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 187-46

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	12.01
Max Continuous Speed	RPM	1,250
Max Continuous Power	W	1,572
Peak Parameters @ Max Speed	**Units**	**Value**
Peak Torque (1 sec)	N-m	241
Peak Power (1 sec)	W	31,547
Peak Torque (3 sec)	N-m	139
Peak Power (3 sec)	W	18,195
Mechanical Parameters	**Units**	**Value**
Number of Magnetic Poles	ea	26
Outer Diameter	mm	187
Through Hole Diameter	mm	145
Axial Height	mm	46
Rotor Inertia	$kg\text{-}m^2$	9.82E-03
Rotor Mass	kg	1.578
Stator Mass	kg	1.139
Part Set Mass	kg	2.717
Temperature Parameters	**Units**	**Value**
Max Stator Temperature	°C	130
Max Rotor Temperature	°C	85
Thermal Resistance	°C/W	0.948

Torque and Mechanical Speed

Continuous rated torque of up to 12.01 N-m and a rated speed of up to 1250 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-l}	463.2	231.6	133.7
Max Continuous Phase Current	A_{RMS}	3.0	6.0	10.3
Peak Phase Current (1 sec)	A_{RMS}	58.5	117.0	202.7
Peak Phase Current (3 sec)	A_{RMS}	33.8	67.6	117.09
Motor Resistance @ 20°C	Ω	6.1	1.5	0.5
Motor Resistance @ Max Temperature	Ω	8.6	2.1	0.716
Terminal Inductance	µH	1,390 ± 20%	347.5 ± 20%	115.8 ± 20%
Electrical Frequency @ Max Speed	Hz	271	271	271
Motor Constants	**Units**	**Value**	**Value**	**Value**
Voltage Constant (l-l)	$V_{pkl-l}/rad/s$	3.367	1.684	0.972
Voltage Constant (l-l)	$V_{pkl-l}/kRPM$	352.6	176.3	101.8
Torque Constant	$N\text{-}m/A_{RMS}$	4.124	2.062	1.191
Motor Constant	$N\text{-}m/\sqrt{W}$	1.36	1.36	1.36

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