巻線チップインダクタ
WOUND CHIP INDUCTORS
LE SERIES M TYPE

OPERATING TEMP.	−40～+85℃

フロー／WAVE　　リフロー／REFLOW

特長　FEATURES

・アキシャルリード形インダクタの製造工程・基本構造を継承した量産性に優れた高品質のインダクタ
・耐熱樹脂成形による優れた耐熱性と機械的強度を有したインダクタ

・A high-quality inductor that is simple to mass-produce and conforms to the same production process and basic construction as an axial lead type inductor.
・Constructed of heat-resistant molded resin having excellent heat resistance and mechanical strength.

用途　APPLICATIONS

VTRカメラ、HDD、FDD、液晶TV、カーオーディオ、移動体通信、その他小型電子機器一般

Video cameras, hard disk drives, floppy disk drives, liquid crystal television sets, car audio equipment, mobile communications and other small-sized general electronic appliances.

形名表記法　ORDERING CODE

1 形式

LE	巻線チップインダクタ

2 形状

M△	角形
MC	角形 / 大電流
MF	角形 / 低 Rdc

△= スペース

3 外径寸法〔mm〕

2520(1008)	2.5×2.0
3225(1210)	3.2×2.5

4 包装

B△	単品
T△	テーピング

△= スペース

5 公称インダクタンス〔μH〕

例	
10N	0.010
R10	0.1
1R0	1
101	100

※R= 小数点
※N=nH としての小数点

6 インダクタンス許容差〔%〕

J	± 5
K	±10
M	±20

7 当社管理記号

△△△△	標準品

△= スペース

L E M △ 2 5 2 0 T △ 3 R 3 J ○ ○ ○ ○
1 2 3 4 5 6 7

1 Type

LE	Wound chip inductor

2 Shape

M△	Rectangular Type
M C	Rectangular / High current Type
M F	Rectangular / Low Rdc

△=Blank space

3 External Dimensions〔mm〕

2520(1008)	2.5×2.0
3225(1210)	3.2×2.5

4 Packaging

B△	Bulk
T△	Tape & Reel

△=Blank space

5 Nominal Inductance〔μH〕

example	
10N	0.010
R10	0.1
1R0	1
101	100

*R=decimal point
*N=0.0(nH type)

6 Inductance Tolerances〔%〕

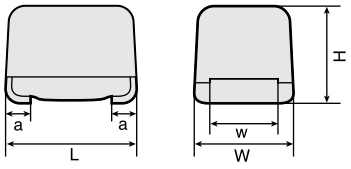
J	± 5
K	±10
M	±20

7 Internal code

△△△△	Standard Products

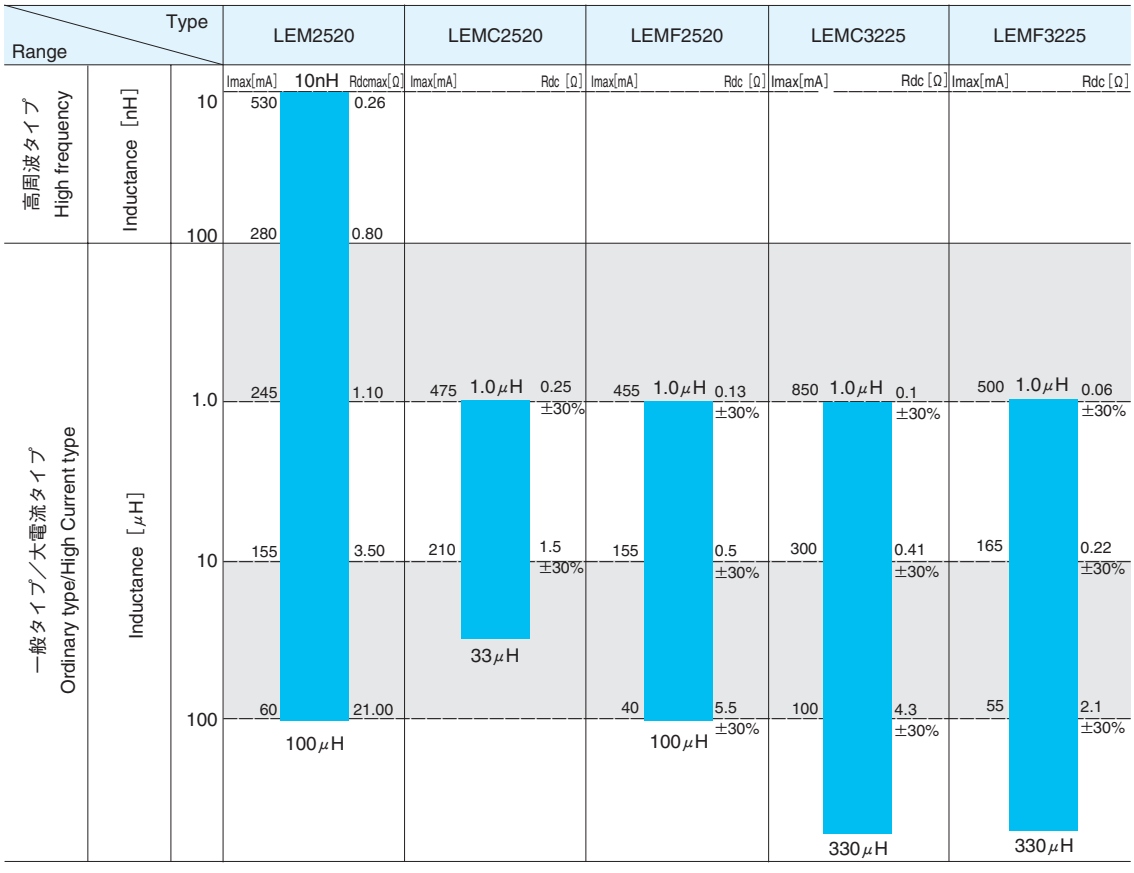
△=Blank space

外形寸法　EXTERNAL DIMENSIONS

Type	LEM2520/LEMC2520/LEMF2520 (1008)	LEMC3225 / LEMF3225 (1210)
Fig.		
L	2.5±0.2 (0.098±0.008)	3.2±0.2 (0.126±0.008)
W	2.0±0.2 (0.079±0.008)	2.5±0.2 (0.098±0.008)
H	1.8±0.2 (0.071±0.008)	2.2±0.2 (0.087±0.008)
a	0.45 (0.018)	0.45 (0.018)
w	1.4±0.1 (0.055±0.004)	1.9±0.1 (0.075±0.004)

Unit：mm(inch)

概略バリエーション　AVAILABLE INDUCTANCE RANGE



代表値 Examples	inductance	I max [mA]	Rdc [Ω]	I max [mA]	Rdc [Ω]	I max [mA]	Rdc [Ω]	I max [mA]	Rdc [Ω]	I max [mA]	Rdc [Ω]
	10nH	530	0.26	—	—	—	—	—	—	—	—
	100nH	280	0.80	—	—	—	—	—	—	—	—
	1μH	245	1.10	475	0.25±30%	455	0.13±30%	850	0.10±30%	500	0.06±30%
	10μH	155	3.50	210	1.5±30%	155	0.50±30%	300	0.41±30%	165	0.22±30%
	100μH	60	21.00	—	—	40	5.50±30%	100	4.30±30%	55	2.1±30%

セレクションガイド Selection Guide ◀ P.10
アイテム一覧 Part Numbers P.176 ▶
特性図 Electrical Characteristics P.179 ▶
梱包 Packaging P.188 ▶
信頼性 Reliability Data P.198 ▶
使用上の注意 Precautions P.214 ▶
etc

LEM2520 TYPE

高周波タイプ　High frequency type

形　名 Ordering code		公称インダクタンス Inductance (nH)	インダクタンス許容差 Inductance Tolerance	Q min.	LQ測定周波数 Measuring frequency (MHz)	Q (参考値) (Typical) 周波数 Frequency (MHz) 100	300	500	800	1000	自己共振周波数 Self-resonant frequency (MHz) min.	typ.	直流抵抗 DC Resistance (Ω) max.	定格電流 Rated current (mA) max.
LEM2520□10NK		10	±10%	10	100	25	37	45	52	57	2150	4300	0.26	530
LEM2520□12NK		12		15		26	38	45	52	54	2050	3900	0.27	500
LEM2520□15NK		15				26	38	46	51	51	1850	3500	0.31	480
LEM2520□18NK		18				26	40	48	52	51	1650	3100	0.34	450
LEM2520□22NK		22				28	43	51	56	50	1550	2700	0.38	420
LEM2520□27NK		27				29	44	50	51	48	1400	2450	0.42	410
LEM2520□33NK		33				30	45	51	50	43	1250	2200	0.46	400
LEM2520□39NK		39		20		30	45	50	39	42	1100	2000	0.50	380
LEM2520□47NK		47				30	44	48	43	35	1050	1800	0.56	360
LEM2520□56NK		56				31	44	42	35	25	950	1600	0.65	340
LEM2520□68NK		68				31	41	38	27	17	900	1500	0.70	320
LEM2520□82NK		82				32	44	40	29	17	850	1300	0.75	300
LEM2520□R10K		100				32	41	36	20	8	700	1200	0.80	280

・注：形名の□には包装記号が入ります。　・□ Please specify the packaging code. (T: Tape & reel, B: Bulk)

一般タイプ　Ordinary type

形　名 Ordering code		公称インダクタンス Inductance (μH)	インダクタンス許容差 Inductance Tolerance	Q min.	測定周波数 Measuring frequency (MHz)	自己共振周波数 Self-resonant frequency (MHz) min.	直流抵抗 DC Resistance (Ω) max.	定格電流 Rated current (mA) max.
LEM2520□R12K		0.12	±10%	30	25.2	600	0.37	520
LEM2520□R15K		0.15				550	0.42	480
LEM2520□R18K		0.18				500	0.46	460
LEM2520□R22K		0.22				450	0.52	430
LEM2520□R27K		0.27				425	0.56	420
LEM2520□R33K		0.33				400	0.60	400
LEM2520□R39K		0.39				375	0.65	375
LEM2520□R47K		0.47				350	0.68	350
LEM2520□R56K		0.56				300	0.75	325
LEM2520□R68K		0.68				270	0.85	300
LEM2520□R82K		0.82				250	1.00	260
LEM2520□1R0J		1.0	±5%		7.96	220	1.10	245
LEM2520□1R2J		1.2				180	1.20	230
LEM2520□1R5J		1.5				135	1.30	220
LEM2520□1R8J		1.8				100	1.45	210
LEM2520□2R2J		2.2				75	1.55	200
LEM2520□2R7J		2.7				55	1.70	195
LEM2520□3R3J		3.3				48	1.90	185
LEM2520□3R9J		3.9				43	2.10	180
LEM2520□4R7J		4.7				40	2.30	175
LEM2520□5R6J		5.6		25		36	2.50	170
LEM2520□6R8J		6.8				33	2.70	165
LEM2520□8R2J		8.2				30	3.05	160
LEM2520□100J		10			2.52	27	3.50	155
LEM2520□120J		12				23	3.80	150
LEM2520□150J		15				20	4.40	140
LEM2520□180J		18				18	4.80	130
LEM2520□220J		22				17	5.50	125
LEM2520□270J		27				16	6.30	115
LEM2520□330J		33				15	7.10	110
LEM2520□390J		39		20		14	9.50	90
LEM2520□470J		47				13	11.10	80
LEM2520□560J		56				12	12.10	75
LEM2520□680J		68				11	16.60	70
LEM2520□820J		82				10	19.00	65
LEM2520□101J		100		15	0.796	9	21.00	60

・注：形名の□には包装記号が入ります。　・□ Please specify the packaging code. (T: Tape & reel, B: Bulk)

LEMC2520 TYPE

大電流タイプ　High current type

形　名 Ordering code		公称 インダクタンス Inductance 〔μH〕	インダクタンス 許容差 Inductance Tolerance	Q （参考値） （Typical）	測　定 周波数 Measuring frequency 〔MHz〕	自己共振 周 波 数 Self-resonant frequency 〔MHz〕 min.	直流抵抗 DC Resistance 〔Ω〕 （30%）	定格電流 Rated current 〔mA〕 max.
LEMC2520□1R0M		1.0	±20%	20	7.96	180	0.25	475
LEMC2520□1R5M		1.5				100	0.3	435
LEMC2520□2R2M		2.2				75	0.4	390
LEMC2520□3R3M		3.3				55	0.5	340
LEMC2520□4R7M		4.7				43	0.7	285
LEMC2520□6R8M		6.8				39	0.9	275
LEMC2520□100K		10	±10%	30	2.52	32	1.5	210
LEMC2520□150K		15				21	1.9	175
LEMC2520□220K		22				18	2.7	160
LEMC2520□330K		33				16	4.8	120

・注：形名の□には包装記号が入ります。・□ Please specify the packaging code. (T: Tape & reel, B: Bulk,)

LEMF2520 TYPE

低Rdcタイプ　Low Rdc type

形　名 Ordering code		公称 インダクタンス Inductance 〔μH〕	インダクタンス 許容差 Inductance Tolerance	Q （参考値） （Typical）	測　定 周波数 Measuring frequency 〔MHz〕	自己共振 周 波 数 Self-resonant frequency 〔MHz〕 min.	直流抵抗 DC Resistance 〔Ω〕 （±30%）	定格電流 Rated current 〔mA〕 max.
LEMF2520□1R0M		1.0	±20%	10	7.96	100	0.13	455
LEMF2520□1R5M		1.5				80	0.17	350
LEMF2520□2R2M		2.2				70	0.20	315
LEMF2520□3R3M		3.3				55	0.25	280
LEMF2520□4R7M		4.7				45	0.30	210
LEMF2520□6R8M		6.8				38	0.35	175
LEMF2520□100K		10	±10%	20	2.52	32	0.50	155
LEMF2520□150K		15				28	1.00	130
LEMF2520□220K		22				16	1.20	105
LEMF2520□330K		33				14	2.10	85
LEMF2520□470K		47				11	2.60	60
LEMF2520□680K		68				10	3.30	50
LEMF2520□101K		100			0.796	8	5.50	40

・注：形名の□には包装記号が入ります。・□ Please specify the packaging code. (T: Tape & reel, B: Bulk,)

LEMC3225 TYPE

大電流タイプ　High current type

形　名 Ordering code		公称 インダクタンス Inductance 〔μH〕	インダクタンス 許容差 Inductance Tolerance	Q min.	測　定 周波数 Measuring frequency 〔MHz〕	自己共振 周 波 数 Self-resonant frequency 〔MHz〕 min.	直流抵抗 DC Resistance 〔Ω〕 (±30%)	定格電流 Rated current 〔mA〕 max.
LEMC3225□1R0M		1.0	±20%	10	7.96	100	0.10	850
LEMC3225□1R5M		1.5				80	0.12	700
LEMC3225□2R2M		2.2				68	0.15	600
LEMC3225□3R3M		3.3				54	0.18	500
LEMC3225□4R7M		4.7				46	0.22	430
LEMC3225□6R8M		6.8				38	0.29	360
LEMC3225□100K		10	±10%	15	2.52	30	0.41	300
LEMC3225□150K		15				26	0.55	250
LEMC3225□220K		22				20	1.00	210
LEMC3225□330K		33				17	1.30	170
LEMC3225□470K		47				14	1.90	150
LEMC3225□680K		68				12	3.30	120
LEMC3225□101K		100			0.796	10	4.30	100
LEMC3225□151K		150		20		8	6.30	85
LEMC3225□221K		220				6	8.00	70
LEMC3225□331K		330				5	13.00	60

・注：形名の□には包装記号が入ります。・□ Please specify the packaging code. (T: Tape & reel, B: Bulk,)

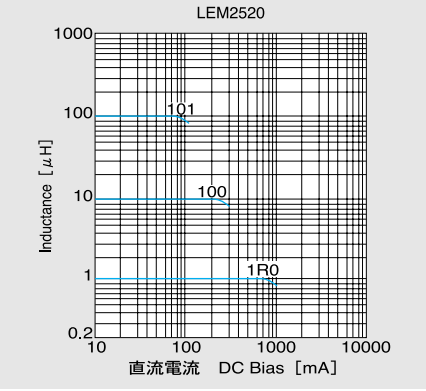
LEMF3225 TYPE

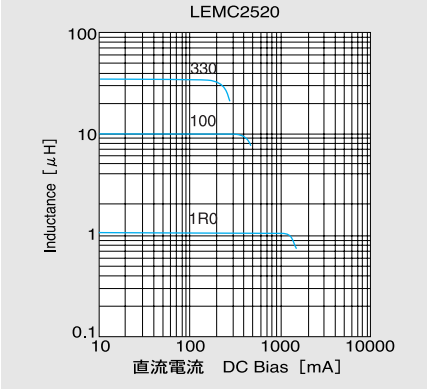
低Rdcタイプ　Low Rdc type

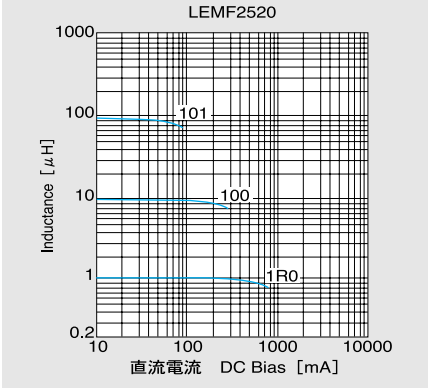
形　名 Ordering code		公称 インダクタンス Inductance 〔μH〕	インダクタンス 許容差 Inductance Tolerance	Q (参考値) (Typical)	測　定 周波数 Measuring frequency 〔MHz〕	自己共振 周 波 数 Self-resonant frequency 〔MHz〕 min.	直流抵抗 DC Resistance 〔Ω〕 (±30%)	定格電流 Rated current 〔mA〕 max.
LEMF3225□1R0M		1.0	±20%	5	7.96	100	0.06	500
LEMF3225□1R5M		1.5				80	0.08	400
LEMF3225□2R2M		2.2				68	0.09	340
LEMF3225□3R3M		3.3				54	0.11	270
LEMF3225□4R7M		4.7				43	0.13	240
LEMF3225□6R8M		6.8				35	0.17	195
LEMF3225□100K		10	±10%	10	2.52	28	0.22	165
LEMF3225□150K		15				24	0.30	145
LEMF3225□220K		22				20	0.45	115
LEMF3225□330K		33				17	0.65	95
LEMF3225□470K		47				13	0.95	85
LEMF3225□680K		68				11	1.3	70
LEMF3225□101K		100			0.796	9	2.1	55
LEMF3225□151K		150				7	3.2	45
LEMF3225□221K		220				6	4.5	35
LEMF3225□331K		330				4.5	7.0	30

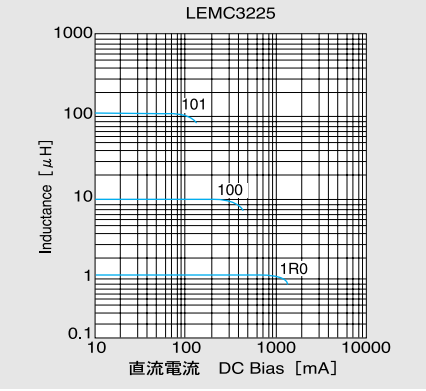
・注：形名の□には包装記号が入ります。・□ Please specify the packaging code. (T: Tape & reel, B: Bulk,)

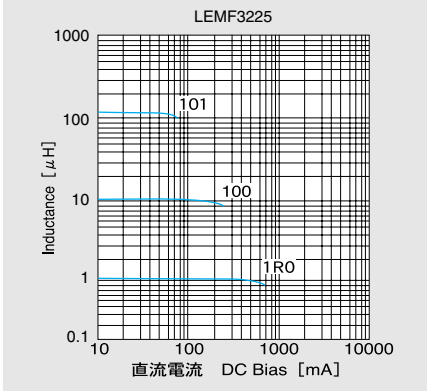
直流重量特性例　DC Bias characteristics(Measured by HP4285A+42841A)



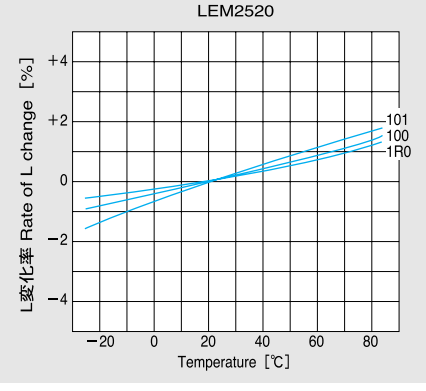


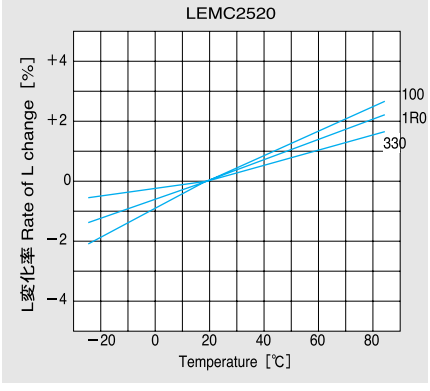


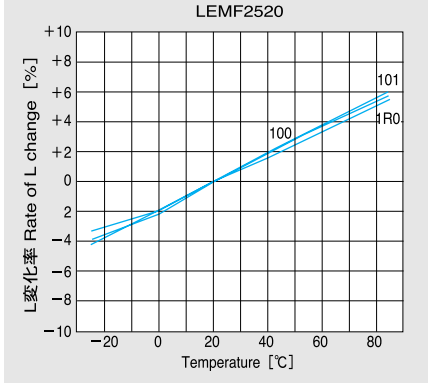


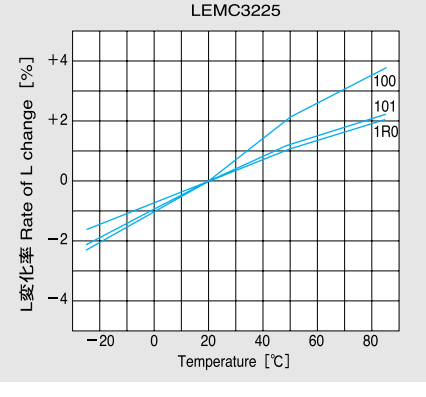


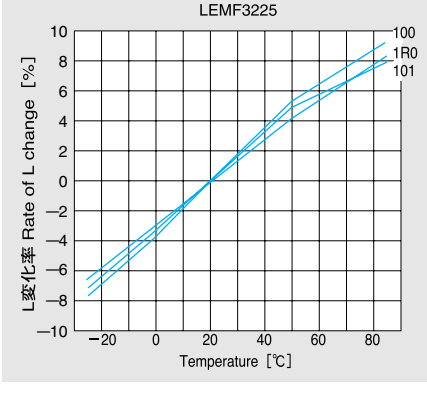
温度特性例　Temperature characteristics(Measured by HP4285A+42851A)





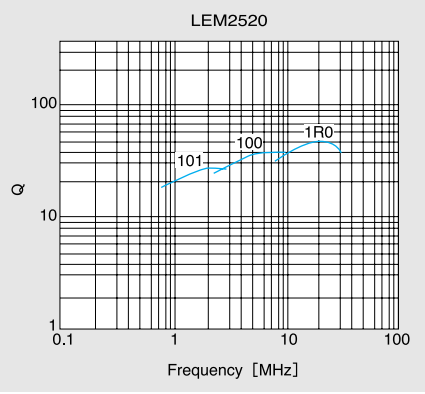




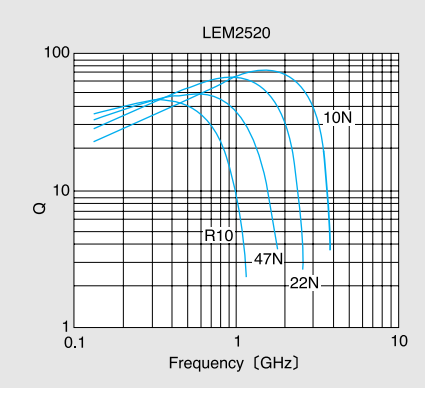


Q-周波数特性例　Q-Characteristics

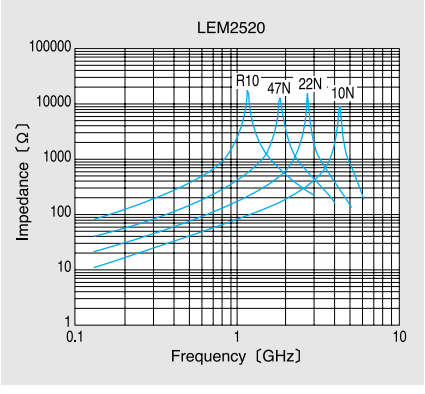
一般タイプ　Ordinary type(Measured by HP4285A+42851A)



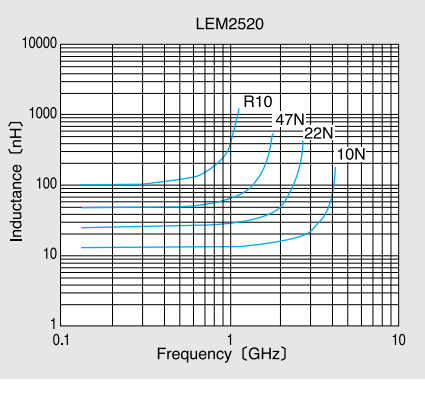
高周波タイプ　High frequency type(Measured by HP8720B)



インピーダンス周波数特性例　Impedance-vs-Frequency characteristics(Measured by HP8720B)



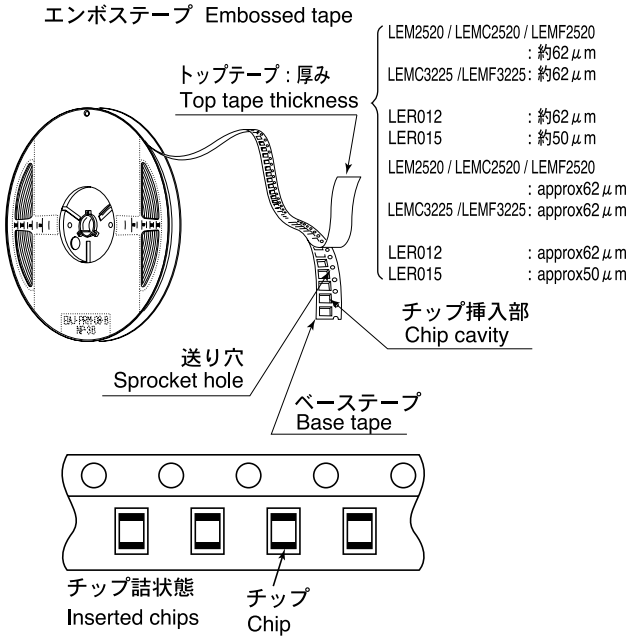
インダクタンス周波数特性例　Inductance-vs-Frequency characteristics(Measured by HP8720B)



①標準数量 Standard Quantity

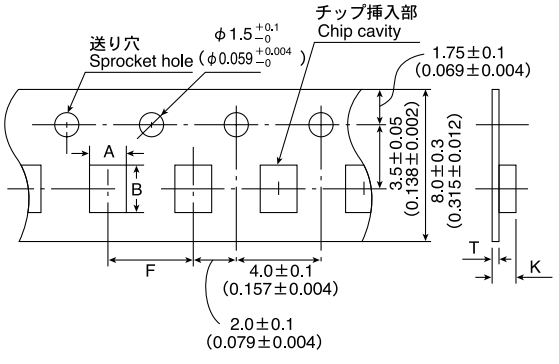
形　式 Type	標準数量 Standard Quantity [pcs]	
	袋づめ Bulk / Bag	テーピング Tape&Reel
LEM2520/LEMC2520/LEMF2520	2000	2000
LEMC3225/LEMF3225	2000	2000
LER012	3000	3000
LER015	3000	3000

②テーピング材質 Tape material



③テーピング寸法　Taping Dimensions

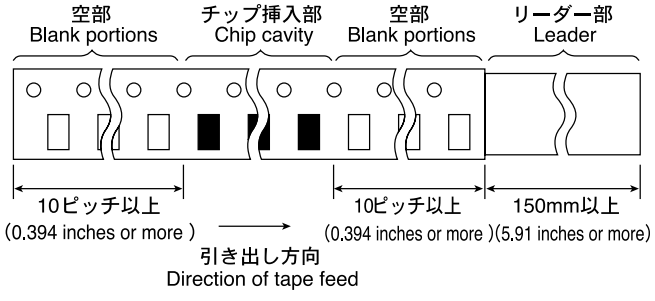
エンボステープ（8mm幅）Embossed Tape (0.315 inches wide)



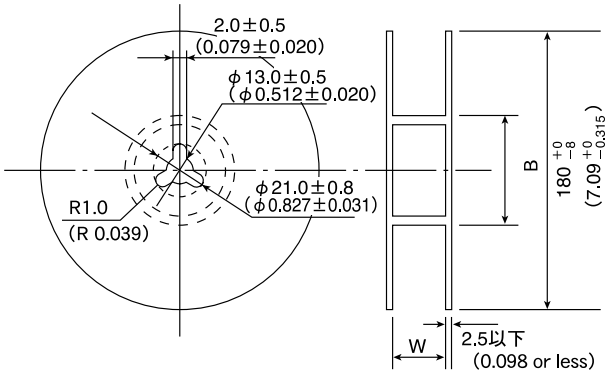
形　式 Type	チップ挿入部 Chip Cavity		挿入ピッチ Insertion Pitch	テープ厚み Tape Thickness	
	A	B	F	K	T
LEM2520/ LEMC2520/ LEMF2520	2.3±0.1 (0.091±0.004)	2.7±0.1 (0.106±0.004)	4.0±0.1 (0.157±0.004)	2.1 (0.083) ±0.1 (±0.004)	0.3 (0.012) ±0.05 (±0.002)
LEMC3225/ LEMF3225	2.8±0.2 (0.110±0.008)	3.55±0.2 (0.140±0.008)	4.0±0.1 (0.157±0.004)	2.45 (0.096) ±0.1 (0.004)	0.3 (0.012) ±0.05 (0.002)
LER012	1.45±0.2 (0.057±0.008)	2.43±0.2 (0.096±0.008)	4.0±0.1 (0.157±0.004)	2.0 (0.079) max.	0.3 (0.012) max.
LER015	2.0±0.2 (0.079±0.008)	3.6±0.2 (0.142±0.008)	4.0±0.1 (0.157±0.004)	2.0 (0.079) max.	0.3 (0.012) ±0.05 (±0.002)

Unit: mm (inch)

④リーダ部／空部 Leader and Blank Portion



⑤リール寸法 Reel Size

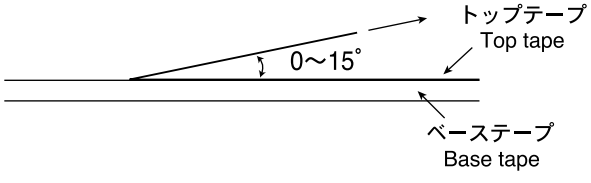


Unit: mm (inch)

形　式 Type	W	B
LER012	9±0.8 (0.354±0.031)	60 $^{+1}_{-0}$ (2.36 $^{+0.039}_{-0}$)
LER015	10.0±1.5 (0.394±0.059)	50±1 (1.97±0.039)
LEM2520 LEMC2520 LEMF2520	9±0.8 (0.354±0.031)	60 $^{+1}_{-0}$ (2.36 $^{+0.039}_{-0}$)
LEMC3225 LEMF3225	9±0.8 (0.354±0.031)	60 $^{+1}_{-0}$ (2.36 $^{+0.039}_{-0}$)

⑥トップテープ強度 Top Tape Strength

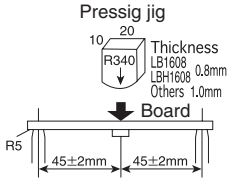
トップテープのはがし力は、下図矢印方向にて0.2～0.7Nとなります。
The top tape requires a peel-off force of 0.2 to 0.7N in the direction of the arrow as illustrated below.



Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
1.Operating temperature Range	−25~+85℃	−40~+85℃					−25~+85℃						
2.Storage	−40~+85℃						−25~+85℃						
3.Rated Voltage	Within the specified tolerance												The maximum DC value having inductance decrease within 10% and temperature increas within 20℃ by the application of DC bias. LBH1608・LEM Series 5N6~R10: The maximum DC value having temperature increas within 20℃ by the application of DC bias.
4.Inductance	Within the specified tolerance												LER・LEM Series 5N6~R10： Measuring equipment：Impedance analyzer (HP4291A or its equivalent) Measuring frequency：Specified frequency LER・LEM Series R12~221： Measuring equipment：LCR Meter (HP4285A+42851A or its equivalent) Measuring frequency：Specified frequency LB・LBC Series： Measuring equipment：LCR Mater (HP4285A or its equivalent) LBH1608 Series： Measuring equipment：Impedance analyzer (HP4291A or its equivalent)
5.Q	Within the specified tolerance											12~18 (at 100MHz) min	LER・LEM Series 5N6~R10： Measuring equipment：Impedance analyzer (HP4291A or its equivalent) Measuring frequency：Specified frequency LER・LEM Series R12~221： Measuring equipment：LCR Meter (HP4285A+42851A or its equivalent) Measuring frequency：Specified frequency LB・LBC Series： Measuring equipment：LCR Mater (HP4285A or its equivalent) LBH1608 Series： Measuring equipment：Impedance analyzer (HP4291A or its equivalent)
6.DC Resisitance	Within the specified tolerance												LER・LEM・LB・LBC・LBH Series： Measuring equipment：low ohmmeter (A&D AD5812 or its equivalent)

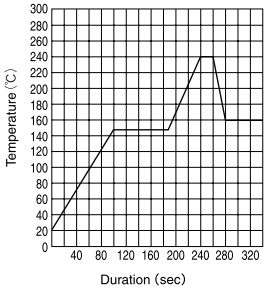
<table>
<tr><th rowspan="2">Item</th><th colspan="12">Specified Value</th><th rowspan="2">Test Methods and Remarks</th></tr>
<tr><th>LER012
LER015</th><th>LEM2520</th><th>LEMC2520</th><th>LEMF2520</th><th>LEMC3225</th><th>LEMF3225</th><th>LB2518</th><th>LB2016</th><th>LB2012</th><th>LB1608</th><th>LBC2518</th><th>LBH1608</th></tr>
<tr><td>7.Self-Resonant Frequency</td><td colspan="11">Within the specified tolerance</td><td>LER・LEM Series
5N6～R10：
Measuring equipment：Network analyzer
(HP8720B or its equivalent)
LER・LEM Series (Exclude LEM2520)
R12～：
Measuring equipment：Impeadnce nanlyzer
(HP4291A or its equivalent)
LEM2520：
Measuring equipment：Network analyzer
(Anritsu MS620J or its equivalent)

LB・LBC Series：
Measuring equipment：Impedance analyzer
(HP4291A or its equivalent)
LBH1608 Series：
Measuring equipment：Network analyzer
(HP8720B or its equivalent)</td></tr>
<tr><td>8.Temperature Characteristic</td><td colspan="2">△L/L→Within±5%</td><td>△L/L→
Within
±10%</td><td>△L/L→
Within
±5%</td><td colspan="2">△L/L→Within±15%</td><td colspan="2">△L/L→Within±15%</td><td>△L/L→
Within±5%
※△L/L→
Within±0.5nH
under 8.2nH</td><td>Change of maximum inductance deviation in step 1—5

＊Exclude CM03MS series
<table><tr><th>Step</th><th>Temperture (℃)</th></tr><tr><td>1</td><td>20</td></tr><tr><td>2</td><td>−25</td></tr><tr><td>3</td><td>20 (Reference temperature)</td></tr><tr><td>4</td><td>+85 (Maximum operating temperature)</td></tr><tr><td>5</td><td>20</td></tr></table></td></tr>
<tr><td>9.Rasistance to Flexure of Substrate</td><td colspan="11">No breakdown or damage</td><td>Warp: 2mm (LER012, LER015, LBC, LB)
: 3mm (LEM2520, LEMC2520, LEMF2520, LEMC3225, LEMF3225)
Test substrate: Printed board
Accoding to JIS C0051
  </td></tr>
<tr><td>10.Body Stregght</td><td colspan="11">No breakdown or damage</td><td>LER012・LER015
Applide forde：15N
Duration：5sec.
LB・LBC・LBH
LEM2520・LEMC2520・LEMF2520・
LEMC3225・LEMF3225
Applide forde：10N
Duration：10sec.
LB1608
Applide forde：5N
Duration：10sec.</td></tr>
<tr><td>11.Self Resonant Freguency</td><td colspan="11">△L/L→Within−10%</td><td>Measure inductance with application of rated current using LCR metre to cpmpare it with the initial value. (* Excluding 5N6～R10)</td></tr>
</table>

Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
12.Adhesion of terminal electrode	Shall not come off PC board.		No detachment of electrode				Shall not come off PC board.						LER012・LER015 Applied force：15N Duration：5 sec. Test substrate：Printed board LB・LBC・LBH LEM2520・LEMC2520・LEMF2520・ LEMC3225・LEMF3225 Applied force：10N to X and Y directions Duration：5 sec. Test substrate：Printed board
13.Resistance to vibration	△L/L→ Within±5% Q→ R12~1R0： 25min. 1R2~3R3： 20min. △L/L→ Within±5% Q→ R12~100： 30min. 120~220： 20min.	△L/L→Within±5% No significant abnormality in appearance.				△L/L→Within±10% No significant abnormality in appearance.							LER・LEM・LB・LBC： According to JIS C5102 clause 8.2. Vibration type：A Directions：2 hrs each in X, Y and Z directions. Total：6 hrs Frequency range：10 to 55 to 10 Hz (1min.) Amplitude：1.5mm Mounting method：Soldering onto printed board (* Excluding 5N6-R10 LE Series) Recovery：At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.

Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
14.Drop test	No significant abnormality in appearance.	△L/L→Within±5% No significant abnormality in appearance.				△L/L→Within±10% No significant abnormality in appearance.							LER・LEM： LER012・LER015 Drop test Impact material：concreta or vinyl tile Height：1m Total number of drops：10 times LEM2520・LEMC2520・LEMF2520・LEMC3225・LEMF3225 Acceleration：980m/sec^2 Duration：6msec Number of times：6 sides × 3 times Mounting method：Soldering onto printed board (* Excluding 10N～R10) Recovery：At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.
15.Solderability	At least 90% of electrode												LER・LEM： Solder temperature：230±5℃ Duration：2±0.5sec. (LER012・LER015) 5±0.5sec. (LEM2520・LEMC2520・LEMF2520・LEMC3225・LEMF3225) Fiux：Methanol solution with 25% of colophony LB・LBH： Solder temperature：230±5℃ Duration：5±0.5sec Fiux：Methanol solution with 25% of colophony

Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
16.Resisitance to soldering heat	No significant abnormality in appearance												Conduct following wave soldering twice. (LER012)  Solder temperature：260±5℃ Duration：5±0.5sec. Twice (LERO15) 10±1sec. Once (LEM2520・LEMC2520・LEMF2520・LEMC3225・LEMF3225) LB・LBH： 3 times of reflow oven at 220 ± 5℃for 40sec.with peak temperature at 235± 5℃ for 5sec.
17.Resisitance to soolvent	No significant abnormality in appearance.												Solvent temperature：Room temperature Type of solvent：Chlorocarbon type (LEM2520・LEMC2520・LEMC3225) Isopropyl alcohol (LEMF2520・LEMF3225・LB・LBC) Cleaning conditions：Output：20mW/cm³ Frequency：28kHz Duration：1 min Conduct ultrasonic cleaning. (LEM2520・LEMC2520・LEMC3225) 90s. Immersion and cleaning. (LEMF2520・LEMF3225・LB・LBC)

Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
18.Resisitance to solvent	△L/L→ Within±10% Q→ 5N6~18N： 10min. 22N~R10： 15min. R12~1R0： 25min. 1R2~3R3： 20min. △L/L→ Within±10% Q→ 10N~18N： 10min. 22N~R10： 15min. R12~100： 30min. 120~220： 20min.	△L/L→ Within±10% Q→ 10N：10min. 12N~33N： 15min. 39N~R10： 20min. R12~4R7： 30min. 5R6~330： 25min. 390~820： 20min. 101：15min.	△L/L→Within±10%									△L/L→ Within±5% ※△L/L→ within±0.5nH under 8.2nH △Q/Q→ within±20% ※△Q/Q →within ±5 under 8.2nH	Conditions for 1cycle Step / Temperature(℃)① / Temperature(℃)② / Duration(min) 1 / −25 / −40 / 30 2 / +85 / +85 / 30 Temperature ① for：LER012・LER015 Temperature ② for： LEM2520・LEMC2520・LEMF2520・ LEMC3225・LEMF3225 Number of cycle：100 cycle Recovery：At least 1 hr of recovery the standard condition after the removal from test chamber, followed by measurement within 2 hrs. LB・LBC・LBH： −40~+85℃, miantain times 30min. ,100 cycle Recovery：At least 1 hr of recovery under the standard condition after the test, followed by the measurement within 2 hrs.
19.Damp heat	△L/L→ Within±10% Q→ 5R6~18N： 10min. 22N~R10： 15min. R12~1R0： 25min. 1R2~3R3： 20min. △L/L→ Within±10% Q→ 10N~18N： 10min. 22N~R10： 15min. R12~100： 30min. 120~220：	△L/L→ Within±10% Q→ 10N：10min. 12N~33N： 15min. 39N~R10： 20min. R12~4R7： 30min. 5R6~330： 25min. 390~820： 20min. 101：15min.	△L/L→Within±10%									△L/L→ Within±5% ※△L/L→ within±0.5nH under 8.2nH △Q/Q→ Within±20% ※△Q/Q →within ±5 under 8.2nH	Temperature：60±2℃ Humidity：90~95%RH Duration：1000 hrs Recovery：At least 1 hr of recovery the standard condition after the removal from test chamber, followed by measurement within 2 hrs.

Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
20.Loading under damp heat	△L/L→ Within±10% Q→ R12~1R0： 25min. 1R2~3R3： 20min. △L/L→ Within±10% Q→ R12~100： 30min. 120~220： 20min.	△L/L→ Within±10% Q→ R12~4R7： 30min. 5R6~330： 25min. 390~820： 20min. 101：15min.	△L/L→Within±10%									△L/L→ Within±5% ※△L/L→ within ±0.5nH under 8.2nH △Q/Q→ within±20% ※△Q/Q →within ±5 under 8.2nH	LER・LEM・LB・LBC： Temperature：60±2℃ (Excluding nH range) Humidity：90~95%RH Duration：1000 hrs Applied current：Rated current Recovery：At least 1 hr of recovery the standard condition after the removal from test chamber, followed by measurement within 2 hrs.
21.Hirh temperaturte life test	△L/L→ Within±10% Q→ 5R6~18N： 10min. 22N~R10： 15min. R12~1R0： 25min. 1R2~3R3： 20min. △L/L→ Within±10% Q→ 10N~18N： 10min. 22N~R10： 15min. R12~100： 30min. 120~220： 20min.	△L/L→ Within±10% Q→ 10N：10min. 12N~33N： 15min. 39N~R10： 20min. R12~4R7： 30min. 5R6~330： 25min. 390~820： 20min. 101：15min.	△L/L→Within±10%										LER・LEM： Temperature：85±2℃ Duration：1000 hrs Recovery：At least 1 hr of recovery the standard condition after the removal from test chamber, followed by measurement within 2 hrs.
22.Loading at high temperature	△L/L→ Within±10% Q→ R12~1R0： 25min. 1R2~3R3： 20min. △L/L→ Within±10% Q→ R12~100： 30min. 120~220： 20min.						△L/L→Within±10%					△L/L→ Within±5% ※△L/L→ within±0.5nH under 8.2nH △Q/Q→ Within±20% ※△Q/Q →within ±0.5 under 8.2nH	LER・LB・LBC： Temperature：85±2℃ (Excluding nH range) Duration：1000 hrs Applied current：Rated current Recovery：At least 1 hr of recovery the standard condition after the removal from test chamber, followed by measurement within 2 hrs.

Item	Specified Value												Test Methods and Remarks
	LER012 LER015	LEM2520	LEMC2520	LEMF2520	LEMC3225	LEMF3225	LB2518	LB2016	LB2012	LB1608	LBC2518	LBH1608	
23.Low temperature life test	△L/L→ Within±10% Q→ 5R6～18N： 10min. 22N～R10： 15min. R12～1R0： 25min. 1R2～3R3： 20min. △L/L→ ±10%以内 Q→ 10N～18N： 10min. 22N～R10： 15min. R12～100： 30min. 120～220： 20min.	△L/L→ Within±10% Q→ 10N：10min. 12N～33N： 15min. 39N～R10： 20min. R12～4R7： 30min. 5R6～330： 25min. 390～820： 20min. 101：15min.	△L/L→Within±10%									△L/L→ Within±5% ※△L/L→ within±0.5nH under 8.2 n H △Q/Q→ Within±20% ※△Q/Q →within ±5 under 8.2 n H	LER・LEM・LB・LBC・LBH Temperature：−40±2℃ Duration：1000 hrs Recovery：At least 1 hr of recovery the standard condition after the removal from test chamber, followed by measurement within 2 hrs.
24.Standard condition	"Sutandard condition" referred to herein defined as follows：5 to 35℃ of temperature, 45 to 85% relative humidity, and 86 to 106kPa of air pressure.When there are questions concerning measurement results：In order to provide correlation data, the test shall be conducted under condition of 20±2℃ of temperature, 45 to 85% to 106kPa of air pressure. Unless otherwise specified all the test are conducted under the "standard condition"						Standard test condition：Unless oherwise specified,Temperature20±15℃of temperature, 65±20% of relative humidity.When there are question concerning measurement result：In order to provide correlation date, the test shall be condition of 20±2℃ of tenterature, 65±5% relative humidity. Inductance is in accordance with our measured value.						

LER Type, LEM Type, LB Type

Stages	Precautions	Technical considerations
1.Circuit Design	Operating environment, 1.The products described in this specification are intended for use in general electronic equipment,(office supply equipment, telecommunications systems, measuring equipment, and household equipment). They are not intended for use in mission-critical equipment or systems requiring special quality and high reliability (traffic systems, safety equipment, aerospace systems, nuclear control systems and medical equipment including life-support systems,) where product failure might result in loss of life, injury or damage. For such uses, contact TAIYO YUDEN Sales Department in advance.	
2.PCB Design	Land pattern design 1.Please contact any of our offices for a land pattern, and refer to a recommended land pattern of specifications.	
3.Considerations for automatic placement	Adjustment of mounting machine 1.Excessive impact load should not be imposed on the products when mounting onto the PC boards. 2.Mounting and soldering conditions should be checked beforehand.	1. When installing products, care should be taken not to apply distortion stress as it may deform the products.
4.Soldering	Wave soldering 1.Please refer to the specifications in the catalog for a wave soldering. Reflow soldering 1.Please contact any of our offices for a reflow soldering, and refer to the recommended condition specified. 2.LER012 Type,LB Type Reflow solderring only. Lead free soldering 1.When using products with lead free soldering, we request to use them after confirming of adhesion, temperature of resistance to soldering heat, etc. sufficiently. Recommended conditions for using a soldering iron Put the soldering iron on the land-pattern. Soldering iron's temperature - Below 350 ℃ Duration - 3 seconds or less The soldering iron should not directly touch the inductor.	1.If products are used beyond the range of the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of the products.
5.Cleaning	Cleaning conditions LB Type 1.Washing by supersonic waves shall be avoided.	LB Type 1.If washing by supersonic waves, supersonic waves may cause broken products.
6.Handling	Handling 1.Keep the inductors away from all magnets and magnetic objects. Breakaway PC boards (splitting along perforations) 1.When splitting the PC board after mounting inductors, care should be taken not to give any stresses of deflection or twisting to the board. 2.Board separation should not be done manually, but by using the appropriate devices. Mechanical considerations 1.Please do not give the inductors any excessive mechanical shocks.	1.There is a case that a characteristic varies with magnetic influence. 1.Planning pattern configurations and the position of products should be carefully performed to minimize stress. 1.There is a case to be damaged by a mechanical shock.
7.Storage conditions	Storage 1.To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled. ・Recommended conditions Ambient temperature 0～40℃ Humidity Below 70% RH The ambient temperature must be kept below 30℃ Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, LE type inductors should be used within one year from the time of delivery. LER type, LB type Please should be used within 6 months from the time of delivery. LE type In case of storage over 6 months, solderability shall be checked before actual usage.	1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place.