DC-Micromotors

Precious Metal Commutation

2,9 mNm

5,3 W

Series 1524 ... SR

Values at 22°C and nominal voltage		1524 T	003 SR	006 SR	009 SR	012 SR	018 SR	024 SR	
1	Nominal voltage	U_N	3	6	9	12	18	24	V
2	Terminal resistance	R	1,1	5,1	10,6	19,8	43,9	79,3	Ω
3	Output power	$P_{2nom.}$	1,93	1,72	1,87	1,78	1,8	1,77	W
4	Efficiency, max.	$\eta_{max.}$	80	80	80	80	80	80	%
5	No-load speed	n_0	10 600	9 500	10 000	9 800	9 800	9 800	min^{-1}
6	No-load current, typ. (with shaft ø 1,5 mm)	I_0	0,03	0,013	0,009	0,007	0,005	0,004	A
7	Stall torque	M_H	6,95	6,98	7,18	6,92	7,07	6,91	mNm
8	Friction torque	M_R	0,08	0,08	0,08	0,08	0,08	0,08	mNm
9	Speed constant	k_n	3 577	1 592	1 117	827	548	414	min^{-1}/V
10	Back-EMF constant	k_E	0,28	0,628	0,895	1,21	1,83	2,42	mV/min^{-1}
11	Torque constant	k_M	2,67	6	8,55	11,5	17,4	23,1	mNm/A
12	Current constant	k_I	0,374	0,167	0,117	0,087	0,057	0,043	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	1 530	1 350	1 380	1 420	1 380	1 420	min^{-1}/mNm
14	Rotor inductance	L	22	110	230	420	950	1 670	µH
15	Mechanical time constant	τ_m	8,5	8,2	8,3	8,3	8,2	8,3	ms
16	Rotor inertia	J	0,53	0,58	0,57	0,56	0,57	0,56	gcm^2
17	Angular acceleration	$\alpha_{max.}$	131	120	126	124	124	123	$\cdot 10^3 rad/s^2$
18	Thermal resistance	R_{th1} / R_{th2}	10 / 29						K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	5,6 / 220						s
20	Operating temperature range:								
	– motor		-30 ... +85 (optional version -55 ... +125)						°C
	– winding, max. permissible		+125						°C
21	Shaft bearings		sintered bearings		ball bearings, preloaded				
22	Shaft load max.:		(standard)		(optional version)				
	– with shaft diameter		1,5		1,5				mm
	– radial at 3 000 min^{-1} (3 mm from bearing)		1,2		5				N
	– axial at 3 000 min^{-1}		0,2		0,5				N
	– axial at standstill		20		10				N
23	Shaft play:								
	– radial	≤	0,03		0,015				mm
	– axial	≤	0,2		0				mm
24	Housing material		steel, black coated						
25	Mass		18						g
26	Direction of rotation		clockwise, viewed from the front face						
27	Speed up to	$n_{max.}$	13 000						min^{-1}
28	Number of pole pairs		1						
29	Magnet material		NdFeB						

Rated values for continuous operation									
30	Rated torque	M_N	1,7	2,9	2,9	2,9	2,9	2,9	mNm
31	Rated current (thermal limit)	I_N	0,7	0,56	0,38	0,28	0,19	0,14	A
32	Rated speed	n_N	7 800	3 860	4 500	4 130	4 330	4 110	min^{-1}

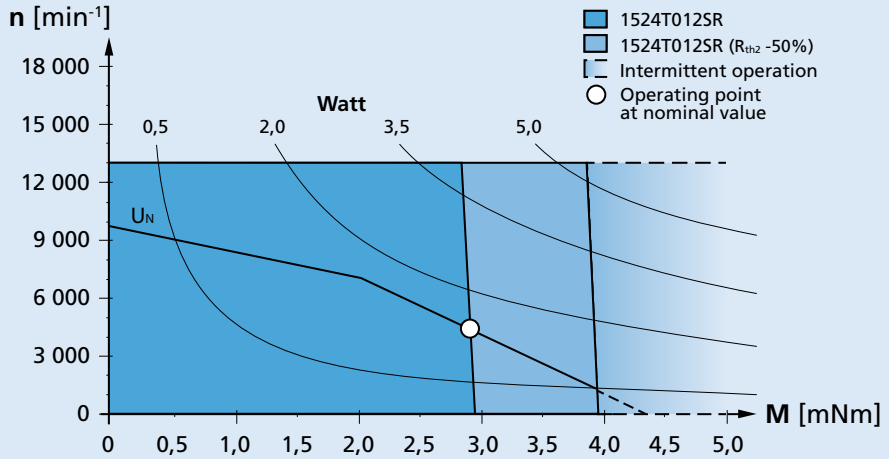
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The Rth2 value has been reduced by 0%.

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.

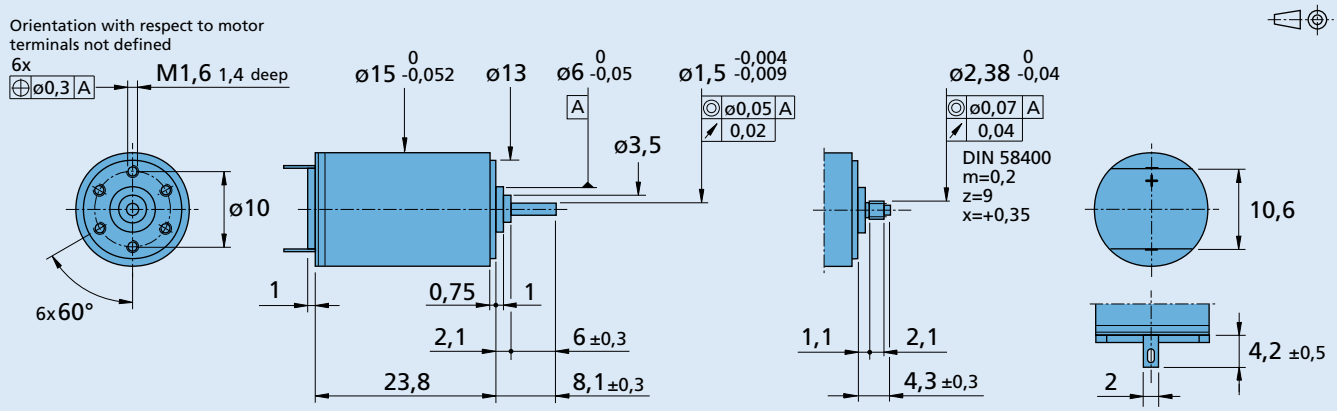
The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. 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.



Recommended operation areas (example: nominal voltage 12V)

Dimensional drawing



1524 T ... SR **1524 E ... SR**

Options

Example product designation: **1524T012SR-277**

Option	Type	Description
L	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-)
4924	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-)
X4924	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-)
4925	Twin Leads	For motors with twin leads (PVC), length 150 mm, red (+) / black (-), with connector AMP 179228-2
X4925	Twin Leads	For motors with twin leads (PVC), length 300 mm, red (+) / black (-), with connector AMP 179228-2
Y4925	Twin Leads	For motors with twin leads (PVC), length 600 mm, red (+) / black (-), with connector AMP 179228-2
F	Single Leads	For motors with single leads (PTFE), length 150 mm, red (+) / black (-)
277	Bearings	2 preloaded ball bearings

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics
15A	IE2-16	SC 1801
15/10	IE2-1024	MCDC 3002
16/7	IEH2-4096	
15/5	IEH3-4096	
15/5 S		
16A		
15/8		