

ATOM HS Series

SVTN A 02

Coreless BLDC motors

2 Pole High-speed Brushless DC Motors

[illegible]

ATOM HS Series

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Coreless BLDC motors

2 Pole High-speed Brushless DC Motors



Cost effective



Low noise



High speed



Typically employed in the medical field for surgical tools, these motors merge the SVTN A Series characteristics to a optimized project for high-speed functions.

Thanks to a precise balancing of the rotor and the use of special bearings, maximum stability and low noise are guaranteed.

Benefits

High-speed

Long lifespan

Cost-effective

Low inertia

High efficiency

Low noise

High reliability

Product code

SVTN A 02 ○○◇◇ - □□ - ◇ - ◇☆☆

A Series

02 Brushless DC Motors

○ Diameter

◇ Length

□ Nominal Voltage

◇ Shaft
Single shaft - standard [S]; Double shaft [D]

◇ Sensor
Sensorless [0]; Hall sensor - standard [H]*

☆☆ Customizations

* Not available for SVTN A 02 2053 and SVTN A 02 2057

Features

Winding	3 phase
Operating temperature	-30° +100° C
Connectors	JST PHR-8 1636; 1644; 1656; 2040
Magnets	Neodymium
Design technology	Coreless winding system
Estimated operating lifetime	Lifetime depends on motor working conditions. It can reach 20.000 hours under optimal conditions.

Feedback

Hall Sensor (standard)

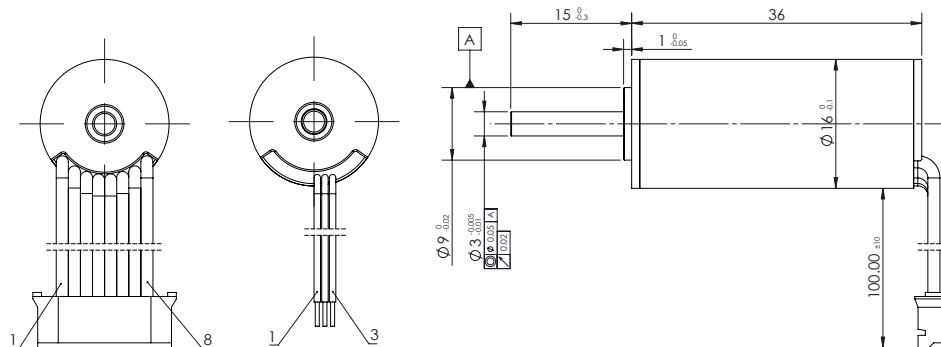
Customizations

Flange	Shape
Shaft	Length/Diameter/D-Cut
Leadwire	PVC/Silicon/Teflon/UL No/Dimension/length
Connector	JST



ATOM HS Series SVTN A 02 1636

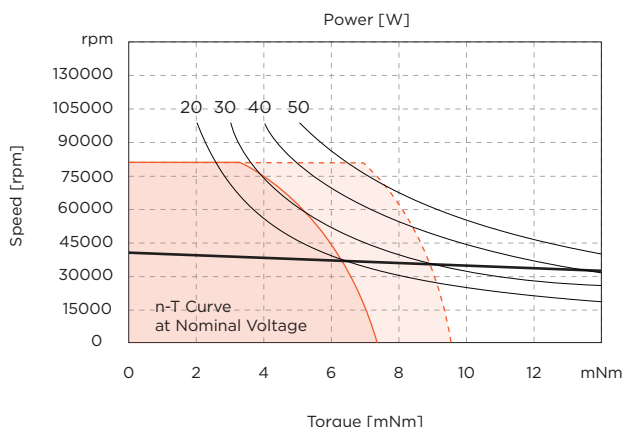
50 Watt



v3.1

Values	Unit	SVTN A 02	1636-24..	1636-30..	1636-36..
Motor Data					
1 Nominal voltage	V	24	30	36	
2 No load speed	rpm	40273	40225	40760	
3 No load current	mA	90	77	72	
4 Nominal speed	rpm	37067	36958	37406	
5 Nominal torque	mNm	5	5	5	
6 Nominal current	A	0,98	0,79	0,67	
7 Stall torque	mNm	62,8	61,6	60,8	
8 Stall current	A	11,2	8,8	7,3	
9 Max. efficiency	%	82,9	82,2	81,2	
Characteristics					
10 Terminal resistance*	Ω	2,14	3,41	4,9	
11 Terminal inductance*	mH	0,11	0,17	0,24	
12 Torque constant	mNm/A	5,65	7,06	8,35	
13 Speed constant	rpm/V	1692	1353	1143	
14 Speed/torque gradient	rpm/mNm	641	653	671	
15 Mechanical time constant	ms	3,7	3,8	3,9	
16 Rotor inertia	gcm ²	0,55	0,55	0,55	
Mechanical data					
17 Thermal resistance housing-ambient	18.6 K/W				
18 Thermal resistance winding-housing	3.44 K/W				
19 Thermal time constant winding	6 s				
20 Thermal time constant motor	298 s				
21 Ambient temperature	-30...+100°C				
22 Max. permissible winding temperature	+150°C				
23 Max. permissible speed	80000 rpm				
24 Radial play	preloaded				
25 Max. axial load (dynamic)	2.5 N				
26 Max. force for press fits (static)	44 N				
27 Max. radial load, 5mm from flange	11 N				
Other specifications					
28 Number of poles	2				
29 Number of phases	3				
30 Weight	32 g				

*The diagram based on ambient temperature of 25°.



Continuous operating range
Continuous operating range with Reduced Rth2 50%

Connection

Connection H	(Sensor)	PVC	
Pin 1	Vhall 3-18 VDC	AWG26	black
Pin 2	Hall sensor HA	AWG26	black
Pin 3	Hall sensor HB	AWG26	black
Pin 4	Hall sensor HC	AWG26	black
Pin 5	GND	AWG26	black
Pin 6	Motor winding MA	AWG26	black
Pin 7	Motor winding MB	AWG26	black
Pin 8	Motor winding MC	AWG26	black
Connector			
JST	PHR-8		
Connection O	(Sensorless)		
Pin 1	Motor winding MA	AWG26	yellow
Pin 2	Motor winding MB	AWG26	green
Pin 3	Motor winding MC	AWG26	blue

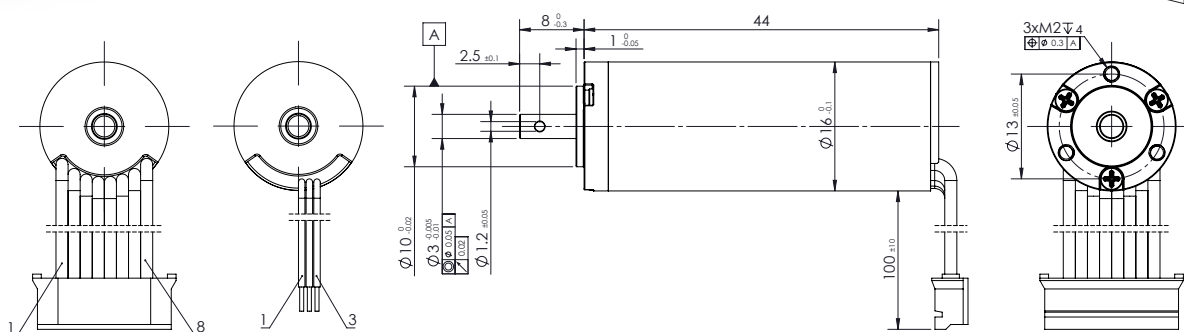
Drive combinations

Hall sensors
SVTE-A-E45
SVTE-A-E55



ATOM HS Series SVTN A 02 1644

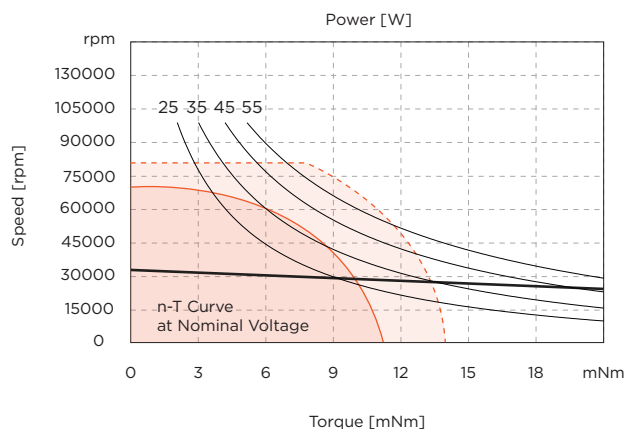
55 Watt



v3.1

Values	Unit	SVTN A 02	1644-24..	1644-30..	1644-36..
Motor Data					
1 Nominal voltage	V	24	30	36	
2 No load speed	rpm	30580	30900	30160	
3 No load current	mA	95	80	76	
4 Nominal speed	rpm	28134	28403	27632	
5 Nominal torque	mNm	7,5	7,5	7,5	
6 Nominal current	A	1,1	0,9	0,74	
7 Stall torque	mNm	93,8	92,8	89,5	
8 Stall current	A	12,7	10,2	8	
9 Max. efficiency	%	83,4	83	81,5	
Characteristics					
10 Terminal resistance*	Ω	1,89	2,95	4,5	
11 Terminal inductance*	mH	0,12	0,19	0,28	
12 Torque constant	mNm/A	7,44	9,2	11,3	
13 Speed constant	rpm/V	1284	1038	846	
14 Speed/torque gradient	rpm/mNm	326	333	337	
15 Mechanical time constant	ms	2,8	2,9	2,9	
16 Rotor inertia	gcm ²	0,82	0,82	0,82	
Mechanical data					
17 Thermal resistance housing-ambient	16.2 K/W				
18 Thermal resistance winding-housing	3.5 K/W				
19 Thermal time constant winding	4 s				
20 Thermal time constant motor	339 s				
21 Ambient temperature	-30...+100°C				
22 Max. permissible winding temperature	+150°C				
23 Max. permissible speed	80000 rpm				
24 Radial play	preloaded				
25 Max. axial load (dynamic)	2.5 N				
26 Max. force for press fits (static)	44 N				
27 Max. radial load, 5mm from flange	11 N				
Other specifications					
28 Number of poles	2				
29 Number of phases	3				
30 Weight	43g				

*The diagram based on ambient temperature of 25°.



Connection

Connection H	(Sensor)	PVC	
Pin 1	Vhall 3-18 VDC	AWG26	black
Pin 2	Hall sensor HA	AWG26	black
Pin 3	Hall sensor HB	AWG26	black
Pin 4	Hall sensor HC	AWG26	black
Pin 5	GND	AWG26	black
Pin 6	Motor winding MA	AWG26	black
Pin 7	Motor winding MB	AWG26	black
Pin 8	Motor winding MC	AWG26	black
Connector	JST	PHR-8	
Connection O	(Sensorless)		
Pin 1	Motor winding MA	AWG26	yellow
Pin 2	Motor winding MB	AWG26	green
Pin 3	Motor winding MC	AWG26	blue

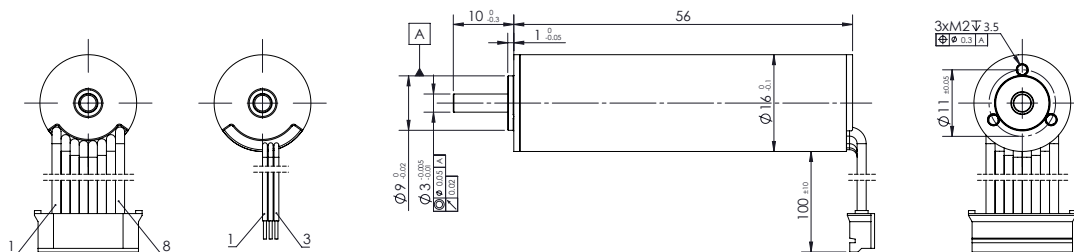
Drive combinations

Hall sensors
SVTE-A-E45
SVTE-A-E55



ATOM HS Series SVTN A 02 1656

75 Watt



v3.1

Values	Unit	SVTN A 02			
		1656-24..	1656-30..	1656-36..	
Motor Data					
1	Nominal voltage	V	24	30	36
2	No load speed	rpm	41670	40775	41311
3	No load current	mA	103	89	79
4	Nominal speed	rpm	39232	38438	38898
5	Nominal torque	mNm	6	6	6
6	Nominal current	A	1,2	0,95	0,8
7	Stall torque	mNm	103	105	103
8	Stall current	A	18,9	15,1	12,5
9	Max. efficiency	%	85,8	85,2	84,7
Characteristics					
10	Terminal resistance*	Ω	1,27	1,99	2,88
11	Terminal inductance*	mH	0,09	0,14	0,2
12	Torque constant	mNm/A	5,47	6,98	8,27
13	Speed constant	rpm/V	1746	1367	1155
14	Speed/torque gradient	rpm/mNm	406	390	402
15	Mechanical time constant	ms	2,6	2,5	2,6
16	Rotor inertia	gcm²	0,61	0,61	0,61
Mechanical data					
17	Thermal resistance housing-ambient	16.2 K/W			
18	Thermal resistance winding-housing	1.9 K/W			
19	Thermal time constant winding	5 s			
20	Thermal time constant motor	397 s			
21	Ambient temperature	-30...+100°C			
22	Max. permissible winding temperature	+150°C			
23	Max. permissible speed	80000 rpm			
24	Radial play	preloaded			
25	Max. axial load (dynamic)	2.5 N			
26	Max. force for press fits (static)	44 N			
27	Max. radial load, 5mm from flange	11 N			
Other specifications					
28	Number of poles	2			
29	Number of phases	3			
30	Weight	50 g			

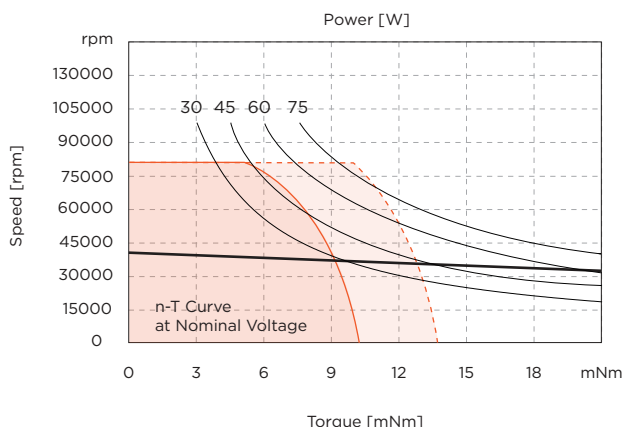
*The diagram based on ambient temperature of 25°.

The graph plots Speed [rpm] on the y-axis (0 to 130,000) against Power [W] on the x-axis (0 to 130,000). Four curves represent nominal speeds at different temperatures: 30, 45, 60, and 75. A shaded area represents the continuous operating range. A dashed line indicates the n-T curve at nominal voltage.

operating range

Continuos operating range

*The diagram based on ambient temperature of 25°.



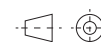
Continuous operating range
Continuous operating range with Reduced Rth2 50%

Connection

Connection H	(Sensor)	PVC	
Pin 1	Vhall 3-18 VDC	AWG26	black
Pin 2	Hall sensor HA	AWG26	black
Pin 3	Hall sensor HB	AWG26	black
Pin 4	Hall sensor HC	AWG26	black
Pin 5	GND	AWG26	black
Pin 6	Motor winding MA	AWG26	black
Pin 7	Motor winding MB	AWG26	black
Pin 8	Motor winding MC	AWG26	black
Connector	JST	PHR-8	
Connection O	(Sensorless)		
Pin 1	Motor winding MA	AWG26	yellow
Pin 2	Motor winding MB	AWG26	green
Pin 3	Motor winding MC	AWG26	blue

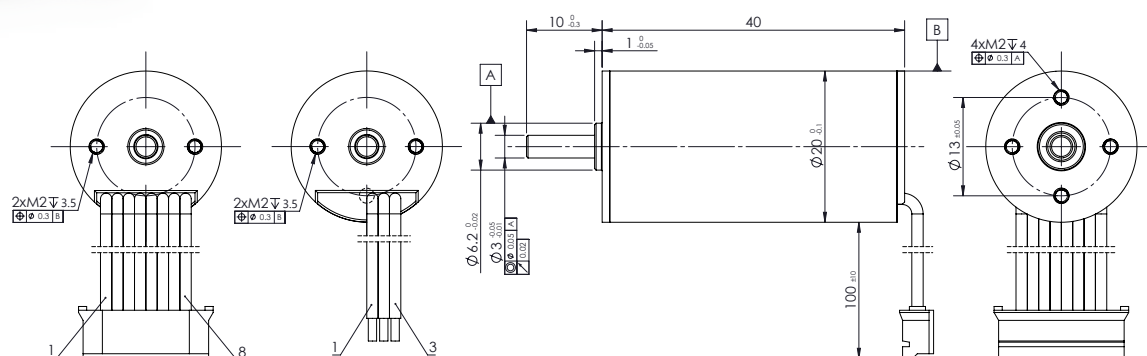
Drive combinations

Hall sensors
SVTE-A-E45
SVTE-A-E55



ATOM HS Series

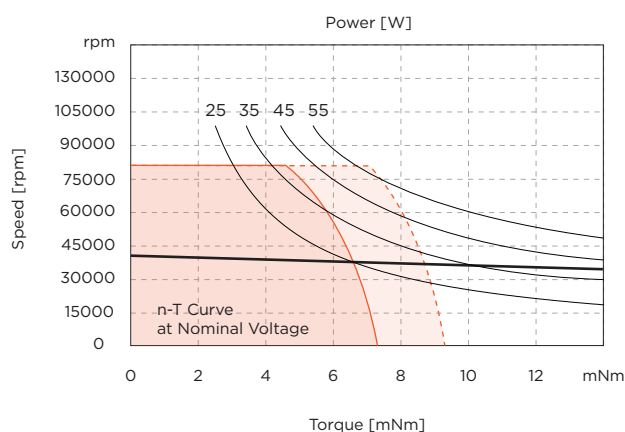
SVTN A 02 2040



v3.1

Values	Unit	SVTN A 02	2040-24..	2040-30..	2040-36..
Motor Data					
1 Nominal voltage	V	24	30	36	
2 No load speed	rpm	41392	40700	40020	
3 No load current	mA	69	60	55	
4 Nominal speed	rpm	37500	36777	36049	
5 Nominal torque	mNm	6,3	6,3	6,3	
6 Nominal current	A	1,21	0,96	0,79	
7 Stall torque	mNm	67	65,4	63,5	
8 Stall current	A	12,2	9,4	7,5	
9 Max. efficiency	%	85,5	84,7	83,6	
Characteristics					
10 Terminal resistance*	Ω	1,96	3,19	4,8	
11 Terminal inductance*	mH	0,21	0,47	0,47	
12 Torque constant	mNm/A	5,51	6,99	8,53	
13 Speed constant	rpm/V	1734	1365	1120	
14 Speed/torque gradient	rpm/mNm	618	623	630	
15 Mechanical time constant	ms	4,5	4,5	4,6	
16 Rotor inertia	gcm ²	0,69	0,69	0,69	
Mechanical data					
17 Thermal resistance housing-ambient	18.7 K/W				
18 Thermal resistance winding-housing	1.9 K/W				
19 Thermal time constant winding	5 s				
20 Thermal time constant motor	397 s				
21 Ambient temperature	-30...+100°C				
22 Max. permissible winding temperature	+150°C				
23 Max. permissible speed	80000 rpm				
24 Radial play	preloaded				
25 Max. axial load (dynamic)	2.5 N				
26 Max. force for press fits (static)	44 N				
27 Max. radial load, 5mm from flange	11 N				
Other specifications					
28 Number of poles	2				
29 Number of phases	3				
30 Weight	53 g				

*The diagram based on ambient temperature of 25°.



Continuous operating range

Continuous operating range with Reduced Rth2 50%

Connection

Connection H	(Sensor)	PVC	
Pin 1	Vhall 3-18 VDC	AWG26	black
Pin 2	Hall sensor HA	AWG26	black
Pin 3	Hall sensor HB	AWG26	black
Pin 4	Hall sensor HC	AWG26	black
Pin 5	GND	AWG26	black
Pin 6	Motor winding MA	AWG26	black
Pin 7	Motor winding MB	AWG26	black
Pin 8	Motor winding MC	AWG26	black
Connector	JST	PHR-8	
Connection O	(Sensorless)		
Pin 1	Motor winding MA	AWG26	yellow
Pin 2	Motor winding MB	AWG26	green
Pin 3	Motor winding MC	AWG26	blue

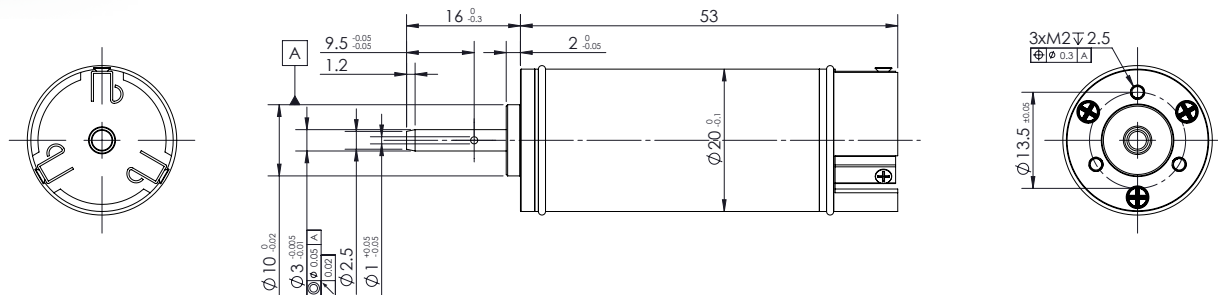
Drive combinations

Hall sensors
SVTE-A-E45
SVTE-A-E55



ATOM HS Series SVTN A 02 2053

100 Watt



v3.1

Values	Unit	SVTN A 02	2053-18..	2053-24..	2053-36..	2053-48..
Motor Data						
1	Nominal voltage	V	18	24	36	48
2	No load speed	rpm	50202	50832	51448	50700
3	No load current	mA	136	107	81	68
4	Nominal speed	rpm	45684	46379	46936	46188
5	Nominal torque	mNm	10	10	10	10
6	Nominal current	A	3,07	2,33	1,58	1,18
7	Stall torque	mNm	111	114	114	112
8	Stall current	A	32,7	25,5	17,2	12,6
9	Max. efficiency	%	87,5	87,5	86,8	85,8
Characteristics						
10	Terminal resistance*	Ω	0,55	0,94	2,09	3,82
11	Terminal inductance*	mH	0,06	0,1	0,23	0,38
12	Torque constant	mNm/A	3,41	4,49	6,65	8,99
13	Speed constant	rpm/V	2801	2127	1436	1062
14	Speed/torque gradient	rpm/mNm	452	445	451	451
15	Mechanical time constant	ms	3,9	3,9	3,9	3,9
16	Rotor inertia	gcm ²	0,83	0,83	0,83	0,83
Mechanical data						
17	Thermal resistance housing-ambient	11.8 K/W				
18	Thermal resistance winding-housing	0.8 K/W				
19	Thermal time constant winding	2 s				
20	Thermal time constant motor	386 s				
21	Ambient temperature	-30...+100°C				
22	Max. permissible winding temperature	+150°C				
23	Max. permissible speed	80000 rpm				
24	Radial play	preloaded				
25	Max. axial load (dynamic)	2.5 N				
26	Max. force for press fits (static)	44 N				
27	Max. radial load, 5mm from flange	11 N				
Other specifications						
28	Number of poles	2				
29	Number of phases	3				
30	Weight	63 g				

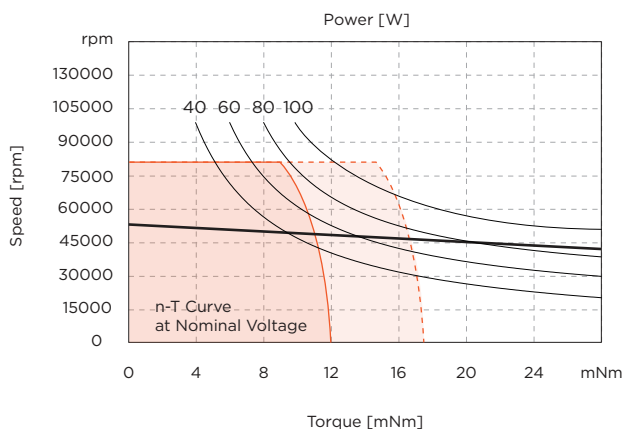
*The diagram based on ambient temperature of 25°.

The graph plots Speed [rpm] on the y-axis (0 to 130,000) against Power [W] on the x-axis. Four curves represent different ambient temperatures: 40°C, 60°C, 80°C, and 100°C. A solid red shaded area indicates the 'Continuous operating range', and a dashed red line outlines the 'Maximum operating range'. The curves show that as temperature increases, the permissible speed and power range decrease. The label 'n-T Curve at Nominal Voltage' is present in the bottom left of the graph area.

Continuous operating range

Maximum operating range

*The diagram based on ambient temperature of 25°.



Continuous operating range
Continuous operating range with Reduced Rth2 50%

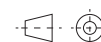
Connection

Screw terminals

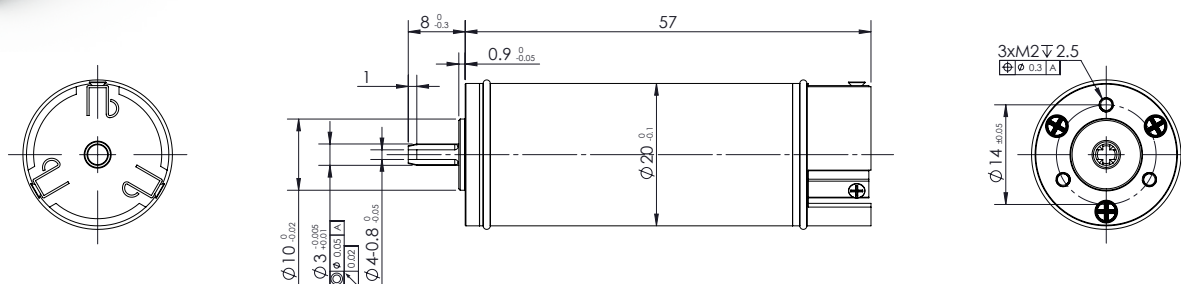


ATOM HS Series SVTN A 02 2057

150 Watt



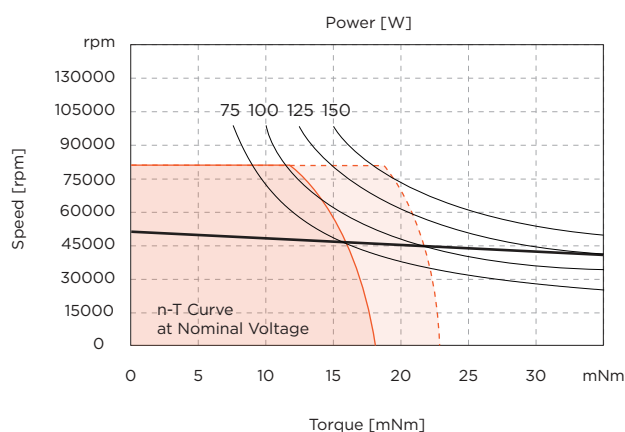
servotecnica



v3.1

Values	Unit	SVTN A 02 2057-18..	2057-24..	2057-36..	2057-48..
Motor Data					
1 Nominal voltage	V	18	24	36	48
2 No load speed	rpm	50202	50832	51286	50700
3 No load current	mA	210	158	113	94
4 Nominal speed	rpm	46263	46714	47328	46436
5 Nominal torque	mNm	15	15	15	15
6 Nominal current	A	4,61	3,5	2,36	1,76
7 Stall torque	mNm	191	185	194	178
8 Stall current	A	56,3	41,4	29,2	19,9
9 Max. efficiency	%	88,2	88	87,9	86,7
Characteristics					
10 Terminal resistance*	Ω	0,32	0,58	1,23	2,41
11 Terminal inductance*	mH	0,04	0,06	0,14	0,25
12 Torque constant	mNm/A	3,41	4,49	6,68	9
13 Speed constant	rpm/V	2799	2126	1430	1061
14 Speed/torque gradient	rpm/mNm	263	275	264	284
15 Mechanical time constant	ms	2,5	2,6	2,5	2,7
16 Rotor inertia	gcm ²	0,91	0,91	0,91	0,91
Mechanical data					
17 Thermal resistance housing-ambient	K/W	7,6			
18 Thermal resistance winding-housing	K/W	1,6			
19 Thermal time constant winding	s	5			
20 Thermal time constant motor	s	410			
21 Ambient temperature	°C	-30...+100			
22 Max. permissible winding temperature	°C	+150			
23 Max. permissible speed	rpm	80000			
24 Radial play		preloaded			
25 Max. axial load (dynamic)	N	2,5			
26 Max. force for press fits (static)	N	44			
27 Max. radial load, 5mm from flange	N	11			
Other specifications					
28 Number of poles		2			
29 Number of phases		3			
30 Weight	g	69			

*The diagram based on ambient temperature of 25°.



Continuous operating range

Continuous operating range with Reduced Rth2 50%

Connection

Screw terminals