Data Sheet

Customer:	
Product:	**Automotive Grade Multilayer Chip Inductor – CL-SA Series**
Sizes.:	**0201/0402/0603**
Issued Date:	**14-Apr-25**
Edition:	**REV.A3**

RoHS Compliant

HONG KONG HELISTO INDUSTRIAL LIMITED
香港海利斯特实业有限公司

SHENZHEN HELISTO TECHNOLOGYCOLTD
深圳市海利斯特科技有限公司

ADD:5/F., A Block, Hongdu Industrial Park, Fanshen Road, 45 Area, Baoan, Shenzhen, China
TEL:+86-755-29741555 29749555
FAX:+86-755-29742111
E-mail:donnyhai@helisto.com
www.Helisto.com

Produced by (QC)	Checked (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
14-Apr-25	14-Apr-25	14-Apr-25	14-Apr-25	
Mandy Chang	*Ben Chang*	*Ben Chang*		

Automotive Grade Multilayer Chip Inductor



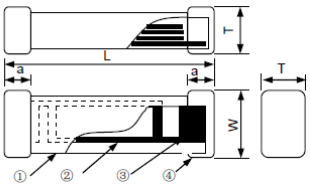
■Features

- Particular ceramic material and coil structure provide high frequency application range up to 10GHz
- Small size and low profile
- Available in various sizes
- Excellent solderability and heat resistance
- AEC-Q200 Compliance

■Applications

- RF and Wireless Communication
- Information Technology Equipment Which Includes Computer
- Telecommunications, Rated Detectors, Automotive Electronics, Cellular Phones
- Pagers, Audio Equipment, PDAs, Keyless Remote System and Low-voltage Power Supply Modules.

■Construction



①	Ceramic Material	③	Pull Out Electrode
②	Intermal Electrode	④	End-termination

■Dimensions

Unit: mm

Type	Size (Inch)	L	W	T	a
CL01-SA	0201	0.60±0.03	0.30±0.03	0.30±0.03	0.10~0.20
CL02-SA	0402	1.00±0.10	0.50±0.10	0.50±0.10	0.10~0.30
CL03-SA	0603	1.60±0.15	0.80±0.15	0.80±0.15	0.20~0.60

■Part Numbering

CL	02	J	T		1N0	-S	A
Product Type	Dimensions	Inductance Tolerance	Packaging Code	Appearance	Inductance	Special	Function Code
	01: 0201 02: 0402 03: 0603	B: ±0.1nH C: ±0.2nH S: ±0.3nH G: ±2% H: ±3% J: ±5%	T: Taping Reel	: Standard Q:High Q	0N3: 0.3nH 1N0: 1.0nH 10N: 10nH R10: 100nH		A: Automotive Grade

■Standard Electrical Specifications

CL01-SA Multilayer Chip Inductors / Standard Type

Inductance (nH)	Tolerance	Quality Factor /min.	L/Q Freq. (MHz)	SRF min. (GHz)	RDC (Ω) max.	IDC (mA) max.
0.3	±0.1nH	4	100	10.00	0.07	850
0.4	±0.1nH	4	100	10.00	0.07	850
0.5	±0.1nH	4	100	10.00	0.08	800
0.6	±0.1nH	4	100	10.00	0.08	800
0.7	±0.1nH	4	100	10.00	0.09	750
0.8	±0.1nH	4	100	10.00	0.10	750
0.9	±0.1nH	4	100	10.00	0.10	750
1.0	±0.1, 0.2, 0.3nH	4	100	10.00	0.14	600
1.1	±0.1, 0.2, 0.3nH	4	100	10.00	0.14	600
1.2	±0.1, 0.2, 0.3nH	4	100	10.00	0.14	600
1.3	±0.1, 0.2, 0.3nH	4	100	10.00	0.14	600
1.4	±0.1, 0.2, 0.3nH	4	100	10.00	0.18	550
1.5	±0.1, 0.2, 0.3nH	4	100	10.00	0.18	550
1.6	±0.1, 0.2, 0.3nH	4	100	10.00	0.18	500
1.7	±0.1, 0.2, 0.3nH	4	100	10.00	0.19	500
1.8	±0.1, 0.2, 0.3nH	4	100	10.00	0.19	500
1.9	±0.1, 0.2, 0.3nH	4	100	10.00	0.20	450
2.0	±0.1, 0.2, 0.3nH	4	100	10.00	0.20	450
2.1	±0.1, 0.2, 0.3nH	4	100	10.00	0.20	450
2.2	±0.1, 0.2, 0.3nH	4	100	10.00	0.22	450
2.3	±0.1, 0.2, 0.3nH	4	100	10.00	0.22	450
2.4	±0.1, 0.2, 0.3nH	4	100	10.00	0.24	450
2.5	±0.1, 0.2, 0.3nH	4	100	10.00	0.24	450
2.6	±0.1, 0.2, 0.3nH	4	100	10.00	0.25	450
2.7	±0.1, 0.2, 0.3nH	5	100	10.00	0.25	450
2.9	±0.1, 0.2, 0.3nH	5	100	9.50	0.28	450
3.0	±0.1, 0.2, 0.3nH	5	100	9.50	0.28	450
3.1	±0.1, 0.2, 0.3nH	5	100	9.50	0.28	450
3.2	±0.1, 0.2, 0.3nH	5	100	9.50	0.30	450
3.3	±0.1, 0.2, 0.3nH	5	100	9.50	0.30	450
3.4	±0.1, 0.2, 0.3nH	5	100	8.00	0.30	400
3.5	±0.1, 0.2, 0.3nH	5	100	8.00	0.30	400
3.6	±0.1, 0.2, 0.3nH	5	100	8.00	0.30	400
3.7	±0.1, 0.2, 0.3nH	5	100	8.00	0.30	400
3.8	±0.1, 0.2, 0.3nH	5	100	6.50	0.30	400
3.9	±0.1, 0.2, 0.3nH	5	100	6.50	0.30	400
4.3	±0.1, 0.2, 0.3nH	5	100	6.50	0.40	350
4.7	±0.1, 0.2, 0.3nH	5	100	6.50	0.40	350
5.1	±0.1, 0.2, 0.3nH	5	100	6.50	0.40	350
5.6	±0.1, 0.2, 0.3nH	5	100	6.00	0.40	350
6.2	±0.1, 0.2, 0.3nH	5	100	6.00	0.44	300
6.8	±3, 5%	5	100	5.40	0.50	300
7.5	±3, 5%	5	100	4.80	0.53	300
8.2	±3, 5%	5	100	4.80	0.55	250
9.1	±3, 5%	5	100	4.50	0.62	250
10	±3, 5%	5	100	4.50	0.65	250
12	±3, 5%	5	100	3.70	0.70	250
15	±3, 5%	5	100	2.20	0.80	250
18	±3, 5%	5	100	2.20	0.90	200

■Operating temperature range: -55~+125℃

■Standard Electrical Specifications

CL02-SA Multilayer Chip Inductors / Standard Type

Inductance (nH)	Tolerance	Quality Factor /min.	L/Q Freq. (MHz)	SRF min. (GHz)	RDC (Ω) max.	IDC (mA) max.
0.3	±0.1nH	8	100	10.00	0.08	1000
0.4	±0.1nH	8	100	10.00	0.08	1000
0.5	±0.1nH	8	100	10.00	0.08	1000
0.6	±0.1nH	8	100	10.00	0.08	1000
0.7	±0.1nH	8	100	10.00	0.08	1000
0.8	±0.1nH	8	100	10.00	0.08	1000
1.0	±0.1, 0.2, 0.3nH	8	100	10.00	0.08	1000
1.1	±0.1, 0.2, 0.3nH	8	100	10.00	0.08	1000
1.2	±0.1, 0.2, 0.3nH	8	100	10.00	0.09	1000
1.3	±0.1, 0.2, 0.3nH	8	100	10.00	0.09	1000
1.5	±0.1, 0.2, 0.3nH	8	100	10.00	0.10	1000
1.6	±0.1, 0.2, 0.3nH	8	100	10.00	0.10	1000
1.8	±0.1, 0.2, 0.3nH	8	100	10.00	0.12	900
2.0	±0.1, 0.2, 0.3nH	8	100	10.00	0.12	900
2.2	±0.1, 0.2, 0.3nH	8	100	10.00	0.13	900
2.4	±0.1, 0.2, 0.3nH	8	100	10.00	0.13	800
2.7	±0.1, 0.2, 0.3nH	8	100	6.00	0.16	800
3.0	±0.1, 0.2, 0.3nH	8	100	6.00	0.16	800
3.3	±0.1, 0.2, 0.3nH	8	100	6.00	0.16	800
3.6	±0.1, 0.2, 0.3nH	8	100	6.00	0.20	700
3.9	±0.1, 0.2, 0.3nH	8	100	6.00	0.20	700
4.3	±0.1, 0.2, 0.3nH	8	100	6.00	0.20	700
4.7	±0.1, 0.2, 0.3nH	8	100	6.00	0.20	700
5.1	±0.1, 0.2, 0.3nH	8	100	5.30	0.23	600
5.6	±0.1, 0.2, 0.3nH	8	100	4.50	0.23	600
6.2	±0.1, 0.2, 0.3nH	8	100	4.50	0.25	600
6.8	±2, 3, 5%	8	100	4.50	0.25	600
7.5	±2, 3, 5%	8	100	4.20	0.28	500
8.2	±2, 3, 5%	8	100	3.70	0.28	500
9.1	±2, 3, 5%	8	100	3.40	0.30	500
10	±2, 3, 5%	8	100	3.40	0.30	500
12	±2, 3, 5%	8	100	3.00	0.45	400
15	±2, 3, 5%	8	100	2.50	0.55	400
18	±2, 3, 5%	8	100	2.20	0.65	300
22	±2, 3, 5%	8	100	1.90	0.70	300
27	±2, 3, 5%	8	100	1.70	0.80	300
33	±2, 3, 5%	8	100	1.60	0.90	200
39	±2, 3, 5%	8	100	1.20	1.00	200
47	±2, 3, 5%	8	100	1.10	1.10	200
56	±2, 3, 5%	8	100	1.00	1.10	200
68	±2, 3, 5%	8	100	0.80	1.20	200
82	±5%	8	100	0.60	1.30	200
100	±5%	8	100	0.60	1.60	200

■Operating temperature range: -55~+125℃

■Standard Electrical Specifications

CL03-SA Multilayer Chip Inductors / Standard Type

Inductance (nH)	Tolerance	Quality Factor /min.	L/Q Freq. (MHz)	SRF min. (GHz)	RDC (Ω) max.	IDC (mA) max.
1.0	±0.3nH	8	100	10.00	0.05	1000
1.2	±0.3nH	8	100	10.00	0.05	1000
1.5	±0.3nH	8	100	10.00	0.10	1000
1.8	±0.3nH	8	100	10.00	0.10	1000
2.2	±0.3nH	8	100	8.00	0.10	1000
2.7	±0.3nH	10	100	7.00	0.13	1000
3.3	±0.3nH	10	100	6.00	0.13	1000
3.9	±0.3nH	10	100	6.00	0.15	1000
4.7	±0.3nH	10	100	5.00	0.20	1000
5.6	±0.3nH	10	100	4.00	0.23	700
6.8	±5%	10	100	4.00	0.25	700
8.2	±5%	10	100	3.50	0.28	600
10	±5%	12	100	3.40	0.30	600
12	±5%	12	100	2.60	0.35	600
15	±5%	12	100	2.30	0.40	600
18	±5%	12	100	2.00	0.45	600
22	±5%	12	100	1.60	0.50	600
27	±5%	12	100	1.40	0.55	600
33	±5%	12	100	1.20	0.60	600
39	±5%	12	100	1.10	0.65	500
47	±5%	12	100	0.90	0.70	500
56	±5%	12	100	0.90	0.75	500
68	±5%	12	100	0.70	0.85	400
82	±5%	12	100	0.60	0.95	300
100	±5%	12	100	0.60	1.00	300
120	±5%	8	50	0.50	1.20	300

■Operating temperature range: -55~+125℃

■High Q Electrical Specifications

CL01-SA Multilayer Chip Inductors / High Q Type

Inductance (nH)	Tolerance	Quality Factor /min.	L/Q Freq. (MHz)	SRF min. (GHz)	RDC (Ω) max.	IDC (mA) max.
0.3	±0.1, 0.2nH	11	100	18.00	0.07	850
0.4	±0.1, 0.2nH	11	100	18.00	0.07	850
0.5	±0.1, 0.2nH	11	100	18.00	0.08	850
0.6	±0.1, 0.2nH	11	100	18.00	0.08	850
0.7	±0.1, 0.2nH	12	100	18.00	0.09	750
0.8	±0.1, 0.2nH	12	100	18.00	0.10	750
0.9	±0.1, 0.2nH	12	100	18.00	0.12	700
1.0	±0.1, 0.2nH	12	100	17.00	0.14	600
1.1	±0.1, 0.2nH	12	100	17.00	0.14	600
1.2	±0.1, 0.2nH	12	100	15.00	0.14	600
1.3	±0.1, 0.2nH	12	100	15.00	0.15	600
1.4	±0.1, 0.2nH	12	100	14.00	0.15	600
1.5	±0.1, 0.2nH	12	100	13.50	0.15	600
1.6	±0.1, 0.2nH	12	100	13.00	0.15	600
1.7	±0.1, 0.2nH	12	100	12.50	0.19	500
1.8	±0.1, 0.2nH	12	100	12.50	0.20	500
1.9	±0.1, 0.2nH	12	100	12.50	0.20	450
2.0	±0.1, 0.2nH	12	100	12.50	0.20	450
2.1	±0.1, 0.2nH	12	100	12.00	0.22	450
2.2	±0.1, 0.2nH	12	100	12.00	0.22	450
2.3	±0.1, 0.2nH	12	100	11.50	0.24	450
2.4	±0.1, 0.2nH	12	100	11.00	0.25	450
2.5	±0.1, 0.2nH	12	100	11.00	0.25	450
2.6	±0.1, 0.2nH	12	100	11.00	0.25	450
2.7	±0.1, 0.2nH	12	100	11.00	0.25	450
2.8	±0.1, 0.2nH	12	100	9.50	0.25	450
2.9	±0.1, 0.2nH	12	100	9.50	0.25	450
3.0	±0.1, 0.2nH	12	100	9.50	0.25	450
3.1	±0.1, 0.2nH	12	100	9.50	0.30	450
3.2	±0.1, 0.2nH	12	100	9.50	0.30	450
3.3	±0.1, 0.2nH	12	100	9.50	0.30	400
3.4	±0.1, 0.2nH	12	100	8.00	0.30	400
3.5	±0.1, 0.2nH	12	100	8.00	0.30	400
3.6	±0.1, 0.2nH	12	100	8.00	0.30	400
3.7	±0.1, 0.2nH	12	100	7.00	0.30	400
3.8	±0.1, 0.2nH	12	100	7.00	0.35	350
3.9	±0.1, 0.2nH	12	100	6.50	0.35	350
4.3	±3, 5%	12	100	6.50	0.40	350
4.7	±3, 5%	12	100	6.50	0.40	350
5.1	±3, 5%	12	100	6.50	0.40	350
5.6	±3, 5%	12	100	6.00	0.44	300
6.2	±3, 5%	12	100	6.00	0.50	300
6.8	±3, 5%	12	100	5.40	0.53	300
7.5	±3, 5%	12	100	4.80	0.55	250
8.2	±3, 5%	12	100	4.80	0.62	250
9.1	±3, 5%	12	100	4.50	0.65	250
10	±3, 5%	11	100	4.00	0.70	250
12	±3, 5%	11	100	3.70	0.75	250
15	±3, 5%	11	100	3.10	0.85	250
18	±3, 5%	11	100	2.80	1.00	200

■Operating temperature range: -55~+125℃

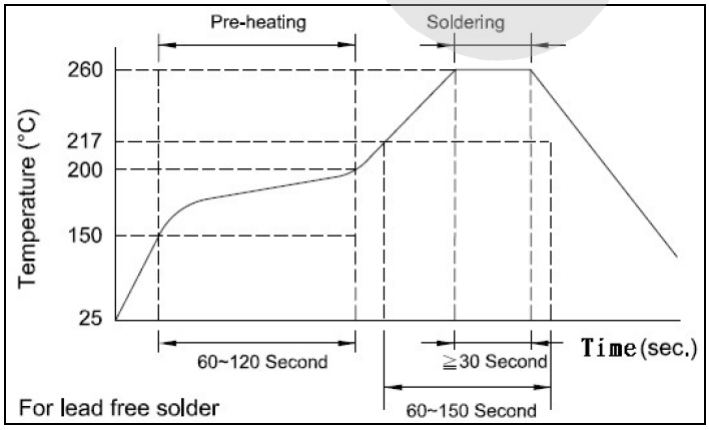
■Environmental Characteristics

Item	Requirement	Test Condition
High Temperature Expose (Storage)	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	at+125±5°C for 1000 hrs Measurement at 24±4 hrs after test conclusion
Temperature Cycle	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	-55°C to +125°C, 1000 cycles Dwell time: 30 min Transition time≤1min
Biased Humidity	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	1000 hrs 85±2°C/85%RH, full rated current Measurement at 24±4 hrs after test conclusion
Operational Life	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	1000 hrs @125±5°C, full rated current Measurement at 24±4 hrs after test conclusion
Mechanical Shock	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	Condition F: 1500g's / 0.5ms / Half sine
Vibration Test	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	5g's for 20min, 12cycles each of 3 orientations Test form 10-2000Hz., 12cycles each of 3 orientations
Solderability	More than 95% of terminal electrode should be Covered with new solder Appearance: No damage	235±5°C for 5±1 seconds
Resistance to Soldering Heat	More than 95% of terminal electrode should be Covered with new solder Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	265±5°C for 10±1 seconds
Board Flex	Appearance: No damage	Epoxy-PCB(1.6mm) Deflection 2mm(min) 60s minimum holding time
Terminal Strength	Appearance: No damage	Size / Apply Force(F) / Test Time 0201 / 2N / 10±1 sec 0402 / 5N / 10±1 sec 0603 / 10N / 10±1 sec
ESD	Appearance: No damage Inductance: Within ±10% of initial value Q: Within ±20% of initial value	Classification levels 1C

■Storage Temperature: Less than 40℃ and 70% RH

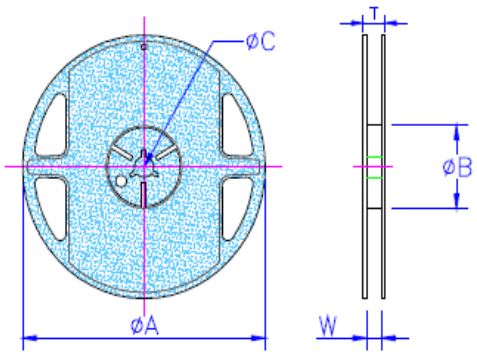
■Shelf life: 1 years Max

■Reflow Soldering Profile



■Packaging Specifications

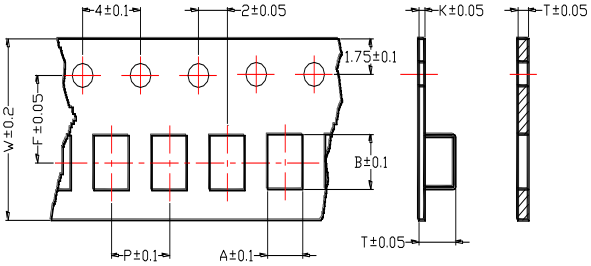
Reel Dimension



Unit: mm

Type	A	B	C	W	T	Quantity (EA)
CL01-SA	178±1	60.0±0.5	13.0±0.20	9.00±0.5	12.0±0.15	15,000
CL02-SA	178±1	60.0±0.5	13.0±0.20	9.00±0.5	12.0±0.15	10,000
CL03-SA	178±2	50 or more	13.2±1.00	10.00±1.5	-	4,000

Tape Specifications

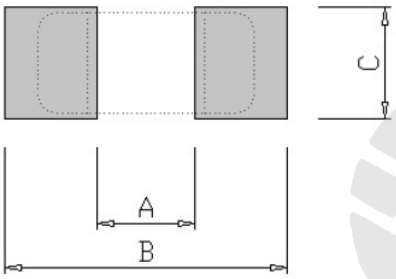


Unit: mm

Type	A	B	T	W	P	F	K	Tape
CL01-SA	0.36	0.66	0.42	8	2	3.5	-	B
CL02-SA	0.60	1.12	0.60	8	2	3.5	-	B
CL03-SA	0.98	1.80	0.95	8	4	3.5	-	B

Type A ***Type B***

■Recommend Land Pattern



Unit: mm

Type	A	B	C
CL01-SA	0.20-0.30	0.80-0.90	0.20-030
CL02-SA	0.40	1.40-1.50	0.50-0.60
CL03-SA	0.70	1.90-2.30	0.60-0.80

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A3	Apr 14,2025		-Modify Storage conditions.