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 39-17

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	0.101
Max Continuous Speed	RPM	4,600
Max Continuous Power	W	48.7
Peak Parameters @ Max Speed	**Units**	**Value**
Peak Torque (1 sec)	N-m	0.356
Peak Power (1 sec)	W	172
Peak Torque (3 sec)	N-m	0.205
Peak Power (3 sec)	W	99
Mechanical Parameters	**Units**	**Value**
Number of Magnetic Poles	ea	12
Outer Diameter	mm	39
Through Hole Diameter	mm	23
Axial Height	mm	17
Rotor Inertia	$kg\text{-}m^2$	8.67E-06
Rotor Mass	kg	0.043
Stator Mass	kg	0.033
Part Set Mass	kg	0.076
Temperature Parameters	**Units**	**Value**
Max Stator Temperature	°C	130
Max Rotor Temperature	°C	85
Thermal Resistance	°C/W	5.989

Torque and Mechanical Speed

Continuous rated torque of up to 0.101 N-m and a rated speed of up to 4600 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	$V_{pkl\text{-}l}$	27.4	13.7	7.9
Max Continuous Phase Current	A_{RMS}	1.9	3.9	6.7
Peak Phase Current (1 sec)	A_{RMS}	6.6	13.3	23.0
Peak Phase Current (3 sec)	A_{RMS}	3.8	7.6	13.2
Motor Resistance @ 20°C	Ω	2.42	0.60	0.20
Motor Resistance @ Max Temperature	Ω	3.39	0.85	0.28
Terminal Inductance	µH	44.3 ± 20%	11.1 ± 20%	3.7 ± 20%
Electrical Frequency @ Max Speed	Hz	460	460	460
Motor Constants	**Units**	**Value**	**Value**	**Value**
Voltage Constant (l-l)	$V_{pkl\text{-}l}$/rad/s	0.045	0.022	0.013
Voltage Constant (l-l)	$V_{pkl\text{-}l}$/kRPM	4.7	2.4	1.4
Torque Constant	$N\text{-}m/A_{RMS}$	0.055	0.028	0.016
Motor Constant	$N\text{-}m/\sqrt{W}$	0.029	0.029	0.029

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