

DC-Micromotors

Graphite Commutation

26,9 mNm
22,5 W

Series 2642 ... CXR

Values at 22°C and nominal voltage	2642 W	012 CXR	015 CXR	018 CXR	024 CXR	036 CXR	048 CXR	
Nominal voltage	U_N	12	15	18	24	36	48	V
Terminal resistance	R	1,46	2,38	3,29	5,84	13,8	24,1	Ω
Rotor inductance	L	136	228	313	563	1 280	2 290	μH
Efficiency, max.	η_{max}	77	77	78	78	79	79	%
No-load current, typ.	I_0	0,0929	0,0717	0,0612	0,0456	0,0302	0,0226	A
No-load speed	n_0	5 930	5 770	5 940	5 950	5 950	5 960	min^{-1}
Stall torque	M_H	145	145	148	151	146	149	mNm
Rotor inertia	J	12	12	12	12	12	12	gcm^2
Friction torque	M_R	1,7	1,7	1,7	1,7	1,7	1,7	mNm
Torque constant	k_M	18,6	24,1	28,3	37,9	57,2	76,5	mNm/A
Speed constant	k_n	513	396	338	252	167	125	min^{-1}/V
Slope of n-M curve	$\Delta n/\Delta M$	40,3	39,1	39,4	38,8	40,2	39,3	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:								
– winding to housing	R_{th1}	4,9						K/W
– housing to ambient (external plastic flange)	$R_{\text{th2 p}}$	14						K/W
– housing to ambient (external metal flange)	$R_{\text{th2 m}}$	1,9						K/W
Thermal time constant:								
– winding	τ_{w1}	24						s
– housing (external plastic flange)	$\tau_{w2 p}$	650						s
– housing (external metal flange)	$\tau_{w2 m}$	87						s
Operating temperature range:								
– motor		-30 ... +100						°C
– winding, max. permissible		+125						°C
Shaft bearings		sintered bearings			ball bearings, preloaded			
Shaft diameter		4			4			mm
Radial shaft load max.:								
– dynamic at 3 000 min^{-1} (3 mm from bearing)		10			20			N
Axial shaft load max.:								
– dynamic at 3 000 min^{-1}		2			2			N
– static (shaft unsupported)		50			20			N
– static (shaft supported)		1 400			1 400			N
Shaft play, max.:								
– radial		0,03			0,015			mm
– axial		0,15			0			mm
Speed up to	n_{max}	7 000						min^{-1}
Number of pole pairs		1						
Mass		114						g
Housing material		steel, zinc galvanized and passivated						
Magnet material		NdFeB						

Rated values for continuous operation

Rated torque	M_N	25,5	26,3	26,2	26,7	26,4	26,9	mNm
Rated current (thermal limit)	I_N	1,65	1,31	1,12	0,844	0,554	0,421	A
Rated speed	n_N	4 700	4 520	4 710	4 710	4 660	4 680	min^{-1}

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The $R_{\text{th2 p}}$ 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.



