

**NEW**

**DC-Micromotors**  
Precious Metal Commutation

**5,03 mNm**  
**9,76 W**

**Series 1627 ... SXR**

Values at 22°C and nominal voltage	1627 U	003 SXR	4,5 SXR	006 SXR	009 SXR	012 SXR	018 SXR	024 SXR		
Nominal voltage	$U_N$	3	4,5	6	9	12	18	24	V	
Terminal resistance	$R$	0,63	1,51	2,43	6,73	10,5	25,3	39,5	$\Omega$	
Rotor inductance	$L$	29,8	72,2	119	332	518	1 260	1 960	$\mu\text{H}$	
Efficiency, max.	$\eta_{max}$	75	75	76	75	76	76	76	%	
No-load current, typ.	$I_0$	0,0827	0,052	0,0414	0,0232	0,0193	0,0121	0,0101	A	
No-load speed	$n_0$	8 350	8 040	8 350	7 500	8 010	7 700	8 240	$\text{min}^{-1}$	
Stall torque	$M_H$	15,9	15,4	16,5	14,9	15,9	15,4	16,5	mNm	
Rotor inertia	$J$	0,908	0,908	0,908	0,908	0,908	0,908	0,908	$\text{gcm}^2$	
Friction torque	$M_f$	0,105	0,102	0,105	0,097	0,102	0,099	0,104	mNm	
Torque constant	$k_M$	3,4	5,28	6,79	11,3	14,2	22,1	27,5	$\text{mNm/A}$	
Speed constant	$k_n$	2 810	1 810	1 410	844	675	433	347	$\text{min}^{-1}/\text{V}$	
Slope of n-M curve	$\Delta n/\Delta M$	522	518	504	501	502	497	497	$\text{min}^{-1}/\text{mNm}$	
Thermal resistance:										
- winding to housing	$R_{th1}$	10							K/W	
- housing to ambient (external plastic flange)	$R_{th2p}$	26							K/W	
- housing to ambient (external metal flange)	$R_{th2m}$	2,9							K/W	
Thermal time constant:										
- winding	$\tau_{w1}$	11							s	
- housing (external plastic flange)	$\tau_{w2p}$	310							s	
- housing (external metal flange)	$\tau_{w2m}$	34							s	
Operating temperature range:										
- motor		-30 ... +85							$^{\circ}\text{C}$	
- winding, max. permissible		+125							$^{\circ}\text{C}$	
Shaft bearings										
Shaft diameter		sintered bearings				ball bearings, preloaded				
Radial shaft load max.:		2				2				mm
- dynamic at 3 000 $\text{min}^{-1}$ (4 mm from bearing)		2				8				N
Axial shaft load max.:										
- dynamic at 3 000 $\text{min}^{-1}$		0,2				0,8				N
- static (shaft unsupported)		40				40				N
- static (shaft supported)		300				300				N
Shaft play, max.:										
- radial		0,03				0,015				mm
- axial		0,2				0				mm
Speed up to	$n_{max}$	15 000								$\text{min}^{-1}$
Number of pole pairs		1								
Mass		24,1								g
Housing material		steel, nickel plated								
Magnet material		NdFeB								

Rated values for continuous operation									
Rated torque	$M_N$	2,53	3,97	4,96	5,02	4,99	5,03	5	mNm
Rated current (thermal limit)	$I_N$	0,84	0,84	0,84	0,508	0,405	0,262	0,209	A
Rated speed	$n_N$	6 990	5 700	5 070	4 110	4 690	4 360	4 960	$\text{min}^{-1}$

**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2p}$  value has been reduced by 0%.

**Note:**

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

The nominal voltage ( $U_N$ ) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



