

请务必在使用敝公司产品之前阅读。

### 注意

■ 本产品目录中所记载的内容为2018年10月之内容。因改良等原因,可能会不经预告而变更记载内容,所以请务必在使用前先确认最新的产品信息。未按照本产品目录中所记载的内容或交货规格说明书使用敝公司产品的,即便其致使使用设备发生损害、瑕疵等时,敝公司也不承担任何责任,敬请悉知。

■ 就规格相关的详细内容,敝公司备有交货规格说明书,详情请向敝公司咨询。

■ 使用敝公司产品时,请务必事先安装到设备之后,在实际使用的环境下进行评估和确认。

■ 本产品目录中所记载的产品可使用于一般电子设备 [音像设备、办公自动化设备、家电产品、办公设备、信息/通讯设备(手机、电脑等)] 以及医疗设备(国际(IMDRF)第一类,第二类)。因此,若考虑将本产品目录中所记载的产品使用于可能会直接危及生命或身体的设备 [运输用设备(汽车驱动控制设备、火车控制设备、船舶控制设备等)、交通信号设备、防灾设备、医疗设备(国际(IMDRF)第三类)、高公共性信息通信设备(电话交换机以及电话、无线、广播电视等基站)] 等时,请务必事先向敝公司咨询。

另外,请勿将敝公司产品使用于对安全性和可靠性要求较高的设备(航天设备、航空设备\*、医疗设备(国际(IMDRF)第四类)、原子能控制设备、海底设备、军事设备等)。

※ 注释:仅限于对航空设备的安全运行不产生直接干扰的设备[机内娱乐设备、机内照明设备、电动座椅、餐饮设备等],在满足敝公司另行指定的相关条件时,亦可将敝公司产品用于以上用途。在贵公司考虑将敝公司的产品用于以上用途时,请务必事先向敝公司咨询相关的信息。

且即便属于一般电子设备,使用于对安全性和可靠性要求较高的设备、电路上时,敝公司建议进行充分的安全评估,并根据需要,在设计时追加保护电路等。

未经敝公司的事先书面同意,把本产品目录中所记载的产品使用于前述需要向敝公司咨询的设备或敝公司禁止使用的设备,从而给客户或第三方造成损害的,敝公司不承担任何责任,敬请悉知。

■ 本产品目录中所记载的信息是用于说明相关产品的典型操作以及相关应用。此类信息的使用不代表对于敝公司以及第三方的知识产权以及其他权利的使用许可或是不侵权保证。

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■ 本产品目录中所记载的内容适用于从敝公司营业所、销售子公司、销售代理店(即“正规销售渠道”)购买的敝公司产品,并不适用于从上述以外的渠道购买的敝公司产品,敬请悉知。

### 出口相关注意事项

本产品目录中所记载的部分产品在出口时须事先确认《外汇和对外贸易法》以及美国出口管理的相关法规,并办理相关手续。如有不明之处,请向敝公司咨询。

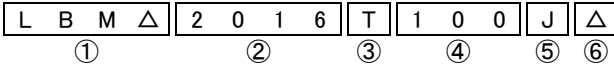
# 信号用绕线型片状电感器(LB 系列 M 型)



回流焊

## ■ 型号标示法

※使用温度范围: -40~+105°C (包含产品本身发热)



空格

### ① 类型

代码	类型
LBM△	信号用绕线型片状电感器

### ② 尺寸 (L × W)

代码	尺寸 (L×W) [mm]
2016	2.0 × 1.6

### ③ 包装

代码	包装
T	卷盘带装

### ④ 标称电感值

代码 (例)	标称电感值 [μH]
R12	0.12
1R0	1.0
100	10
101	100

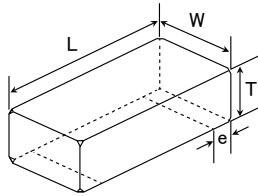
※R=小数点

### ⑤ 电感量公差

代码	电感量公差
J	±5%

### ⑥ 本公司管理记号

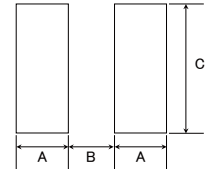
## ■ 标准外型尺寸 / 标准数量



推荐焊盘图案  
 实装上的注意  
 ·请确认实装状态后使用。  
 ·本产品焊法限定为回流焊法。

Type	A	B	C
LBM 2016	0.6	1.0	1.8

单位: mm



Type	L	W	T	e	标准数量[pcs]	
					纸带	压纹带
LBM 2016	2.0±0.2 (0.08±0.008)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.2 (0.02±0.008)	—	2000

单位: mm (inch)

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●LBM2016 型

型号	EHS	标称电感值 [μH]	电感量公差	Q值 (min.)	自共振频率 [MHz] (min.)	直流电阻 [Ω] (±30%)	额定电流 [mA] (max.)	测试频率 [MHz]
LBM 2016TR12J	RoHS	0.12	±5%	30	600	0.13	610	25.2
LBM 2016TR15J	RoHS	0.15	±5%	30	550	0.15	570	25.2
LBM 2016TR18J	RoHS	0.18	±5%	30	500	0.15	560	25.2
LBM 2016TR22J	RoHS	0.22	±5%	30	450	0.20	520	25.2
LBM 2016TR27J	RoHS	0.27	±5%	30	425	0.21	510	25.2
LBM 2016TR33J	RoHS	0.33	±5%	30	400	0.21	490	25.2
LBM 2016TR39J	RoHS	0.39	±5%	30	375	0.26	440	25.2
LBM 2016TR47J	RoHS	0.47	±5%	30	350	0.26	430	25.2
LBM 2016TR56J	RoHS	0.56	±5%	30	300	0.29	410	25.2
LBM 2016TR68J	RoHS	0.68	±5%	30	270	0.32	400	25.2
LBM 2016TR82J	RoHS	0.82	±5%	30	250	0.34	390	25.2
LBM 2016T1R0J	RoHS	1.0	±5%	30	220	0.38	385	7.96
LBM 2016T1R2J	RoHS	1.2	±5%	30	180	0.41	370	7.96
LBM 2016T1R5J	RoHS	1.5	±5%	30	135	0.47	350	7.96
LBM 2016T1R8J	RoHS	1.8	±5%	30	100	0.48	345	7.96
LBM 2016T2R2J	RoHS	2.2	±5%	30	75	0.54	340	7.96
LBM 2016T2R7J	RoHS	2.7	±5%	30	55	0.59	310	7.96
LBM 2016T3R3J	RoHS	3.3	±5%	30	48	0.68	290	7.96
LBM 2016T3R9J	RoHS	3.9	±5%	30	43	0.74	275	7.96
LBM 2016T4R7J	RoHS	4.7	±5%	30	40	0.78	270	7.96
LBM 2016T5R6J	RoHS	5.6	±5%	25	36	0.88	255	7.96
LBM 2016T6R8J	RoHS	6.8	±5%	25	33	0.97	240	7.96
LBM 2016T8R2J	RoHS	8.2	±5%	25	30	1.1	225	7.96
LBM 2016T100J	RoHS	10	±5%	25	27	1.2	215	2.52
LBM 2016T120J	RoHS	12	±5%	25	23	1.4	200	2.52
LBM 2016T150J	RoHS	15	±5%	25	20	1.5	190	2.52
LBM 2016T180J	RoHS	18	±5%	25	18	2.5	150	2.52
LBM 2016T220J	RoHS	22	±5%	25	17	2.8	140	2.52
LBM 2016T270J	RoHS	27	±5%	25	16	3.2	130	2.52
LBM 2016T330J	RoHS	33	±5%	25	15	3.6	125	2.52
LBM 2016T390J	RoHS	39	±5%	20	14	3.9	120	2.52
LBM 2016T470J	RoHS	47	±5%	20	13	4.1	115	2.52
LBM 2016T560J	RoHS	56	±5%	20	12	5.9	95	2.52
LBM 2016T680J	RoHS	68	±5%	20	11	7.0	90	2.52
LBM 2016T820J	RoHS	82	±5%	20	10	7.7	85	2.52
LBM 2016T101J	RoHS	100	±5%	15	9.0	8.0	80	0.796
LBM 2016T151J	RoHS	150	±5%	15	6.5	13.5	69	0.796
LBM 2016T181J	RoHS	180	±5%	15	6.0	15	67	0.796
LBM 2016T221J	RoHS	220	±5%	15	5.5	18	65	0.796

※) 额定电流: 直流叠加导致的电感降低在10%以内、以及温度上升20°C以内都满足的最大直流电流值。

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# WIRE-WOUND CHIP INDUCTORS (LB SERIES), WIRE-WOUND CHIP POWER INDUCTORS (CB SERIES), WIRE-WOUND CHIP INDUCTORS FOR SIGNAL LINES (LB SERIES M TYPE)

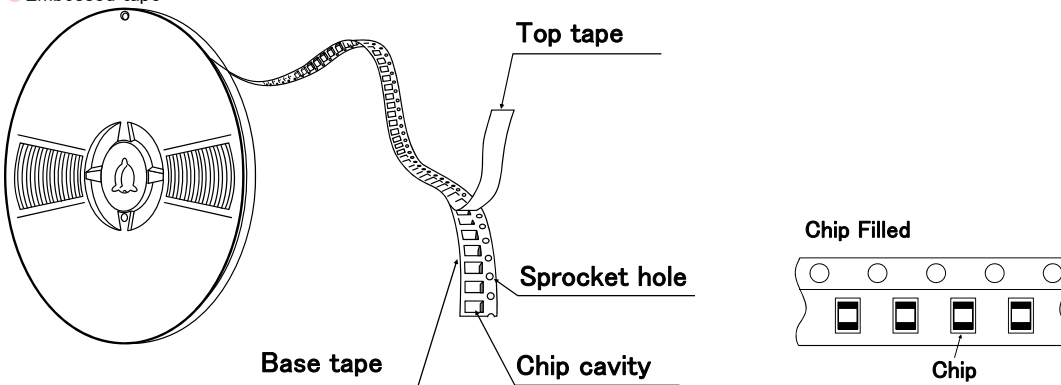
## PACKAGING

### ① Minimum Quantity

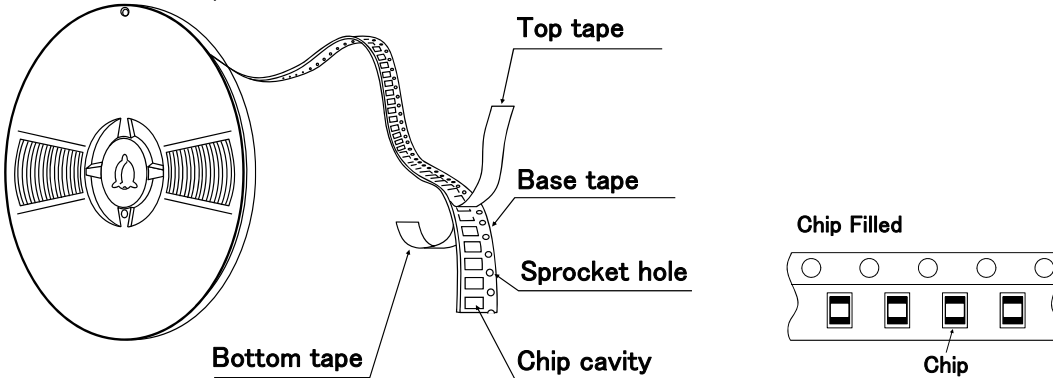
Type	Standard Quantity [pcs]	
	Paper Tape	Embossed Tape
LB C3225	—	1000
CB C3225	—	1000
LB 3218	—	2000
LB R2518	—	2000
LB C2518	—	2000
LB 2518	—	2000
CB 2518	—	2000
CB C2518	—	2000
LBM2016	—	2000
LB C2016	—	2000
LB 2016	—	2000
CB 2016	—	2000
CB C2016	—	2000
LB 2012	—	3000
LB C2012	—	3000
LB R2012	—	3000
CB 2012	—	3000
CB C2012	—	3000
CB L2012	4000	—
LB 1608	4000	—
LBMF1608	—	3000
CBMF1608	—	3000

### ② Tape material

#### ● Embossed tape



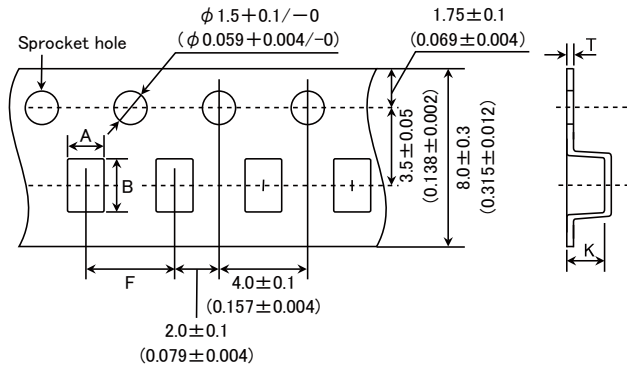
#### ● Card board carrier tape



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### ③ Taping Dimensions

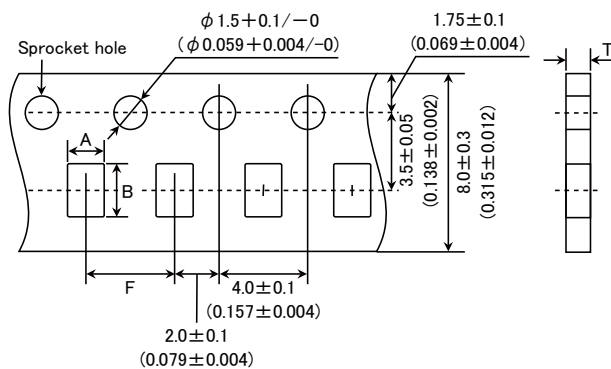
#### ● Embossed Tape (0.315 inches wide)



Type	Chip cavity		Insertion pitch	Tape thickness	
	A	B	F	T	K
LBM2016	1.75 ± 0.1 (0.069 ± 0.004)	2.1 ± 0.1 (0.083 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.3 ± 0.05 (0.012 ± 0.002)	1.9max. (0.075max.)
LB C3225 CB C3225	2.8 ± 0.1 (0.110 ± 0.004)	3.5 ± 0.1 (0.138 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.3 ± 0.05 (0.012 ± 0.002)	4.0max. (0.157max.)
LB 3218	2.1 ± 0.1 (0.083 ± 0.004)	3.5 ± 0.1 (0.138 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.3 ± 0.05 (0.012 ± 0.002)	2.2max. (0.087max.)
LB 2518 CB 2518 LB C2518 CB C2518 LB R2518	2.15 ± 0.1 (0.085 ± 0.004)	2.7 ± 0.1 (0.106 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.3 ± 0.05 (0.012 ± 0.002)	2.2max. (0.087max.)
LB 2016 CB 2016 LB C2016 CB C2016	1.75 ± 0.1 (0.069 ± 0.004)	2.1 ± 0.1 (0.083 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.3 ± 0.05 (0.012 ± 0.002)	1.9max. (0.075max.)
LB 2012 CB 2012 LB C2012 CB C2012 LB R2012	1.45 ± 0.1 (0.057 ± 0.004)	2.25 ± 0.1 (0.089 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.25 ± 0.05 (0.010 ± 0.002)	1.45max. (0.057max.)
LBMF1608 CBMF1608	1.1 ± 0.1 (0.043 ± 0.004)	1.9 ± 0.1 (0.075 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.25 ± 0.05 (0.010 ± 0.002)	1.2max. (0.047max.)

Unit: mm (inch)

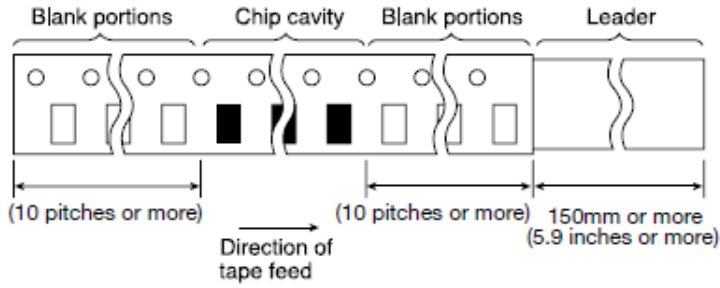
#### ● Card board carrier tape (0.315 inches wide)



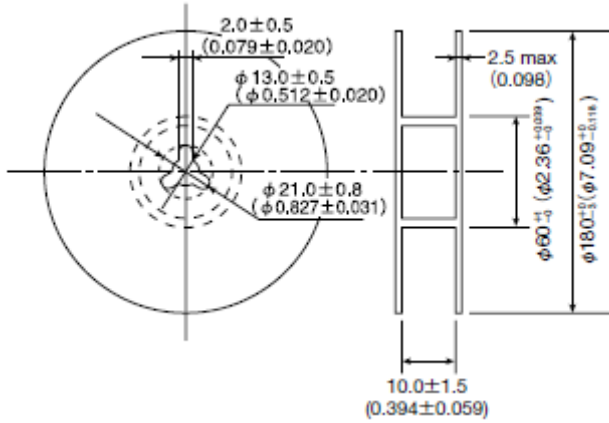
Type	Chip cavity		Insertion pitch	Tape thickness
	A	B	F	T
CB L2012	1.55 ± 0.1 (0.061 ± 0.004)	2.3 ± 0.1 (0.091 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.1max. (0.043max.)
LB 1608	1.0 ± 0.1 (0.039 ± 0.004)	1.8 ± 0.1 (0.071 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.1max. (0.043max.)

Unit: mm (inch)

#### ④ Leader and Blank Portion

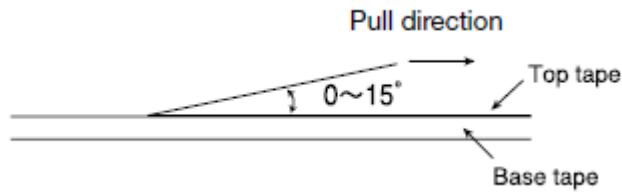


#### ⑤ Reel Size



#### ⑥ Top Tape Strength

The top tape requires a peel-off force 0.2 to 0.7N in the direction of the arrow as illustrated below.



# WIRE-WOUND CHIP INDUCTORS (LB SERIES), WIRE-WOUND CHIP POWER INDUCTORS (CB SERIES), WIRE-WOUND CHIP INDUCTORS FOR SIGNAL LINES (LB SERIES M TYPE)

## RELIABILITY DATA

1. Operating temperature Range		
Specified Value	LB, LBC, LBR, LBMF Series	-40~ +105°C (Including self-generated heat)
	CB, CBC, CBL, CBMF Series	
	LBM Series	
2. Storage Temperature Range (after soldering)		
Specified Value	LB, LBC, LBR, LBMF Series	-40~ +85°C
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	LB, CB Series : Please refer the term of "7. storage conditions" in precautions.	
3. Rated Current		
Specified Value	LB, LBC, LBR, LBMF Series	Within the specified tolerance
	CB, CBC, CBL, CBMF Series	
	LBM Series	
4. Inductance		
Specified Value	LB, LBC, LBR, LBMF Series	Within the specified tolerance
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	LB・LBC・LBR・CB・CBC・CBL・LBMF・CBMF・LBM Series Measuring equipment : LCR Meter (HP4285A or its equivalent) Measuring frequency : Specified frequency	
5. Q		
Specified Value	LB, LBC, LBR, LBMF Series	-
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	LBM Series Measuring equipment : LCR Meter (HP4285A or its equivalent) Measuring frequency : Specified frequency	
6. DC Resitance		
Specified Value	LB, LBC, LBR, LBMF Series	Within the specified tolerance
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	Measuring equipment : DC Ohmmeter (HIOKI 3227 or its equivalent)	
7. Self-Resonant Frequency		
Specified Value	LB, LBC, LBR, LBMF Series	Within the specified tolerance
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	Measuring equipment : Impedance analyzer (HP4291A or its equivalent)	

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8. Temperature Characteristic					
Specified Value	LBM2016				Inductance change : Within $\pm 5\%$
	LB1608	LB2012	LBR2012	CB2012	Inductance change : Within $\pm 20\%$
	CBL2012	LB2016	CB2016	LB2518	
	LBR2518	CB2518	LBC3225	CBC3225	
	LBMF1608	CBMF1608	LBC2016	CBC2016	Inductance change : Within $\pm 25\%$
LBC2518	CBC2518	LB3218			
Test Methods and Remarks	LBC2012	CBC2012			Inductance change : Within $\pm 35\%$
	Based on the inductance at 20°C and Measured at the ambient of $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .				

9. Resistance to Flexure of Substrate			
Specified Value	LB, LBC, LBR, LBMF Series		No damage.
	CB, CBC, CBL, CBMF Series		
	LBM Series		
Test Methods and Remarks	Warp : 2mm (LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF Series)		
	Test substrate : Glass epoxy-resin substrate Thickness : 0.8mm (LB1608·LBMF1608·CBMF1608) : 1.0mm (Others)		

10. Body Strength			
Specified Value	LB, LBC, LBR, LBMF Series		No damage.
	CB, CBC, CBL, CBMF Series		
	LBM Series		
Test Methods and Remarks	LB·LBC·LBR·CB·CBC·CBL·LBM		
	Applied force : 10N Duration : 10sec. LB1608·LBMF1608·CBMF1608 Applied force : 5N Duration : 10sec.		

11. Adhesion of terminal electrode			
Specified Value	LB, LBC, LBR, LBMF Series		No abnormality.
	CB, CBC, CBL, CBMF Series		
	LBM Series		
Test Methods and Remarks	LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF		
	Applied force : 10N to X and Y directions Duration : 5 sec. Test substrate : Printed board LB1608·CBMF1608·LBMF1608 Applied force : 5N to X and Y directions Duration : 5 sec. Test substrate : Printed board		

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12. Resistance to vibration		
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.
	CB, CBC, CBL, CBMF Series	
	LBM Series	Inductance change : Within $\pm 5\%$ No significant abnormality in appearance.
Test Methods and Remarks	LB·LBR·LBC·CB·CBC·CBL·LBM·LBMF·CBMF :	
	The given sample is soldered to the board and then it is tested depending on the conditions of the following table.	
	Vibration Frequency	10~55Hz
	Total Amplitude	1.5mm (May not exceed acceleration 196m/s <sup>2</sup> )
	Sweeping Method	10Hz to 55Hz to 10Hz for 1min.
	Time	X Y Z For 2 hours on each X, Y, and Z axis.
	Recovery	: At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

13. Drop test		
Specified Value	LB, LBC, LBR, LBMF Series	—
	CB, CBC, CBL, CBMF Series	
	LBM Series	

14. Solderability		
Specified Value	LB, LBC, LBR, LBMF Series	At least 90% of surface of terminal electrode is covered by new
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF :	
	Solder temperature	: 245 $\pm$ 5 $^{\circ}$ C
	Duration	: 5 $\pm$ 0.5sec
	Flux	: Methanol solution with 25% of colophony

15. Resistance to soldering		
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$
	CB, CBC, CBL, CBMF Series	
	LBM Series	Inductance change : Within $\pm 5\%$
Test Methods and Remarks	LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF :	
	3 times of reflow oven at 230 $^{\circ}$ C MIN for 40sec. with peak temperature at 260 $^{\circ}$ C for 5sec. Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

16. Resistance to solvent		
Specified Value	LB, LBC, LBR, LBMF Series	—
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	Solvent temperature	: Room temperature
	Type of solvent	: Isopropyl alcohol
	Cleaning conditions	: 90s. Immersion and cleaning.

17. Thermal shock			
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.	
	CB, CBC, CBL, CBMF Series		
	LBM Series		
Test Methods and Remarks	LB·LBC·LBR·CB·CBC·CBL·LBM·LBMF·CBMF :		
	The given sample is soldered to the board and then its Inductance is measured after 100cycles of the following conditions.		
	Conditions of 1 cycle		
	Step	Temperature ( $^{\circ}$ C)	Duration (min)
	1	-40 $\pm$ 3	30 $\pm$ 3
	2	Room temperature	Within 3
3	+85 $\pm$ 2	30 $\pm$ 3	
4	Room temperature	Within 3	
	Recovery	: At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

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For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

18.Damp heat life test		
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	Temperature : $60 \pm 2^\circ\text{C}$ Humidity : $90 \sim 95\% \text{RH}$ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

19.Loading under damp heat life test		
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	Temperature : $60 \pm 2^\circ\text{C}$ Humidity : $90 \sim 95\% \text{RH}$ Duration : 1000 hrs Applied current : Rated current Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

20.High temperature life test		
Specified Value	LB, LBC, LBR, LBMF Series	—
	CB, CBC, CBL, CBMF Series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.
	LBM Series	
Test Methods and Remarks	Temperature : $85 \pm 2^\circ\text{C}$ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

21.Loading at high temperature life test		
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$ (LBC3225 Series : Within $\pm 20\%$ ) No significant abnormality in appearance.
	CB, CBC, CBL, CBMF Series	
	LBM Series	—
Test Methods and Remarks	Temperature : $85 \pm 2^\circ\text{C}$ Duration : 1000 hrs Applied current : Rated current Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

22.Low temperature life test		
Specified Value	LB, LBC, LBR, LBMF Series	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks	Temperature : $-40 \pm 2^\circ\text{C}$ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.	

23.Standard condition		
Specified Value	LB, LBC, LBR, LBMF Series	Standard test conditions Unless specified, Ambient temperature is $20 \pm 15^\circ\text{C}$ and the Relative humidity is $65 \pm 20\%$ . If there is any doubt about the test results, further measurement shall be had within the following limits: Ambient Temperature: $20 \pm 2^\circ\text{C}$ Relative humidity: $65 \pm 5\%$ Inductance value is based on our standard measurement systems.
	CB, CBC, CBL, CBMF Series	
	LBM Series	

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# WIRE-WOUND CHIP INDUCTORS (LB SERIES), WIRE-WOUND CHIP POWER INDUCTORS (CB SERIES), WIRE-WOUND CHIP INDUCTORS FOR SIGNAL LINES (LB SERIES M TYPE)

## ■ PRECAUTIONS

1. Circuit Design	
Precautions	<p>◆Operating environment</p> <p>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.</p>
2. PCB Design	
Precautions	<p>◆Land pattern design</p> <p>1. Please contact any of our offices for a land pattern, and refer to a recommended land pattern of a right figure or specifications.</p>
Technical considerations	<p>PRECAUTIONS 【Recommended Land Patterns】</p> <p>Surface Mounting</p> <ul style="list-style-type: none"> <li>• Mounting and soldering conditions should be checked beforehand.</li> <li>• Applicable soldering process to those products is reflow soldering only.</li> </ul>
3. Considerations for automatic placement	
Precautions	<p>◆Adjustment of mounting machine</p> <p>1. Excessive impact load should not be imposed on the products when mounting onto the PC boards.</p> <p>2. Mounting and soldering conditions should be checked beforehand.</p>
Technical considerations	<p>1. When installing products, care should be taken not to apply distortion stress as it may deform the products.</p>
4. Soldering	
Precautions	<p>◆Reflow soldering( LB and CB Types)</p> <p>1. For reflow soldering with either leaded or lead-free solder, the profile specified in "point for controlling" is recommended.</p> <p>◆Recommended conditions for using a soldering iron</p> <p>1. Put the soldering iron on the land-pattern. Soldering iron's temperature - Below 350°C Duration-3 seconds or less. The soldering iron should not come in contact with inductor directly.</p>
Technical considerations	<p>◆Reflow soldering( LB and CB Types)</p> <p>1. Reflow profile</p> <p>Temperature [°C]</p> <p>Heating Time [sec]</p> <p>150~180</p> <p>90±30sec</p> <p>30±10sec</p> <p>230°C min</p> <p>5sec max</p> <p>Peak: 260+0/-5°C</p> <p>◆Recommended conditions for using a soldering iron</p> <p>1. Components can be damaged by excessive heat where soldering conditions exceed the specified range.</p>
5. Cleaning	
Precautions	<p>◆Cleaning conditions</p> <p>Washing by supersonic waves shall be avoided.</p>
Technical considerations	<p>◆Cleaning conditions</p> <p>If washed by supersonic waves, the products might be broken.</p>

6. Handling	
Precautions	<ul style="list-style-type: none"> <li>◆ Handling               <ol style="list-style-type: none"> <li>1. Keep the inductors away from all magnets and magnetic objects.</li> </ol> </li> <li>◆ Breakaway PC boards ( splitting along perforations)               <ol style="list-style-type: none"> <li>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.</li> <li>2. Board separation should not be done manually, but by using the appropriate devices.</li> </ol> </li> <li>◆ Mechanical considerations               <ol style="list-style-type: none"> <li>1. Please do not give the inductors any excessive mechanical shocks.</li> </ol> </li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆ Handling               <ol style="list-style-type: none"> <li>1. There is a case that a characteristic varies with magnetic influence.</li> </ol> </li> <li>◆ Breakaway PC boards ( splitting along perforations)               <ol style="list-style-type: none"> <li>1. Planning pattern configurations and the position of products should be carefully performed to minimize stress.</li> </ol> </li> <li>◆ Mechanical considerations               <ol style="list-style-type: none"> <li>1. There is a case to be damaged by a mechanical shock.</li> </ol> </li> </ul>

7. Storage conditions	
Precautions	<ul style="list-style-type: none"> <li>◆ Storage               <ol style="list-style-type: none"> <li>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.                   <ul style="list-style-type: none"> <li>• Recommended conditions                       <ul style="list-style-type: none"> <li>Ambient temperature : 0~40°C</li> <li>Humidity : Below 70% RH</li> </ul> </li> <li>• The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes.                           <ul style="list-style-type: none"> <li>For this reason, product should be used within 6 months from the time of delivery.</li> <li>In case of storage over 6 months, solderability shall be checked before actual usage.</li> </ul> </li> </ul> </li> </ol> </li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆ Storage               <ol style="list-style-type: none"> <li>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.</li> </ol> </li> </ul>