

# DC-Micromotors

## Precious Metal Commutation

# 1,8 mNm

For combination with (overview on page 14-15)

Gearheads:  
10/1, 12/3, 12/4, 12/5

Encoders:  
30B

## Series 1224 ... SR

	1224 N	006 S	012 S	015 S	
1 Nominal voltage	$U_N$	6	12	15	Volt
2 Terminal resistance	R	4,6	18,2	29,4	$\Omega$
3 Output power	$P_{2 \max.}$	1,92	1,95	1,88	W
4 Efficiency	$\eta_{\max.}$	82	83	83	%
5 No-load speed	$n_0$	13 800	13 700	13 400	rpm
6 No-load current (with shaft $\varnothing$ 1,0 mm)	$I_0$	0,011	0,005	0,004	A
7 Stall torque	$M_H$	5,31	5,43	5,36	mNm
8 Friction torque	$M_R$	0,05	0,05	0,05	mNm
9 Speed constant	$k_n$	2 323	1 151	901	rpm/V
10 Back-EMF constant	$k_E$	0,430	0,869	1,110	mV/rpm
11 Torque constant	$k_M$	4,11	8,30	10,60	mNm/A
12 Current constant	$k_I$	0,243	0,120	0,094	A/mNm
13 Slope of n-M curve	$\Delta n / \Delta M$	2 600	2 523	2 499	rpm/mNm
14 Rotor inductance	L	55	220	350	$\mu H$
15 Mechanical time constant	$\tau_m$	5	5	5	ms
16 Rotor inertia	J	0,18	0,18	0,18	gcm <sup>2</sup>
17 Angular acceleration	$\alpha_{\max.}$	295	302	298	$\cdot 10^3 \text{ rad/s}^2$
18 Thermal resistance	$R_{th 1} / R_{th 2}$	17 / 37			K/W
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	6,5 / 371			s
20 Operating temperature range:					
– motor		– 30 ... + 85			°C
– rotor, max. permissible		+ 85			°C
21 Shaft bearings		sintered bronze sleeves			
22 Shaft load max.:					
– with shaft diameter		1,0			mm
– radial at 3 000 rpm (1,5 mm from bearing)		0,5			N
– axial at 3 000 rpm		0,1			N
– axial at standstill		20			N
23 Shaft play:					
– radial	$\leq$	0,03			mm
– axial	$\leq$	0,2			mm
24 Housing material		steel, black coated			
25 Weight		13,5			g
26 Direction of rotation		clockwise, viewed from the front face			
<b>Recommended values - mathematically independent of each other</b>					
27 Speed up to	$n_{e \max.}$	12 000	12 000	12 000	rpm
28 Torque up to	$M_{e \max.}$	1,80	1,86	1,86	mNm
29 Current up to (thermal limits)	$I_{e \max.}$	0,450	0,230	0,180	A

