

**NEW**

**DC-Micromotors**  
Graphite Commutation

**5,71 mNm**  
**9,31 W**

**Series 1627 ... GXR**

Values at 22°C and nominal voltage	1627 U	4,5 GXR	006 GXR	009 GXR	012 GXR	018 GXR	024 GXR	
Nominal voltage	$U_N$	4,5	6	9	12	18	24	V
Terminal resistance	$R$	1,51	2,43	6,73	10,5	25,3	39,5	$\Omega$
Rotor inductance	$L$	72,2	119	332	518	1 260	1 960	$\mu\text{H}$
Efficiency, max.	$\eta_{max}$	63	66	68	69	70	71	%
No-load current, typ.	$I_0$	0,064	0,0516	0,0297	0,0248	0,0157	0,0131	A
No-load speed	$n_0$	7 110	7 620	7 050	7 650	7 460	8 040	$\text{min}^{-1}$
Stall torque	$M_{H1}$	13,6	15	14	15,1	14,9	16	mNm
Rotor inertia	$J$	0,908	0,908	0,908	0,908	0,908	0,908	$\text{gcm}^2$
Friction torque	$M_R$	0,163	0,166	0,163	0,166	0,165	0,168	mNm
Torque constant	$k_M$	5,28	6,79	11,3	14,2	22,1	27,5	$\text{mNm/A}$
Speed constant	$k_n$	1 810	1 410	844	675	433	347	$\text{min}^{-1}/\text{V}$
Slope of n-M curve	$\Delta n/\Delta M$	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 ... +100						$^{\circ}\text{C}$
- winding, max. permissible		+125						$^{\circ}\text{C}$
Shaft bearings		sintered bearings			ball bearings, preloaded			
Shaft diameter		2			2			mm
Radial shaft load max.:								
- 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	$M_N$	3,92	4,95	5,62	5,62	5,71	5,69	mNm
Rated current (thermal limit)	$I_N$	0,84	0,84	0,582	0,467	0,304	0,244	A
Rated speed	$n_N$	4 750	4 350	2 850	3 500	3 260	3 910	$\text{min}^{-1}$

**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2p}$  value has been reduced by 25%.

**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.



