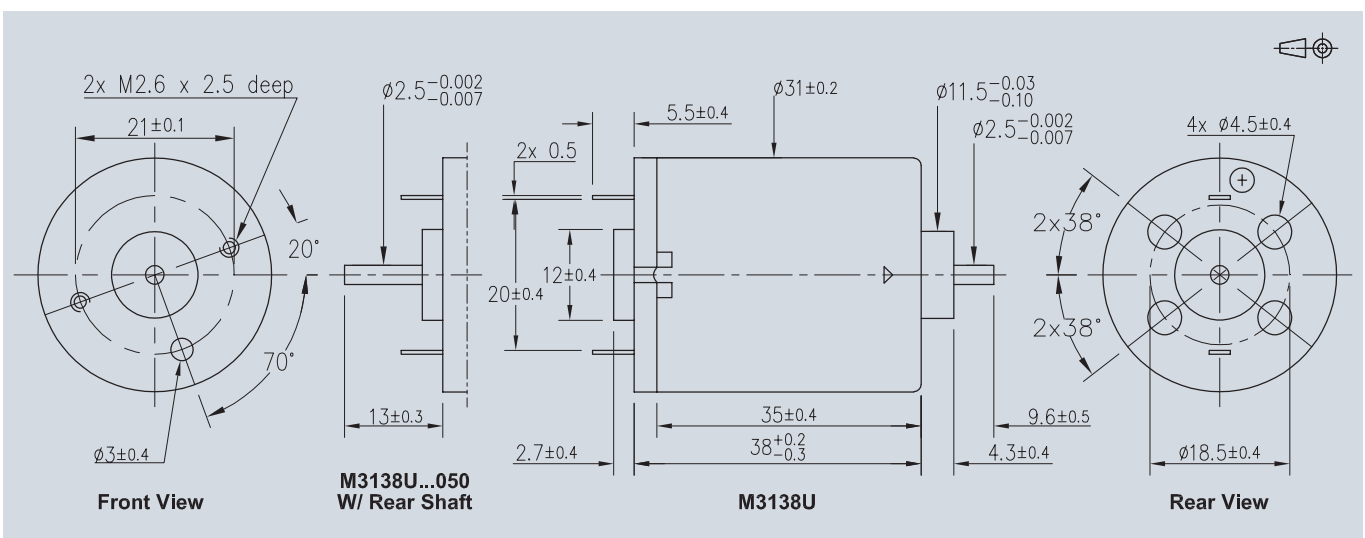
## Graphite Commutation

12.5 mNm

For combination with:  
 Gearheads:  
 M32P, MD35C, MD35P  
 Encoders:  
 E4P-300, AMT 102, AMT 103

### Series M3138U

	M3138U		06GS	12GS	24GS	
1 Nominal voltage	$U_N$		6	12	24	Volt
2 Winding resistance	$R$	$\pm 10\%$	0.43	2.50	8.70	$\Omega$
3 Output power	$P_{2 \text{ max.}}$		19.65	12.98	15.26	W
4 Efficiency	$\eta_{\text{ max.}}$		68	60	64	%
5 No-load speed	$n_o$	$\pm 10\%$	7,800	7,800	6,600	rpm
6 No-load current max. (shaft $\varnothing$ 2.5 mm)	$I_o$	$\pm 60\%$	0.432	0.243	0.11	A
7 Stall torque	$M_H$		99.32	66.95	91.97	mNm
8 Friction torque	$M_R$		3.08	3.39	3.67	mNm
9 Speed constant	$k_n$		1,342	685	286	rpm/V
10 Back-EMF constant	$k_E$		0.75	1.46	3.49	mV/rpm
11 Torque constant	$k_M$		7.12	13.95	33.34	mNm/A
12 Current constant	$k_I$		0.140	0.072	0.030	A/mNm
13 Slope of n-M curve	$\Delta n/\Delta M$		79	117	72	rpm/mNm
14 Rotor inductance	$L$		470	2,200	2,500	$\mu\text{H}$
15 Mechanical time constant	$\tau_m$		15	26	14	ms
16 Rotor inertia	$J$		18	20	18	$\text{gcm}^2$
17 Angular acceleration	$\alpha_{\text{ max.}}$		55	33	51	$\cdot 10^3 \text{ rad/s}^2$
18 Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	25 / 9.5				$^{\circ}\text{C/W}$
19 Thermal time constant	$\tau_w$	793				s
20 Operating temperature range:						
- motor		- 10 to + 50				$^{\circ}\text{C}$
- rotor, max. permissible		+ 120				$^{\circ}\text{C}$
21 Shaft bearing		sintered bronze sleeves				
22 Shaft load max.:						
- with shaft diameter		2.5				mm
- radial at 3,000 rpm (3 mm from bearing)		5.88				N
- axial at 3,000 rpm		2				N
- axial at standstill (shaft supported)		490				N
23 Shaft play						
- radial (4 mm from motor face)	$\leq$	0.03				mm
- axial	$\leq$	0.5				mm
24 Housing material		steel, nickel plating				
25 Weight		100				g
26 Direction of rotation			CCW	CW	CCW	
<b>Recommended values</b>						
27 Speed up to	$n_{e \text{ max.}}$		15,000	15,000	15,000	rpm
28 Torque up to	$M_{e \text{ max.}}$		12.498	9.597	12.454	mNm
29 Current up to (thermal limits)	$I_{e \text{ max.}}$		2.184	0.856	0.465	A



## How to Order a M3138U

Part number	Voltage	Description
M3138U06GS000	6	standard motor
M3138U06GS050	6	standard motor with rear shaft
M3138U12GS000	12	standard motor
M3138U12GS050	12	standard motor with rear shaft
M3138U24GS000	24	standard motor
M3138U24GS050	24	standard motor with rear shaft