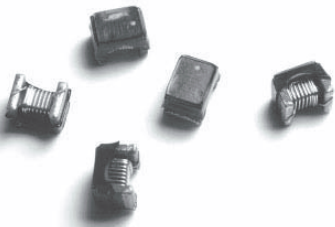


## Wound Chip Inductors

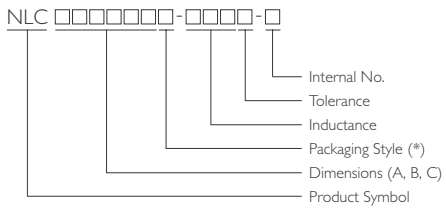
# NLC Series



These revolutionary, highly reliable wound chip inductors for automatic mounting have been developed in response to the trend toward high density in electronic equipment.

With metal terminals and a body of heat resistant resin, these inductors offer many superior features.

### PRODUCT IDENTIFICATION

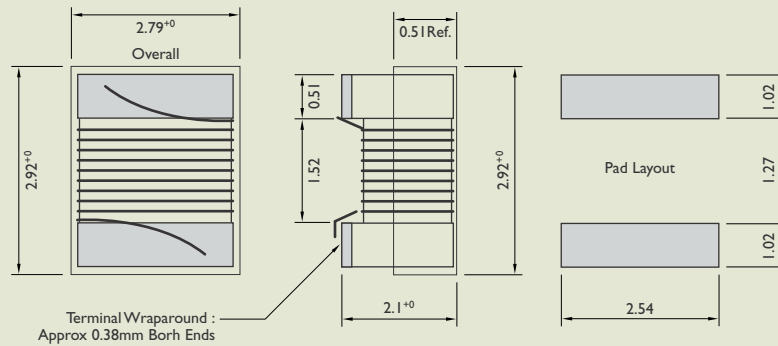


\* T: Tape and Reel ; B: Bulk



## SHAPES AND DIMENSIONS NLC252018 SERIES

Dimensions : mm



## ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE ( $\mu\text{H}$ )	TOLERANCE ( $\pm\%$ )	Q Min.	TEST FREQUENCY (MHz)	SRF (MHz) Min.	DC RESISTANCE ( $\Omega$ ) Max.	IDC (mA) Max.	COLOR CODING		
NLC252018T-1R0□-S	1.0	20	25	7.96	300	0.34	1400	Brown	Black	Red
NLC252018T-1R5□-S	1.5	20	25	7.96	270	0.42	1300	Brown	Green	Red
NLC252018T-2R2□-S	2.2	20	25	7.96	140	0.50	1300	Red	Red	Red
NLC252018T-3R3□-S	3.3	20	25	7.96	95	0.65	800	Orange	Orange	Red
NLC252018T-4R7□-S	4.7	20	25	7.96	90	0.80	800	Yellow	Violet	Red
NLC252018T-6R8□-S	6.8	20	25	7.96	68	1.00	650	Blue	Gray	Red
NLC252018T-100□-S	10	10	20	2.52	45	1.50	600	Brown	Black	Orange
NLC252018T-150□-S	15	10	20	2.52	40	2.20	450	Brown	Green	Orange
NLC252018T-220□-S	22	10	20	2.52	25	2.70	380	Red	Red	Orange
NLC252018T-330□-S	33	10	20	2.52	25	4.00	350	Orange	Orange	Orange
NLC252018T-470□-S	47	10	16	2.52	20	8.00	300	Orange	Orange	Orange

When ordering, please specify tolerance and packaging code. Ex : NLC252018T-6R8J-S

Tolerance : J = 5%

K = 10%

Packaging : Clear Tape and Reel (Standard)

L, Q : HP4287A

SRF : HP8753D / HP4291A

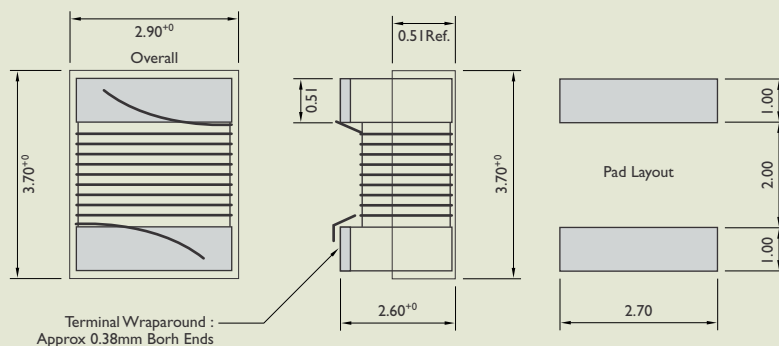
RDC : Digital Multimeter SC-7401

Operating Temperature Range : -25°C to +85°C



## SHAPES AND DIMENSIONS NLC322522 SERIES

Dimensions : mm



## ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE ( $\mu$ H)	TOLERANCE ( $\pm$ %)	Q Min.	TEST FREQUENCY (MHz)	SRF (MHz) Min.	DC RESISTANCE ( $\Omega$ ) Max.	IDC (mA) Max.	COLOR CODING		
NLC322522T-1R0□-S	1.0	5, 10	20	7.96	100	0.08	1500	Brown	Black	Red
NLC322522T-1R5□-S	1.5	5, 10	20	7.96	80	0.13	1125	Brown	Green	Red
NLC322522T-2R2□-S	2.2	5, 10	20	7.96	68	0.13	970	Red	Red	Red
NLC322522T-3R3□-S	3.3	5, 10	20	7.96	54	0.16	837	Orange	Orange	Red
NLC322522T-4R7□-S	4.7	5, 10	20	7.96	43	0.20	675	Yellow	Violet	Red
NLC322522T-6R8□-S	6.8	5, 10	20	7.96	33	0.27	600	Blue	Gray	Red
NLC322522T-100□-S	10	5, 10	15	2.52	28	0.36	520	Brown	Green	Orange
NLC322522T-150□-S	15	5, 10	15	2.52	19	0.56	480	Brown	Green	Orange
NLC322522T-220□-S	22	5, 10	15	2.52	16	0.77	310	Red	Red	Orange
NLC322522T-330□-S	33	5, 10	15	2.52	12	1.10	270	Orange	Orange	Orange
NLC322522T-470□-S	47	5, 10	15	2.52	10	1.64	210	Yellow	Violet	Orange
NLC322522T-680□-S	68	5, 10	15	2.52	9	2.80	189	Blue	Gray	Orange
NLC322522T-101□-S	100	5, 10	15	0.796	6	3.70	145	Brown	Black	Yellow
NLC322522T-151□-S	150	5, 10	15	0.796	5	6.10	120	Brown	Green	Yellow
NLC322522T-221□-S	220	5, 10	15	0.796	4	8.40	100	Red	Red	Yellow
NLC322522T-331□-S	330	5, 10	15	0.796	3.5	12.3	80	Orange	Orange	Yellow
NLC322522T-471□-S	470	5, 10	15	0.796	2.8	22.0	75	Yellow	Violet	Yellow
NLC322522T-681□-S	680	5, 10	15	0.796	2	28.0	65	Blue	Gray	Yellow

When ordering, please specify tolerance and packaging code. Ex : NLC322522T-101J-S

Tolerance : J = 5%

K = 10%

Packaging : Clear Tape and Reel (Standard)

L, Q : HP4287A

SRF : HP8753D / HP4291A

RDC : Digital Multimeter SC-7401

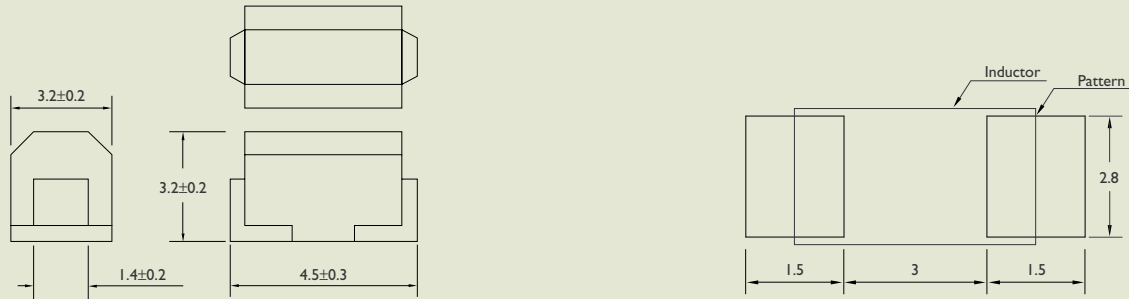
Operating Temperature Range : -25°C to +85°C



## SHAPES AND DIMENSIONS NLC453232 SERIES

Dimensions : mm

Shapes and Dimensions / Recommended PC Board Patterns



## ELECTRICAL CHARACTERISTICS

Dimensions : mm

PART NO.	INDUCTANCE ( $\mu$ H)	TOLERANCE ( $\pm$ %)	Q Min.	TEST FREQUENCY (MHz)	SRF (MHz) Min.	DC RESISTANCE ( $\Omega$ ) Max.	IDC (mA) Max.
NLC453232T-1R0K-S	1.0	10	10	7.96	200	0.11	1050
NLC453232T-1R2K-S	1.2	10	10	7.96	155	0.12	1000
NLC453232T-1R5K-S	1.5	10	10	7.96	130	0.15	950
NLC453232T-1R8K-S	1.8	10	10	7.96	100	0.16	900
NLC453232T-2R2K-S	2.2	10	10	7.96	80	0.18	850
NLC453232T-2R7K-S	2.7	10	10	7.96	55	0.20	800
NLC453232T-3R3K-S	3.3	10	10	7.96	45	0.22	750
NLC453232T-3R9K-S	3.9	10	10	7.96	40	0.24	700
NLC453232T-4R7K-S	4.7	10	10	7.96	35	0.27	650
NLC453232T-5R6K-S	5.6	10	10	7.96	30	0.30	650
NLC453232T-6R8K-S	6.8	10	10	7.96	28	0.35	600
NLC453232T-8R2K-S	8.2	10	10	7.96	25	0.40	600
NLC453232T-100K-S	10	10	10	2.52	22	0.50	550
NLC453232T-120K-S	12	10	10	2.52	21	0.60	500
NLC453232T-150K-S	15	10	10	2.52	20	0.70	450
NLC453232T-180K-S	18	10	10	2.52	18	0.80	400
NLC453232T-220K-S	22	10	10	2.52	17	0.90	370
NLC453232T-270K-S	27	10	10	2.52	15	1.20	330
NLC453232T-330K-S	33	10	10	2.52	14	1.40	300
NLC453232T-390K-S	39	10	10	2.52	12	1.60	280
NLC453232T-470K-S	47	10	10	2.52	11.5	1.90	260
NLC453232T-560K-S	56	10	10	2.52	10.5	2.20	240
NLC453232T-680K-S	68	10	10	2.52	9	2.60	220
NLC453232T-820K-S	82	10	10	2.52	8.5	3.50	200
NLC453232T-101K-S	100	10	20	0.796	7.0	4.00	180
NLC453232T-121K-S	120	10	20	0.796	6.5	4.50	160
NLC453232T-151K-S	150	10	20	0.796	6	6.50	140
NLC453232T-181K-S	180	10	20	0.796	5.5	7.50	120
NLC453232T-221K-S	220	10	20	0.796	5.0	9.00	120
NLC453232T-271K-S	270	10	20	0.796	4.5	11.0	100
NLC453232T-331K-S	330	10	20	0.796	4	13.0	90

Test Instruments : HP4286A RF Impedance Analyzer for L, Q, SRF  
HP4285A LF Impedance Analyzer for L, Q

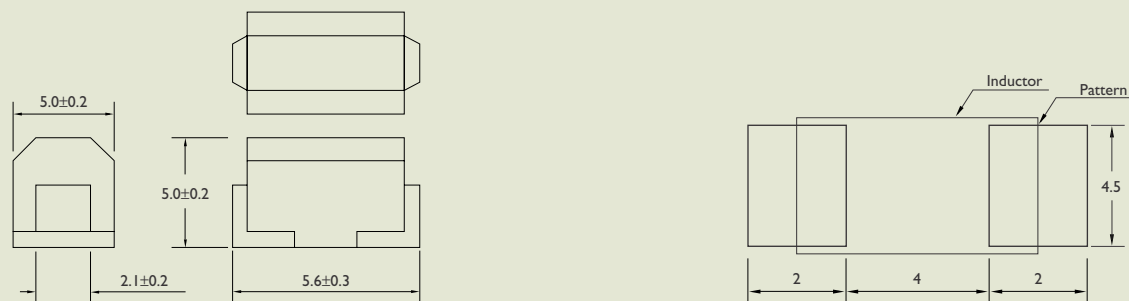
Digital Multimeter SC-7401 for RDC  
Chen-Hwa 1061+Chen-Wha 301A for IDC



## SHAPES AND DIMENSIONS NLC565050 SERIES

Dimensions : mm

Shapes and Dimensions / Recommended PC Board Patterns



## ELECTRICAL CHARACTERISTICS

PART NO.	INDUCTANCE ( $\mu$ H)	TOLERANCE ( $\pm$ %)	Q Min.	TEST FREQUENCY (MHz)	SRF (MHz) Min.	DC RESISTANCE ( $\Omega$ ) Max.	IDC (mA) Max.
NLC565050T-1R0K-S	1.0	10	10	7.96	95	0.03	1800
NLC565050T-1R2K-S	1.2	10	10	7.96	70	0.035	1700
NLC565050T-1R5K-S	1.5	10	10	7.96	55	0.04	1600
NLC565050T-1R8K-S	1.8	10	10	7.96	47	0.05	1400
NLC565050T-2R2K-S	2.2	10	10	7.96	42	0.06	1300
NLC565050T-2R7K-S	2.7	10	10	7.96	37	0.07	1200
NLC565050T-3R3K-S	3.3	10	10	7.96	34	0.08	1120
NLC565050T-3R9K-S	3.9	10	10	7.96	32	0.09	1050
NLC565050T-4R7K-S	4.7	10	10	7.96	29	0.11	950
NLC565050T-5R6K-S	5.6	10	10	7.96	26	0.13	880
NLC565050T-6R8K-S	6.8	10	10	7.96	24	0.15	810
NLC565050T-8R2K-S	8.2	10	10	7.96	22	0.18	750
NLC565050T-100K-S	10	10	10	2.52	19	0.21	690
NLC565050T-120K-S	12	10	10	2.52	17	0.25	630
NLC565050T-150K-S	15	10	10	2.52	16	0.30	580
NLC565050T-180K-S	18	10	10	2.52	14	0.36	530
NLC565050T-220K-S	22	10	10	2.52	13	0.43	480
NLC565050T-270K-S	27	10	10	2.52	11.5	0.52	440
NLC565050T-330K-S	33	10	10	2.52	10.5	0.62	400
NLC565050T-390K-S	39	10	10	2.52	9.5	0.72	370
NLC565050T-470K-S	47	10	10	2.52	8.5	0.85	340
NLC565050T-560K-S	56	10	10	2.52	7.8	1.00	310
NLC565050T-680K-S	68	10	10	2.52	7	1.2	290
NLC565050T-820K-S	82	10	10	2.52	6.4	1.4	270
NLC565050T-101K-S	100	10	20	0.796	6	1.6	250
NLC565050T-121K-S	120	10	20	0.796	5.4	1.9	230
NLC565050T-151K-S	150	10	20	0.796	4.8	2.2	210
NLC565050T-181K-S	180	10	20	0.796	4.4	2.8	190
NLC565050T-221K-S	220	10	20	0.796	3.9	3.4	170
NLC565050T-271K-S	270	10	20	0.796	3.6	4.2	155
NLC565050T-331K-S	330	10	20	0.796	3.2	4.9	140
NLC565050T-391K-S	390	10	20	0.796	2.9	5.8	130
NLC565050T-471K-S	470	10	20	0.796	2.6	7	120
NLC565050T-561K-S	560	10	20	0.796	2.4	8.5	110
NLC565050T-681K-S	680	10	20	0.796	2.2	10	100
NLC565050T-821K-S	820	10	20	0.796	2	13	90
NLC565050T-102K-S	1000	10	20	0.252	1.8	15	85

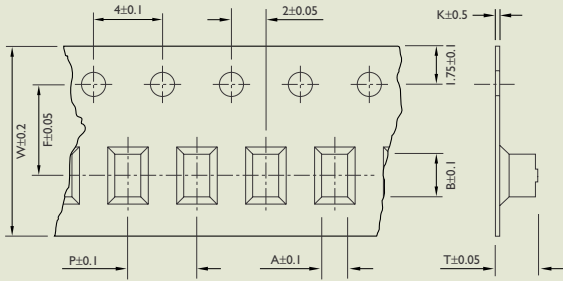
Test Instruments : HP4286A RF Impedance Analyzer for L, Q, SRF  
HP4285A LF Impedance Analyzer for L, Q

Digital Multimeter SC-7401 for RDC  
Chen-Hwa 1061+Chen-Waha 301A for IDC



## TAPE DIMENSIONS

Dimensions : mm



TYPE	A	B	T	W	P	F	K
NLC252018	2.61	2.83	2.25	8	4	3.5	0.25
NLC322522	2.61	2.83	2.25	8	4	3.5	0.25
NLC453232	3.64	5.14	3.6	12	8	5.5	0.3
NLC565050	4.9	5.65	5.3	16.15	12.2	5.5	0.5

## REEL DIMENSIONS

Dimensions : mm

Figure 1

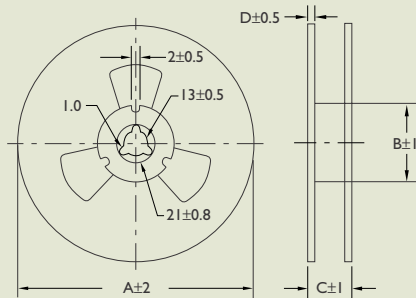
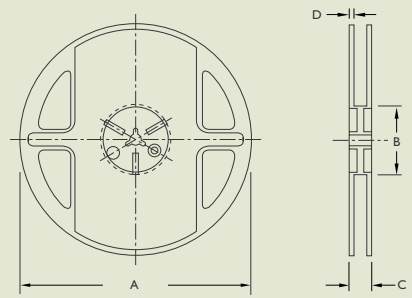


Figure 2



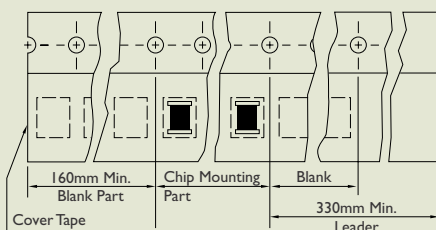
TYPE	FIGURE	A	B	C	D
NLC252018	2	178	60	12	1.5
NLC322522	1	178	60	10	2
NLC453232	1	250	80	14	2
NLC565050	2	330	80	20	2

## TAPE MATERIAL

Carrier Tape : Polystyrene

Cover Tape : Polyethylene

## PACKAGING QUANTITY

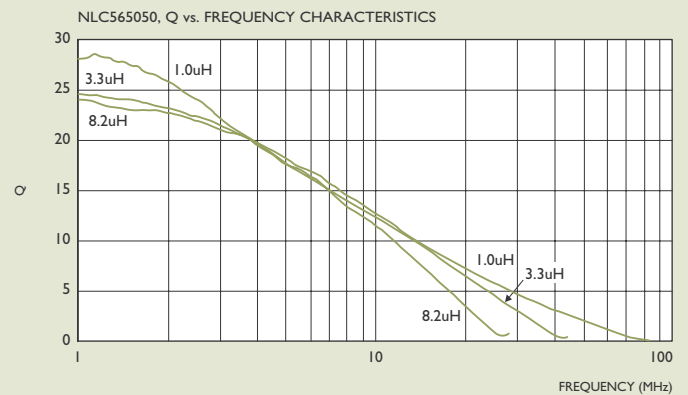
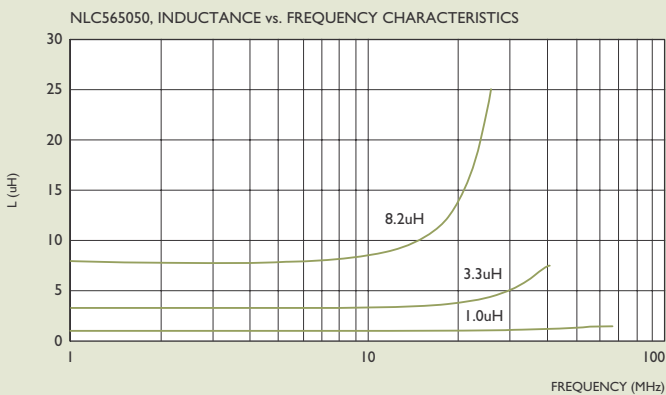
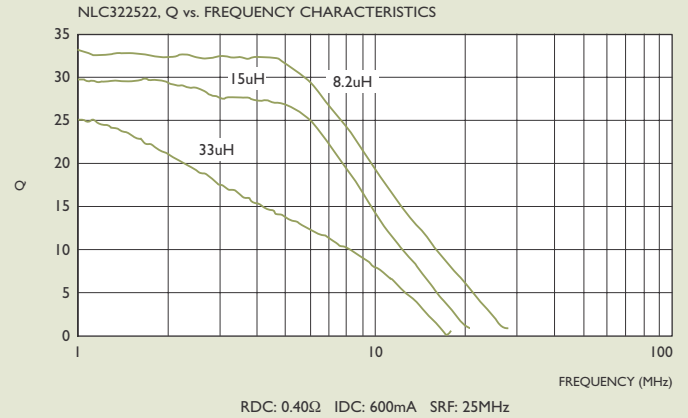
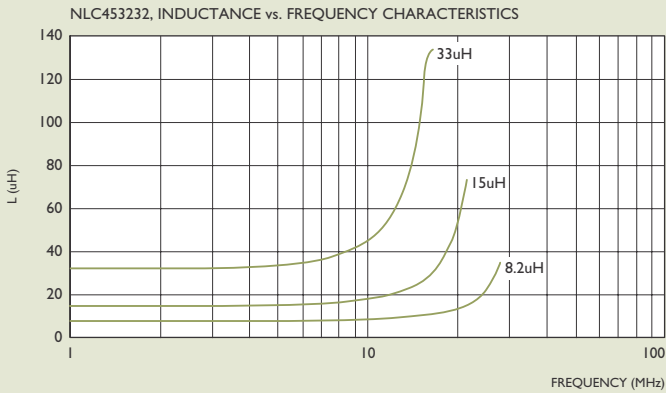
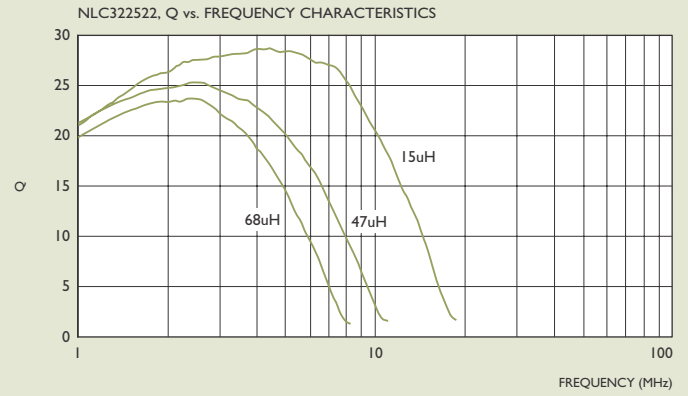
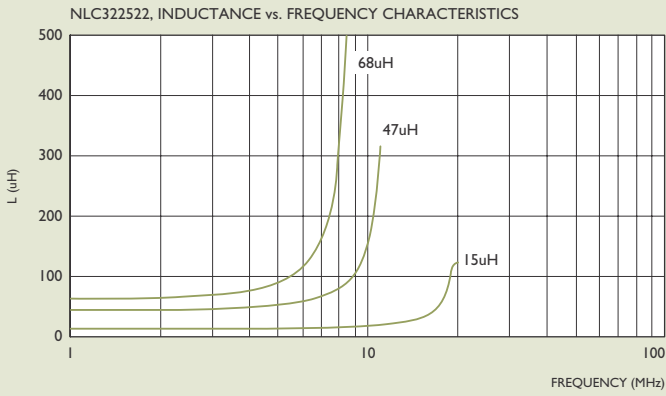


TYPE	BULK	QUANTITY/REEL
NLC252018	√	2000
NLC322522	√	2000
NLC453232	√	500
NLC565050	√	1000



# TYPICAL ELECTRICAL CHARACTERISTICS

Test Instruments : HP4291A Impedance / Material Analyzer





## NLC SERIES RELIABILITY TEST

### I-1 MECHANICAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS
I-1-1	Vibration	Appearance : No Damage L Change : within $\pm 10\%$ Q Change : within $\pm 30\%$ RDC : within Specification	Test device shall be soldered on the substrate. Oscillation Frequency : 10 to 55 to 10Hz for 1Min. Amplitude : 1.5mm Time : 2Hrs. for each Axis (X,Y & Z), Total 6Hrs.
I-1-2	Resistance to Soldering Heat	Appearance : No Damage	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : $260 \pm 5^\circ\text{C}$ Immersion Time : $10 \pm 1$ Sec.
I-1-3	Solderability	The electrodes shall be at least 90% covered with new solder coating.	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : $230 \pm 5^\circ\text{C}$ Immersion Time : $4 \pm 1$ Sec.

### I-2 ENVIRONMENTAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS															
I-2-1	Temperature Cycle	Appearance : No Damage L Change : within $\pm 10\%$ Q Change : within $\pm 30\%$ RDC : within Specification	One Cycle <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (<math>^\circ\text{C}</math>)</th> <th>Time (Min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><math>-25 \pm 3</math></td> <td>30</td> </tr> <tr> <td>2</td> <td><math>25 \pm 2</math></td> <td>3</td> </tr> <tr> <td>3</td> <td><math>85 \pm 3</math></td> <td>30</td> </tr> <tr> <td>4</td> <td><math>25 \pm 2</math></td> <td>3</td> </tr> </tbody> </table> Total : 100 Cycles Measured after Exposure in the Room Condition for 24Hrs.	Step	Temperature ( $^\circ\text{C}$ )	Time (Min.)	1	$-25 \pm 3$	30	2	$25 \pm 2$	3	3	$85 \pm 3$	30	4	$25 \pm 2$	3
Step	Temperature ( $^\circ\text{C}$ )	Time (Min.)																
1	$-25 \pm 3$	30																
2	$25 \pm 2$	3																
3	$85 \pm 3$	30																
4	$25 \pm 2$	3																
I-2-2	Humidity Resistance		Temperature : $40 \pm 2^\circ\text{C}$ Relative Humidity : 90 ~ 95% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-3	High Temperature Resistance		Temperature : $85 \pm 3^\circ\text{C}$ Relative Humidity : 20% Applied Current : Rated Current Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-4	Low Temperature Resistance		Temperature : $-25 \pm 3^\circ\text{C}$ Relative Humidity : 0% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															