

DC-Micromotors

Precious Metal Commutation

0,172 mNm

0,578 W

Series 0615 ... S

Values at 22°C and nominal voltage	0615 N	1,5 S	003 S	4,5 S	
Nominal voltage	U_N	1,5	3	4,5	V
Terminal resistance	R	3,9	16,2	37,7	Ω
Rotor inductance	L	12	39	95	μH
Efficiency, max.	η_{max}	53	51	50	%
No-load current, typ.	I_0	0,0291	0,0154	0,0102	A
No-load speed	n_0	19 200	20 300	20 100	min^{-1}
Stall torque	M_H	0,245	0,221	0,214	mNm
Rotor inertia	J	0,01	0,01	0,01	gcm^2
Friction torque	M_R	0,02	0,02	0,02	mNm
Torque constant	k_M	0,69	1,3	1,96	mNm/A
Speed constant	k_n	13 800	7 350	4 870	min^{-1}/V
Slope of n-M curve	$\Delta n/\Delta M$	78 200	91 500	93 700	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:					
– winding to housing	R_{th1}	34			K/W
– housing to ambient (external plastic flange)	$R_{\text{th2 p}}$	74			K/W
– housing to ambient (external metal flange)	$R_{\text{th2 m}}$	56			K/W
Thermal time constant:					
– winding	τ_{w1}	2,6			s
– housing (external plastic flange)	$\tau_{w2 p}$	54			s
– housing (external metal flange)	$\tau_{w2 m}$	41			s
Operating temperature range:					
– motor		-30 ... +85 (optional version -30 ... +125)			°C
– winding, max. permissible		+85 (optional version +125)			°C
Shaft bearings		sintered bearings			
Shaft diameter		0,8			mm
Radial shaft load max.:					
– dynamic at 3 000 min^{-1} (1,5 mm from bearing)		0,5			N
Axial shaft load max.:					
– dynamic at 3 000 min^{-1}		0,1			N
– static (shaft unsupported)		20			N
Shaft play, max.:					
– radial		0,03			mm
– axial		0,15			mm
Speed up to	n_{max}	24 000			min^{-1}
Number of pole pairs		1			
Mass		2			g
Housing material		steel, black coated			
Magnet material		NdFeB			

Rated values for continuous operation					
Rated torque	M_N	0,172	0,156	0,152	mNm
Rated current (thermal limit)	I_N	0,292	0,142	0,0919	A
Rated speed	n_N	2 500	2 500	2 500	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 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.



