

ATOM HS Series

SVTN A 02

Coreless BLDC motors
2 Pole High-speed Brushless DC Motors

ATOM HS Series

SVTN A 02

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 ○○◇◇ - □□ - 〡 - 〡☆☆

A Series

02 Brushless DC Motors

○ Diameter

◇ Length

□ Nominal Voltage

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

〡 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)

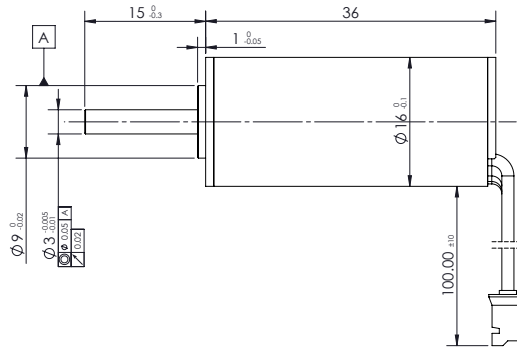
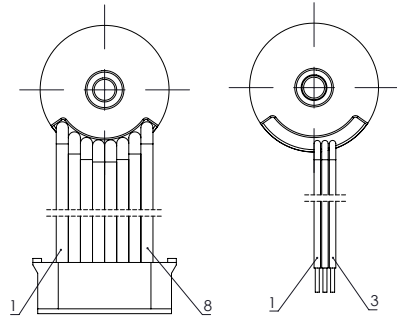
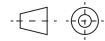
Customizations

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



ATOM HS Series SVTN A 02 1636

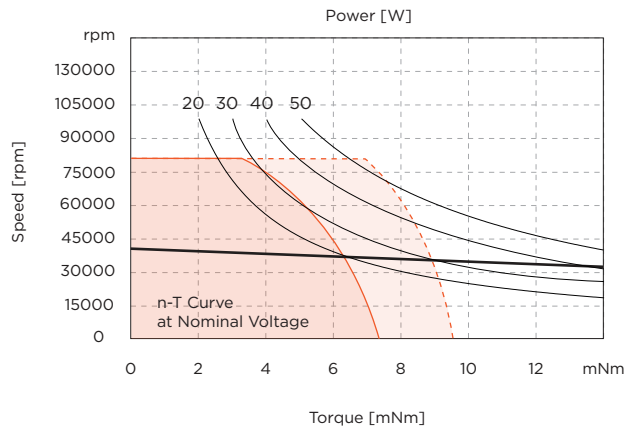
50 Watt



V 3

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	K/W	18,6		
18	Thermal resistance winding-housing	K/W	3,44		
19	Thermal time constant winding	s	6		
20	Thermal time constant motor	s	298		
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	32		

*The diagram based on ambient temperature of 25°.



Continuous operating range
Continuous operating range with Reduced RTHZ 50%

Connection

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

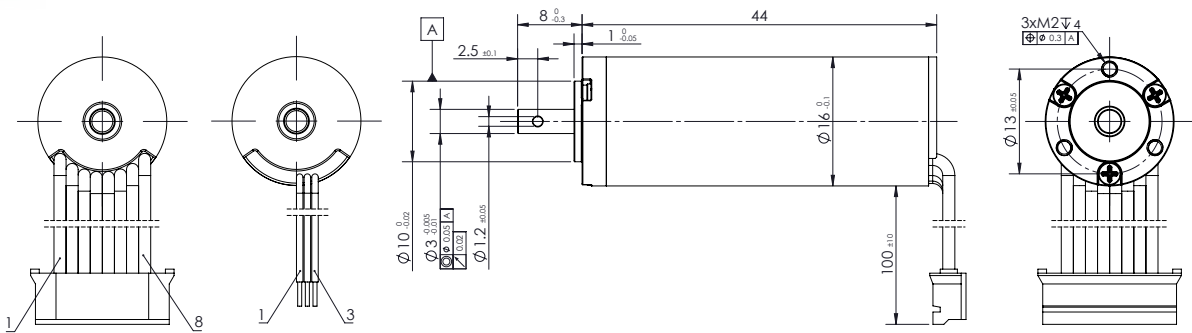
Drive combinations

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



ATOM HS Series
SVTN A 02 1644

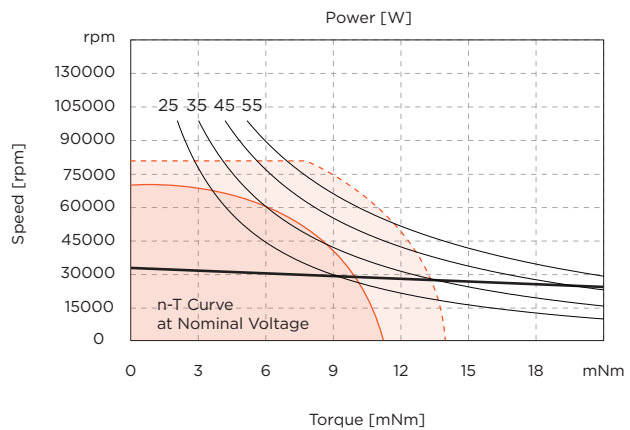
55 Watt



V 3

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	K/W	16.2		
18	Thermal resistance winding-housing	K/W	3.5		
19	Thermal time constant winding	s	4		
20	Thermal time constant motor	s	339		
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	43g		

*The diagram based on ambient temperature of 25°.



Continuous operating range
Continuous operating range with Reduced RthZ 50%

Connection

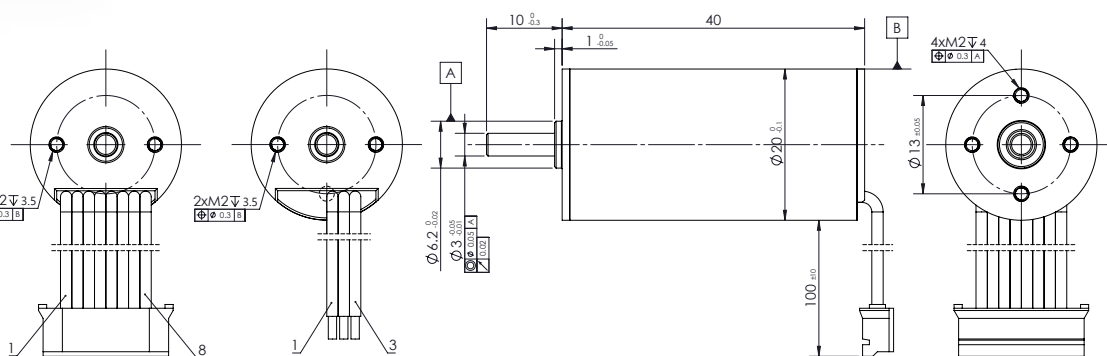
Connection H (Sensor)	PVC
Pin 1	Vhall 3-18 VDC
Pin 2	Hall sensor HA
Pin 3	Hall sensor HB
Pin 4	Hall sensor HC
Pin 5	GND
Pin 6	Motor winding MA
Pin 7	Motor winding MB
Pin 8	Motor winding MC
Connector	JST PHR-8
Connection O (Sensorless)	
Pin 1	Motor winding MA
Pin 2	Motor winding MB
Pin 3	Motor winding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

Drive combinations

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



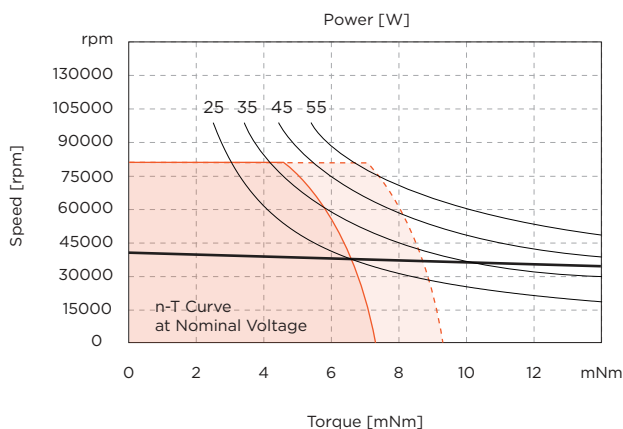
ATOM HS Series
SVTN A 02 2040



V 3

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 RthZ 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	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

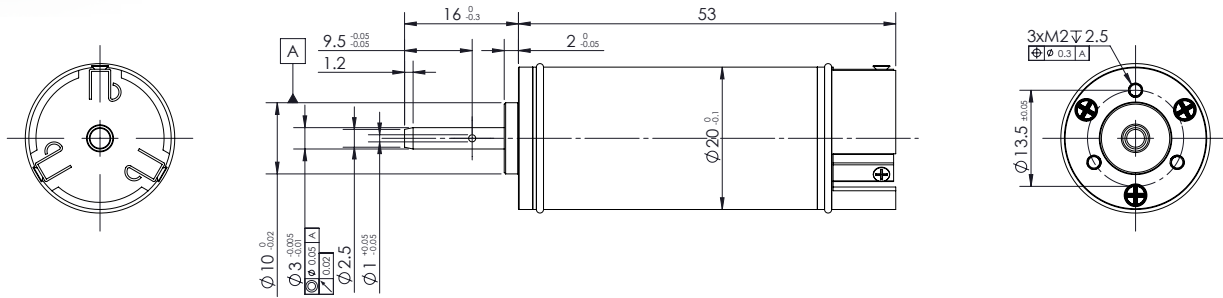
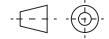
Drive combinations

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



ATOM HS Series SVTN A 02 2053

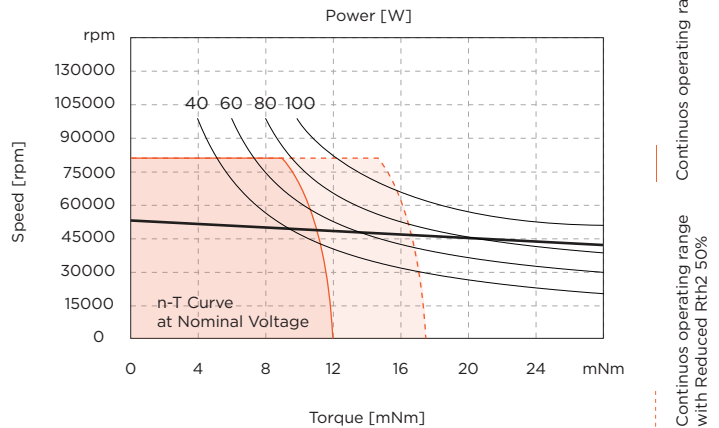
100 Watt



V 3

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	K/W	11,8			
18	Thermal resistance winding-housing	K/W	0,8			
19	Thermal time constant winding	s	2			
20	Thermal time constant motor	s	386			
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	63			

*The diagram based on ambient temperature of 25°.

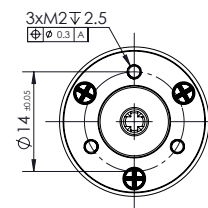
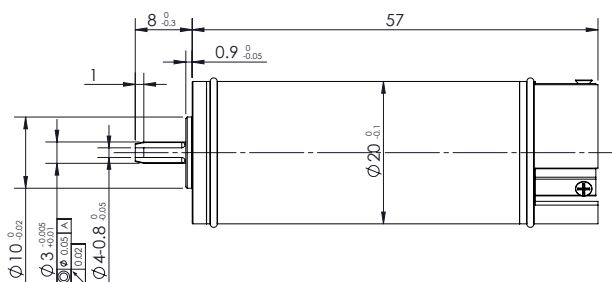
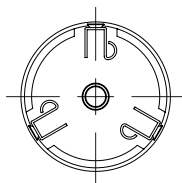


Connection

Screw terminals



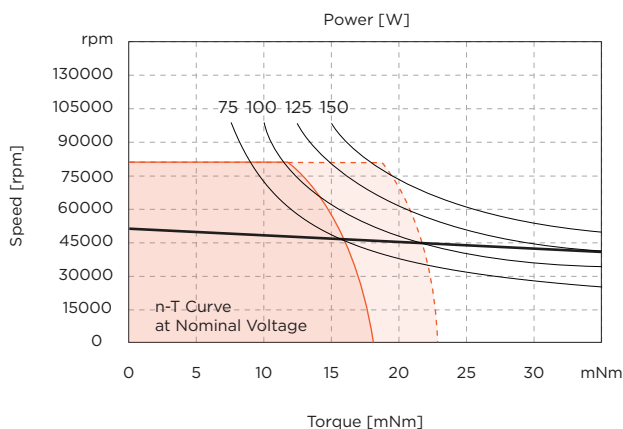
ATOM HS Series
SVTN A 02 2057



V 3

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 Rtn2 50%

Connection

Screw terminals