

# Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

## ! REMINDERS

- Product information in this catalog is as of October 2014. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or usage of the Products.

Please note that TAIYO YUDEN CO., LTD. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact TAIYO YUDEN CO., LTD. for further details of product specifications as the individual specification is available.
- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.
- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,( automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact TAIYO YUDEN CO., LTD. for more detail in advance.

Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN's official sales channel").

It is only applicable to the products purchased from any of TAIYO YUDEN's official sales channel.

- Please note that TAIYO YUDEN CO., LTD. shall have no responsibility for any controversies or disputes that may occur in connection with a third party's intellectual property rights and other related rights arising from your usage of products in this catalog. TAIYO YUDEN CO., LTD. grants no license for such rights.

- Caution for export

Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations. Should you have any question or inquiry on this matter, please contact our sales staff.

# WIRE-WOUND CHIP INDUCTORS (LB SERIES)



REFLOW

## PARTS NUMBER

L	B	△	△	2	0	1	2	T	1	0	0	M	△	△	△	△	△
①	②	③	④	⑤	⑥	⑦	⑧										

△=Blank space

\*Operating Temp. : -40~+105°C (Including self-generated heat)

## ①Series name

Code	Series name
LB	Wound chip inductor

## ②Characteristics

Code	Characteristic
△△	Standard
△C	High current
△R	Low Rdc
MF	Low loss

## ③Dimensions (L × W)

Code	Type (inch)	Dimensions (L × W) [mm]
1608	1608(0603)	1.6 × 0.8
2012	2012(0805)	2.0 × 1.25
2016	2016(0806)	2.0 × 1.6
2518	2518(1007)	2.5 × 1.8
3218	3218(1207)	3.2 × 1.8
3225	3225(1210)	3.2 × 2.5

## ④Packaging

Code	Packaging
T	Taping

## ⑤Nominal inductance

Code (example)	Nominal inductance [μH]
1R0	1.0
100	10
101	100

※R=Decimal point

## ⑥Inductance tolerance

Code	Inductance tolerance
K	±10%
M	±20%

## ⑦Special code

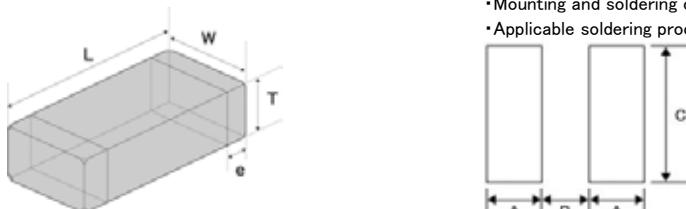
Code	Special code
△	Standard
R	Low Rdc type

## ⑧Internal code

## STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY

Recommended Land Patterns  
Surface Mounting

- Mounting and soldering conditions should be checked beforehand.
- Applicable soldering process to these products is reflow soldering only.



Type	A	B	C
1608	0.55	0.7	0.9
MF1608	0.55	0.7	1.0
2012	0.60	1.0	1.45
2016	0.60	1.0	1.8
2518	0.60	1.5	2.0
3218	0.85	1.7	2.0
3225	0.85	1.7	2.7

Unit:mm

Type	L	W	T	e	Standard quantity [pcs]	
					Paper tape	Embossed tape
LB 1608	1.6±0.1 (0.063±0.004)	0.8±0.1 (0.031±0.004)	0.8±0.1 (0.031±0.004)	0.35±0.15 (0.014±0.006)	4000	—
LB MF1608	1.6±0.2 (0.063±0.008)	0.8±0.2 (0.031±0.008)	0.8±0.2 (0.031±0.008)	0.45±0.15 (0.016±0.006)	—	3000
LB 2012 LB C2012 LB R2012	2.0±0.2 (0.079±0.008)	1.25±0.2 (0.049±0.008)	1.25±0.2 (0.049±0.008)	0.5±0.2 (0.020±0.008)	—	3000
LB 2016 LB C2016	2.0±0.2 (0.079±0.008)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.2 (0.020±0.008)	—	2000
LB 2518 LB C2518 LB R2518	2.5±0.2 (0.098±0.008)	1.8±0.2 (0.071±0.008)	1.8±0.2 (0.071±0.008)	0.5±0.2 (0.020±0.008)	—	2000
LB 3218	3.2±0.2 (0.128±0.008)	1.8±0.2 (0.071±0.008)	1.8±0.2 (0.071±0.008)	0.6±0.2 (0.024±0.008)	—	2000
LB C3225	3.2±0.2 (0.128±0.008)	2.5±0.2 (0.098±0.008)	2.5±0.2 (0.098±0.008)	0.6±0.3 (0.024±0.012)	—	1000

Unit:mm(inch)

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## ■ PARTS NUMBER

## ● 1608(0603) type

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB 1608T1R0M	RoHS	1.0	$\pm 20\%$	100	0.17	160	7.96
LB 1608T2R2M	RoHS	2.2	$\pm 20\%$	80	0.33	115	7.96
LB 1608T4R7M	RoHS	4.7	$\pm 20\%$	45	0.55	70	7.96
LB 1608T8R2M	RoHS	8.2	$\pm 20\%$	32	0.70	60	2.52
LB 1608T100M	RoHS	10	$\pm 20\%$	32	0.70	60	2.52

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LBMF1608T1R0M	RoHS	1.0	$\pm 20\%$	100	0.09	230	7.96
LBMF1608T2R2M	RoHS	2.2	$\pm 20\%$	80	0.17	160	7.96
LBMF1608T3R3M	RoHS	3.3	$\pm 20\%$	60	0.22	130	7.96
LBMF1608T4R7M	RoHS	4.7	$\pm 20\%$	45	0.24	110	7.96
LBMF1608T100M	RoHS	10	$\pm 10\%, \pm 20\%$	32	0.36	80	2.52
LBMF1608T220M	RoHS	22	$\pm 10\%, \pm 20\%$	16	1.0	50	2.52
LBMF1608T470M	RoHS	47	$\pm 10\%, \pm 20\%$	11	2.5	35	2.52

## ● 2012(0805) type

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB 2012T1R0M	RoHS	1.0	$\pm 20\%$	100	0.15	405	7.96
LB 2012T2R2M	RoHS	2.2	$\pm 20\%$	80	0.23	260	7.96
LB 2012T3R3M	RoHS	3.3	$\pm 20\%$	55	0.30	235	7.96
LB 2012T4R7M	RoHS	4.7	$\pm 20\%$	45	0.40	190	7.96
LB 2012T6R8M	RoHS	6.8	$\pm 20\%$	38	0.47	135	7.96
LB 2012T100M	RoHS	10	$\pm 10\%, \pm 20\%$	32	0.70	120	2.52
LB 2012T100M	RoHS	10	$\pm 10\%, \pm 20\%$	32	0.50	120	2.52
LB 2012T150M	RoHS	15	$\pm 10\%, \pm 20\%$	28	1.3	100	2.52
LB 2012T220M	RoHS	22	$\pm 10\%, \pm 20\%$	16	1.7	80	2.52
LB 2012T470M	RoHS	47	$\pm 10\%, \pm 20\%$	11	3.7	60	2.52
LB 2012T680M	RoHS	68	$\pm 10\%, \pm 20\%$	10	6.0	50	2.52
LB 2012T101M	RoHS	100	$\pm 10\%, \pm 20\%$	8	7.0	45	0.796

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB C2012T1R0M	RoHS	1.0	$\pm 20\%$	100	0.19	620	7.96
LB C2012T2R2M	RoHS	2.2	$\pm 20\%$	70	0.33	430	7.96
LB C2012T4R7M	RoHS	4.7	$\pm 20\%$	45	0.50	295	7.96
LB C2012T100M	RoHS	10	$\pm 10\%, \pm 20\%$	40	1.2	200	2.52
LB C2012T220M	RoHS	22	$\pm 10\%, \pm 20\%$	16	3.7	130	2.52
LB C2012T470M	RoHS	47	$\pm 10\%, \pm 20\%$	11	5.8	90	2.52

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB R2012T1R0M	RoHS	1.0	$\pm 20\%$	100	0.07	400	7.96
LB R2012T2R2M	RoHS	2.2	$\pm 20\%$	80	0.13	260	7.96
LB R2012T4R7M	RoHS	4.7	$\pm 20\%$	45	0.24	200	7.96
LB R2012T100M	RoHS	10	$\pm 10\%, \pm 20\%$	32	0.36	150	2.52
LB R2012T220M	RoHS	22	$\pm 10\%, \pm 20\%$	16	1.0	100	2.52
LB R2012T470M	RoHS	47	$\pm 10\%, \pm 20\%$	11	1.7	75	2.52
LB R2012T101M	RoHS	100	$\pm 10\%, \pm 20\%$	8	4.0	50	0.796

## ● 2016(0806) type

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB 2016T1R0M	RoHS	1.0	$\pm 20\%$	100	0.09	490	7.96
LB 2016T1R5M	RoHS	1.5	$\pm 20\%$	80	0.11	380	7.96
LB 2016T2R2M	RoHS	2.2	$\pm 20\%$	70	0.13	375	7.96
LB 2016T3R3M	RoHS	3.3	$\pm 20\%$	55	0.20	285	7.96
LB 2016T4R7M	RoHS	4.7	$\pm 20\%$	45	0.25	225	7.96
LB 2016T6R8M	RoHS	6.8	$\pm 20\%$	38	0.35	200	7.96
LB 2016T100M	RoHS	10	$\pm 10\%, \pm 20\%$	32	0.50	155	2.52
LB 2016T150M	RoHS	15	$\pm 10\%, \pm 20\%$	28	0.70	130	2.52
LB 2016T220M	RoHS	22	$\pm 10\%, \pm 20\%$	16	1.0	105	2.52
LB 2016T330M	RoHS	33	$\pm 10\%, \pm 20\%$	14	1.7	85	2.52
LB 2016T470M	RoHS	47	$\pm 10\%, \pm 20\%$	11	2.4	70	2.52
LB 2016T680M	RoHS	68	$\pm 10\%, \pm 20\%$	10	3.0	55	2.52
LB 2016T101M	RoHS	100	$\pm 10\%, \pm 20\%$	8	4.5	40	0.796

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB C2016T1R0M	RoHS	1.0	$\pm 20\%$	100	0.10	690	7.96
LB C2016T1R5M	RoHS	1.5	$\pm 20\%$	80	0.15	600	7.96
LB C2016T2R2M	RoHS	2.2	$\pm 20\%$	70	0.20	520	7.96
LB C2016T3R3M	RoHS	3.3	$\pm 20\%$	55	0.27	410	7.96
LB C2016T4R7M	RoHS	4.7	$\pm 20\%$	45	0.37	355	7.96
LB C2016T6R8M	RoHS	6.8	$\pm 20\%$	38	0.59	290	7.96
LB C2016T100M	RoHS	10	$\pm 10\%, \pm 20\%$	32	0.82	245	2.52
LB C2016T150M	RoHS	15	$\pm 10\%, \pm 20\%$	28	1.2	200	2.52
LB C2016T220M	RoHS	22	$\pm 10\%, \pm 20\%$	16	1.8	165	2.52
LB C2016T330M	RoHS	33	$\pm 10\%, \pm 20\%$	14	2.8	135	2.52
LB C2016T470M	RoHS	47	$\pm 10\%, \pm 20\%$	11	4.3	110	2.52
LB C2016T680M	RoHS	68	$\pm 10\%, \pm 20\%$	10	7.0	95	2.52
LB C2016T101M	RoHS	100	$\pm 10\%, \pm 20\%$	8	8.0	75	0.796

• □ Please specify the Inductance tolerance code (K or M)

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## ● 2518(1007) type

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB 2518T1R0M	RoHS	1.0	$\pm 20\%$	100	0.06	665	7.96
LB 2518T1R5M	RoHS	1.5	$\pm 20\%$	80	0.07	405	7.96
LB 2518T2R2M	RoHS	2.2	$\pm 20\%$	68	0.09	340	7.96
LB 2518T3R3M	RoHS	3.3	$\pm 20\%$	54	0.11	280	7.96
LB 2518T4R7M	RoHS	4.7	$\pm 20\%$	46	0.13	240	7.96
LB 2518T4R7MR	RoHS	4.7	$\pm 20\%$	46	0.10	235	7.96
LB 2518T6R8M	RoHS	6.8	$\pm 20\%$	38	0.15	195	7.96
LB 2518T100□	RoHS	10	$\pm 10\%, \pm 20\%$	30	0.25	165	2.52
LB 2518T150□	RoHS	15	$\pm 10\%, \pm 20\%$	23	0.32	145	2.52
LB 2518T220□	RoHS	22	$\pm 10\%, \pm 20\%$	19	0.50	115	2.52
LB 2518T330□	RoHS	33	$\pm 10\%, \pm 20\%$	15	0.70	95	2.52
LB 2518T470□	RoHS	47	$\pm 10\%, \pm 20\%$	12	0.95	85	2.52
LB 2518T680□	RoHS	68	$\pm 10\%, \pm 20\%$	9.5	1.5	70	2.52
LB 2518T101□	RoHS	100	$\pm 10\%, \pm 20\%$	9.0	2.1	60	0.796
LB 2518T151□	RoHS	150	$\pm 10\%, \pm 20\%$	7.0	3.2	45	0.796
LB 2518T221□	RoHS	220	$\pm 10\%, \pm 20\%$	5.5	4.5	40	0.796
LB 2518T331□	RoHS	330	$\pm 10\%, \pm 20\%$	4.5	7.0	30	0.796
LB 2518T471□	RoHS	470	$\pm 10\%, \pm 20\%$	3.5	10	25	0.796
LB 2518T681□	RoHS	680	$\pm 10\%, \pm 20\%$	3.0	17	20	0.796
LB 2518T102□	RoHS	1000	$\pm 10\%, \pm 20\%$	2.4	24	15	0.252

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB C2518T1R0M	RoHS	1.0	$\pm 20\%$	100	0.08	775	7.96
LB C2518T1R0MR	RoHS	1.0	$\pm 20\%$	100	0.07	890	7.96
LB C2518T1R5M	RoHS	1.5	$\pm 20\%$	80	0.11	730	7.96
LB C2518T2R2M	RoHS	2.2	$\pm 20\%$	68	0.13	630	7.96
LB C2518T3R3M	RoHS	3.3	$\pm 20\%$	54	0.16	560	7.96
LB C2518T4R7M	RoHS	4.7	$\pm 20\%$	41	0.20	510	7.96
LB C2518T6R8M	RoHS	6.8	$\pm 20\%$	38	0.30	420	7.96
LB C2518T100□	RoHS	10	$\pm 10\%, \pm 20\%$	30	0.36	375	2.52
LB C2518T150□	RoHS	15	$\pm 10\%, \pm 20\%$	23	0.65	285	2.52
LB C2518T220□	RoHS	22	$\pm 10\%, \pm 20\%$	19	0.77	250	2.52
LB C2518T330□	RoHS	33	$\pm 10\%, \pm 20\%$	15	1.5	185	2.52
LB C2518T470□	RoHS	47	$\pm 10\%, \pm 20\%$	12	1.9	165	2.52
LB C2518T680□	RoHS	68	$\pm 10\%, \pm 20\%$	9.5	2.8	140	2.52
LB C2518T101□	RoHS	100	$\pm 10\%, \pm 20\%$	9.0	3.7	125	0.796
LB C2518T151□	RoHS	150	$\pm 10\%, \pm 20\%$	7.0	6.1	95	0.796
LB C2518T221□	RoHS	220	$\pm 10\%, \pm 20\%$	5.5	8.4	80	0.796
LB C2518T331□	RoHS	330	$\pm 10\%, \pm 20\%$	4.5	12.3	65	0.796
LB C2518T471□	RoHS	470	$\pm 10\%, \pm 20\%$	3.5	22	50	0.796
LB C2518T681□	RoHS	680	$\pm 10\%, \pm 20\%$	3.0	28	45	0.796

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB R2518T1R0M	RoHS	1.0	$\pm 20\%$	100	0.045	960	7.96
LB R2518T2R2M	RoHS	2.2	$\pm 20\%$	68	0.07	480	7.96
LB R2518T4R7M	RoHS	4.7	$\pm 20\%$	45	0.10	345	7.96
LB R2518T100□	RoHS	10	$\pm 10\%, \pm 20\%$	30	0.19	235	2.52
LB R2518T220□	RoHS	22	$\pm 10\%, \pm 20\%$	19	0.44	175	2.52
LB R2518T470□	RoHS	47	$\pm 10\%, \pm 20\%$	11	0.84	120	2.52
LB R2518T101□	RoHS	100	$\pm 10\%, \pm 20\%$	9	1.89	80	0.796

## ● 3218(1207) type

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB 3218T1R0M	RoHS	1.0	$\pm 20\%$	100	0.06	1,075	7.96
LB 3218T1R5M	RoHS	1.5	$\pm 20\%$	80	0.07	860	7.96
LB 3218T2R2M	RoHS	2.2	$\pm 20\%$	68	0.09	775	7.96
LB 3218T3R3M	RoHS	3.3	$\pm 20\%$	54	0.11	560	7.96
LB 3218T4R7M	RoHS	4.7	$\pm 20\%$	41	0.13	550	7.96
LB 3218T6R8M	RoHS	6.8	$\pm 20\%$	40	0.17	380	7.96
LB 3218T100□	RoHS	10	$\pm 10\%, \pm 20\%$	30	0.25	340	2.52
LB 3218T150□	RoHS	15	$\pm 10\%, \pm 20\%$	25	0.32	300	2.52
LB 3218T220□	RoHS	22	$\pm 10\%, \pm 20\%$	19	0.49	255	2.52
LB 3218T330□	RoHS	33	$\pm 10\%, \pm 20\%$	15	0.75	215	2.52
LB 3218T470□	RoHS	47	$\pm 10\%, \pm 20\%$	12	0.92	205	2.52
LB 3218T680□	RoHS	68	$\pm 10\%, \pm 20\%$	11	1.49	145	2.52
LB 3218T101□	RoHS	100	$\pm 10\%, \pm 20\%$	8.0	2.4	140	0.796
LB 3218T151□	RoHS	150	$\pm 10\%, \pm 20\%$	7.0	3.2	105	0.796
LB 3218T221□	RoHS	220	$\pm 10\%, \pm 20\%$	5.0	5.4	80	0.796
LB 3218T331□	RoHS	330	$\pm 10\%, \pm 20\%$	4.0	7.0	65	0.796
LB 3218T471□	RoHS	470	$\pm 10\%, \pm 20\%$	3.5	14	54	0.796
LB 3218T681□	RoHS	680	$\pm 10\%, \pm 20\%$	3.0	17	45	0.796
LB 3218T102□	RoHS	1000	$\pm 10\%, \pm 20\%$	2.4	27	39	0.252

• □ Please specify the Inductance tolerance code(K or M)

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## ● 3225(1210) type

Parts number	EHS	Nominal inductance [ $\mu$ H]	Inductance tolerance	Self-resonant frequency [MHz] (min.)	DC Resistance [ $\Omega$ ] ( $\pm 30\%$ )	Rated current [mA] (max.)	Measuring frequency [MHz]
LB C3225T1R0MR	RoHS	1.0	$\pm 20\%$	250	0.055	1,100	0.1
LB C3225T1R5MR	RoHS	1.5	$\pm 20\%$	220	0.060	1,000	0.1
LB C3225T2R2MR	RoHS	2.2	$\pm 20\%$	190	0.080	930	0.1
LB C3225T3R3MR	RoHS	3.3	$\pm 20\%$	160	0.095	820	0.1
LB C3225T4R7MR	RoHS	4.7	$\pm 20\%$	70	0.100	680	0.1
LB C3225T6R8MR	RoHS	6.8	$\pm 20\%$	50	0.120	620	0.1
LB C3225T100JR	RoHS	10	$\pm 10\%, \pm 20\%$	23	0.133	540	0.1
LB C3225T150JR	RoHS	15	$\pm 10\%, \pm 20\%$	20	0.195	420	0.1
LB C3225T220JR	RoHS	22	$\pm 10\%, \pm 20\%$	17	0.27	330	0.1
LB C3225T330JR	RoHS	33	$\pm 10\%, \pm 20\%$	13	0.41	300	0.1
LB C3225T470JR	RoHS	47	$\pm 10\%, \pm 20\%$	10	0.67	220	0.1
LB C3225T680JR	RoHS	68	$\pm 10\%, \pm 20\%$	8	1.0	190	0.1
LB C3225T101JR	RoHS	100	$\pm 10\%, \pm 20\%$	6	1.4	150	0.1

• □ Please specify the Inductance tolerance code (K or M)

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

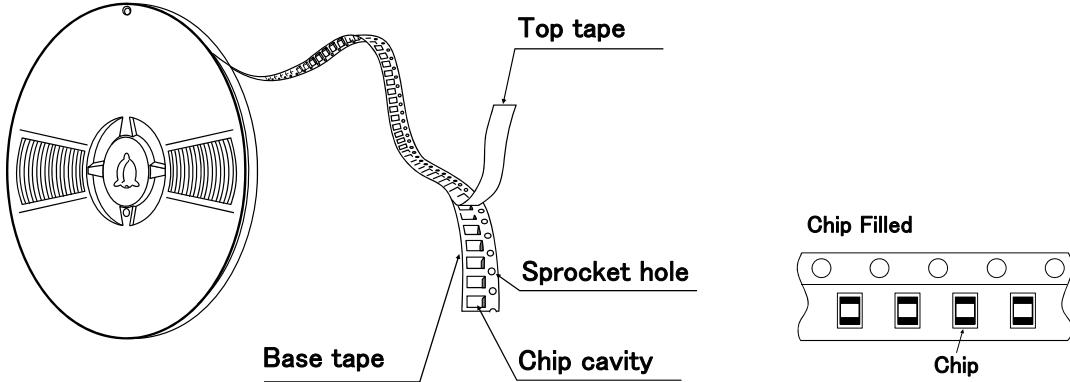
## ■ PACKAGING

### ① Minimum Quantity

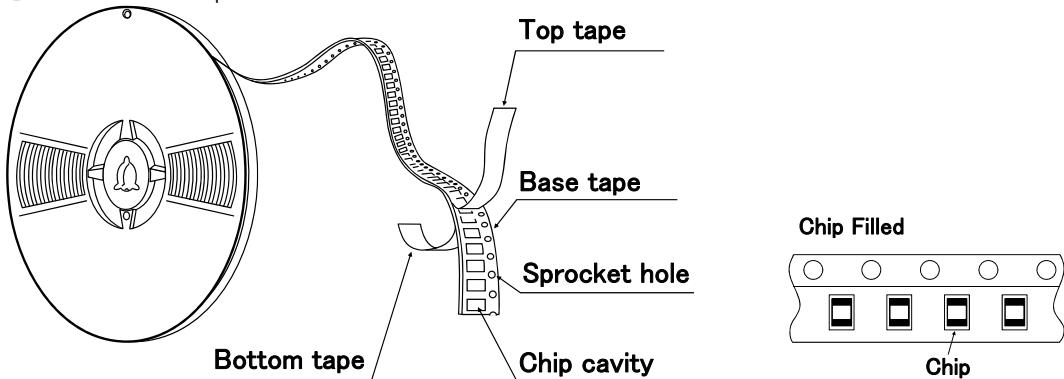
Type	Standard Quantity [pcs]	
	Paper Tape	Embossed Tape
LB C3225	—	1000
CB C3225	—	2000
LB 3218	—	2000
LB R2518	—	2000
LB C2518	—	2000
LB 2518	—	2000
CB 2518	—	2000
CB C2518	—	2000
LBM2016	—	2000
LB C2016	—	2000
LB 2016	—	2000
CB 2016	—	2000
CB C2016	—	2000
LB 2012	—	3000
LB C2012	—	3000
LB R2012	—	3000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

### ② Tape material

#### Embossed tape



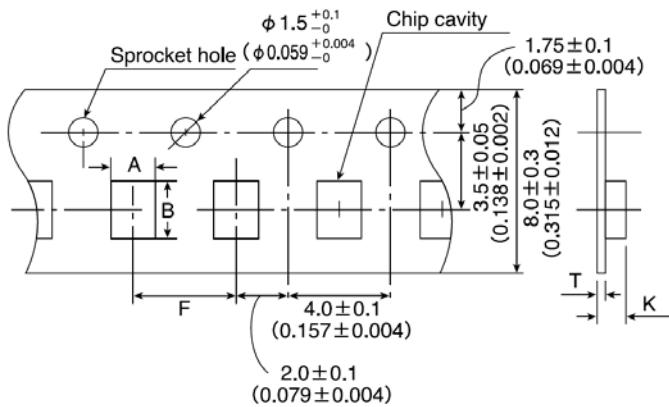
#### Card board carrier tape



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### ③ Taping Dimensions

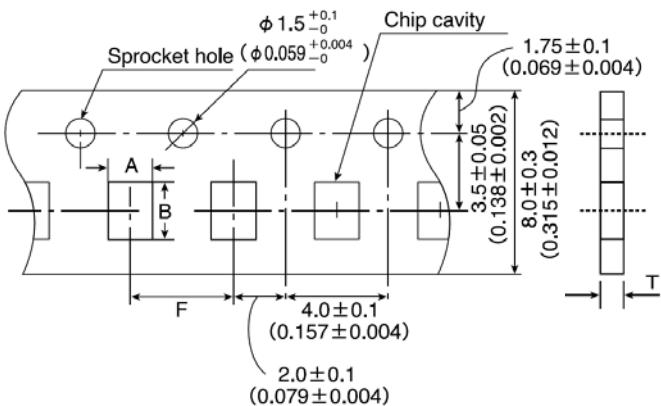
#### Embossed Tape (0.315 inches wide)



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

Unit: mm (inch)

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

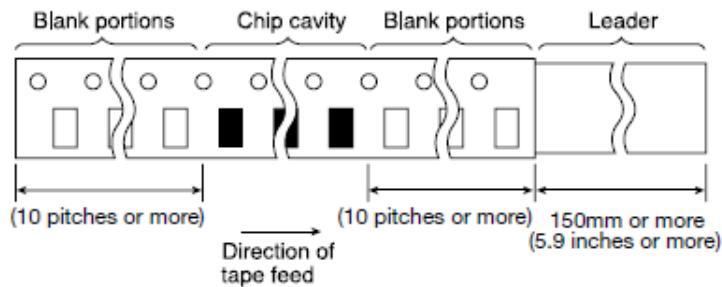


Type	Chip cavity		Insertion pitch	Tape thickness
	A	B		
CB L2012	$1.55 \pm 0.1$ (0.061 $\pm$ 0.004)	$2.3 \pm 0.1$ (0.091 $\pm$ 0.004)	$4.0 \pm 0.1$ (0.157 $\pm$ 0.004)	1.1max. (0.043max.)
LB 1608	$1.0 \pm 0.1$ (0.039 $\pm$ 0.004)	$1.8 \pm 0.1$ (0.071 $\pm$ 0.004)	$4.0 \pm 0.1$ (0.157 $\pm$ 0.004)	1.1max.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

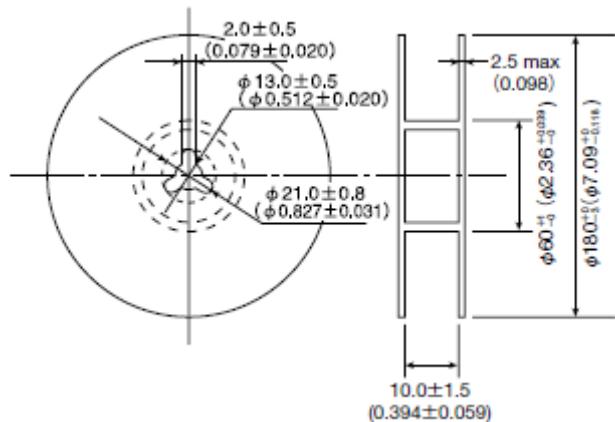
Unit: mm (inch)

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#### ④Leader and Blank Portion



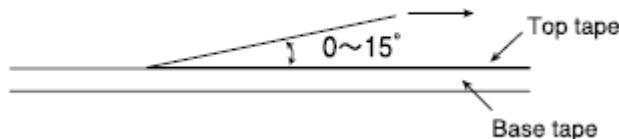
#### ⑤Reel Size



#### ⑥Top Tape Strength

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

**Pull direction**



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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)

## ■ 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 Mater (HP4285A or its equivalent)	

### 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 Mater (HP4285A or its equivalent)	

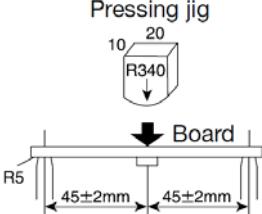
### 6. DC Resistancce

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±5%						
	LB1608	LB2012	LBR2012	CB2012	Inductance change : Within±20%						
	CBL2012	LB2016	CB2016	LB2518	Inductance change : Within±25%						
	LBR2518	CB2518	LBC3225	CBC3225	Inductance change : Within±35%						
	LBMF1608	CBMF1608	LBC2016	CBC2016	Inductance change : Within±25%						
	LBC2518	CBC2518	LB3218		Inductance change : Within±35%						
Test Methods and Remarks	Change of maximum inductance deviation in step 1~5										
	Step	Temperature (°C)									
		LB, CB Series									
		1	20								
		2	-40								
	3 20 (Reference temperature)										
	4 +85 (Maximum operating temperature)										
	5 20										
9.Rasistance 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 : Board according to JIS C0051										
Test Methods and Remarks	Thickness : 0.8mm(LB•LBMF•CBMF1608) : 1.0mm (Others)										
	Pressing jig										
											
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.										
Test Methods and Remarks	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		
Test Methods and Remarks	LB•LBC•LBR•CB•CBC•CBL•LBM•LBMF•CBMF : 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	
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		
Test Methods and Remarks	LB•LBC•LBR•CB•CBC•CBL•LBM•LBMF•CBMF:	
	Solder temperature : 245 $\pm$ 5°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	
Test Methods and Remarks		
Test Methods and Remarks	LB•LBC•LBR•CB•CBC•CBL•LBM•LBMF•CBMF:	
	3 times of reflow oven at 230°C MIN for 40sec. with peak temperature at 260 °C for 5sec.	
16.Resistiance to solvent		
Specified Value	LB, LBC, LBR, LBMF Series	—
	CB, CBC, CBL, CBMF Series	
	LBM Series	
Test Methods and Remarks		
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		
Test Methods and Remarks	LB•LBC•LBR•CB•CBC•CBL•LBM•LBMF•CBMF : -40 $\sim$ +85°C, maintain times 30min. ,100 cycle	
	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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#### 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 : $60 \pm 2^\circ\text{C}$	At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.
	Humidity : 90~95%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 : $60 \pm 2^\circ\text{C}$	At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.
	Humidity : 90~95%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> <ol style="list-style-type: none"> <li>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.</li> </ol>
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### 2. PCB Design

Precautions	<p>◆ Land pattern design</p> <ol style="list-style-type: none"> <li>Please contact any of our offices for a land pattern, and refer to a recommended land pattern of a right figure or specifications.</li> </ol>
Technical considerations	<p><b>PRECAUTIONS</b></p> <p><b>【Recommended Land Patterns】</b></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> <ol style="list-style-type: none"> <li>Excessive impact load should not be imposed on the products when mounting onto the PC boards.</li> <li>Mounting and soldering conditions should be checked beforehand.</li> </ol>
Technical considerations	<ol style="list-style-type: none"> <li>When installing products, care should be taken not to apply distortion stress as it may deform the products.</li> </ol>

### 4. Soldering

Precautions	<p>◆ Reflow soldering ( LB and CB Types)</p> <ol style="list-style-type: none"> <li>For reflow soldering with either leaded or lead-free solder, the profile specified in "point for controlling" is recommended.</li> </ol> <p>◆ Recommended conditions for using a soldering iron</p> <ol style="list-style-type: none"> <li>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.</li> </ol>
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>5sec max</p> <p>Peak: 260+0/-5°C</p> <p>30±10sec</p> <p>230°C min</p> <p>90±30sec</p> <p>150~180</p> <p>◆ Recommended conditions for using a soldering iron</p> <ol style="list-style-type: none"> <li>Components can be damaged by excessive heat where soldering conditions exceed the specified range.</li> </ol>

### 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>

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## 6. Handling

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

## 7. Storage conditions

Precautions	<ul style="list-style-type: none"><li>◆ Storage<ul 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 Ambient temperature: 0~40°C / Humidity: Below 70% RH</li></ul></li></ul></li></ul>
Technical considerations	<ul style="list-style-type: none"><li>◆ Storage<ul 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></ul></li></ul>

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