LEADED INDUCTORS

■OPERATION TEMP.	-25~+85℃(Including self-generated heat)

■FEATURES

- ABCO Axial inductor is wire wound on the fewite core.
- Extremely reliable inductors that are ideal for signal and power line applications
- Highly efficient automated production processes can provide high quality inductors in large volumes.

■APPLICATIONS

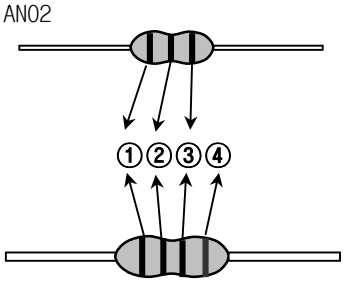
- Consumer electronics (such as VCR,TV,Audio, equipment, general electronic sppliances.)

■ORDERING CODE

AL	03	TB	R22	K
①	②	③	④	⑤

■MARKING

AL02,ALC02,AN02



AL03,04,05

※AL02,ALC02,AN02TYPE

J GRADE→③Fiure(Dluble coding)

①TYPE	
AL	Axial Inductor Standard type
ALC	Axial Inductor Standard High current type
AN	Axial Inductor High current type

②BODY SIZE (D ×L)[mm]	
02	2.5 × 3.4(AL,ALC)
	2.5 × 3.7(AN)
03	3.0 × 7.0
04	4.2 × 9.8
05	4.5 × 14.0

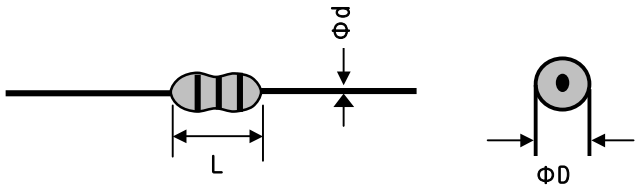
③TAPING CONFIGURATIONS[mm]	
TA	Axial lead(26mm lead space) /ammo pack(02/03type)
TB	Axial lead(52mm lead space) /ammo pack(all types)

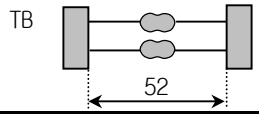
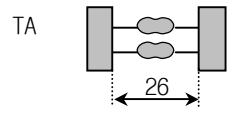
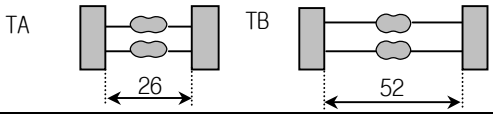
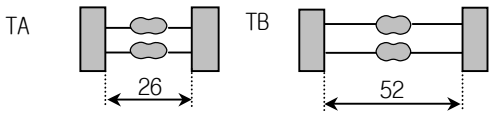
④NOMINAL INDUCTANCE [μ	
R22	0.22
1R5	1.5
120	12

⑤INDUCTANCE TOLERANCE[%]	
J	±5
K	±10
M	±20

COLOR	INDUCTANCE[μH]			
	1st figure	second figure	Multiplier	Tolerance
	①	②	③	④
Black	0		×1	±20%
Brown	1		×10	-
Red	2		×100	-
Orange	3		×1000	-
Yellow	4		-	-
Green	5		-	-
Blue	6		-	-
Purple	7		-	-
Gray	8		-	-
White	9		-	-
Gold	·		×0.1	± 5%
Silver	·		×0.01	±10%

■APPEARANCE DIMENSIONS



Type	Dimensions[mm]			Taped
	L	ΦD	Φd	Straight
AL02	3.4max	2.5max	0.50±0.05	
ALC02	3.4max	2.5max	0.50±0.05	
AN02	3.7max	2.5max	0.50±0.05	
AL02	3.4max	2.5max	0.45±0.05	
ALC02	3.4max	2.5max	0.45±0.05	
AN02	3.7max	2.5max	0.45±0.05	
AL03	7.0max	3.0max	0.50±0.05	
AL04	9.8max	4.2max	0.65±0.05	
AL05	14.0max	4.5max	0.65±0.06	

■AVAILABLE INDUCTANCE RANGE

TYPE	Range	0	1	10	100	1000	2200	8200	10000	15000
AL02	Imax.(mA)		270	160	44					
	INDUCTANCE(μH)	0.22			470					
	Rdc(mΩ)		0.8	2.3	12					
ALC02	Imax.(mA)		510	270	105					
	INDUCTANCE(μH)	0.22			100					
	Rdc(mΩ)		0.4	1.4	9.1					
AN02	Imax.(mA)		500	280	120					
	INDUCTANCE(μH)	0.12			470					
	Rdc(mΩ)		0.32	1	5.6					
AL03	Imax.(mA)		270	160	90	40				
	INDUCTANCE(μH)	0.22				1000				
	Rdc(mΩ)		0.8	2.3	7	33				
AL04	Imax.(mA)		920	500	275	100	80	45	35	
	INDUCTANCE(μH)	0.22						10000		
	Rdc(mΩ)		0.19	0.58	1.8	14	40	116	148	
AL05	Imax.(mA)		5600	2100	700	240				
	INDUCTANCE(μH)		1.0			1500				
	Rdc(mΩ)		0.022	0.062	0.48	5.8				

ITEM-PART NUMBERS

■AL02

Ordering code	Inductance [μH]	Inductance Tolerance	Q (min.)	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (max.)	Rated Current [mA] (max.)	Measuring frequency [MHz]
AL02T○R22K	0.22	±10% (±5%)	35	410	0.40	400	25.2
AL02T○R27K	0.27			410	0.43	380	
AL02T○R33K	0.33			360	0.48	370	
AL02T○R39K	0.39			300	0.51	350	
AL02T○R47K	0.47			230	0.56	330	
AL02T○R56K	0.56			210	0.61	320	
AL02T○R68K	0.68			190	0.67	310	
AL02T○R82K	0.82			170	0.74	290	
AL02T○1R0K	1.0			150	0.80	270	
AL02T○1R2K	1.2		40	110	0.90	260	7.96
AL02T○1R5K	1.5			80	1.0	250	
AL02T○1R8K	1.8			60	1.1	240	
AL02T○2R2K	2.2			45	1.2	230	
AL02T○2R7K	2.7			40	1.3	220	
AL02T○3R3K	3.3			38	1.4	210	
AL02T○3R9K	3.9			35	1.6	200	
AL02T○4R7K	4.7			32	1.7	190	
AL02T○5R6K	5.6			30	1.9	180	
AL02T○6R8K	6.8			28	2.0	175	
AL02T○8R2K	8.2			26	2.2	165	
AL02T○100K	10			24	2.3	160	
AL02T○120K	12			22	2.5	150	2.52
AL02T○150K	15			20	2.8	145	
AL02T○180K	18			18	3.1	140	
AL02T○220K	22			17	3.4	130	
AL02T○270K	27			16	4.3	80	
AL02T○330K	33			14	4.7	76	
AL02T○390K	39			13	5.2	74	
AL02T○470K	47			12	5.8	70	
AL02T○560K	56			11	6.4	68	
AL02T○680K	68			10	7.2	64	
AL02T○820K	82			9.5	11.0	46	
AL02T○101K	100			9.0	12.0	44	
AL02T○121K	120			8.0	13.0	42	0.796
AL02T○151K	150			6.0	16.0	39	
AL02T○181K	180			5.5	18.0	37	
AL02T○221K	220			5.0	20.0	35	
AL02T○271K	270			4.6	26.0	28	
AL02T○331K	330			4.4	27.0	26	
AL02T○391K	390			4.1	28.0	25	
AL02T○471K	470			3.7	30.0	24	

○Please specify the taping configuration code.

○:A,B

ITEM-PART NUMBERS

■ALC02

Ordering code	Inductance [μH]	Inductance Tolerance	Q (min.)	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (max.)	Rated Current [mA] (max.)	Measuring frequency [MHz]
ALC02T○R22K	0.22	±10% (±5%)	50	450	0.20	730	25.2
ALC02T○R27K	0.27			400	0.21	700	
ALC02T○R33K	0.33			350	0.23	670	
ALC02T○R39K	0.39			320	0.25	640	
ALC02T○R47K	0.47			300	0.27	620	
ALC02T○R56K	0.56			280	0.30	590	
ALC02T○R68K	0.68			240	0.33	570	
ALC02T○R82K	0.82			210	0.35	540	
ALC02T○1R0K	1.0			190	0.40	510	
ALC02T○1R2K	1.2			110	0.43	490	7.96
ALC02T○1R5K	1.5			80	0.48	460	
ALC02T○1R8K	1.8			70	0.53	440	
ALC02T○2R2K	2.2			60	0.60	420	
ALC02T○2R7K	2.7			55	0.68	390	
ALC02T○3R3K	3.3			50	0.75	370	
ALC02T○3R9K	3.9			45	0.83	350	
ALC02T○4R7K	4.7		40	40	0.91	340	
ALC02T○5R6K	5.6			35	1.0	320	
ALC02T○6R8K	6.8			30	1.1	300	
ALC02T○8R2K	8.2		35	26	1.3	290	
ALC02T○100K	10			24	1.4	270	
ALC02T○120K	12		40	22	1.4	270	2.52
ALC02T○150K	15			20	1.6	260	
ALC02T○180K	18			18	1.7	250	
ALC02T○220K	22			17	1.9	230	
ALC02T○270K	27			16	2.5	200	
ALC02T○330K	33			14	3.4	180	
ALC02T○390K	39			13	3.6	170	
ALC02T○470K	47			12	4.6	150	
ALC02T○560K	56			11	5.1	140	
ALC02T○680K	68			10	5.6	130	
ALC02T○820K	82			9.5	7.9	115	
ALC02T○101K	100			9.0	9.1	105	

○Please specify the taping configuration code.

○:A,B

ITEM-PART NUMBERS

■AN02

Ordering code	Inductance [μH]	Inductance Tolerance	Q (min.)	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (max.)	Rated Current [mA] (max.)	Measuring frequency [MHz]
AN02T○R12K	0.12	±10% (±5%)	50	500	0.12	850	25.2
AN02T○R15K	0.15			500	0.14	800	
AN02T○R18K	0.18			500	0.15	760	
AN02T○R22K	0.22			500	0.16	730	
AN02T○R27K	0.27			500	0.18	690	
AN02T○R33K	0.33			480	0.19	660	
AN02T○R39K	0.39			430	0.21	640	
AN02T○R47K	0.47			380	0.23	610	
AN02T○R56K	0.56			350	0.25	580	
AN02T○R68K	0.68			310	0.27	550	
AN02T○R82K	0.82			270	0.29	520	
AN02T○1R0K	1.0			240	0.32	500	
AN02T○1R2K	1.2			210	0.35	480	7.96
AN02T○1R5K	1.5			190	0.38	450	
AN02T○1R8K	1.8			140	0.42	430	
AN02T○2R2K	2.2			90	0.47	410	
AN02T○2R7K	2.7			70	0.52	390	
AN02T○3R3K	3.3			50	0.57	370	
AN02T○3R9K	3.9		40	35	0.63	360	
AN02T○4R7K	4.7			32	0.69	340	
AN02T○5R6K	5.6			30	0.75	320	
AN02T○6R8K	6.8			28	0.84	310	
AN02T○8R2K	8.2			26	0.92	290	
AN02T○100K	10			24	1.0	280	
AN02T○120K	12			22	1.0	280	2.52
AN02T○150K	15			20	1.2	265	
AN02T○180K	18			18	1.3	250	
AN02T○220K	22			17	1.5	235	
AN02T○270K	27			15	1.7	220	
AN02T○330K	33		50	14	2.2	180	
AN02T○390K	39			13	2.4	170	
AN02T○470K	47			12	2.8	160	
AN02T○560K	56			10	4.1	140	
AN02T○680K	68			9.2	4.5	130	
AN02T○820K	82			8.8	5.0	125	
AN02T○101K	100			8.0	5.6	120	
AN02T○121K	120			6.6	9.2	90	0.796
AN02T○151K	150			5.8	10.5	85	
AN02T○181K	180			5.4	11.5	80	
AN02T○221K	220			4.8	13.0	75	
AN02T○271K	270			3.6	16.0	70	
AN02T○331K	330			3.4	18.0	66	
AN02T○391K	390			3.2	20.0	63	
AN02T○471K	470			3.0	22.0	60	

○Please specify the taping configuration code.

○:A,B

ITEM-PART NUMBERS

■AL03

Ordering code	Inductance [μH]	Inductance Tolerance	Q (min.)	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (max.)	Rated Current [mA] (max.)	Measuring frequency [MHz]
AL03T○R22K	0.22	±10% (±5%)	35	450	0.40	400	25.2
AL03T○R27K	0.27			410	0.43	380	
AL03T○R33K	0.33			360	0.48	370	
AL03T○R39K	0.39			300	0.51	350	
AL03T○R47K	0.47			230	0.56	330	
AL03T○R56K	0.56		40	210	0.61	320	
AL03T○R68K	0.68			190	0.67	310	
AL03T○R82K	0.82			170	0.74	290	
AL03T○1R0K	1.0			150	0.80	270	
AL03T○1R2K	1.2		50	144	0.90	260	7.96
AL03T○1R5K	1.5			131	1.0	250	
AL03T○1R8K	1.8			121	1.1	240	
AL03T○2R2K	2.2			110	1.2	230	
AL03T○2R7K	2.7			100	1.3	220	
AL03T○3R3K	3.3			94	1.4	210	
AL03T○3R9K	3.9			65	1.6	200	
AL03T○4R7K	4.7			56	1.7	190	
AL03T○5R6K	5.6			48	1.9	180	
AL03T○6R8K	6.8			37	2.0	175	
AL03T○8R2K	8.2			25	2.2	165	
AL03T○100K	10			21	2.3	160	
AL03T○120K	12			19	2.5	150	2.52
AL03T○150K	15			17	2.8	145	
AL03T○180K	18			13	3.1	160	
AL03T○220K	22			9.6	3.4	130	
AL03T○270K	27			7.2	3.8	125	
AL03T○330K	33			6.3	4.1	120	
AL03T○390K	39			6.3	4.5	115	
AL03T○470K	47			6.3	4.9	110	
AL03T○560K	56			6.2	5.3	105	
AL03T○680K	68			5.7	5.8	100	
AL03T○820K	82			5.3	6.3	95	
AL03T○101K	100			4.8	7.0	90	
AL03T○121K	120			3.8	13	90	0.796
AL03T○151K	150			3.5	15	85	
AL03T○181K	180			3.3	16	80	
AL03T○221K	220			3.0	17	75	
AL03T○271K	270			2.8	19	65	
AL03T○331K	330			2.6	20	60	
AL03T○391K	390			2.4	22	55	
AL03T○471K	470			2.25	24	55	
AL03T○561K	560			2.10	26	50	
AL03T○681K	680			1.95	28	45	
AL03T○821K	820			1.85	30	40	
AL03T○102K	1000			1.40	33	40	

○Please specify the taping configuration code.

○:A,B

ITEM-PART NUMBERS

■AL04

Ordering code	Inductance [μH]	Inductance Tolerance	Q (min.)	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (max.)	Rated Current [mA] (max.)	Measuring frequency [MHz]
AL04T○R22K	0.22	±10% (±5%)	45	300	0.10	1400	25.2
AL04T○R27K	0.27			270	0.11	1320	
AL04T○R33K	0.33			250	0.12	1280	
AL04T○R39K	0.39			230	0.13	1200	
AL04T○R47K	0.47			220	0.14	1150	
AL04T○R56K	0.56			200	0.15	1100	
AL04T○R68K	0.68			190	0.16	1030	
AL04T○R82K	0.82			172	0.17	980	
AL04T○1R0K	1.0			157	0.19	920	
AL04T○1R2K	1.2		50	144	0.21	880	7.96
AL04T○1R5K	1.5			131	0.23	830	
AL04T○1R8K	1.8		55	121	0.25	790	
AL04T○2R2K	2.2			110	0.28	750	
AL04T○2R7K	2.7		60	100	0.30	720	
AL04T○3R3K	3.3		65	94	0.34	670	
AL04T○3R9K	3.9			65	0.37	640	
AL04T○4R7K	4.7		70	56	0.39	620	
AL04T○5R6K	5.6			48	0.43	590	
AL04T○6R8K	6.8		75	37	0.48	550	
AL04T○8R2K	8.2		80	25	0.52	530	
AL04T○100K	10		65	21	0.58	500	
AL04T○120K	12		50	19	0.63	480	2.52
AL04T○150K	15			17	0.72	460	
AL04T○180K	18			13	0.77	430	
AL04T○220K	22			9.6	0.84	410	
AL04T○270K	27		55	7.2	0.94	390	
AL04T○330K	33			6.3	1.03	370	
AL04T○390K	39		50	6.3	1.12	350	
AL04T○470K	47		45	6.3	1.22	340	
AL04T○560K	56		40	6.2	1.34	320	
AL04T○680K	68			5.7	1.47	305	
AL04T○820K	82		35	5.3	1.62	290	
AL04T○101K	100		30	4.8	1.80	275	
AL04T○121K	120		55	3.8	3.70	185	0.796
AL04T○151K	150		45	3.5	4.20	175	
AL04T○181K	180		50	3.3	4.60	165	
AL04T○221K	220		55	3.0	5.10	155	
AL04T○271K	270		65	2.8	5.80	145	
AL04T○331K	330			2.6	6.40	137	
AL04T○391K	390			2.4	7.00	133	
AL04T○471K	470		60	2.25	7.70	126	
AL04T○561K	560			2.10	8.50	120	
AL04T○681K	680		55	1.95	9.40	113	
AL04T○821K	820			1.85	10.5	105	
AL04T○102K	1000		50	1.40	14.0	100	
AL04T○122K	1200		50	1.20	22.0	110	0.252
AL04T○152K	1500			1.10	25.0	100	
AL04T○182K	1800			0.98	28.0	90	
AL04T○222K	2200			0.90	40.0	80	
AL04T○272K	2700			0.85	44.0	70	
AL04T○332K	3300			0.81	50.0	70	
AL04T○392K	3900		40	0.72	63.0	60	
AL04T○472K	4700			0.60	69.0	55	
AL04T○562K	5600			0.55	77.0	50	
AL04T○682K	6800			0.50	104.0	45	
AL04T○822K	8200			0.48	116.0	45	
AL04T○103K	10000		30	0.40	148.0	35	

○Please specify the taping configuration code.

○:B

ITEM-PART NUMBERS

■AL05

Ordering code	Inductance [μH]	Inductance Tolerance	Q (min.)	Self-resonant frequency [MHz] (min.)	DC Resistance [Ω] (max.)	Rated Current [mA] (max.)	Measuring frequency [MHz]
AL05T○1R0K	1.0	±10%	10	300	0.022	5600	7.96
AL05T○1R2K	1.2			260	0.024	5500	
AL05T○1R5K	1.5			250	0.026	5000	
AL05T○1R8K	1.8			240	0.029	4700	
AL05T○2R2K	2.2			220	0.031	4500	
AL05T○2R7K	2.7			195	0.034	4000	
AL05T○3R3K	3.3			155	0.038	3400	
AL05T○3R9K	3.9			115	0.040	3100	
AL05T○4R7K	4.7			85	0.044	2800	
AL05T○5R6K	5.6			55	0.048	2600	
AL05T○6R8K	6.8			50	0.051	2400	
AL05T○8R2K	8.2			38	0.056	2200	
AL05T○100K	10			24	0.062	2100	
AL05T○120K	12			18	0.076	1800	2.52
AL05T○150K	15			16	0.088	1700	
AL05T○180K	18			15	0.110	1600	
AL05T○220K	22			14	0.130	1400	
AL05T○270K	27			13	0.140	1300	
AL05T○330K	33			11	0.200	1200	
AL05T○390K	39			10	0.220	1100	
AL05T○430K	43			9.5	0.280	1000	
AL05T○470K	47			9.5	0.280	1000	
AL05T○560K	56			8.0	0.300	900	
AL05T○680K	68			7.5	0.340	800	
AL05T○820K	82			7.0	0.385	700	
AL05T○101K	100			6.5	0.480	700	
AL05T○121K	120		15	5.0	0.595	600	0.796
AL05T○151K	150			4.5	0.900	550	
AL05T○181K	180			4.0	1.10	500	
AL05T○221K	220			3.8	1.25	440	
AL05T○271K	270			3.5	1.85	420	
AL05T○331K	330			3.0	2.10	380	
AL05T○331K	330			2.8	2.28	340	
AL05T○471K	470			2.5	3.22	320	
AL05T○561K	560			2.2	3.85	290	
AL05T○681K	680			2.1	4.00	260	
AL05T○821K	820			2.0	5.00	250	
AL05T○102K	1000			1.8	5.80	240	
AL05T○122K	1200			1.6	7.10	200	
AL05T○152K	1500			1.5	7.80	190	

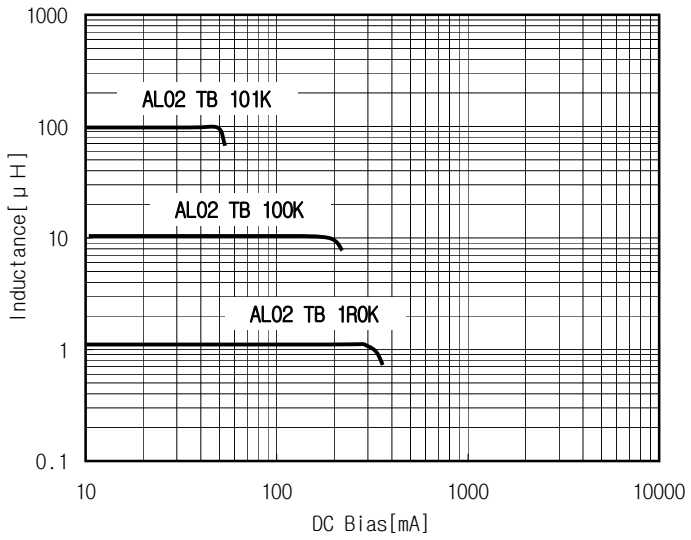
○Please specify the taping configuration code.

○:B

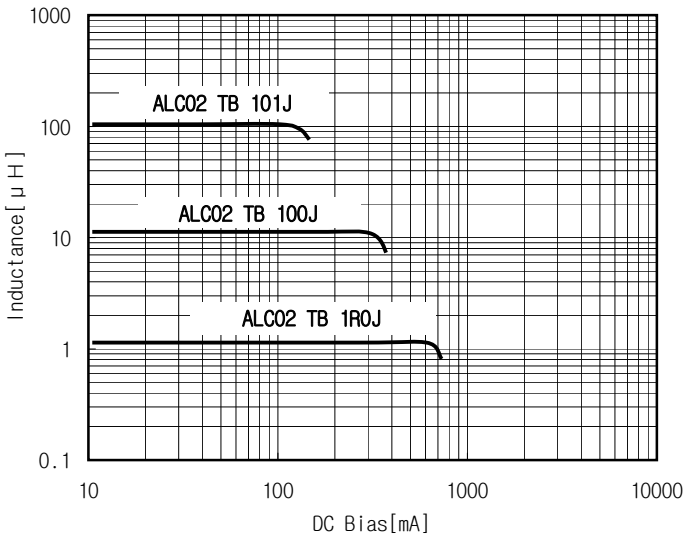
ELECTRICAL CHARACTERISTICS

■DC Bias Characteristics

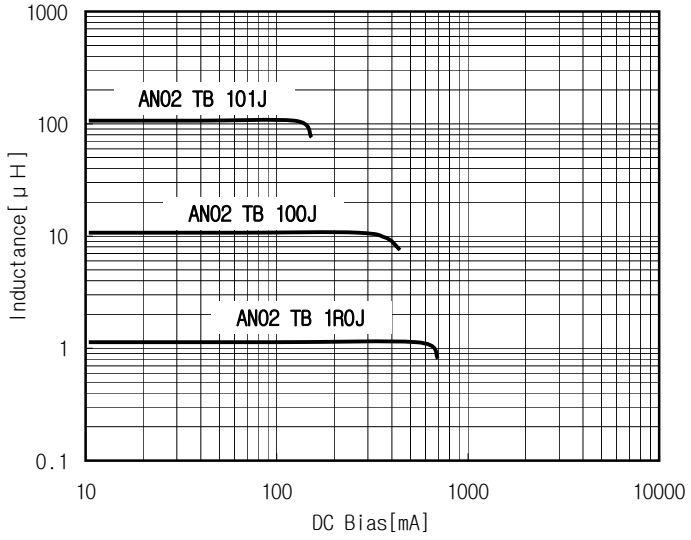
AL02



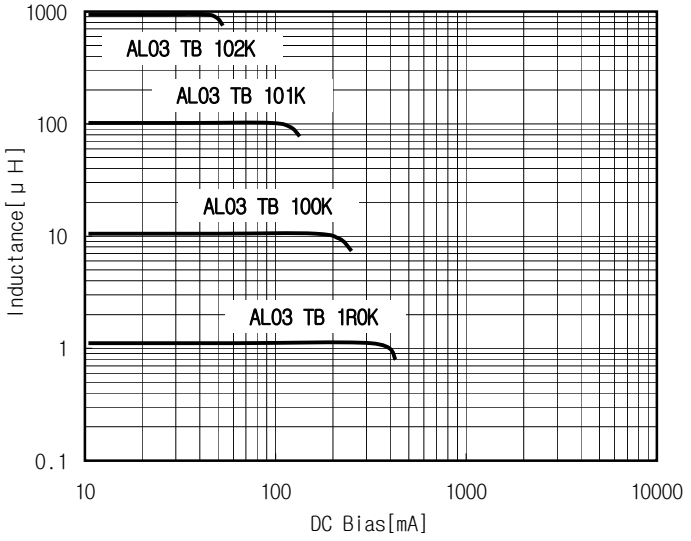
ALC02



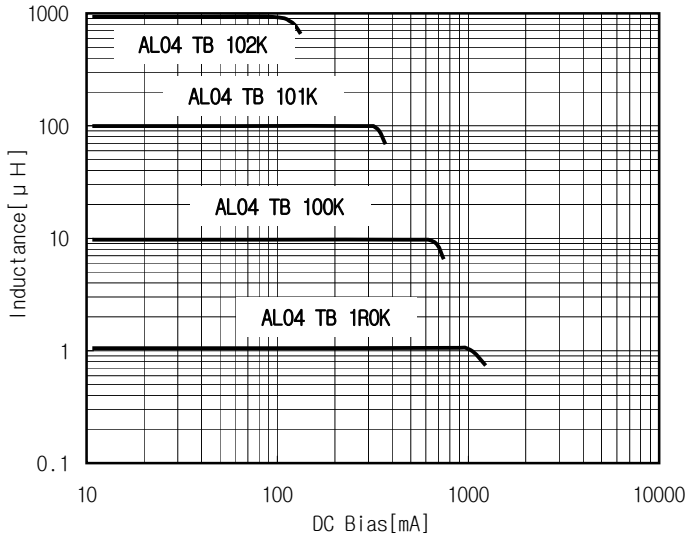
AN02



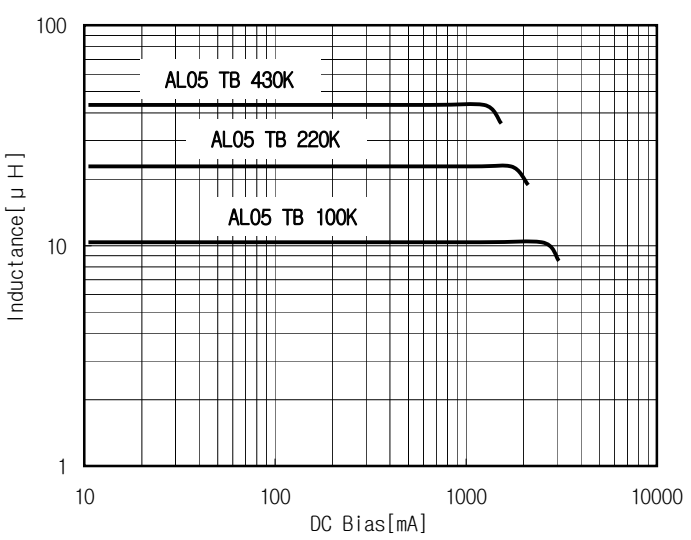
AL03



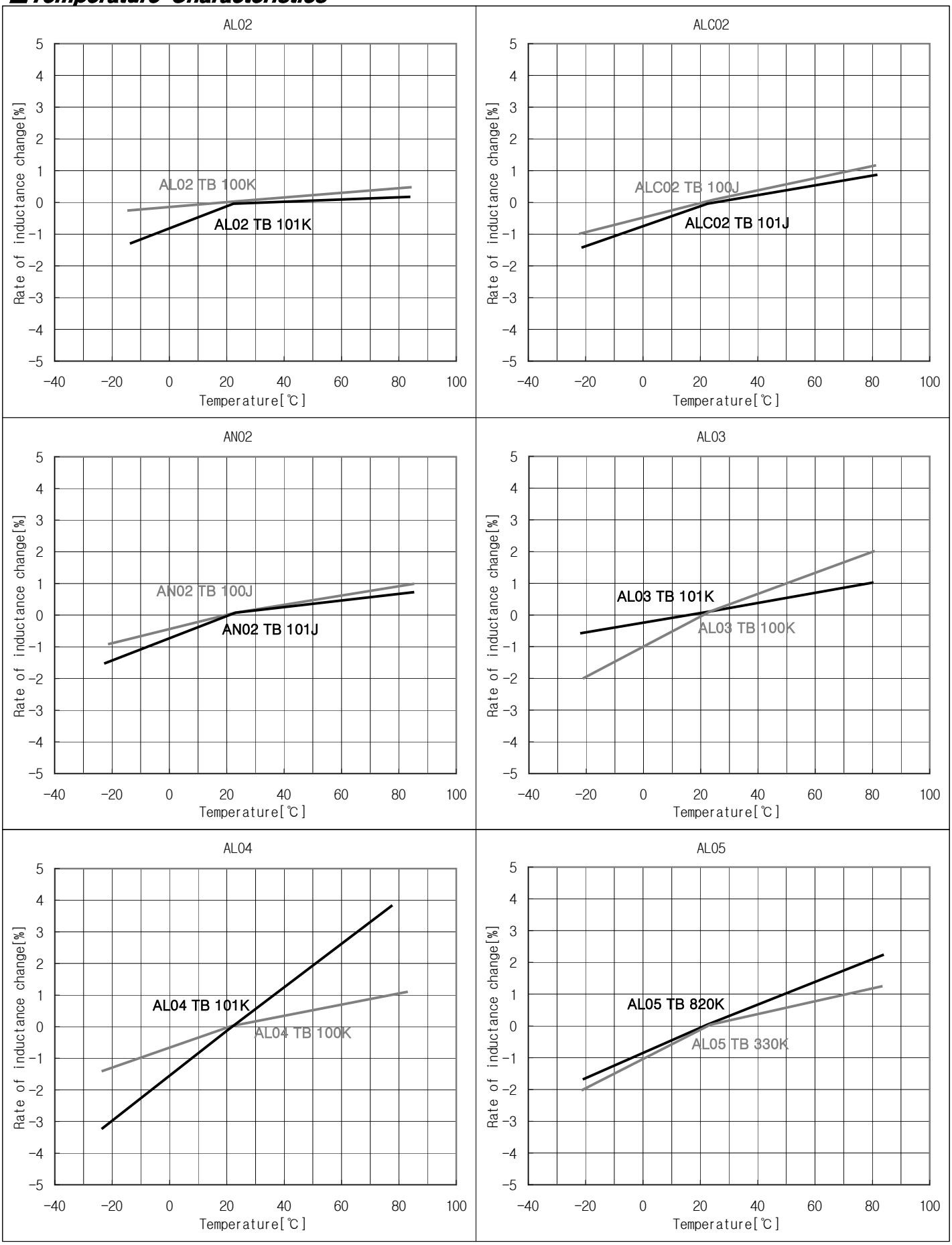
AL04



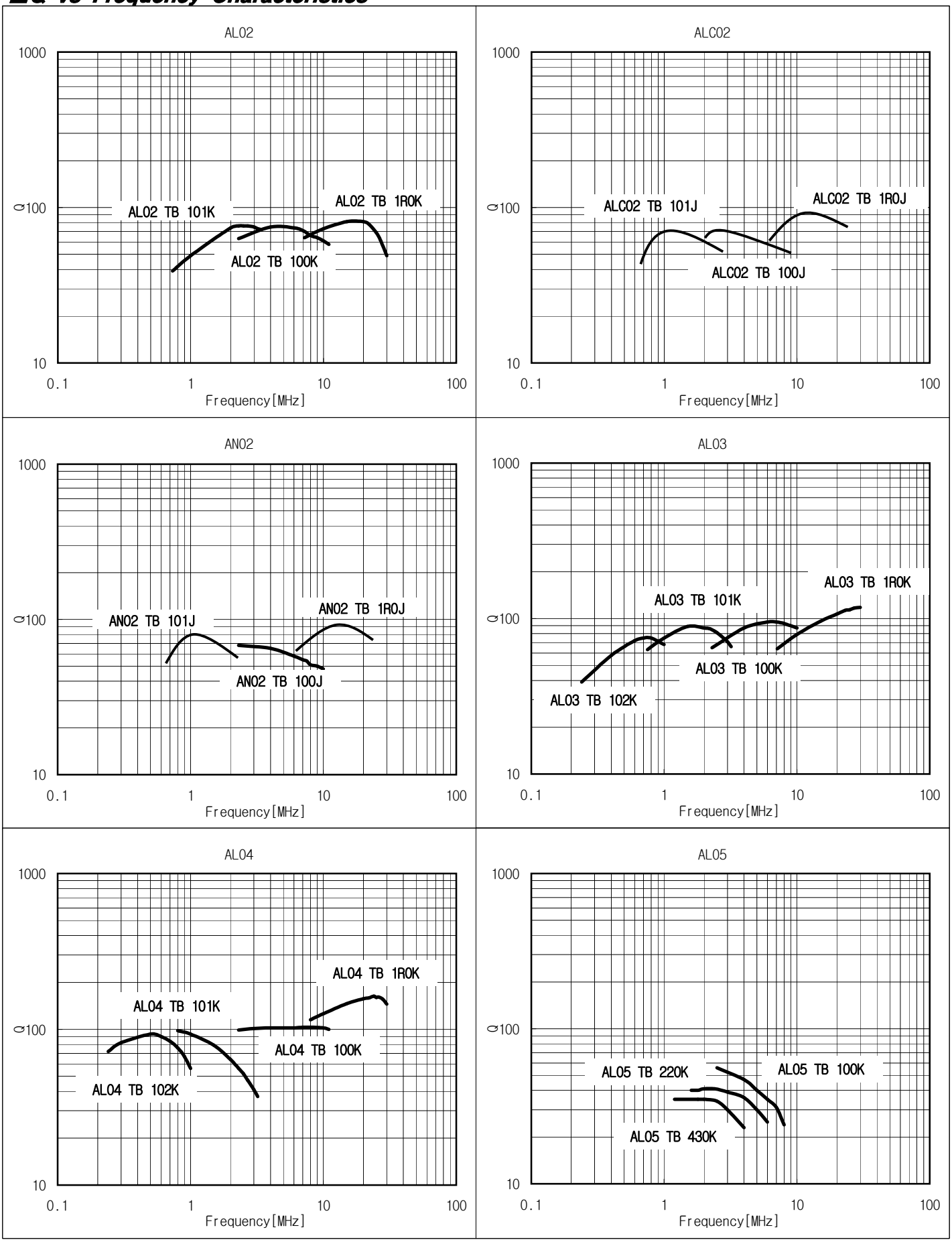
AL05



■Temperature Characteristics

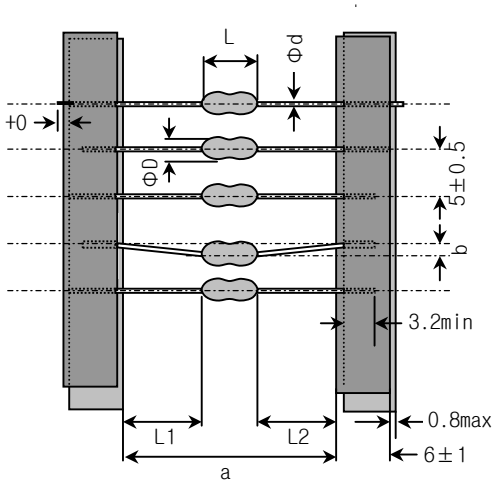


■Q vs Frequency Characteristics



■SHAPE DIMENSIONS

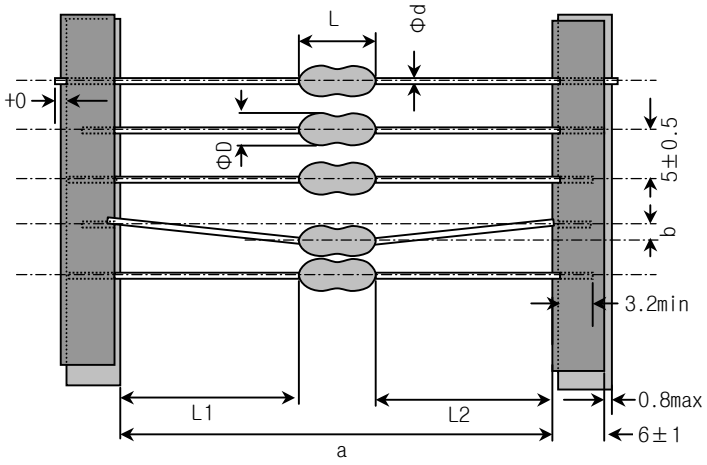
●TA(26mm)



Unit:mm

Type	Dimensions						Pitch Minimum insertion pitch	Inner Box(Q'ty)
	ΦD	L	a	b	|L1-L2|	Φd		
AL02 ALC02	2.5max	3.4max	26 +0.5 -0	0.8max	0.5max	0.45±0.05	5.0	2,000
AN02	2.5max	3.7max	26 +0.5 -0	0.8max	0.5max	0.45±0.05	5.0	
AL03	3.0max	7.0max	26 +1 -0.5	0.8max	1.0max	0.50±0.05	10.0	

●TB(52mm)



Unit:mm

Type	Dimensions						Pitch Minimum insertion pitch	Inner Box(Q'ty)
	ΦD	L	a	b	|L1-L2|	Φd		
AL02 ALC02	2.5max	3.4max	52 +2 -1	1.2max	1.0max	0.50±0.05	5.0	2,500
AN02	2.5max	3.7max	52 +2 -1	1.2max	1.0max	0.50±0.05	7.5	
AL03	3.0max	7.0max	52 +2 -1	1.2max	1.0max	0.50±0.05	10.0	
AL04	4.2max	9.8max	52 +2 -1	1.2max	1.0max	0.65±0.05	12.5	
AL05	4.5max	14max	52 +2 -1	1.2max	1.0max	0.65±0.05	20.0	2,000

RELIABILITY

<table>
<tr><th colspan="2">Item</th><th>Specified Value</th><th>Test Methods and Remarks</th></tr>
<tr><td colspan="2">1.Operating Temperature Range</td><td>-25~+85℃</td><td>Including self-generated heat.</td></tr>
<tr><td colspan="2">2.Storage Temperature Range</td><td>-40~+85℃</td><td></td></tr>
<tr><td colspan="2">3.Self Resonant Frequency</td><td>Within the specified tolerance</td><td>Measuring equipment:Dip meter or HP4294A its equivalent</td></tr>
<tr><td colspan="2">4.DC Resistance</td><td>Within the specified tolerance</td><td>Measuring equipment :mΩHiTester(3226 or its equivalent)</td></tr>
<tr><td colspan="2">5.DC Bias Characteristic</td><td>△L/L→Within -10%</td><td>Measure inductance with application of rated current using LCR meter to compare it with the initial value.</td></tr>
<tr><td colspan="2">6.Inductance
7.Q</td><td>Within the specified tolerance</td><td>Measuring equipment
AL02,ALC02,AN02,AL03,AL04 : LCR METER HP4285A
AL05,35,40,45
:IMPEDANCE/GAIN-PHASE ANALYZER HP4194A
Measuring frequency:Specified frequency</td></tr>
<tr><td colspan="2">8.Temperature Characteristics</td><td>△L/L→Within ±5%</td><td>Change of maximum inductance deviation in step 1to6
<table>
<tr><th>Step</th><th>Temperature(℃)</th></tr>
<tr><td>1</td><td>20</td></tr>
<tr><td>2</td><td>-25(minimum operating temperature)</td></tr>
<tr><td>3</td><td>20(Reference temperature)</td></tr>
<tr><td>4</td><td>+85(Maximum operation temperature)</td></tr>
<tr><td>5</td><td>20</td></tr>
</table></td></tr>
<tr><td colspan="2">9.Rated current</td><td>Within the specified tolerance</td><td>Measuring equipment:LCR METER HP4284A
The maximum DC value having inductance decrease within 10% and temperature increase within 20℃ by the application of DC bias</td></tr>
<tr><td rowspan="2">10.Terminal Strength</td><td>Tensile</td><td>No abnormality such as cutoff or looseness of lead</td><td>Apply the stated tensile force progressively in the direction to draw terminal
<table>
<tr><th>Tensile force (N)</th><th>Duration (S)</th></tr>
<tr><td>25</td><td>5</td></tr>
</table></td></tr>
<tr><td>Bending</td><td>No abnormality such as cutoff or looseness of lead</td><td>Suspend a mass at the terminal, incline the body through angle of 90° and return it to intial position is This operation in done over a period of 2~3 sec. Then a second bend in the opposite direction shall be made.
Number of bends : Two times.
<table>
<tr><th>Nominal wire diameter (mm)</th><th>Bending force (N)</th><th>Mass weight (kg)</th></tr>
<tr><td>0.3<Φd≤0.5</td><td>2.5</td><td>0.25</td></tr>
<tr><td>0.5<Φd≤0.8</td><td>5</td><td>0.5</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Item</th><th>Specified Value</th><th>Test Methods and Remarks</th></tr>
<tr><td>11.Body Strength</td><td>No abnormality such as damage</td><td>Applied force:5Kg
Duration:10sec
Speed:Shall attain to specified force in 2sec.</td></tr>
<tr><td>12.Resistance to
vibration</td><td></td><td>Duration:2hrs each in X,Y and Z directions
Total:6hrs
Frequency range:10 to 55 to 10Hz (1min.)
Amplitude:1.5mm
Mounting method:Soldering onto printed board.
Recovery:At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2hrs.</td></tr>
<tr><td>13.Resostance to
Shock</td><td></td><td>Drop test
impact materal:Concrete of vinyl tile
Height:1m
Total number of drops:10 times</td></tr>
<tr><td>14.Solderability</td><td>At least 95% of terminal electrode is covered by new solder.</td><td>Solder temperature:230±5℃
duration:3±0.5sec.</td></tr>
<tr><td>15.Resistance to
Soldering Heat</td><td>△L/L→Within±5%
Q→Within±30%
No significant abnormality in appearance

※Reflow condition 245℃/20sec , 260℃/10sec</td><td>Solder temperatue:270±5℃
Duration:5±0.5sec. Once
Immersed conditions:DIPPING UNDER 3mm FORM WOUND BODY.
Recovery:At least 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs.</td></tr>
<tr><td>16.Thermal Shock</td><td>△L/L→Within±10%
Q→Within±30%</td><td>Conditions for 1 cycle
<table>
<tr><th>Step</th><th>Temperature(℃)</th><th>Duration(min)</th></tr>
<tr><td>1</td><td>-25^{+0}_{-3}</td><td>30±3</td></tr>
<tr><td>2</td><td>Room temperature</td><td>within 3</td></tr>
<tr><td>3</td><td>$+85^{+2}_{-0}$</td><td>30±3</td></tr>
<tr><td>4</td><td>Room temperature</td><td>within 3</td></tr>
</table>
Number of cycles : 10
Recovery:At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.</td></tr>
<tr><td>17.Damp Heat</td><td>△L/L→Within±10%
Q→Within±30%</td><td>Temperature:40±2℃
Humidity:90to95% RH
Duration:1000hrs
Recovery:At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.</td></tr>
<tr><td>18.Loading under
Damp Heat</td><td>△L/L→Within±10%
Q→Within±30%</td><td>Temperature:40±2℃
Humidity:90to95% RH
Duration:1000hrs
Applied current:Rated current
Recovery:At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.</td></tr>
</table>

Item	Specified Value	Test Methods and Remarks
19.Loading at High Temperature	△L/L→Within±10% Q→Within±30%	Temperature:85±2℃ Duration:1000hrs Applied current:Rated current Recovery:At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.
20.Low Temperature Life Test	△L/L→Within±10% Q→Within±30%	Temperature:-25±2℃ Duration:1000hrs Recovery:At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.

Note on standard condition:"standard condition" referred to herein is defined as follows
5to 35℃ of temperature, 45to85% relative humidity and 86to 106kPa of air pressure.
When there are questions concerning measueent results:
In order to provide correlation data, the test shall be conducted under condition of 20±2℃
of temperature, 45to 85% relative humidity and 86 to 106kPa of air pressure Unless otherwise
specified, all the tests are conducted under the "standard condition"