thin gap | LS SERIES
FRAMELESS MOTOR KIT

HIGH TORQUE-TO-WEIGHT RATIO | LIGHT-WEIGHT AND LOW-INERTIA | HIGHLY EFFICIENT
RING ARCHITECTURE | ZERO COGGING FOR PRECISION MOVEMENT | SCALABLE IN SIZE AND POWER

Data Sheet Model Number: LSI 105-33

ThinGap's LS Line includes numerous high performance brushless permanent magnet motors. The LS line targets lower speed, high precision applications such as gimbals, optics, and precision robotics. The highest torque density with high power capability and low thermal resistance.

ThinGap's LS Line of Brushless Motors
For low speed, high precision applications such as gimbals, optics, and precision robotics. Highest torque density with high power capability. Available in sizes 25mm to 267mm.

Winding Independent Parameter Table

Continuous Parameters	Units	Value
Continuous Torque @ Max Speed	N-m	1.77
Max Continuous Speed	RPM	2,050
Max Continuous Power	W	381
Peak Parameters @ Max Speed	**Units**	**Value**
Peak Torque (1 sec)	N-m	24.4
Peak Power (1 sec)	W	5,238
Peak Torque (3 sec)	N-m	14.1
Peak Power (3 sec)	W	3,027
Mechanical Parameters	**Units**	**Value**
Number of Magnetic Poles	ea	26
Outer Diameter	mm	105
Through Hole Diameter	mm	78
Axial Height	mm	33
Rotor Inertia	$kg\text{-}m^2$	7.20E-04
Rotor Mass	kg	0.389
Stator Mass	kg	0.292
Part Set Mass	kg	0.681
Temperature Parameters	**Units**	**Value**
Max Stator Temperature	°C	130
Max Rotor Temperature	°C	85
Thermal Resistance	°C/W	1.784

Torque and Mechanical Speed

Continuous rated torque of up to 1.77 N-m and a rated speed of up to 2050 RPM.

Motor Controller Recommendation

Standard 3-Phase Controller

High Frequency PWM power input

Resources for Integration

Space-claim CAD files at: www.thingap.com

Complete Mechanical drawings available upon request

Winding dependent Parameter Table

Electrical Parameters	Units	WYE SERIES Value	WYE PARALLEL Value	DELTA PARALLEL* Value
Required Motor Voltage @ Max Speed	$V_{pkl\text{-}l}$	89.5	44.8	25.9
Max Continuous Phase Current	A_{RMS}	4.0	8.0	13.9
Peak Phase Current (1 sec)	A_{RMS}	53.4	106.8	185.0
Peak Phase Current (3 sec)	A_{RMS}	31	62	107
Motor Resistance @ 20°C	Ω	1.83	0.46	0.15
Motor Resistance @ Max Temperature	Ω	2.57	0.64	0.21
Terminal Inductance	µH	85.2 ± 20%	21.3 ± 20%	7.1 ± 20%
Electrical Frequency @ Max Speed	Hz	444	444	444
Motor Constants	**Units**	**Value**	**Value**	**Value**
Voltage Constant (l-l)	$V_{pkl\text{-}l}$/rad/s	0.375	0.188	0.108
Voltage Constant (l-l)	$V_{pkl\text{-}l}$/kRPM	39.3	19.6	11.3
Torque Constant	$N\text{-}m/A_{RMS}$	0.46	0.23	0.13
Motor Constant	$N\text{-}m/\sqrt{W}$	0.277	0.277	0.277

*Delta Parallel winding option not available off-the-shelf; may be ordered as a special configuration.