

有关本公司产品的注意事项

请务必在使用本公司产品目录之前阅读。

注意事项

■ 本产品目录中记载的内容是至2013年10月的内容。本产品目录记载的内容由于产品的改良等原因发生变更时，恕不另行通知。在您订购我司产品之前请确认最新的产品信息。

当您计划在本产品目录记载内容，或是《交货规格书》的规定范围以外使用我司产品时，由于使用我司产品引起的该应用设备的瑕疵我司将不承担任何责任。

■ 有关详细的产品规格我们准备有《交货规格书》，请向我司咨询相关事宜。

■ 在您使用我司产品时，请务必进行应用设备实装状态以及应用产品实际使用环境下的测评。

■ 本产品目录中记载的电子元器件，电路产品等产品适用于一般电子设备。

『AV设备，OA设备，家电及办公设备，信息/通讯设备（手机，电脑等）』

当您计划把本产品目录中记载的产品使用于可能会危及第三方生命安全的应用设备时，请务必提前与我公司取得联系，针对产品信息加以确认。

【运输用设备（火车控制设备，船舶控制设备等），交通用信号设备，防灾设备，医疗用设备，公共性高的信息通信设备等（电话程控交换机，电话，无线电，电视信号等基地局）】

另外，请不要在要求高度安全性，可靠性的应用设备上使用本产品目录中记载的产品。【航天设备，航空设备，核控制设备，用于海底的设备，军事设备等】

同时，应用于安全性，可靠性要求较高的一般电子设备/电路时，请充分进行安全性测评，必要时请在设计过程中追加保护电路。

■ 本产品目录中所记载的内容适用于通过我司营业所，销售子公司，销售代理店（即正规销售渠道）购买的我司产品。通过其他渠道购买的我司产品不在适用范围之内。

■ 由于使用本产品目录记载的产品引起的有关第三方知识产权的冲突，我司概不负责。本产品目录不代表相关权利的实施许诺。

■ 有关出口的注意事项

本产品目录中记载的产品中，部分产品在出口时会被归为“外汇及外贸管理法，美国出口管理法规”的管制货物，请及时实施相关手续，依据相关法律法规进行出口。需确认时，可向我司咨询。

多层片状磁珠电感器（BK 系列）



波峰焊※

回流焊

※BK0402, BK0603, BK1005, BKH1005除外

■型号标示法

※使用温度范围: -55~+125℃

B	K	△	1	6	0	8	H	S	1	2	1	—	T	△
①			②				③		④			⑤	⑥	⑦

△=空格

①类型

代码	类型
BK△	多层片状磁珠电感器
BKH	

②尺寸(L×W)

代码	外型(inch)	尺寸(L×W)[mm]
0402	0402 (01005)	0.4×0.2
0603	0603 (0201)	0.6×0.3
1005	1005 (0402)	1.0×0.5
1608	1608 (0603)	1.6×0.8
2125	2125 (0805)	2.0×1.25

③材料

代码	材料
HW	材料不同时, 阻抗值也有所变化。
HS	
HR	
HM	
LM	
LL	
TS	
TM	

④标称阻抗值

代码(例)	标称阻抗值[Ω]
150	15
101	100
102	1000

⑤特性

代码	特性
—	标准品

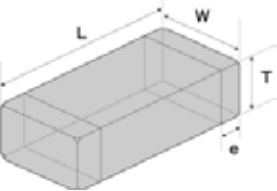
⑥包装

代码	包装
T	卷盘带装

⑦本公司管理记号

代码	本公司管理记号
△	标准品

■标准外型尺寸/标准数量



Type	L	W	T	e	标准数量 [pcs]	
					纸带	压纹带
BK 0402 (01005)	0.40±0.02 (0.016±0.001)	0.20±0.02 (0.008±0.001)	0.20±0.02 (0.008±0.001)	0.10+0.04/-0.03 (0.004+0.002/-0.001)	20000	—
BK 0603 BKH0603 (0201)	0.60±0.03 (0.024±0.001)	0.30±0.03 (0.012±0.001)	0.30±0.03 (0.012±0.001)	0.15±0.05 (0.006±0.002)	15000	—
BK 1005 BKH1005 (0402)	1.00±0.05 (0.039±0.002)	0.50±0.05 (0.020±0.002)	0.50±0.05 (0.020±0.002)	0.25±0.10 (0.010±0.004)	10000	—
BK 1608 (0603)	1.6±0.15 (0.063±0.006)	0.8±0.15 (0.031±0.006)	0.8±0.15 (0.031±0.006)	0.3±0.2 (0.012±0.008)	4000	—
BK 2125 (0805)	2.0+0.3/-0.1 (0.079+0.012/-0.004)	1.25±0.2 (0.049±0.008)	0.85±0.2 (0.033±0.008)	0.5±0.3 (0.020±0.012)	4000	—
	2.0+0.3/-0.1 (0.079+0.012/-0.004)	1.25±0.2 (0.049±0.008)	1.25±0.2 (0.049±0.008)	0.5±0.3 (0.020±0.012)	—	2000

单位: mm(inch)

▶ 本产品目录根据版面大小, 仅记载了代表性产品规格。若考虑使用本公司产品时, 请确认供货规格型号明细表中的详细规格。
有关各商品的详细信息(特性图、可靠性信息、使用时的注意事项等), 请参阅本公司网站(<http://www.ty-top.com/>)。

● BK 0402

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)	厚度 [mm]
BK 0402HS100-T	RoHS	10	±5Ω	100	0.10	540	0.20 ±0.02
BK 0402HS700-T	RoHS	70	±25%	100	0.37	280	0.20 ±0.02
BK 0402HS121-T	RoHS	120	±25%	100	0.53	240	0.20 ±0.02
BK 0402HM100-T	RoHS	10	±5Ω	100	0.07	750	0.20 ±0.02
BK 0402HM750-T	RoHS	75	±25%	100	0.45	260	0.20 ±0.02
BK 0402HM121-T	RoHS	120	±25%	100	0.60	220	0.20 ±0.02
BK 0402HM151-T	RoHS	150	±25%	100	0.65	200	0.20 ±0.02
BK 0402HM181-T	RoHS	180	±25%	100	0.75	200	0.20 ±0.02
BK 0402LL220-T	RoHS	22	±25%	100	0.70	150	0.20 ±0.02

● BK 0603

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)	厚度 [mm]
BK 0603HS220-T	RoHS	22	±25%	100	0.065	500	0.30 ±0.03
BK 0603HS330-T	RoHS	33	±25%	100	0.070	500	0.30 ±0.03
BK 0603HS800-T	RoHS	80	±25%	100	0.40	200	0.30 ±0.03
BK 0603HS121-T	RoHS	120	±25%	100	0.45	200	0.30 ±0.03
BK 0603HS241-T	RoHS	240	±25%	100	0.65	200	0.30 ±0.03
BK 0603HS601-T	RoHS	600	±25%	100	1.20	150	0.30 ±0.03
BK 0603HM600-T	RoHS	60	±25%	100	0.25	200	0.30 ±0.03
BK 0603HM121-T	RoHS	120	±25%	100	0.40	200	0.30 ±0.03
BK 0603HM241-T	RoHS	240	±25%	100	0.80	200	0.30 ±0.03
BK 0603HM471-T	RoHS	470	±25%	100	1.05	100	0.30 ±0.03
BK 0603HM601-T	RoHS	600	±25%	100	1.20	100	0.30 ±0.03
BK 0603LL100-T	RoHS	10	±25%	100	0.25	200	0.30 ±0.03
BK 0603LL220-T	RoHS	22	±25%	100	0.45	200	0.30 ±0.03
BK 0603LL330-T	RoHS	33	±25%	100	0.55	150	0.30 ±0.03
BK 0603LL470-T	RoHS	47	±25%	100	0.70	150	0.30 ±0.03
BK 0603LL560-T	RoHS	56	±25%	100	1.00	100	0.30 ±0.03
BK 0603LL800-T	RoHS	80	±25%	100	1.30	100	0.30 ±0.03
BK 0603LL121-T	RoHS	120	±25%	100	1.50	100	0.30 ±0.03
BK 0603TS800-T	RoHS	80	±25%	100	0.18	500	0.30 ±0.03
BK 0603TS121-T	RoHS	120	±25%	100	0.23	450	0.30 ±0.03
BK 0603TS241-T	RoHS	240	±25%	100	0.32	400	0.30 ±0.03
BK 0603TS601-T	RoHS	600	±25%	100	0.75	270	0.30 ±0.03
BK 0603TM800-T	RoHS	80	±25%	100	0.18	450	0.30 ±0.03
BK 0603TM121-T	RoHS	120	±25%	100	0.23	400	0.30 ±0.03
BK 0603TM241-T	RoHS	240	±25%	100	0.38	300	0.30 ±0.03
BK 0603TM601-T	RoHS	600	±25%	100	0.85	250	0.30 ±0.03
BKH0603LM601-T	RoHS	600	±25%	100	1.50	160	0.30 ±0.03
BKH0603LM102-T	RoHS	1000	±25%	100	2.50	130	0.30 ±0.03
BKH0603LM152-T	RoHS	1500	±25%	100	3.20	115	0.30 ±0.03

● BK 1005

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)	厚度 [mm]
BK 1005HW680-T	RoHS	68	±25%	100	0.17	500	0.50 ±0.05
BK 1005HW121-T	RoHS	120	±25%	100	0.24	450	0.50 ±0.05
BK 1005HW241-T	RoHS	240	±25%	100	0.31	400	0.50 ±0.05
BK 1005HW431-T	RoHS	430	±25%	100	0.50	350	0.50 ±0.05
BK 1005HW601-T	RoHS	600	±25%	100	0.60	300	0.50 ±0.05
BK 1005HS100-T	RoHS	10	±25%	100	0.03	1,000	0.50 ±0.05
BK 1005HS330-T	RoHS	33	±25%	100	0.06	700	0.50 ±0.05
BK 1005HS680-T	RoHS	68	±25%	100	0.10	700	0.50 ±0.05
BK 1005HS800-T	RoHS	80	±25%	100	0.10	700	0.50 ±0.05
BK 1005HS121-T	RoHS	120	±25%	100	0.20	500	0.50 ±0.05
BK 1005HS241-T	RoHS	240	±25%	100	0.30	400	0.50 ±0.05
BK 1005HS431-T	RoHS	430	±25%	100	0.45	350	0.50 ±0.05
BK 1005HS601-T	RoHS	600	±25%	100	0.55	300	0.50 ±0.05
BK 1005HS102-T	RoHS	1000	±25%	100	0.58	300	0.50 ±0.05
BK 1005HR601-T	RoHS	600	±25%	100	0.60	300	0.50 ±0.05
BK 1005HM750-T	RoHS	75	±25%	100	0.18	350	0.50 ±0.05
BK 1005HM121-T	RoHS	120	±25%	100	0.18	300	0.50 ±0.05
BK 1005HM241-T	RoHS	240	±25%	100	0.30	300	0.50 ±0.05
BK 1005HM471-T	RoHS	470	±25%	100	0.45	250	0.50 ±0.05
BK 1005HM601-T	RoHS	600	±25%	100	0.50	250	0.50 ±0.05
BK 1005HM102-T	RoHS	1000	±25%	100	0.70	150	0.50 ±0.05
BK 1005LL100-T	RoHS	10	±25%	100	0.11	500	0.50 ±0.05
BK 1005LL220-T	RoHS	22	±25%	100	0.18	400	0.50 ±0.05
BK 1005LL330-T	RoHS	33	±25%	100	0.25	400	0.50 ±0.05
BK 1005LL470-T	RoHS	47	±25%	100	0.33	350	0.50 ±0.05
BK 1005LL680-T	RoHS	68	±25%	100	0.31	400	0.50 ±0.05
BK 1005LL121-T	RoHS	120	±25%	100	0.45	350	0.50 ±0.05
BK 1005LL181-T	RoHS	180	±25%	100	0.50	300	0.50 ±0.05
BK 1005LL241-T	RoHS	240	±25%	100	0.70	250	0.50 ±0.05
BK 1005LM182-T	RoHS	1800	±25%	100	0.90	120	0.50 ±0.05
BKH1005LM601-T	RoHS	600	±25%	100	0.85	300	0.50 ±0.05
BKH1005LM102-T	RoHS	1000	±25%	100	1.25	250	0.50 ±0.05
BKH1005LM152-T	RoHS	1500	±25%	100	1.50	200	0.50 ±0.05
BKH1005LM182-T	RoHS	1800	±25%	100	2.00	200	0.50 ±0.05

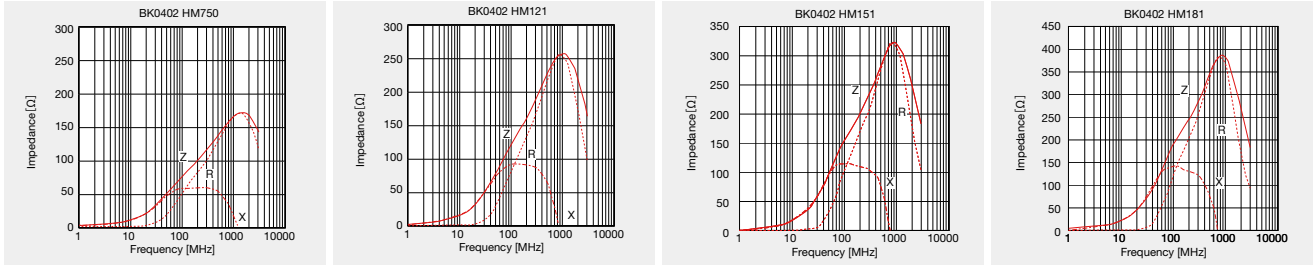
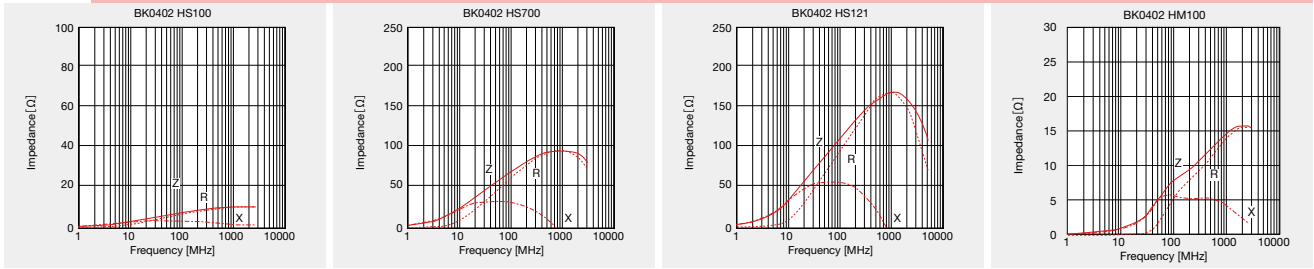
● BK 1608

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)	厚度 [mm]
BK 1608HW121-T	RoHS	120	±25%	100	0.15	600	0.80 ±0.15
BK 1608HW241-T	RoHS	240	±25%	100	0.25	450	0.80 ±0.15
BK 1608HW431-T	RoHS	430	±25%	100	0.30	400	0.80 ±0.15
BK 1608HW601-T	RoHS	600	±25%	100	0.40	300	0.80 ±0.15
BK 1608HS220-T	RoHS	22	±25%	100	0.05	1,500	0.80 ±0.15
BK 1608HS330-T	RoHS	33	±25%	100	0.08	1,200	0.80 ±0.15
BK 1608HS470-T	RoHS	47	±25%	100	0.10	900	0.80 ±0.15
BK 1608HS600-T	RoHS	60	±25%	100	0.10	800	0.80 ±0.15
BK 1608HS800-T	RoHS	80	±25%	100	0.10	600	0.80 ±0.15
BK 1608HS121-T	RoHS	120	±25%	100	0.18	500	0.80 ±0.15
BK 1608HS241-T	RoHS	240	±25%	100	0.25	400	0.80 ±0.15
BK 1608HS601-T	RoHS	600	±25%	100	0.45	350	0.80 ±0.15
BK 1608HS102-T	RoHS	1000	±25%	100	0.60	300	0.80 ±0.15
BK 1608HM121-T	RoHS	120	±25%	100	0.20	350	0.80 ±0.15
BK 1608HM241-T	RoHS	240	±25%	100	0.35	300	0.80 ±0.15
BK 1608HM471-T	RoHS	470	±25%	100	0.45	250	0.80 ±0.15
BK 1608HM601-T	RoHS	600	±25%	100	0.60	250	0.80 ±0.15
BK 1608HM102-T	RoHS	1000	±25%	100	0.70	200	0.80 ±0.15
BK 1608LL300-T	RoHS	30	±25%	100	0.20	500	0.80 ±0.15
BK 1608LL470-T	RoHS	47	±25%	100	0.30	400	0.80 ±0.15
BK 1608LL560-T	RoHS	56	±25%	100	0.30	400	0.80 ±0.15
BK 1608LL680-T	RoHS	68	±25%	100	0.35	300	0.80 ±0.15
BK 1608LL121-T	RoHS	120	±25%	100	0.50	300	0.80 ±0.15
BK 1608LL181-T	RoHS	180	±25%	100	0.65	250	0.80 ±0.15
BK 1608LL241-T	RoHS	240	±25%	100	0.80	250	0.80 ±0.15
BK 1608LL331-T	RoHS	330	±25%	100	0.85	200	0.80 ±0.15
BK 1608LL431-T	RoHS	430	±25%	100	0.85	200	0.80 ±0.15
BK 1608LL511-T	RoHS	510	±25%	100	0.90	200	0.80 ±0.15
BK 1608LL681-T	RoHS	680	±25%	100	1.00	150	0.80 ±0.15
BK 1608LM751-T	RoHS	750	±25%	100	0.60	300	0.80 ±0.15
BK 1608LM152-T	RoHS	1500	±25%	100	0.75	250	0.80 ±0.15
BK 1608LM182-T	RoHS	1800	±25%	100	0.85	200	0.80 ±0.15
BK 1608LM252-T	RoHS	2500	±25%	100	1.10	200	0.80 ±0.15
BK 1608TS431-T	RoHS	430	±25%	100	0.21 ±30%	400	0.80 ±0.15
BK 1608TS601-T	RoHS	600	±25%	100	0.27 ±30%	350	0.80 ±0.15
BK 1608TS102-T	RoHS	1000	±25%	100	0.30 ±30%	300	0.80 ±0.15

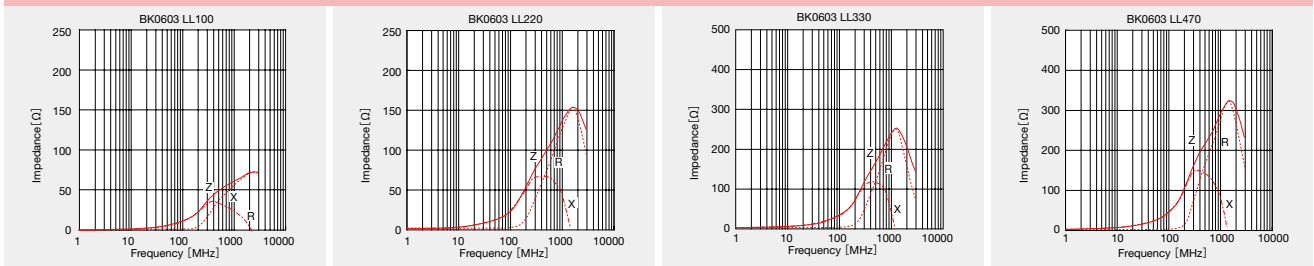
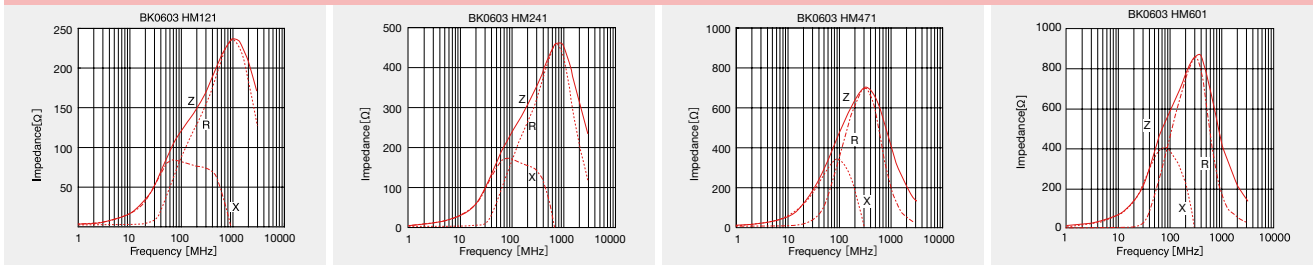
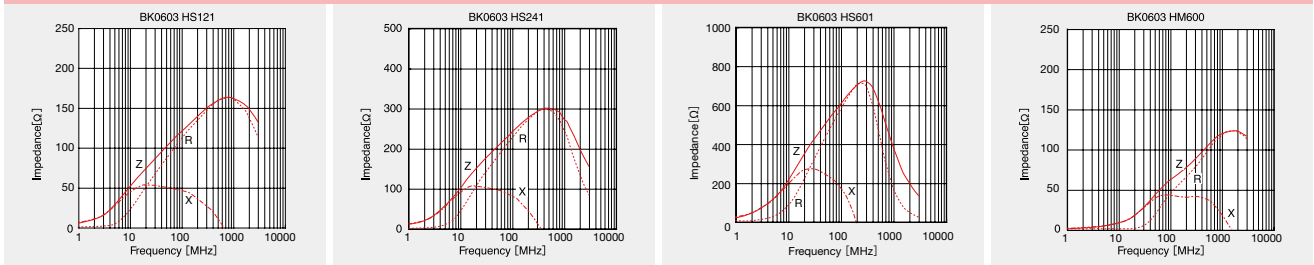
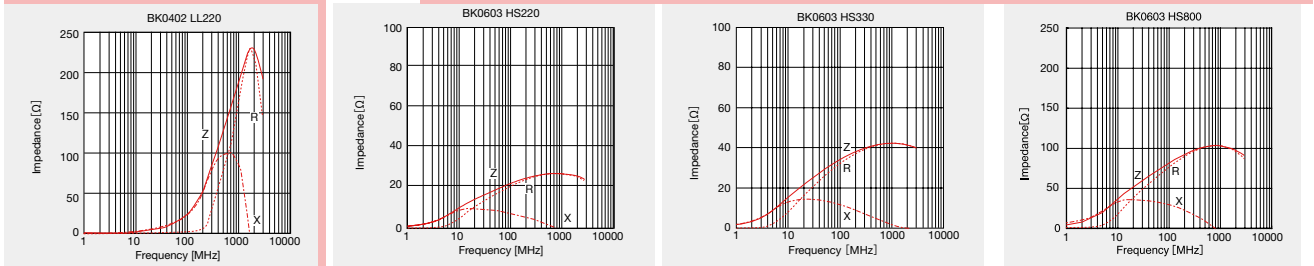
● BK 2125

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)	厚度 [mm]
BK 2125HS150-T	RoHS	15	±25%	100	0.05	1,200	0.85 ±0.2
BK 2125HS220-T	RoHS	22	±25%	100	0.05	1,200	0.85 ±0.2
BK 2125HS330-T	RoHS	33	±25%	100	0.05	1,200	0.85 ±0.2
BK 2125HS470-T	RoHS	47	±25%	100	0.05	1,000	0.85 ±0.2
BK 2125HS750-T	RoHS	75	±25%	100	0.10	1,000	0.85 ±0.2
BK 2125HS101-T	RoHS	100	±25%	100	0.10	900	0.85 ±0.2
BK 2125HS121-T	RoHS	120	±25%	100	0.15	800	0.85 ±0.2
BK 2125HS241-T	RoHS	240	±25%	100	0.20	600	0.85 ±0.2
BK 2125HS431-T	RoHS	430	±25%	100	0.25	500	0.85 ±0.2
BK 2125HS601-T	RoHS	600	±25%	100	0.30	500	0.85 ±0.2
BK 2125HS102-T	RoHS	1000	±25%	100	0.40	300	0.85 ±0.2
BK 2125HM121-T	RoHS	120	±25%	100	0.15	800	0.85 ±0.2
BK 2125HM241-T	RoHS	240	±25%	100	0.20	600	0.85 ±0.2
BK 2125HM471-T	RoHS	470	±25%	100	0.25	500	0.85 ±0.2
BK 2125HM601-T	RoHS	600	±25%	100	0.25	500	0.85 ±0.2
BK 2125HM102-T	RoHS	1000	±25%	100	0.35	400	0.85 ±0.2
BK 2125LL560-T	RoHS	56	±25%	100	0.20	600	0.85 ±0.2
BK 2125LL121-T	RoHS	120	±25%	100	0.30	400	0.85 ±0.2
BK 2125LL241-T	RoHS	240	±25%	100	0.35	300	0.85 ±0.2
BK 2125LM751-T	RoHS	750	±25%	100	0.30	400	0.85 ±0.2
BK 2125LM152-T	RoHS	1500	±25%	100	0.35	400	0.85 ±0.2
BK 2125LM182-T	RoHS	1800	±25%	100	0.45	300	1.25 ±0.2
BK 2125LM252-T	RoHS	2500	±25%	100	0.75	200	1.25 ±0.2

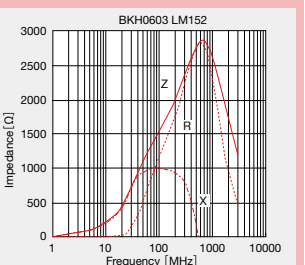
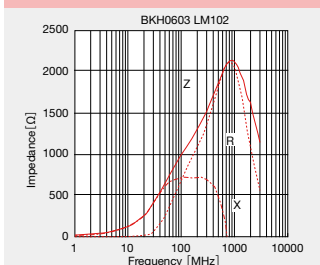
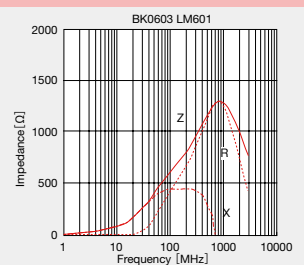
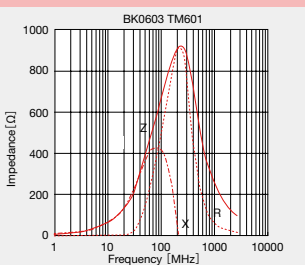
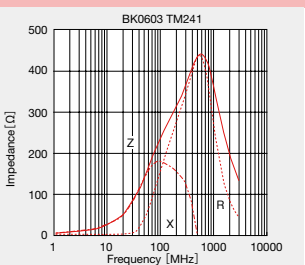
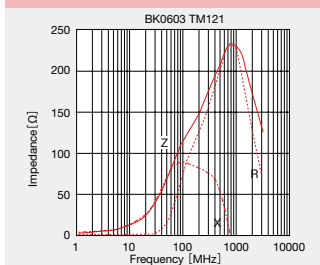
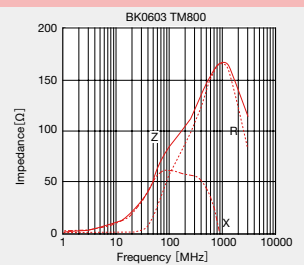
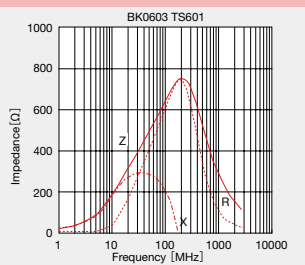
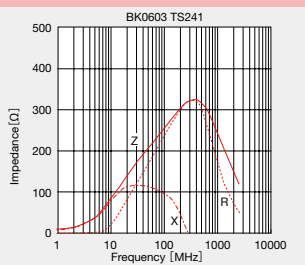
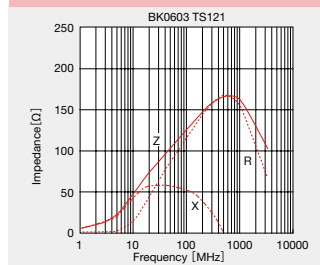
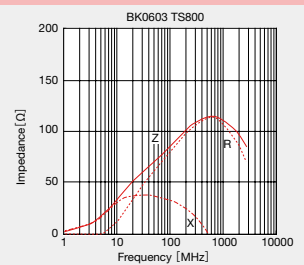
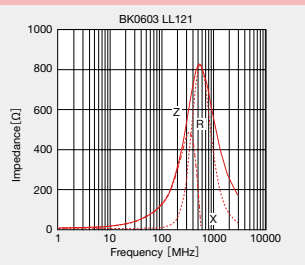
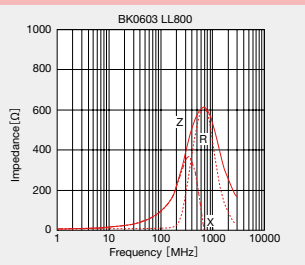
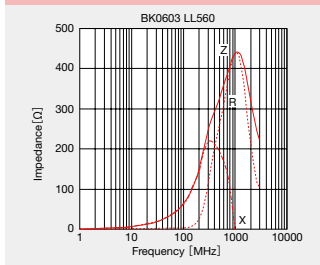
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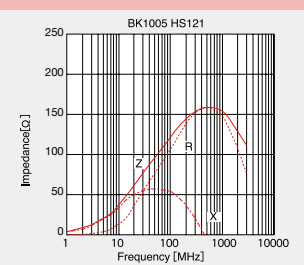
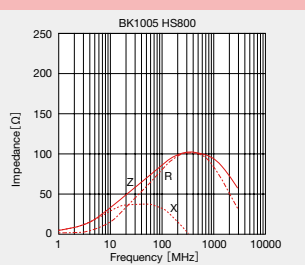
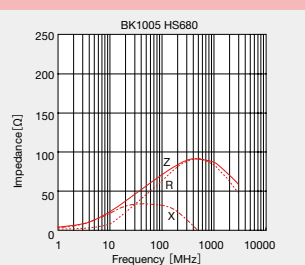
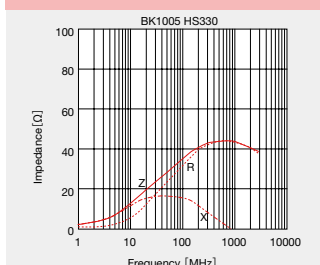
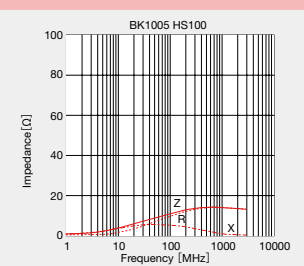
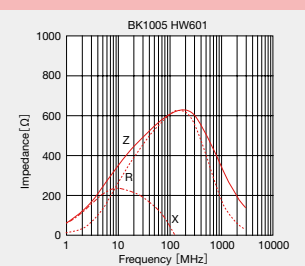
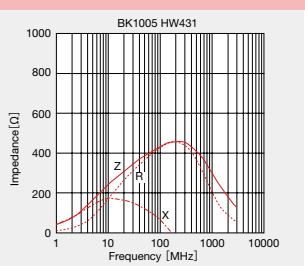
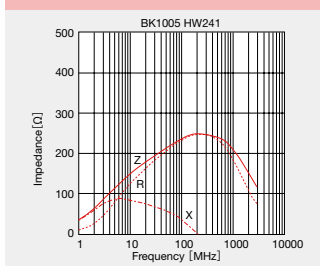
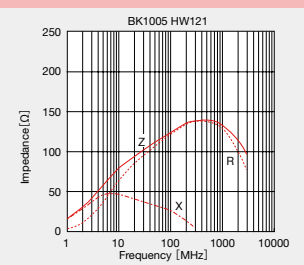
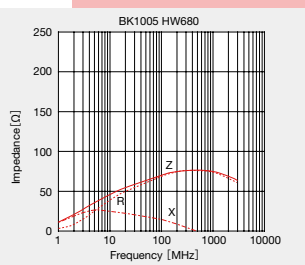
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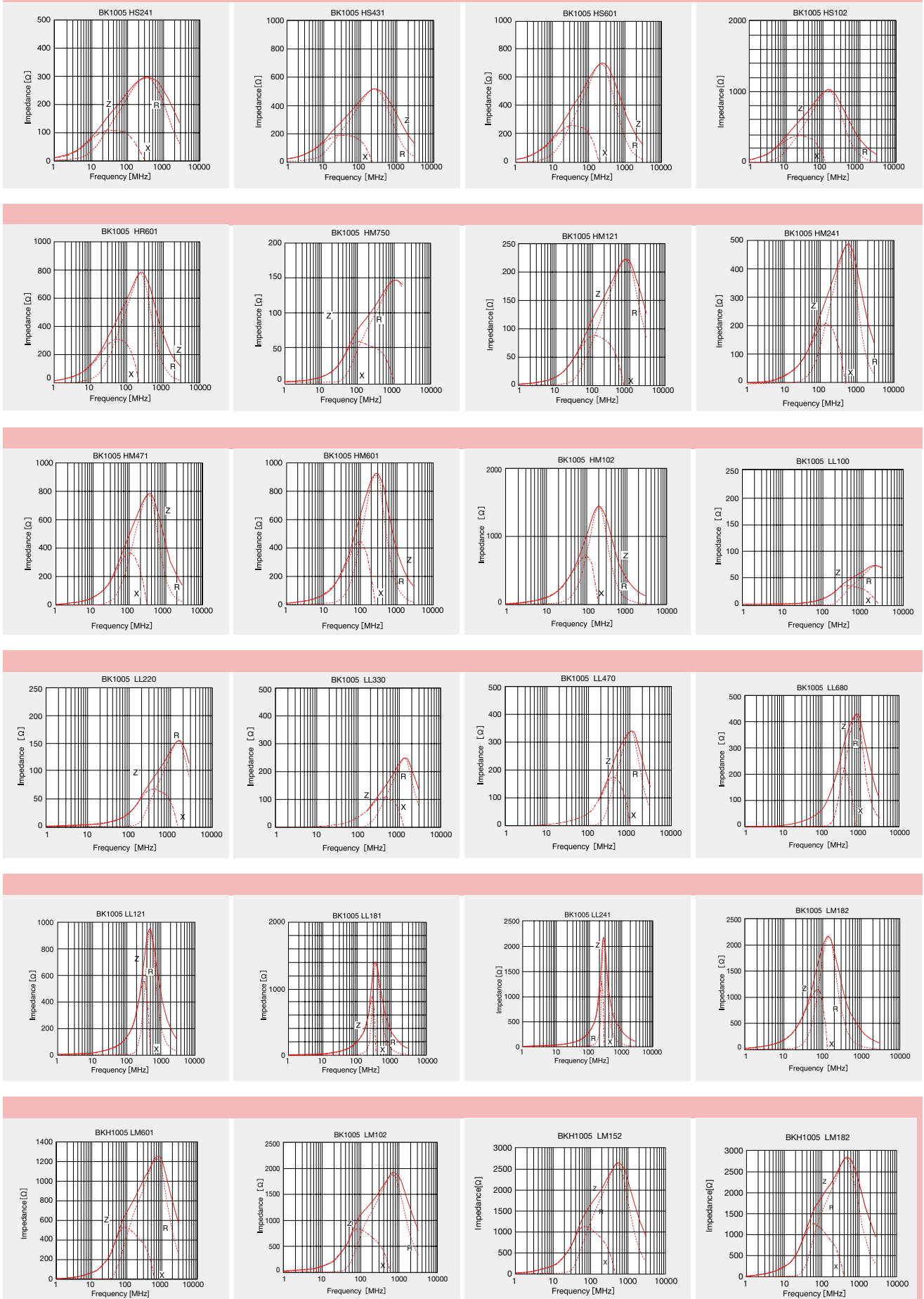
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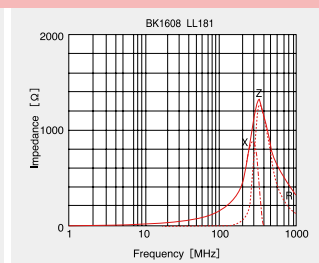
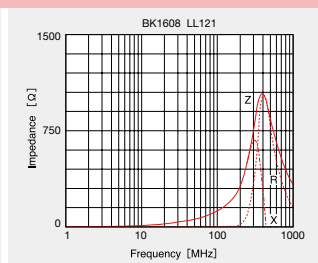
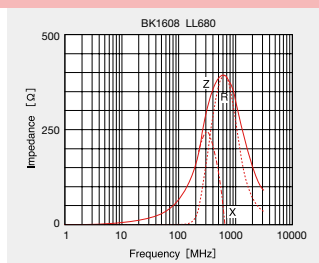
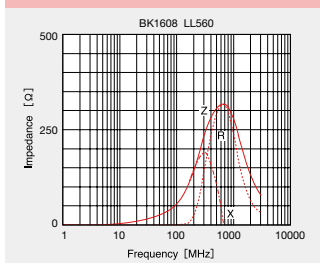
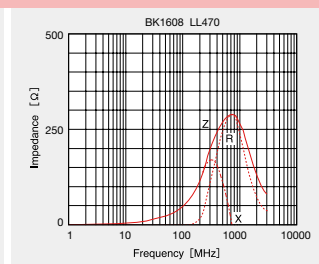
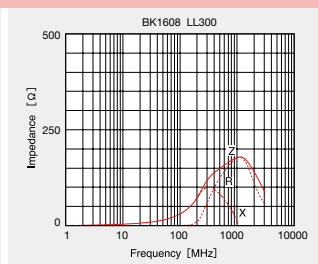
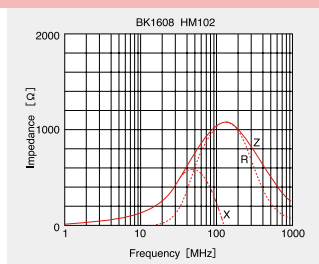
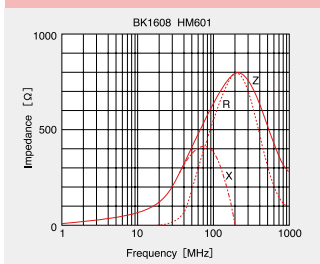
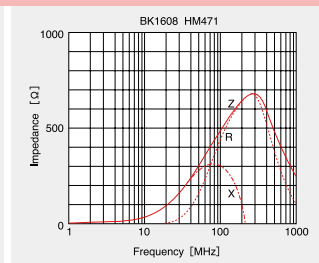
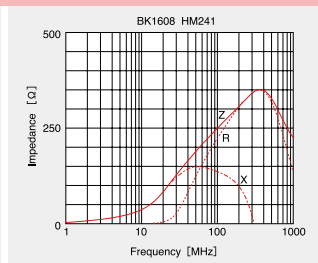
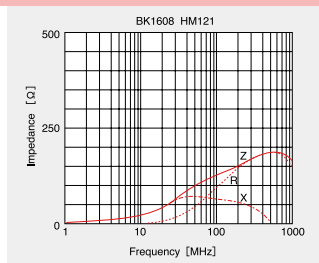
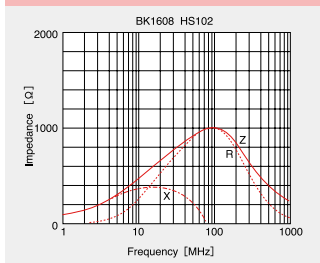
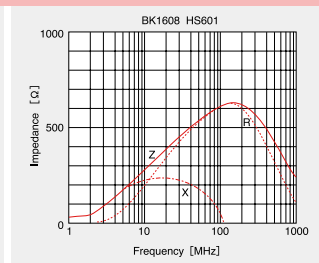
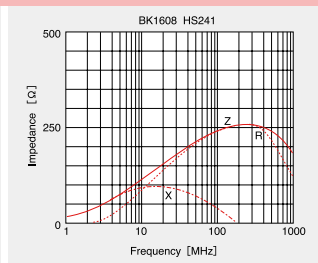
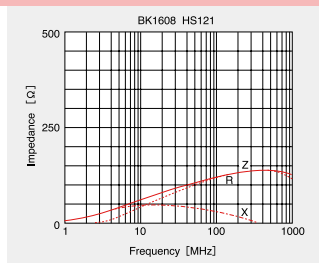
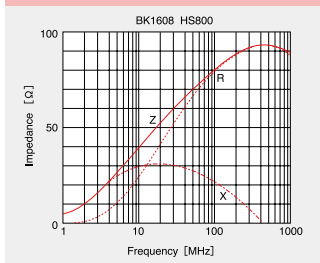
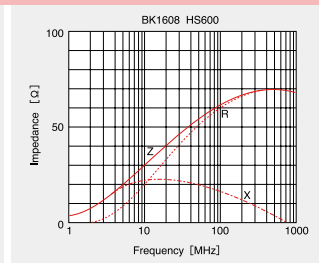
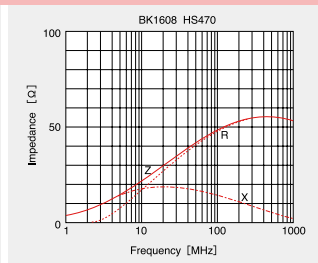
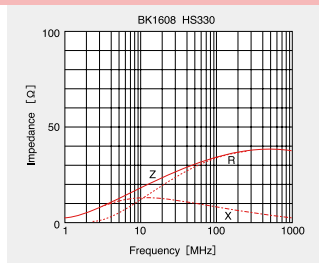
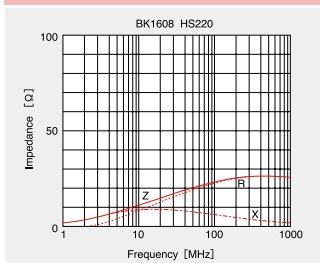
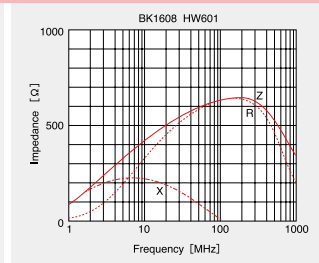
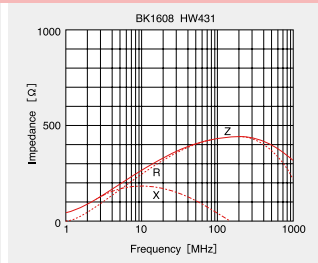
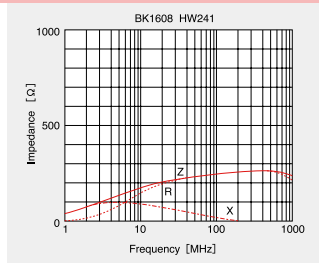
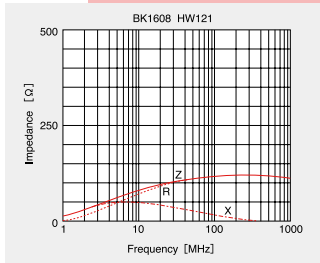
BK1005



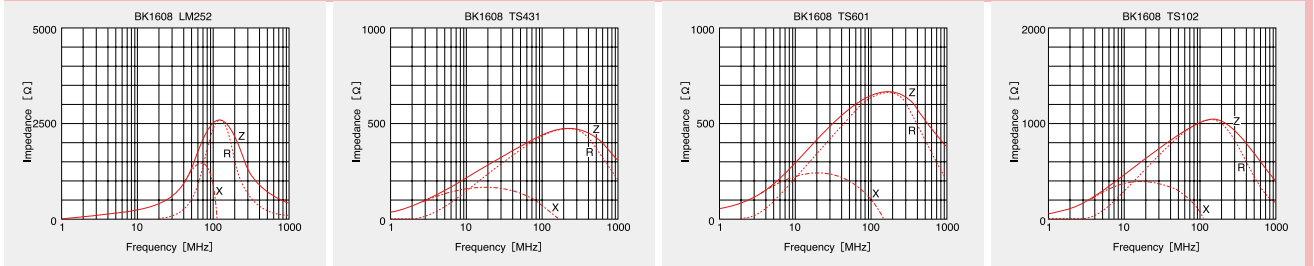
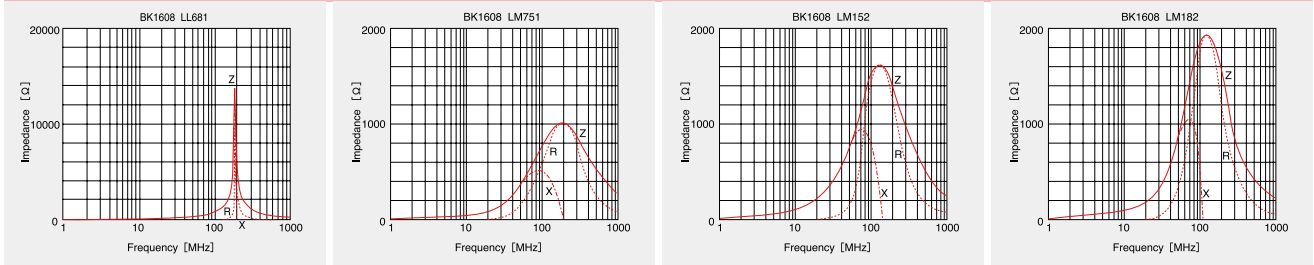
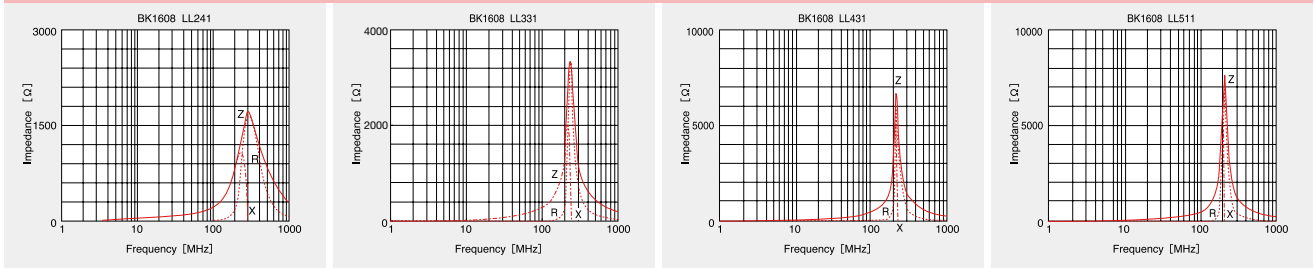
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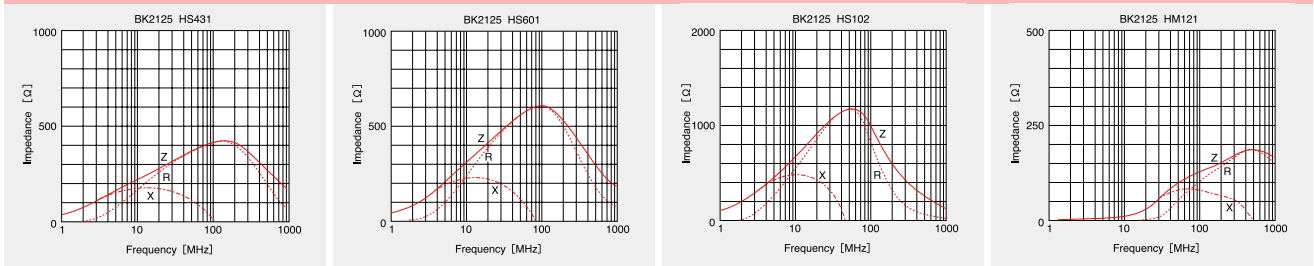
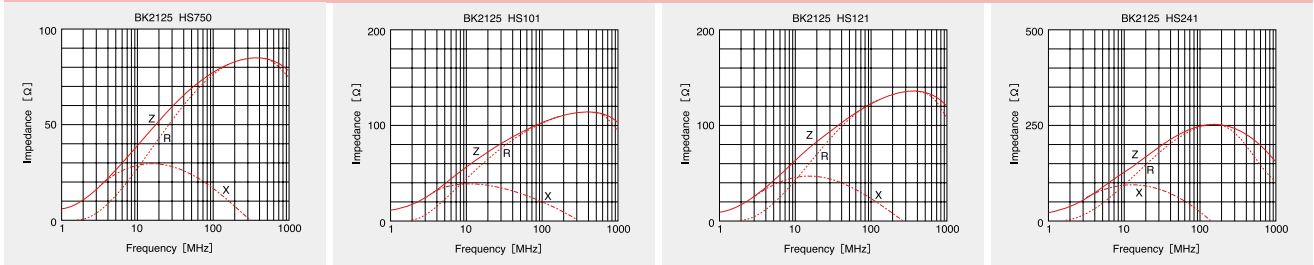
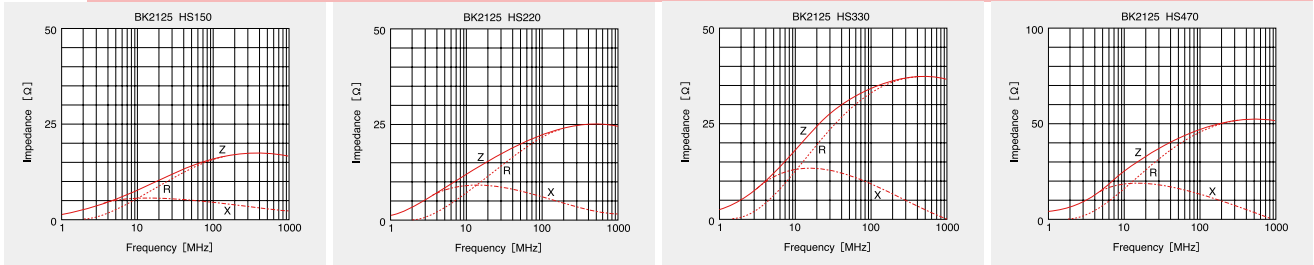
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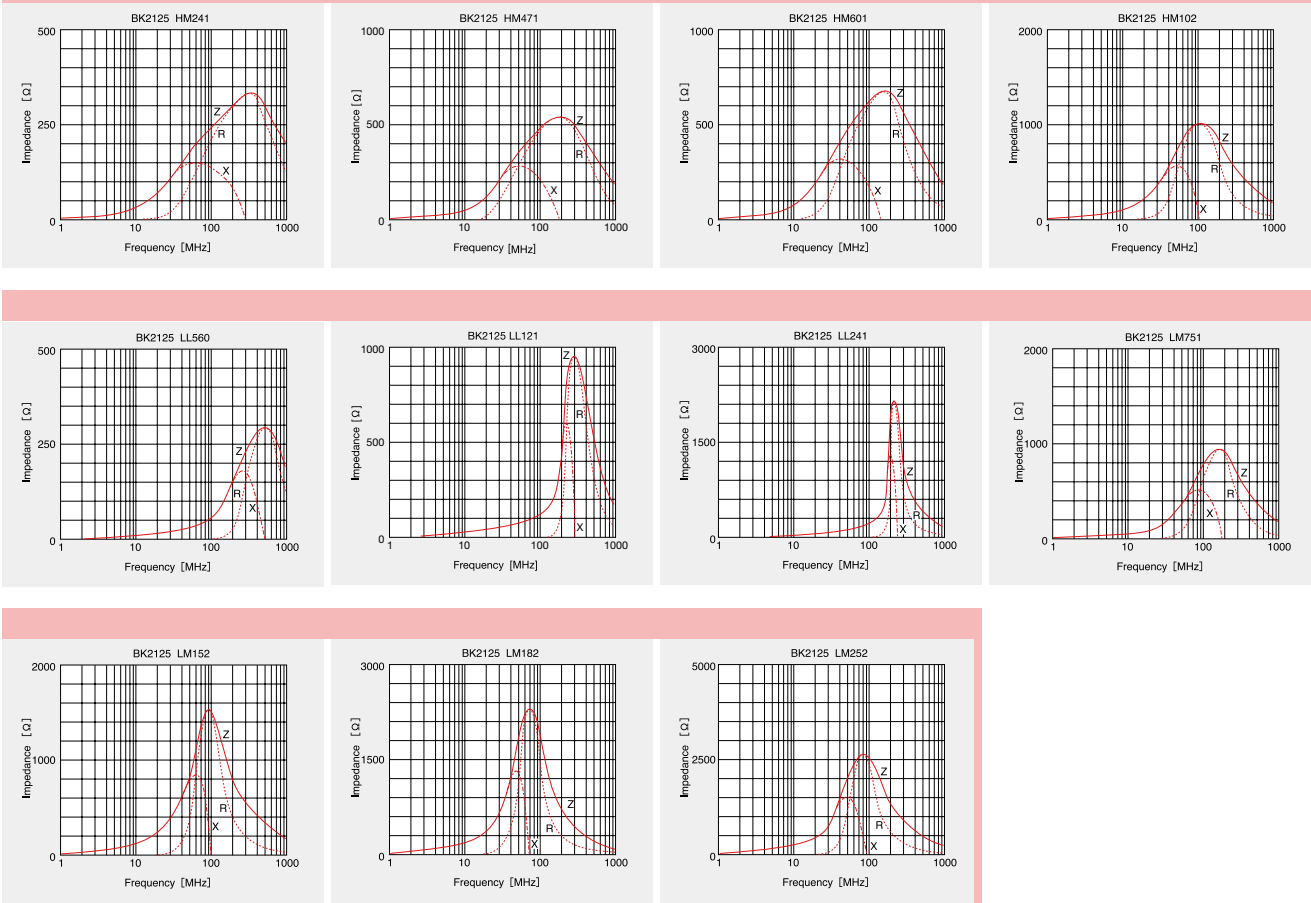
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■ BK2125



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多连型多层片状磁珠电感器（BK 多连型系列）



回流焊

■ 型号标示法

※使用温度范围: -55~+125℃

B	K	△	3	2	1	6	4	S	6	0	1	-	T	△
①			②				③		④			⑤		⑥

△=空格

① 类型

代码	类型
BK△	多层片状磁珠电感器

② 尺寸(L×W)

代码	外型(inch)	尺寸(L×W)[mm]
2010	2010(0804)	2.0×1.0
3216	3216(1206)	3.2×1.6

③ 材料

代码	材料
4W	材料不同时, 阻抗值也有所变化。
4S	
4M	
4L	

④ 标称阻抗值

代码(例)	标称阻抗值[Ω]
601	600
102	1000

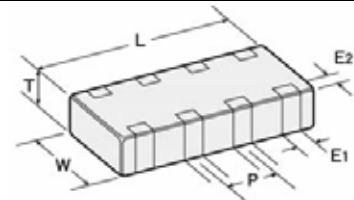
⑤ 包装

代码	包装
-T	卷盘带装

⑥ 本公司管理记号

代码	本公司管理记号
△	标准品

■ 标准外型尺寸/标准数量



Type	L	W	T	E ₁	E ₂	P	标准数量 [pcs]	
							纸带	压纹带
BK 2010 (0804)	2.0±0.15 (0.079±0.006)	1.0±0.15 (0.039±0.006)	0.45±0.05 (0.018±0.002)	0.25±0.15/-0.1 (0.010+0.006/-0.004)	0.25±0.15 (0.010±0.006)	0.5±0.1 (0.020±0.004)	4000	—
BK 3216 (1206)	3.2±0.2 (0.126±0.008)	1.6±0.2 (0.063±0.008)	0.8±0.1 (0.031±0.004)	0.35±0.2 (0.014±0.008)	0.3±0.2 (0.012±0.008)	0.8±0.1 (0.031±0.004)	—	4000

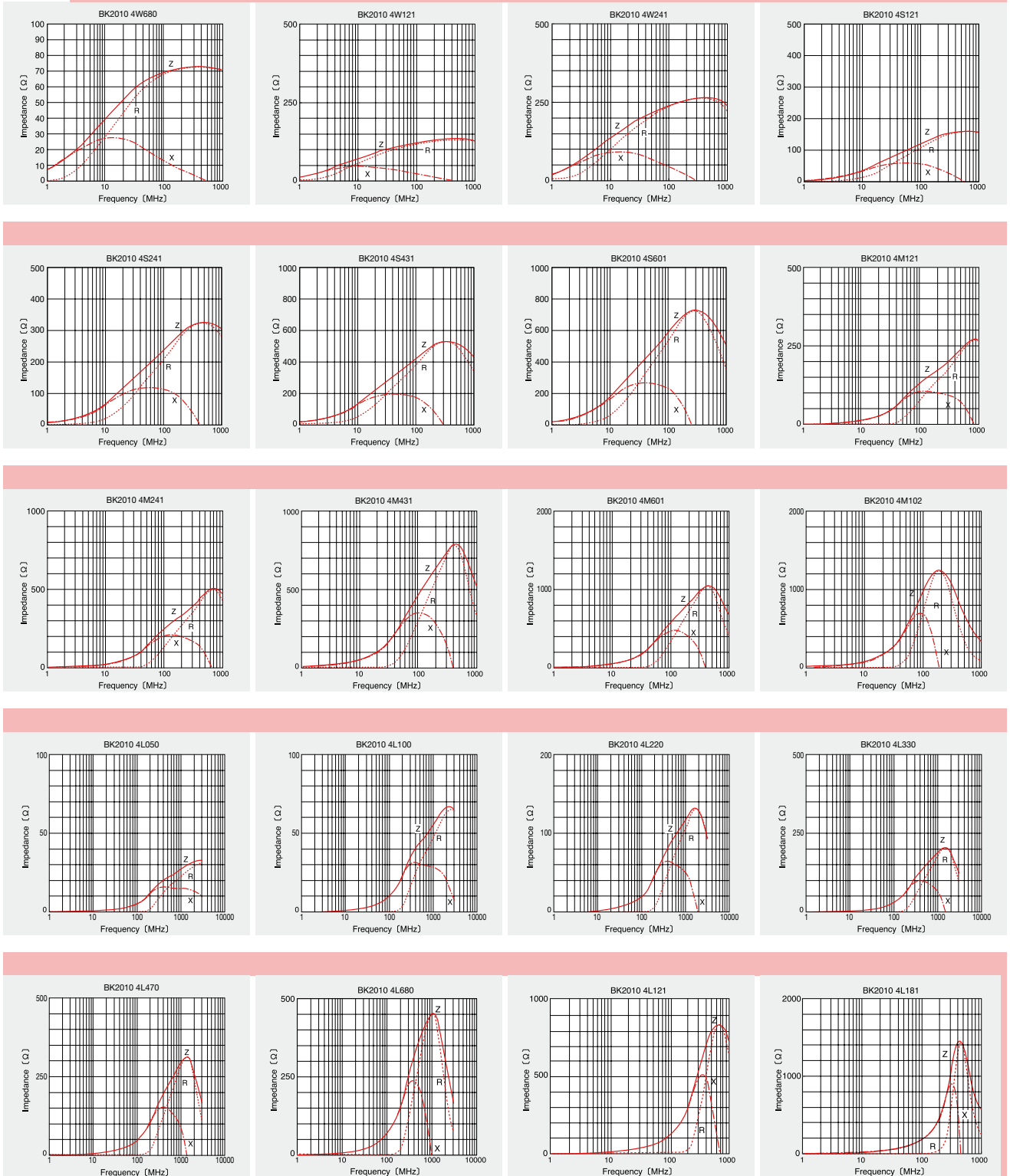
单位: mm(inch)

● BK 2010

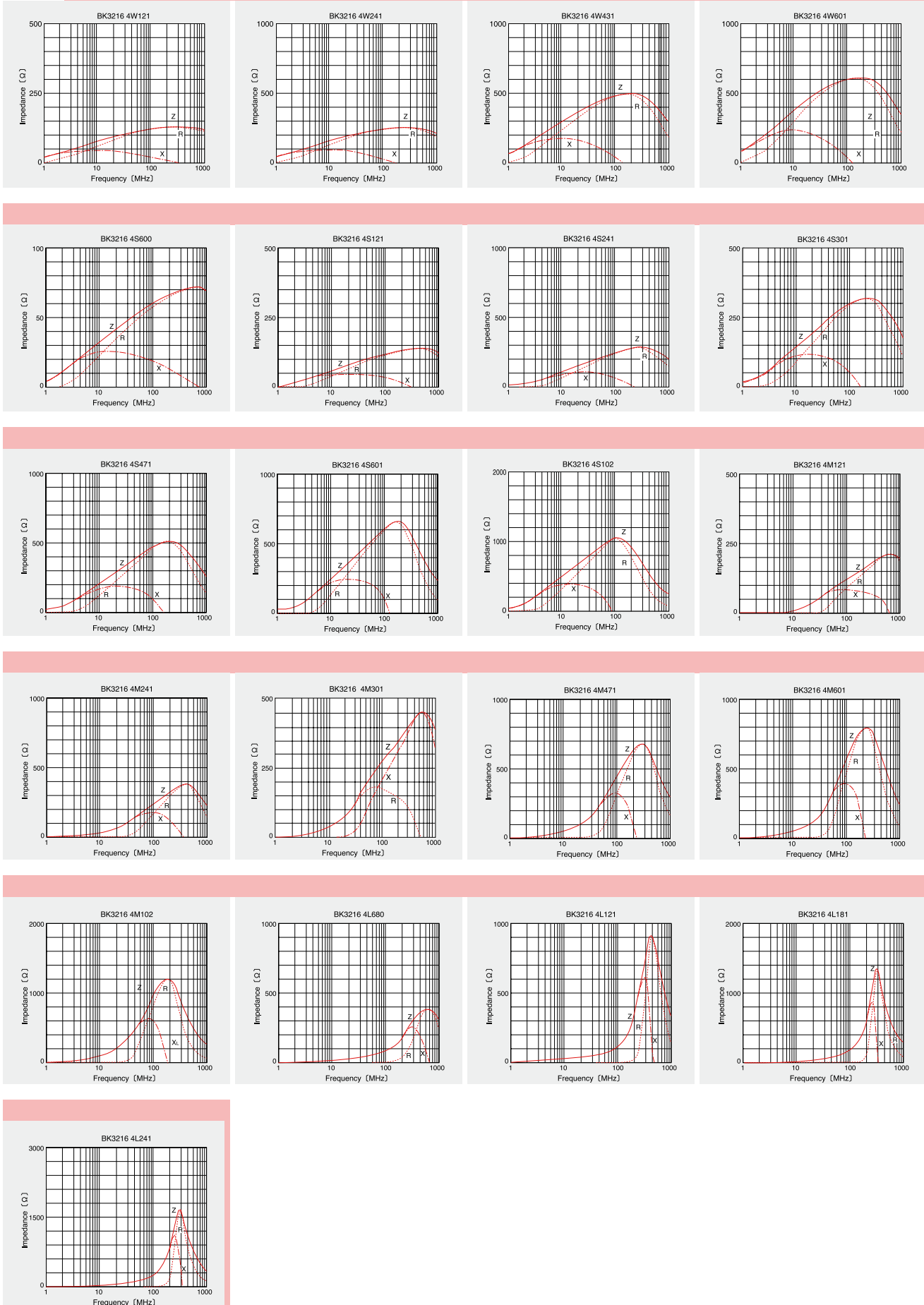
型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)
BK 20104W680-T	RoHS	68	±25%	100	0.35	100
BK 20104W121-T	RoHS	120	±25%	100	0.40	100
BK 20104W241-T	RoHS	240	±25%	100	0.50	100
BK 20104S121-T	RoHS	120	±25%	100	0.30	100
BK 20104S241-T	RoHS	240	±25%	100	0.45	100
BK 20104S431-T	RoHS	430	±25%	100	0.55	100
BK 20104S601-T	RoHS	600	±25%	100	0.70	100
BK 20104M121-T	RoHS	120	±25%	100	0.30	100
BK 20104M241-T	RoHS	240	±25%	100	0.45	100
BK 20104M431-T	RoHS	430	±25%	100	0.55	100
BK 20104M601-T	RoHS	600	±25%	100	0.70	100
BK 20104M102-T	RoHS	1000	±25%	100	0.80	100
BK 20104L050-T	RoHS	5	±25%	100	0.10	100
BK 20104L100-T	RoHS	10	±25%	100	0.15	100
BK 20104L220-T	RoHS	22	±25%	100	0.20	100
BK 20104L330-T	RoHS	33	±25%	100	0.30	100
BK 20104L470-T	RoHS	47	±25%	100	0.40	100
BK 20104L680-T	RoHS	68	±25%	100	0.50	100
BK 20104L121-T	RoHS	120	±25%	100	0.70	100
BK 20104L181-T	RoHS	180	±25%	100	0.90	100

● BK 3216

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [Ω] (max.)	额定电流 [mA] (max.)
BK 32164W121-T	RoHS	120	±25%	100	0.15	100
BK 32164W241-T	RoHS	240	±25%	100	0.25	100
BK 32164W431-T	RoHS	430	±25%	100	0.35	100
BK 32164W601-T	RoHS	600	±25%	100	0.40	100
BK 32164S600-T	RoHS	60	±25%	100	0.18	200
BK 32164S121-T	RoHS	120	±25%	100	0.18	200
BK 32164S241-T	RoHS	240	±25%	100	0.30	200
BK 32164S301-T	RoHS	300	±25%	100	0.40	200
BK 32164S471-T	RoHS	470	±25%	100	0.40	200
BK 32164S601-T	RoHS	600	±25%	100	0.45	200
BK 32164S102-T	RoHS	1000	±25%	100	0.68	100
BK 32164M121-T	RoHS	120	±25%	100	0.20	150
BK 32164M241-T	RoHS	240	±25%	100	0.35	150
BK 32164M301-T	RoHS	300	±25%	100	0.45	150
BK 32164M471-T	RoHS	470	±25%	100	0.50	150
BK 32164M601-T	RoHS	600	±25%	100	0.60	100
BK 32164M102-T	RoHS	1000	±25%	100	0.80	100
BK 32164L680-T	RoHS	68	±25%	100	0.35	200
BK 32164L121-T	RoHS	120	±25%	100	0.55	200
BK 32164L181-T	RoHS	180	±25%	100	0.65	150
BK 32164L241-T	RoHS	240	±25%	100	0.75	150



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电源用多层片状磁珠电感器（BK 系列P 型）



波峰焊※

回流焊

※BKP0603, BKP1005除外

■型号标示法

※使用温度范围: -55~+85℃

B	K	P	1	6	0	8	H	S	1	8	1	—	T	△
①			②				③		④			⑤	⑥	⑦

△=空格

①类型

代码	类型
BKP	电源用多层片状磁珠电感器

②尺寸(L×W)

代码	外型 (inch)	尺寸 (L×W) [mm]
0603	0603 (0201)	0.6×0.3
1005	1005 (0402)	1.0×0.5
1608	1608 (0603)	1.6×0.8
2125	2125 (0805)	2.0×1.25

③材料

代码	材料
HS	材料不同时, 阻抗值也有所变化。
HM	
TS	
TM	
EM	

④标称阻抗值

代码 (例)	标称阻抗值 [Ω]
330	33
101	100
391	390

⑤特性

代码	特性
—	标准品

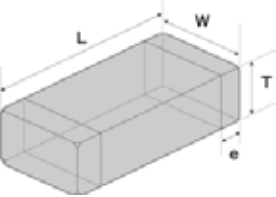
⑥包装

代码	包装
T	卷盘带装

⑦本公司管理记号

代码	本公司管理记号
△	标准品

■标准外型尺寸／标准数量



Type	L	W	T	e	标准数量 [pcs]	
					纸带	压纹带
BKP0603 (0201)	0.6±0.03 (0.024±0.001)	0.3±0.03 (0.012±0.001)	0.3±0.03 (0.012±0.001)	0.15±0.05 (0.006±0.002)	15000	—
BKP1005 (0402)	1.0±0.05 (0.039±0.002)	0.5±0.05 (0.020±0.002)	0.5±0.05 (0.020±0.002)	0.25±0.1 (0.010±0.004)	10000	—
BKP1608 (0603)	1.6±0.15 (0.063±0.006)	0.8±0.15 (0.031±0.006)	0.8±0.15 (0.031±0.006)	0.3±0.2 (0.012±0.008)	4000	—
BKP2125 (0805)	2.0+0.3/-0.1 (0.079+0.012/-0.004)	1.25±0.2 (0.049±0.008)	0.85±0.2 (0.033±0.008)	0.5±0.3 (0.020±0.012)	4000	—

单位: mm (inch)

●BKP0603

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [mΩ] (max.)	额定电流 [A] (max.)	厚度 [mm]
BKP0603HS100-T	RoHS	10	±5Ω	100	30	1.3	0.30 ±0.03
BKP0603HS220-T	RoHS	22	±25%	100	65	1.0	0.30 ±0.03
BKP0603HS330-T	RoHS	33	±25%	100	70	1.0	0.30 ±0.03
BKP0603HS800-T	RoHS	80	±25%	100	120	1.0	0.30 ±0.03
BKP0603HS121-T	RoHS	120	±25%	100	150	0.85	0.30 ±0.03
BKP0603HM100-T	RoHS	10	±5Ω	100	30	1.3	0.30 ±0.03
BKP0603HM220-T	RoHS	22	±25%	100	70	1.0	0.30 ±0.03
BKP0603HM330-T	RoHS	33	±25%	100	70	1.0	0.30 ±0.03
BKP0603HM800-T	RoHS	80	±25%	100	120	1.0	0.30 ±0.03
BKP0603HM121-T	RoHS	120	±25%	100	180	0.80	0.30 ±0.03
BKP0603TS220-T	RoHS	22	±25%	100	40	1.8	0.30 ±0.03
BKP0603TS330-T	RoHS	33	±25%	100	55	1.5	0.30 ±0.03
BKP0603TM220-T	RoHS	22	±25%	100	40	1.8	0.30 ±0.03
BKP0603TM330-T	RoHS	33	±25%	100	55	1.5	0.30 ±0.03

●BKP1005

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [mΩ] (max.)	额定电流 [A] (max.)	厚度 [mm]
BKP1005EM100-T	RoHS	10	±5Ω	100	30	2.4	0.50 ±0.05
BKP1005EM300-T	RoHS	30	±25%	100	35	2.2	0.50 ±0.05
BKP1005EM600-T	RoHS	60	±25%	100	60	1.7	0.50 ±0.05
BKP1005EM121-T	RoHS	120	±25%	100	85	1.55	0.50 ±0.05
BKP1005EM221-T	RoHS	220	±25%	100	150	1.00	0.50 ±0.05
BKP1005EM331-T	RoHS	330	±25%	100	220	0.80	0.50 ±0.05
BKP1005HS100-T	RoHS	10	±25%	100	30	2.0	0.50 ±0.05
BKP1005HS330-T	RoHS	33	±25%	100	50	1.7	0.50 ±0.05
BKP1005HS680-T	RoHS	68	±25%	100	75	1.5	0.50 ±0.05
BKP1005HS121-T	RoHS	120	±25%	100	140	1.0	0.50 ±0.05
BKP1005HS221-T	RoHS	220	±25%	100	200	0.80	0.50 ±0.05
BKP1005HM121-T	RoHS	120	±25%	100	120	1.1	0.50 ±0.05
BKP1005HM221-T	RoHS	220	±25%	100	180	0.90	0.50 ±0.05
BKP1005TS330-T	RoHS	33	±25%	100	39±30%	1.7	0.50 ±0.05
BKP1005TS680-T	RoHS	68	±25%	100	55±30%	1.5	0.50 ±0.05
BKP1005TS121-T	RoHS	120	±25%	100	70±30%	1.3	0.50 ±0.05
BKP1005TM121-T	RoHS	120	±25%	100	100	1.3	0.50 ±0.05

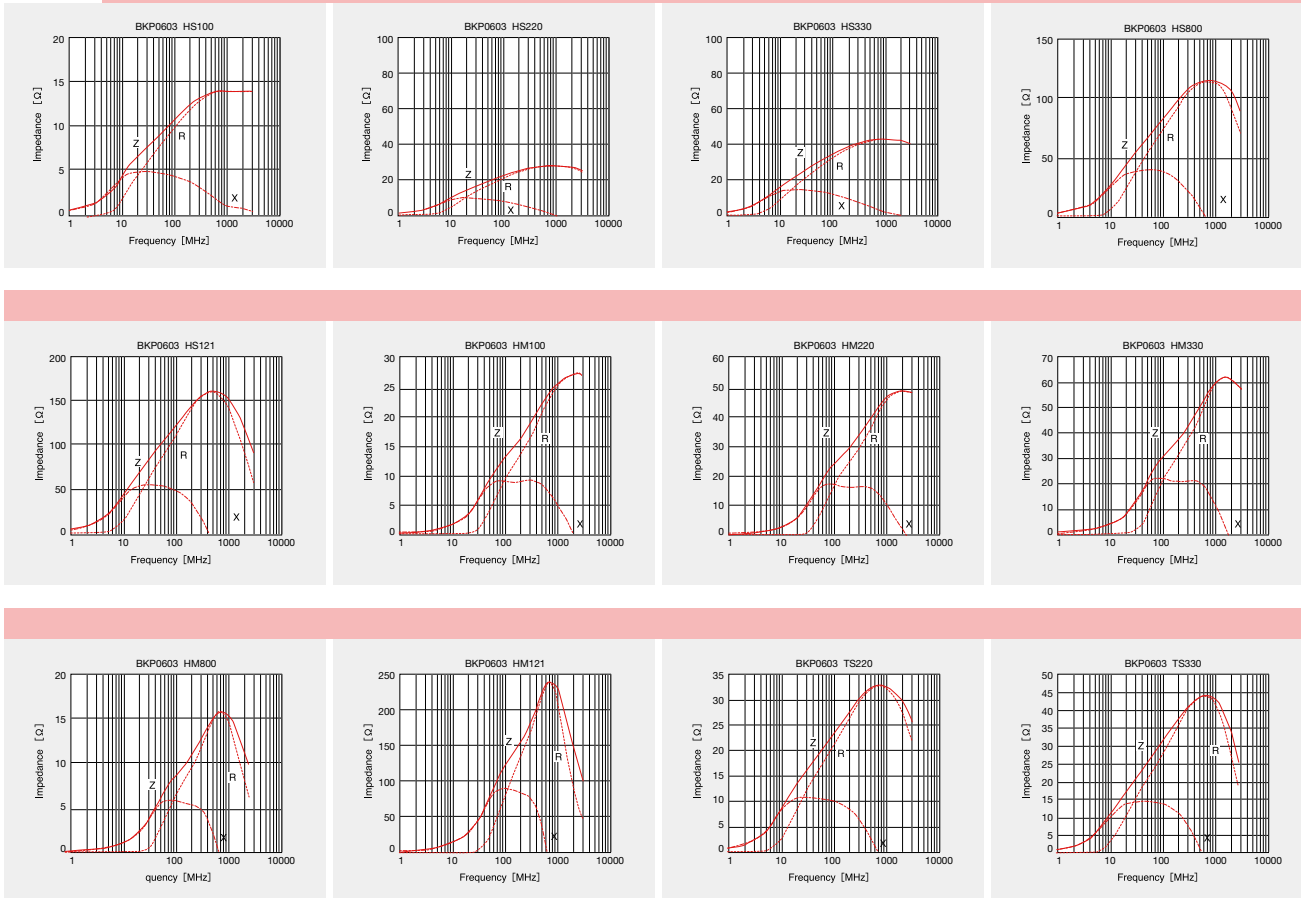
●BKP1608

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [mΩ] (max.)	额定电流 [A] (max.)	厚度 [mm]
BKP1608HS330-T	RoHS	33	±25%	100	25	3.0	0.80 ±0.15
BKP1608HS600-T	RoHS	60	±25%	100	40	2.5	0.80 ±0.15
BKP1608HS101-T	RoHS	100	±25%	100	50	1.7	0.80 ±0.15
BKP1608HS121-T	RoHS	120	±25%	100	35	2.7	0.80 ±0.15
BKP1608HS181-T	RoHS	180	±25%	100	75	1.5	0.80 ±0.15
BKP1608HS271-T	RoHS	270	±25%	100	110	1.2	0.80 ±0.15
BKP1608HS391-T	RoHS	390	±25%	100	140	1.0	0.80 ±0.15
BKP1608HS471-T	RoHS	470	±25%	100	180	1.0	0.80 ±0.15

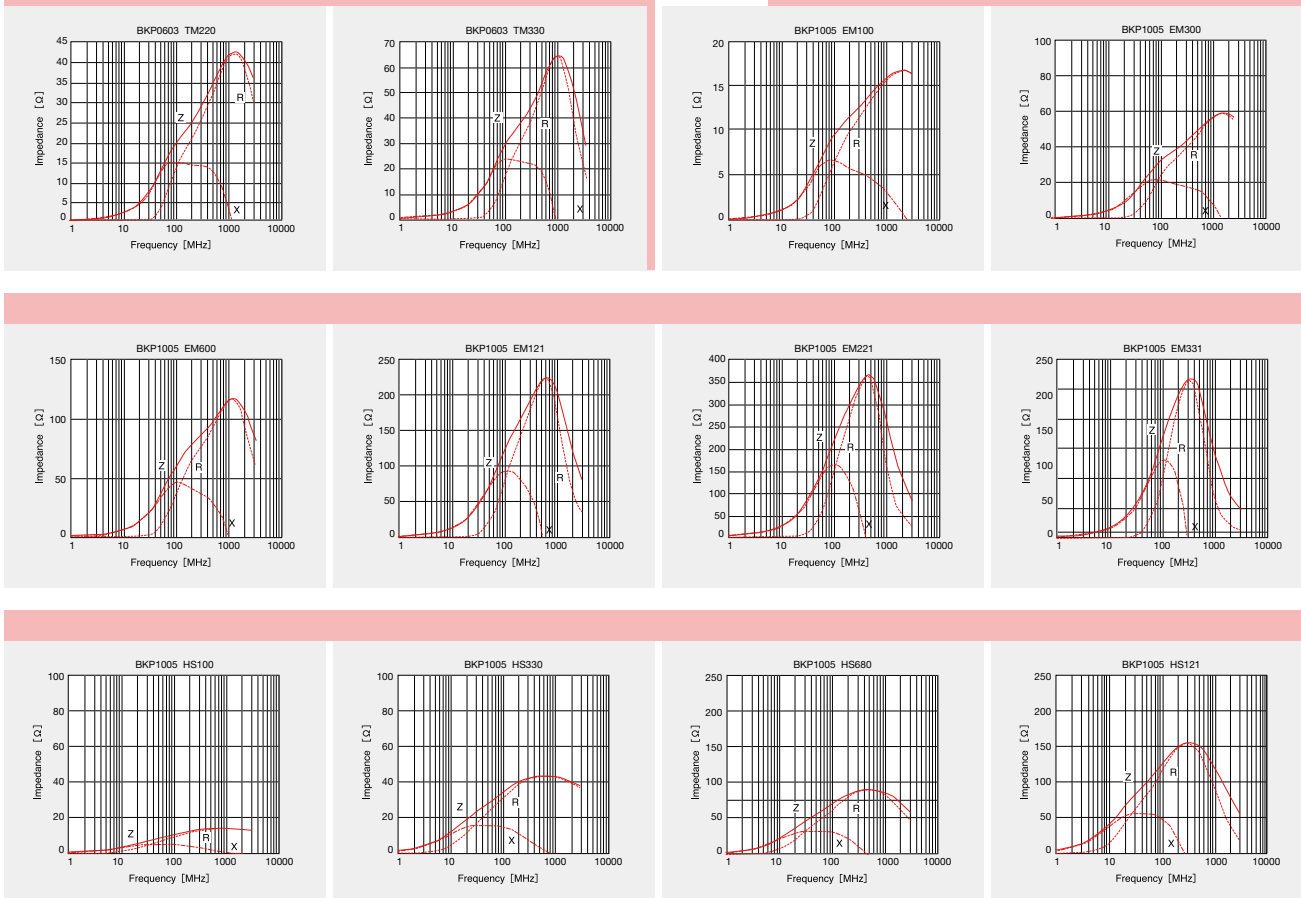
●BKP2125

型号	EHS	阻抗值 [Ω]	阻抗值公差	测试频率 [MHz]	直流电阻DC [mΩ] (max.)	额定电流 [A] (max.)	厚度 [mm]
BKP2125HS330-T	RoHS	33	±25%	100	20	4.0	0.85 ±0.2
BKP2125HS600-T	RoHS	60	±25%	100	25	3.0	0.85 ±0.2
BKP2125HS101-T	RoHS	100	±25%	100	40	2.5	0.85 ±0.2
BKP2125HS221-T	RoHS	220	±25%	100	50	2.0	0.85 ±0.2
BKP2125HS331-T	RoHS	330	±25%	100	75	1.5	0.85 ±0.2

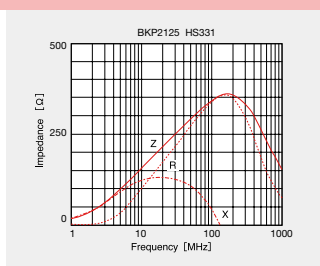
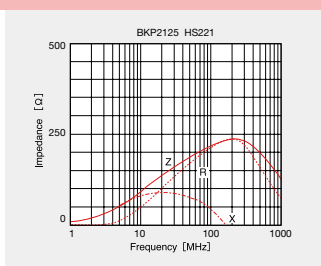
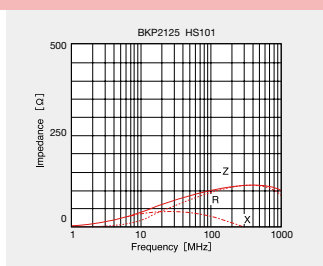
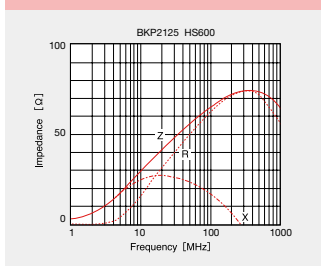
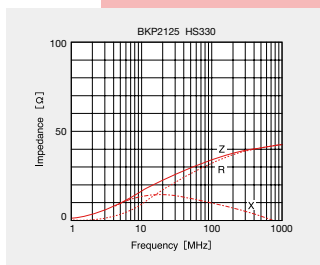
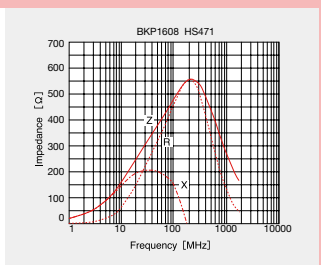
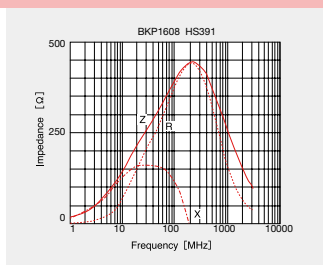
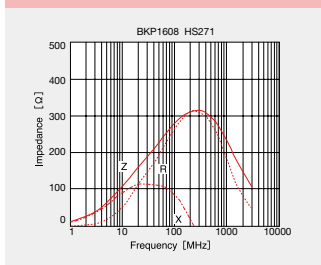
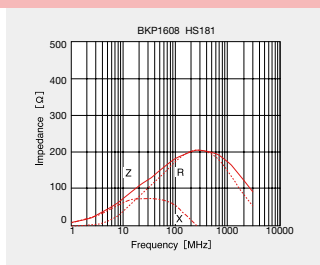
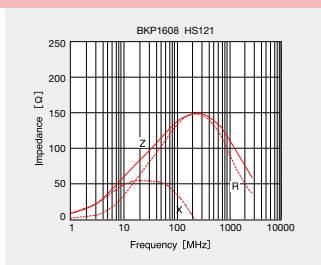
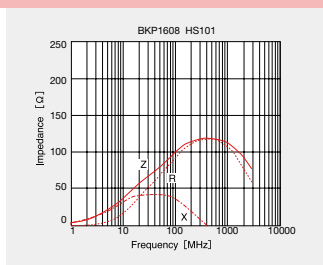
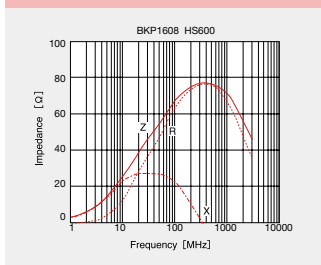
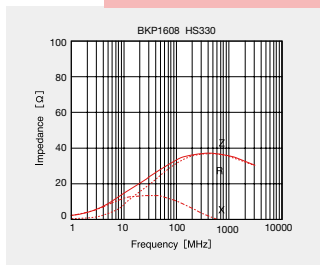
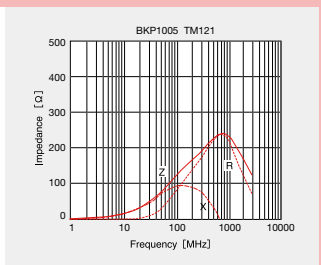
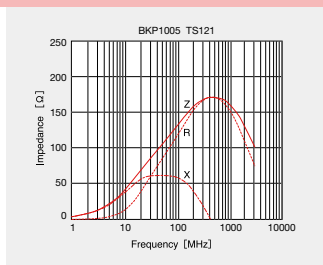
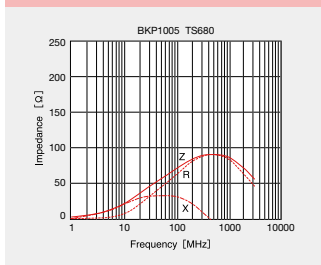
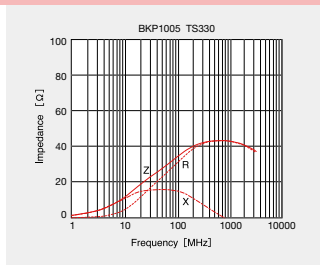
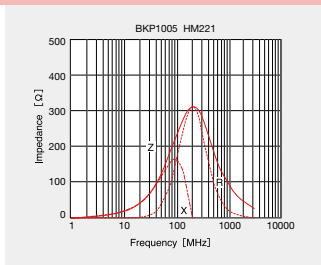
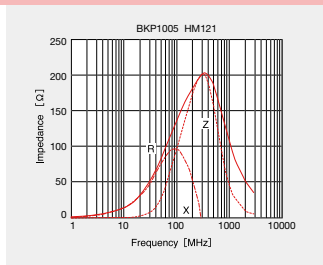
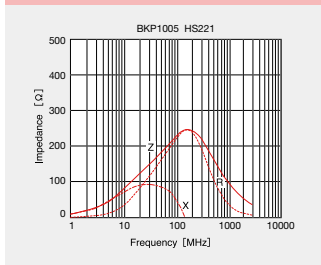
■ BKP0603



■ BKP1005



▶ 本产品目录根据版面大小，仅记载了代表性产品规格，若考虑使用本公司产品时，请确认供货规格型号明细表中的详细规格。
有关各商品的详细信息(特性图、可靠性信息、使用时的注意事项等)，请参阅本公司网站(<http://www.ty-top.com/>)。



■ BKP1608

■ BKP2125

Multilayer chip inductors

Multilayer chip inductors for high frequency, Multilayer chip bead inductors

Multilayer common mode choke coils (MC series F type)

PACKAGING

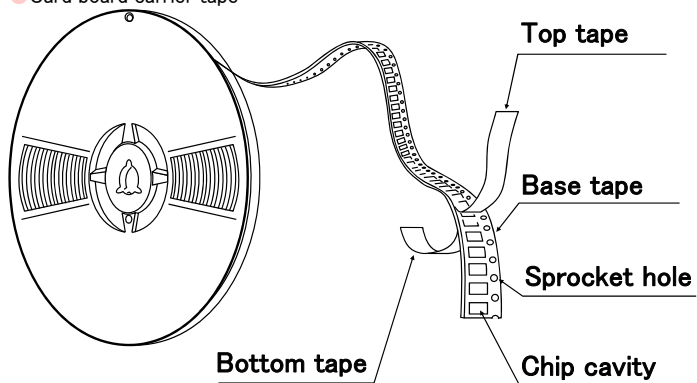
① Minimum Quantity

● Tape & Reel Packaging

Type	Thickness mm (inch)	Standard Quantity [pcs]	
		Paper Tape	Embossed Tape
CK1608 (0603)	0.8 (0.031)	4000	—
CK2125 (0805)	0.85 (0.033)	4000	—
	1.25 (0.049)	—	2000
CKS2125 (0805)	0.85 (0.033)	4000	—
	1.25 (0.049)	—	2000
CKP1608 (0603)	0.8 (0.031)	4000	—
CKP2012 (0805)	0.9 (0.035)	—	3000
CKP2016 (0806)	0.9 (0.035)	—	3000
CKP2520 (1008)	0.7 (0.028)	—	3000
	0.9 (0.035)	—	3000
	1.1 (0.043)	—	2000
NM2012 (0805)	0.9 (0.035)	—	3000
NM2520 (1008)	0.9 (0.035)	—	3000
	1.1 (0.043)	—	2000
LK1005 (0402)	0.5 (0.020)	10000	—
LK1608 (0603)	0.8 (0.031)	4000	—
	0.85 (0.033)	4000	—
LK2125 (0805)	1.25 (0.049)	—	2000
	—	—	—
HK0402 (01005)	0.2 (0.008)	20000	—
HK0603 (0201)	0.3 (0.012)	15000	—
HK1005 (0402)	0.5 (0.020)	10000	—
HK1608 (0603)	0.8 (0.031)	4000	—
HK2125 (0805)	0.85 (0.033)	—	4000
	1.0 (0.039)	—	3000
HKQ0402 (01005)	0.2 (0.008)	20000	40000
HKQ0603W (0201)	0.3 (0.012)	15000	—
HKQ0603C (0201)	0.3 (0.012)	15000	—
HKQ0603S (0201)	0.3 (0.012)	15000	—
HKQ0603U (0201)	0.3 (0.012)	15000	—
AQ105 (0402)	0.5 (0.020)	10000	—
BK0402 (01005)	0.2 (0.008)	20000	—
BK0603 (0201)	0.3 (0.012)	15000	—
BK1005 (0402)	0.5 (0.020)	10000	—
BKH0603 (0201)	0.3 (0.012)	15000	—
BKH1005 (0402)	0.5 (0.020)	10000	—
BK1608 (0603)	0.8 (0.031)	4000	—
BK2125 (0805)	0.85 (0.033)	4000	—
	1.25 (0.049)	—	2000
BK2010 (0804)	0.45 (0.018)	4000	—
BK3216 (1206)	0.8 (0.031)	—	4000
BKP0603 (0201)	0.3 (0.012)	15000	—
BKP1005 (0402)	0.5 (0.020)	10000	—
BKP1608 (0603)	0.8 (0.031)	4000	—
BKP2125 (0805)	0.85 (0.033)	4000	—
MCF0605 (0202)	0.3 (0.012)	15000	—
MCF0806 (0302)	0.4 (0.016)	—	10000
MCF1210 (0504)	0.55 (0.022)	—	5000
MCF2010 (0804)	0.45 (0.018)	—	4000

②Taping material

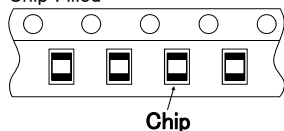
● Card board carrier tape



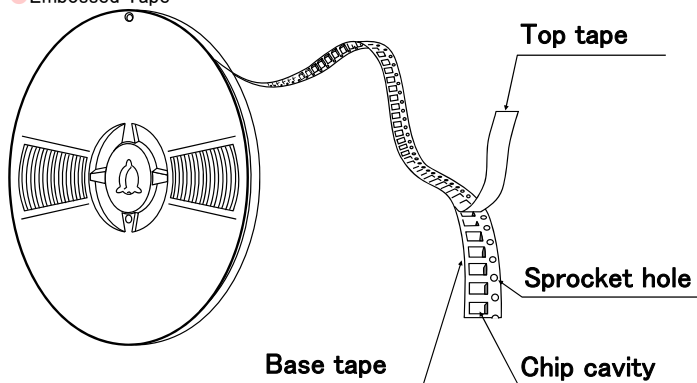
CK	1608
CKP	1608
CK	2125
CKS	2125
LK	1005
LK	1608
LK	2125
HK	0402
HK	0603
HK	1005
HK	1608
HKQ	0402
HKQ	0603
AQ	105

BK	0402
BK	0603
BK	1005
BK	1608
BK	2125
BK	2010
BKP	0603
BKP	1005
BKP	1608
BKP	2125
BKH	0603
BKH	1005
MCF	0605

Chip Filled



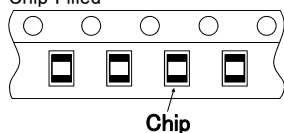
● Embossed Tape



CK	2125
CKS	2125
CKP	2012
CKP	2016
CKP	2520
NM	2012
NM	2520
LK	2125
HKQ	0402
HK	2125

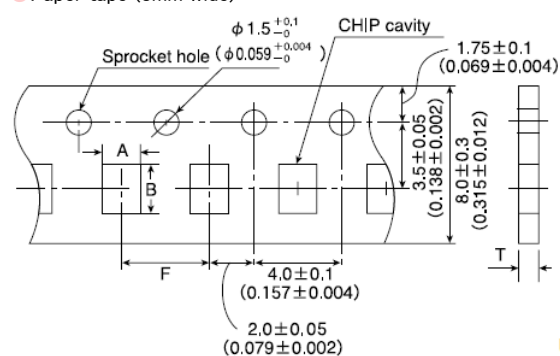
BK	2125
BK	3216
MCF	0806
MCF	1210
MCF	2010

Chip Filled



③Taping Dimensions

● Paper tape (8mm wide)

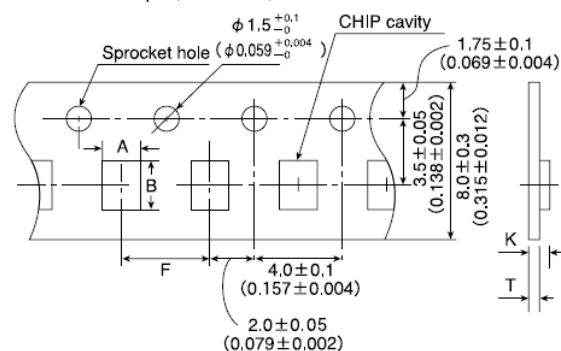


Unit : mm (inch)

Type	Thickness mm (inch)	Chip cavity		Insertion Pitch	Tape Thickness
		A	B	F	T
CK1608 (0603)	0.8 (0.031)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
CK2125 (0805)	0.85 (0.033)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
CKS2125 (0805)	0.85 (0.033)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
CKP1608 (0603)	0.8 (0.031)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
LK1005 (0402)	0.5 (0.020)	0.65±0.1 (0.026±0.004)	1.15±0.1 (0.045±0.004)	2.0±0.05 (0.079±0.002)	0.8max (0.031max)
LK1608 (0603)	0.8 (0.031)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
LK2125 (0805)	0.85 (0.033)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
HK0402 (01005)	0.2 (0.008)	0.25±0.04 (0.010±0.002)	0.45±0.04 (0.018±0.002)	2.0±0.05 (0.079±0.002)	0.36max (0.014max)
HK0603 (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
HK1005 (0402)	0.5 (0.020)	0.65±0.1 (0.026±0.004)	1.15±0.1 (0.045±0.004)	2.0±0.05 (0.079±0.002)	0.8max (0.031max)
HK1608 (0603)	0.8 (0.031)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
HKQ0402 (01005)	0.2 (0.008)	0.25±0.04 (0.010±0.002)	0.45±0.04 (0.018±0.002)	2.0±0.05 (0.079±0.002)	0.36max (0.014max)
HKQ0603W (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
HKQ0603C (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
HKQ0603S (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
HKQ0603U (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
AQ105 (0402)	0.5 (0.020)	0.75±0.1 (0.030±0.004)	1.15±0.1 (0.045±0.004)	2.0±0.05 (0.079±0.002)	0.8max (0.031max)
BK0402 (01005)	0.2 (0.008)	0.25±0.04 (0.010±0.002)	0.45±0.04 (0.018±0.002)	2.0±0.05 (0.079±0.002)	0.36max (0.014max)
BK0603 (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
BK1005 (0402)	0.5 (0.020)	0.65±0.1 (0.026±0.004)	1.15±0.1 (0.045±0.004)	2.0±0.05 (0.079±0.002)	0.8max (0.031max)
BK1608 (0603)	0.8 (0.031)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
BK2125 (0805)	0.85 (0.033)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
BK2010 (0804)	0.45 (0.018)	1.2±0.1 (0.047±0.004)	2.17±0.1 (0.085±0.004)	4.0±0.1 (0.157±0.004)	0.8max (0.031max)
BKP0603 (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
BKP1005 (0402)	0.5 (0.020)	0.65±0.1 (0.026±0.004)	1.15±0.1 (0.045±0.004)	2.0±0.05 (0.079±0.002)	0.8max (0.031max)
BKP1608 (0603)	0.8 (0.031)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
BKP2125 (0805)	0.85 (0.033)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.1 (0.157±0.004)	1.1max (0.043max)
BKH0603 (0201)	0.3 (0.012)	0.40±0.06 (0.016±0.002)	0.70±0.06 (0.028±0.002)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)
BKH1005 (0402)	0.5 (0.020)	0.65±0.1 (0.026±0.004)	1.15±0.1 (0.045±0.004)	2.0±0.05 (0.079±0.002)	0.8max (0.031max)
MCF0605 (0202)	0.3 (0.012)	0.62±0.03 (0.024±0.001)	0.77±0.03 (0.030±0.001)	2.0±0.05 (0.079±0.002)	0.45max (0.018max)

Unit : mm (inch)

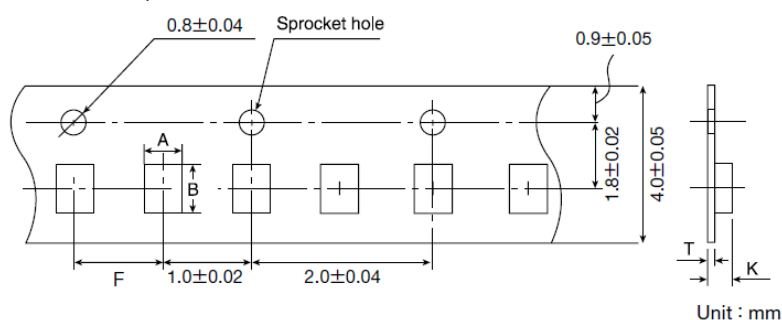
● Embossed Tape (8mm wide)



Type	Thickness mm (inch)	Chip cavity		Insertion Pitch F	Tape Thickness	
		A	B		K	T
CK2125 (0805)	1.25 (0.049)	1.5 ± 0.2 (0.059 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	2.0 (0.079)	0.3 (0.012)
CKS2125 (0805)	1.25 (0.049)	1.5 ± 0.2 (0.059 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	2.0 (0.079)	0.3 (0.012)
CKP2012 (0805)	0.9 (0.035)	1.55 ± 0.2 (0.061 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	1.3 (0.051)	0.3 (0.012)
CKP2016 (0806)	0.9 (0.035)	1.8 ± 0.1 (0.071 ± 0.004)	2.2 ± 0.1 (0.087 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.3 (0.051)	0.25 (0.01)
CKP2520 (1008)	0.7 (0.028)	2.3 ± 0.1 (0.091 ± 0.004)	2.8 ± 0.1 (0.110 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.4 (0.055)	0.3 (0.012)
	0.9 (0.035)				1.4 (0.055)	
	1.1 (0.043)				1.7 (0.067)	
NM2012 (0805)	0.9 (0.035)	1.55 ± 0.2 (0.061 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	1.3 (0.051)	0.3 (0.012)
NM2520 (1008)	0.9 (0.035)	2.3 ± 0.1 (0.091 ± 0.004)	2.8 ± 0.1 (0.110 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.4 (0.055)	0.3 (0.012)
	1.1 (0.043)				1.7 (0.067)	
LK2125 (0805)	1.25 (0.049)	1.5 ± 0.2 (0.059 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	2.0 (0.079)	0.3 (0.012)
HK2125 (0805)	0.85 (0.033)	1.5 ± 0.2 (0.059 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	1.5 (0.059)	0.3 (0.012)
	1.0 (0.039)				2.0 (0.079)	
BK2125 (0805)	1.25 (0.049)	1.5 ± 0.2 (0.059 ± 0.008)	2.3 ± 0.2 (0.091 ± 0.008)	4.0 ± 0.1 (0.157 ± 0.004)	2.0 (0.079)	0.3 (0.012)
BK3216 (1206)	0.8 (0.031)	1.9 ± 0.1 (0.075 ± 0.004)	3.5 ± 0.1 (0.138 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	1.4 (0.055)	0.3 (0.012)
MCF0806 (0302)	0.4 (0.016)	0.75 ± 0.05 (0.030 ± 0.002)	0.95 ± 0.05 (0.037 ± 0.002)	2.0 ± 0.05 (0.079 ± 0.002)	0.55 (0.022)	0.3 (0.012)
MCF1210 (0504)	0.55 (0.022)	1.15 ± 0.05 (0.045 ± 0.002)	1.40 ± 0.05 (0.055 ± 0.002)	4.0 ± 0.1 (0.157 ± 0.004)	0.65 (0.026)	0.3 (0.012)
MCF2010 (0804)	0.45 (0.018)	1.1 ± 0.1 (0.043 ± 0.004)	2.3 ± 0.1 (0.091 ± 0.004)	4.0 ± 0.1 (0.157 ± 0.004)	0.85 (0.033)	0.3 (0.012)

Unit : mm (inch)

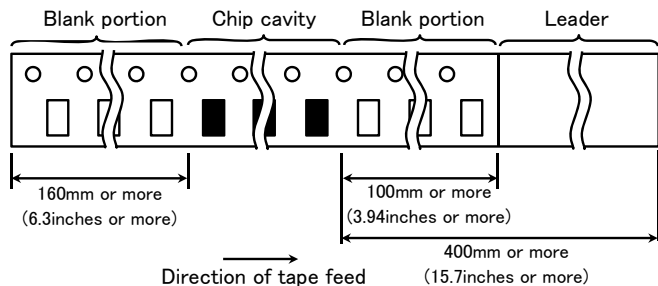
● Embossed Tape (4mm wide)



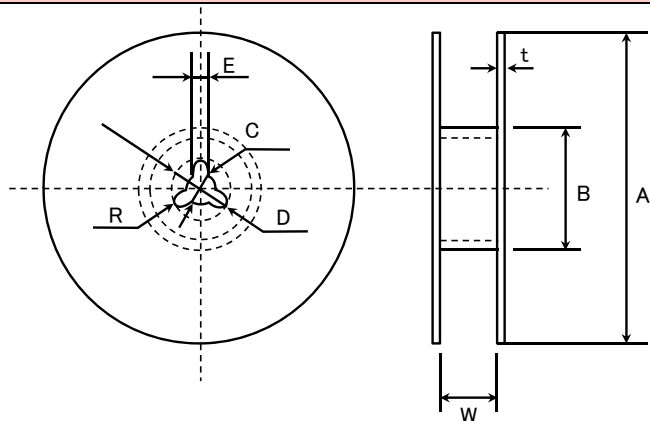
Type	Thickness mm (inch)	Chip cavity		Insertion Pitch F	Tape Thickness	
		A	B		K	T
HKQ0402 (01005)	0.2 (0.008)	0.23	0.43	1.0 ± 0.02	0.5max.	0.25max.

Unit : mm

④ LEADER AND BLANK PORTION



⑤ Reel Size



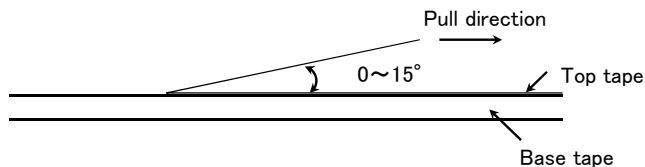
A	B	C	D	E	R
$\phi 178 \pm 2.0$	$\phi 50$ or more	$\phi 13.0 \pm 0.2$	$\phi 21.0 \pm 0.8$	2.0 ± 0.5	1.0

	t	W
4mm width tape	1.5max.	5 ± 1.0
8mm width tape	2.5max.	10 ± 1.5

(Unit : mm)

⑥ Top tape strength

The top tape requires a peel-off force of 0.1~0.7N in the direction of the arrow as illustrated below.



Multilayer chip inductors

Multilayer chip inductors for high frequency, Multilayer chip bead inductors

Multilayer common mode choke coils (MC series F type)

RELIABILITY DATA

1. Operating Temperature Range

Specified Value	BK0402	-55~+125°C
	BK0603	
	BK1005	
	BKH0603	
	BKH1005	
	BK1608	
	BK2125	
	ARRAY	
	BK2010	-55~+85°C
	BK3216	
	BKP0603	
	BKP1005	
	BKP1608	
	BKP2125	
	MCF 0605	-40~+85°C
	MCF 0806	
	MCF 1210	
	MCF 2010	
	CK1608	-40~+85°C
	CK2125	
	CKS2125	
	CKP1608	
	CKP2012	
	CKP2016	
	CKP2520	
	NM2012	
	NM2520	
	LK1005	
	LK1608	-55~+125°C
	LK2125	
	HK0402/HKQ0402	
	HK0603	
	HK1005	-40~+85°C
	HK1608	
	HK2125	
	HKQ0603W/HKQ0603C/HKQ0603S/ HKQ0603U/	-55~+125°C
	AQ105	

2. Storage Temperature Range		
Specified Value	BK0402	- 55 ~ + 125°C
	BK0603	
	BK1005	
	BKH0603	
	BKH1005	
	BK1608	
	BK2125	
	ARRAY	
	BK2010	
	BK3216	
	BKP0603	- 55 ~ + 85°C
	BKP1005	
	BKP1608	
	BKP2125	
	MCF 0605	- 40 ~ + 85°C
	MCF 0806	
	MCF 1210	
	MCF 2010	
	CK1608	- 40 ~ + 85°C
	CK2125	
	CKS2125	
	CKP1608	
	CKP2012	
	CKP2016	
	CKP2520	
	NM2012	
	NM2520	
	LK1005	
	LK1608	
	LK2125	
	HK0402/HKQ0402	- 55 ~ + 125°C
	HK0603	
	HK1005	
	HK1608	- 40 ~ + 85°C
	HK2125	
	HKQ0603W/HKQ0603C/HKQ0603S/ HKQ0603U/	- 55 ~ + 125°C
	AQ105	

3. Rated Current

Specified Value	BK0402		150~750mA DC
	BK0603		100~500mA DC
	BK1005		120~1000mA DC
	BKH0603		115~160mA DC
	BKH1005		200~300mA DC
	BK1608		150~1500mA DC
	BK2125		200~1200mA DC
	ARRAY	BK2010	100mA DC
		BK3216	100~200mA DC
	BKP0603		0.8~1.8A DC
	BKP1005		0.8~2.4A DC
	BKP1608		1.0~3.0A DC
	BKP2125		1.5~4.0A DC
	MCF 0605		0.05A DC
	MCF 0806		0.1~0.13A DC
	MCF 1210		0.1A DC
	MCF 2010		0.1A DC
	CK1608		50~60mA DC
	CK2125		60~500mA DC
	CKS2125		110~280mA DC
	CKP1608		0.35~0.9A DC
	CKP2012		0.7~1.2A DC
	CKP2016		0.9~1.6A DC
	CKP2520		1.1~1.8A DC
	NM2012		1.0~1.2A DC
	NM2520		0.9~1.2A DC
	LK1005		20~25mA DC
	LK1608		1~150mA DC
	LK2125		5~300mA DC
	HK0402		160~380mA DC
	HK0603		60~470mA DC
	HK1005		110~300mA DC (-55~+125°C) 200~900mA DC (-55~+85°C)
	HK1608		150~300mA DC
	HK2125		300mA DC
	HKQ0402		90~500mA DC
	HKQ0603W		100~850mA DC
	HKQ0603C		160~850mA DC
	HKQ0603S		130~600mA DC
	HKQ0603U		190~900mA DC
	AQ105		280~710mA DC

Definition of rated current:

- In the CK, CKS and BK Series, the rated current is the value of current at which the temperature of the element is increased within 20°C.
- In the BK Series P type and CK Series P type, NM Series the rated current is the value of current at which the temperature of the element is increased within 40°C.
- In the LK, HK, HKQ, and AQ Series, the rated current is either the DC value at which the internal L value is decreased within 5% with the application of DC bias, or the value of current at which the temperature of the element is increased within 20°C.

4. Impedance			
Specified Value	BK0402		10～180 Ω ±5 Ω (10 Ω), ±25%(Other)
	BK0603		10～600 Ω ±25%
	BK1005		10～1800 Ω ±25%
	BKH0603		600～1500 Ω ±25%
	BKH1005		600～1800 Ω ±25%
	BK1608		22～2500 Ω ±25%
	BK2125		15～2500 Ω ±25%
	ARRAY	BK2010	5～1000 Ω ±25%
		BK3216	60～1000 Ω ±25%
	BKP0603		10～120 Ω ±5 Ω (10 Ω), ±25%(Other)
	BKP1005		10～330 Ω ±5 Ω (EM100), ±25%(Other)
	BKP1608		33～470 Ω ±25%
	BKP2125		33～330 Ω ±25%
	MCF 0605		12～90 Ω ±5 Ω (12 Ω), ±20%(35 Ω), ±25%(Other)
	MCF 0806		12～90 Ω ±5 Ω (12 Ω), ±20%(Other)
	MCF 1210		40～90 Ω ±25%
	MCF 2010		90 Ω ±25%
	CK1608		—
	CK2125		
	CKS2125		
	CKP1608		
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005		
	LK1608		
	LK2125		
HK0402/HKQ0402			
HK0603			
HK1005			
HK1608			
HK2125			
HKQ0603W/HKQ0603C/HKQ0603S/ HKQ0603U			
AQ105			
Test Methods and Remarks	BK0402Series Measuring frequency : 100±1MHz Measuring equipment : E4991A (or its equivalent) Measuring jig : 16197A (or its equivalent)		
	BK0603Series, BKP0603Series Measuring frequency : 100±1MHz Measuring equipment : 4291A (or its equivalent) Measuring jig : 16193A (or its equivalent)		
	BK1005Series, BKP1005Series ,BKH1005Series Measuring frequency : 100±1MHz Measuring equipment : 4291A (or its equivalent) Measuring jig : 16192A (or its equivalent), 16193A (or its equivalent)		
	BK1608・2125Series, BKP1608・2125Series Measuring frequency : 100±1MHz Measuring equipment : 4291A (or its equivalent), 4195A (or its equivalent) Measuring jig : 16092A (or its equivalent) or 16192A (or its equivalent)/HW		
	BK2010・3216Series, MCFSeries Measuring frequency : 100±1MHz Measuring equipment : 4291A (or its equivalent), 4195A (or its equivalent) Measuring jig : 16192A (or its equivalent)		

5. Inductance		
Specified Value	BK0402	
	BK0603	
	BK1005	
	BKH0603	
	BKH1005	
	BK1608	
	BK2125	
	ARRAY	BK2010 BK3216
	BKP0603	
	BKP1005	
	BKP1608	
	BKP2125	
	MCF 0605	
	MCF 0806	
	MCF 1210	
	MCF 2010	
	CK1608	4.7~10.0 μ H: $\pm$ 20%
	CK2125	0.1~10.0 μ H: $\pm$ 20%
	CKS2125	1.0~10.0 μ H: $\pm$ 20%
	CKP1608	0.33~2.2 μ H: $\pm$ 20%
	CKP2012	0.47~4.7 μ H: $\pm$ 20%
	CKP2016	0.47~4.7 μ H: $\pm$ 20%
	CKP2520	0.47~4.7 μ H: $\pm$ 20%
	NM2012	0.82~1.0 μ H: $\pm$ 20%
	NM2520	1.0~2.2 μ H: $\pm$ 20%
	LK1005	0.12~2.2 μ H: $\pm$ 10 or 20%
	LK1608	0.047~33.0 μ H: $\pm$ 20% 0.10~12.0 μ H: $\pm$ 10%
	LK2125	0.047~33.0 μ H: $\pm$ 20% 0.10~12.0 μ H: $\pm$ 10%
	HK0402	1.0~5.6nH: $\pm$ 0.3nH 6.8~12nH: $\pm$ 5%
	HK0603	1.0~6.2nH: $\pm$ 0.3nH 6.8~100nH: $\pm$ 5%
	HK1005	1.0~6.2nH: $\pm$ 0.3nH 6.8~270nH: $\pm$ 5%
	HK1608	1.0~5.6nH: $\pm$ 0.3nH 6.8~470nH: $\pm$ 5%
	HK2125	1.5~5.6nH: $\pm$ 0.3nH 6.8~470nH: $\pm$ 5%
	HKQ0402	0.5~3.9nH: $\pm$ 0.1 or 0.2 or 0.3nH 4.3~5.6nH: $\pm$ 0.3nH or 3% 6.2~27nH: $\pm$ 3 or 5%
	HKQ0603W	0.6~3.9nH: $\pm$ 0.1 or 0.2 or 0.3nH 4.3~6.2nH: $\pm$ 0.2 or 0.3nH or 3 or 5% 6.8~100nH: $\pm$ 3 or 5%
	HKQ0603C	0.6~3.9nH: $\pm$ 0.1 or 0.2 or 0.3nH 4.3~6.2nH: $\pm$ 0.2 or 0.3nH 6.8~22nH: $\pm$ 3 or 5%
	HKQ0603S	0.6~6.2nH: $\pm$ 0.2 or 0.3nH 6.8~22nH: $\pm$ 3 or 5%
	HKQ0603U	0.6~4.2nH: $\pm$ 0.1 or 0.2 or 0.3nH 4.3~6.5nH: $\pm$ 0.2 or 0.3nH 6.8~22nH: $\pm$ 3 or 5%
	AQ105	1.0~6.2nH: $\pm$ 0.3nH 6.8~15nH: $\pm$ 5%
Test Methods and Remarks	CK、LK、CKP、NM Series	
	Measuring frequency	: 2~4MHz (CK1608)
	Measuring frequency	: 2~25MHz (CK2125)
	Measuring frequency	: 2~10MHz (CKS2125)
	Measuring frequency	: 10~25MHz (LK1005)
	Measuring frequency	: 1~50MHz (LK1608)
	Measuring frequency	: 0.4~50MHz (LK2125)
	Measuring frequency	: 1MHz (CKP1608・CKP2012・CKP2016・CKP2520・NM2012・NM2520)
	Measuring equipment /jig	・4194A+16085B+16092A (or its equivalent) ・4195A+41951+16092A (or its equivalent) ・4294A+16192A (or its equivalent) ・4291A+16193A (or its equivalent) /LK1005 ・4285A+42841A+42842C+42851—61100 (CKP1608・CKP2012・CKP2016・CKP2520・NM2012・NM2520)
	Measuring current	・1mA rms (0.047~4.7 μ H) ・0.1mA rms (5.6~33 μ H)
	HK、HKQ、AQ Series	
	Measuring frequency	: 100MHz (HK0402・HK0603・HK1005・AQ105)
	Measuring frequency	: 50/100MHz (HK1608・HK2125)
	Measuring frequency	: 500MHz (HKQ0603C・HKQ0603S・HKQ0603U)
	Measuring frequency	: 300/500MHz (HKQ0603W)
	Measuring frequency	: 100/500MHz (HKQ0402)
	Measuring equipment /jig	・4291A+16197A (or its equivalent) /HK0603・AQ105 ・4291A+16193A (or its equivalent) /HK1005 ・E4991A+16197A (or its equivalent) /HKQ0603S・HKQ0603U・HKQ0603W・HKQ0603C ・4291A+16092A + in-house made jig (or its equivalent) /HK1608・HK2125 ・E4991A+16196D (or its equivalent) /HK0402・HKQ0402

Specified Value	BK0402	—
	BK0603	
	BK1005	
	BKH0603	
	BKH1005	
	BK1608	
	BK2125	
	ARRAY	
	BK2010	
	BK3216	
	BKP0603	
	BKP1005	
	BKP1608	
	BKP2125	
	MCF 0605	
	MCF 0806	
	MCF 1210	
	MCF 2010	
	CK1608	—
	CK2125	
	CKS2125	
	CKP1608	
	CKP2012	
	CKP2016	
	CKP2520	
	NM2012	
	NM2520	
	LK1005	10~20 min.
	LK1608	10~35 min.
	LK2125	15~50 min.
	HK0402	3 min.
	HK0603	4~5 min.
	HK1005	8 min.
	HK1608	8~12 min.
	HK2125	10~18 min.
	HKQ0402	3~8 min.
	HKQ0603W	6~15 min.
	HKQ0603C	14~15 min.
	HKQ0603S	10~13 min.
	HKQ0603U	14 min.
	AQ105	8 min.
Test Methods and Remarks	LKSeries	
	Measuring frequency	: 10~25MHz (LK1005)
	Measuring frequency	: 1~50MHz (LK1608)
	Measuring frequency	: 0.4~50MHz (LK2125)
	Measuring equipment /jig	• 4194A + 16085B + 16092A (or its equivalent)
		• 4195A + 41951 + 16092A (or its equivalent)
		• 4294A + 16192A (or its equivalent)
		• 4291A + 16193A (or its equivalent) /LK1005
	Measuring current	• 1mA rms (0.047~4.7 μ H)
		• 0.1mA rms (5.6~33 μ H)
	HK、HKQ、AQ Series	
	Measuring frequency	: 100MHz (HK0402・HK0603・HK1005・AQ105)
	Measuring frequency	: 50/100MHz (HK1608・HK2125)
	Measuring frequency	: 500MHz (HKQ0603C・HKQ0603S・HKQ0603U)
	Measuring frequency	: 300/500MHz (HKQ0603W)
	Measuring frequency	: 100/500MHz (HKQ0402)
	Measuring equipment /jig	• 4291A + 16197A (or its equivalent) /HK0603・AQ105
		• 4291A + 16193A (or its equivalent) /HK1005
		• E4991A + 16197A (or its equivalent) /HKQ0603S・HKQ0603U・HKQ0603W・HKQ0603C
		• 4291A + 16092A + in-house made jig (or its equivalent) /HK1608, HK2125
		• E4991A + 16196D (or its equivalent) HK0402・HKQ0402

7. DC Resistance			
Specified Value	BK0402		0.07~0.75 Ω max.
	BK0603		0.065~1.50 Ω max.
	BK1005		0.03~0.90 Ω max.
	BKH0603		1.50~3.20 Ω max.
	BKH1005		0.85~2.00 Ω max.
	BK1608		0.05~1.10 Ω max.
	BK2125		0.05~0.75 Ω max.
	ARRAY	BK2010	0.10~0.90 Ω max.
		BK3216	0.15~0.80 Ω max.
	BKP0603		0.030~0.180 Ω max.
	BKP1005		0.0273~0.220 Ω max.
	BKP1608		0.025~0.18 Ω max.
	BKP2125		0.020~0.075 Ω max.
	MCF 0605		2.5~6.5 Ω max
	MCF 0806		2.5~6.5 Ω max.
	MCF 1210		2.5~4.5 Ω max.
	MCF 2010		4.5 Ω max.
	CK1608		0.45~0.85 Ω (±30%)
	CK2125		0.16~0.65 Ω max.
	CKS2125		0.12~0.52 Ω max.
	CKP1608		0.15~0.35 Ω max.
	CKP2012		0.08~0.28 Ω max.
	CKP2016		0.075~0.20 Ω max
	CKP2520		0.05~0.16 Ω max.
	NM2012		0.10~0.15 Ω max.
	NM2520		0.11~0.22 Ω max.
	LK1005		0.41~1.16 Ω max.
	LK1608		0.2~2.2 Ω max.
	LK2125		0.1~1.1 Ω max.
	HK0402		0.18~0.99 Ω max.
	HK0603		0.11~3.74 Ω max.
	HK1005		0.08~4.8 Ω max.
	HK1608		0.05~2.6 Ω max.
	HK2125		0.10~1.5 Ω max.
	HKQ0402		0.08~2.24 Ω max.
	HKQ0603W		0.07~4.1 Ω max.
	HKQ0603C		0.07~1.6 Ω max.
	HKQ0603S		0.06~1.29 Ω max.
	HKQ0603U		0.06~1.29 Ω max.
	AQ105		0.07~0.45 Ω max.
Test Methods and Remarks	Measuring equipment: VOAC-7412, VOAC-7512, VOAC-7521 (made by Iwasaki Tsushinki)		

8. Self Resonance Frequency (SRF)				
Specified Value	BK0402		—	
	BK0603			
	BK1005			
	BKH0603			
	BKH1005			
	BK1608			
	BK2125			
	ARRAY	BK2010		
		BK3216		
	BKP0603			
	BKP1005			
	BKP1608			
	BKP2125			
	MCF 0605			
	MCF 0806			
	MCF 1210			
	MCF 2010			
	CK1608			17～25MHz min.
	CK2125			24～235MHz min.
	CKS2125			24～75MHz min.
	CKP1608		—	
	CKP2012			
	CKP2016			
	CKP2520			
	NM2012			
	NM2520			
	LK1005		40～180MHz min.	
	LK1608		9～260MHz min.	
	LK2125		13～320MHz min.	
	HK0402		2900～10000MHz min.	
	HK0603		900～10000MHz min.	
	HK1005		400～10000MHz min.	
	HK1608		300～10000MHz min.	
	HK2125		200～4000MHz min.	
HKQ0402		1700～10000MHz min.		
HKQ0603W		800～10000MHz min.		
HKQ0603C		2500～10000MHz min.		
HKQ0603S		1900～10000MHz min.		
HKQ0603U		1900～10000MHz min.		
AQ105		2300～10000MHz min.		
Test Methods and Remarks	LK、CK Series :			
	Measuring equipment	: 4195A (or its equivalent)		
	Measuring jig	: 41951 + 16092A (or its equivalent)		
	HK、HKQ、AQ Series :			
	Measuring equipment	: 8719C (or its equivalent)・8753D (or its equivalent) / HK2125		

9. Temperature Characteristic			
Specified Value	BK0402		—
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY	BK2010	
		BK3216	
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	MCF 0605		
	MCF 0806		
	MCF 1210		
	MCF 2010		
	CK1608		
	CK2125		
	CKS2125		
	CKP1608		
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005		
	LK1608		
	LK2125		
	HK0402		
	HK0603		
	HK1005		
	HK1608		
	HK2125		
	HKQ0402		
	HKQ0603W		
HKQ0603C			
HKQ0603S			
HKQ0603U			
AQ105			
Test Methods and Remarks	HK、HKQ、AQ Series: Temperature range : -30~+85℃ Reference temperature : +20℃		

10. Resistance to Flexure of Substrate

Specified Value	BK0402		No mechanical damage.
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY	BK2010	
		BK3216	
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	MCF 0605		
	MCF 0806		
	MCF 1210		
	MCF 2010		
	CK1608		
	CK2125		
	CKS2125		
	CKP1608		
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005		
	LK1608		
	LK2125		
	HK0402		
	HK0603		
	HK1005		
	HK1608		
	HK2125		
	HKQ0402		
	HKQ0603W		
	HKQ0603C		
	HKQ0603S		
	HKQ0603U		
	AQ105		
Test Methods and Remarks	Warp : 2mm (BK Series without 0402size、BKP、BKH1005、CK、CKS、CKP、NM、LK、HK、HKQ0603S、HKQ0603U、AQ Series、MCF1210)		
	: 1mm (BK0402、BKH0603、HK0402、HKQ0402、HKQ0603W、HKQ0603C Series、MCF Series without 1210 size、)		
	Testing board : glass epoxy-resin substrate		
	Thickness : 0.8mm		
Board 20 R-230 Warp 45 45 Deviation±1 (Unit: mm)			

11. Solderability				
Specified Value	BK0402		At least 75% of terminal electrode is covered by new solder.	
	BK0603			
	BK1005			
	BKH0603			
	BKH1005			
	BK1608			
	BK2125			
	ARRAY	BK2010		
		BK3216		
	BKP0603			
	BKP1005			
	BKP1608			
	BKP2125			
	MCF 0605			
	MCF 0806			
	MCF 1210			
	MCF 2010			
	CK1608			At least 75% of terminal electrode is covered by new solder.
	CK2125			
	CKS2125			
	CKP1608			
	CKP2012			
	CKP2016			
	CKP2520			
	NM2012			
	NM2520			
	LK1005			
	LK1608			
	LK2125			
	HK0402			
	HK0603			
	HK1005			
	HK1608			
	HK2125			
	HKQ0402			
	HKQ0603W			
	HKQ0603C			
	HKQ0603S			
	HKQ0603U			
	AQ105			
Test Methods and Remarks	Solder temperature	: 230±5℃ (JIS Z 3282 H60A or H63A)		
	Solder temperature	: 245±3℃ (Sn/3.0Ag/0.5Cu)		
	Duration	: 4±1 sec.		

12. Resistance to Soldering			
Specified Value	BK0402		Appearance:No significant abnormality Impedance change:Within ±30%
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY	BK2010	
		BK3216	
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	MCF 0605		Appearance:No significant abnormality Impedance change:Within ±20%
	MCF 0806		
	MCF 1210		
	MCF 2010		
	CK1608		No mechanical damage. Remaining terminal electrode:70% min
	CK2125		
	CKS2125		
	CKP1608		Inductance change R10~4R7: Within ±10% 6R8~100: Within ±15% CKS2125 : Within ±20% CKP1608、CKP2012、CKP2016、CKP2520、NM2012、NM2520: Within ±30%
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005		No mechanical damage. Remaining terminal electrode:70% min. Inductance change: Within ±15%
	LK1608		
	LK2125		No mechanical damage. Remaining terminal electrode:70% min. Inductance change 47N~4R7: Within ±10% 5R6~330: Within ±15%
	HK0402		
	HK0603		No mechanical damage. Remaining terminal electrode:70% min. Inductance change: Within ±5%
	HK1005		
	HK1608		
	HK2125		
	HKQ0402		
	HKQ0603W		
HKQ0603C			
HKQ0603S			
HKQ0603U			
AQ105			
Test Methods and Remarks	Solder temperature	:260±5℃	
	Duration	:10±0.5 sec.	
	Preheating temperature	:150 to 180℃	
	Preheating time	:3 min.	
	Flux	:Immersion into methanol solution with colophony for 3 to 5 sec.	
	Recovery	:2 to 3 hrs of recovery under the standard condition after the test.(See Note 1)	

13. Thermal Shock

Specified Value	BK0402		Appearance:No significant abnormality Impedance change: Within ±30%	
	BK0603			
	BK1005			
	BKH0603			
	BKH1005			
	BK1608			
	BK2125			
	ARRAY	BK2010		
		BK3216		
	BKP0603			
	BKP1005			
	BKP1608			
	BKP2125			
	MCF 0605			
	MCF 0806		Appearance:No significant abnormality Impedance change: Within ±20%	
	MCF 1210			
	MCF 2010			
	CK1608			No mechanical damage. Inductance change:Within ±20% Q change:Within ±30%
	CK2125			
	CKS2125			
	CKP1608		Inductance change:Within ±20% (CKS2125)	
	CKP2012			
	CKP2016			
	CKP2520			
	NM2012			
	NM2520			
	LK1005		No mechanical damage. Inductance change: Within ±10% Q change: Within ±30%	
	LK1608			
	LK2125			
	HK0402		No mechanical damage. Inductance change: Within ±10% Q change: Within ±20%	
	HK0603			
	HK1005			
	HK1608			
	HK2125			
	HKQ0402			
	HKQ0603W			
	HKQ0603C			
	HKQ0603S			
	HKQ0603U			
	AQ105			
	Test Methods and Remarks	Conditions for 1 cycle		
Step		temperature(°C)		time(min.)
1		Minimum operating temperature +0/−3		30±3
2		Room temperature	2~3	
3		Maximum operating temperature +3/−0	30±3	
4		Room temperature	2~3	
Number of cycles:5				
Recovery:2 to 3 hrs of recovery under the standard condition after the test.(See Note 1)				
(Note 1) When there are questions concerning measurement result;measurement shall be made after 48±2 hrs of recovery under the standard condition.				

14. Damp Heat (Steady state)					
Specified Value	BK0402		Appearance:No significant abnormality Impedance change: Within ±30%		
	BK0603				
	BK1005				
	BKH0603				
	BKH1005				
	BK1608				
	BK2125				
	ARRAY	BK2010			
		BK3216			
	BKP0603				
	BKP1005				
	BKP1608				
	BKP2125				
	MCF 0605				
	MCF 0806		Appearance:No significant abnormality Impedance change: Within ±20%		
	MCF 1210				
	MCF 2010				
	CK1608			No mechanical damage.	
	CK2125		Inductance change: Within ±20% Q change: Within ±30%		
	CKS2125		Inductance change: Within ±20%		
	CKP1608		No mechanical damage. Inductance change: Within ±30%		
	CKP2012				
	CKP2016				
	CKP2520				
	NM2012				
	NM2520				
	LK1005		No mechanical damage.		
	LK1608		Inductance change: Within ±10% Q change: Within ±30%		
	LK2125		No mechanical damage.		
			Inductance change: Within ±20% Q change: Within ±30%		
	HK0402		No mechanical damage. Inductance change: Within ±10% Q change: Within ±20%		
	HK0603				
	HK1005				
	HK1608				
	HK2125				
	HKQ0402				
	HKQ0603W				
	HKQ0603C				
	HKQ0603S				
	HKQ0603U				
	AQ105				
	Test Methods and Remarks	BK、BKP、BKH Series、MCF Series: Temperature :40±2℃ Humidity :90 to 95%RH Duration :500+24/—0 hrs Recovery :2 to 3 hrs of recovery under the standard condition after the removal from test chamber.(See Note 1)			
		LK、CK、CKS、CKP、NM、HK、HKQ、AQ Series: Temperature :40±2℃(LK、CK、CKS、CKP、NM Series) :60±2℃(HK、HKQ、AQ Series) Humidity :90 to 95%RH Duration :500±12 hrs Recovery :2 to 3 hrs of recovery under the standard condition after the removal from test chamber.(See Note 1)			

15. Loading under Damp Heat

Specified Value	BK0402		Appearance: No significant abnormality Impedance change: Within $\pm 30\%$
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY	BK2010	
		BK3216	
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	CK1608		No mechanical damage.
	CK2125		Inductance change: Within $\pm 20\%$ Q change: Within $\pm 30\%$
	CKS2125		No mechanical damage. Inductance change: Within $\pm 20\%$
	CKP1608		No mechanical damage. Inductance change: Within $\pm 30\%$
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		No mechanical damage. Inductance change: Within $\pm 10\%$ Q change: Within $\pm 30\%$
	LK1005		
	LK1608		No mechanical damage. Inductance change: $0.047 \sim 12.0 \mu\text{H}$: Within $\pm 10\%$ $15.0 \sim 33.0 \mu\text{H}$: Within $\pm 15\%$ Q change: Within $\pm 30\%$
	LK2125		No mechanical damage. Inductance change: Within $\pm 20\%$ Q change: Within $\pm 30\%$
	HK0402		No mechanical damage. Inductance change: Within $\pm 10\%$ Q change: Within $\pm 20\%$
	HK0603		
	HK1005		
	HK1608		
	HK2125		
	HKQ0402		
	HKQ0603W		
	HKQ0603C		
	HKQ0603S		
	HKQ0603U		
	AQ105		

Test Methods and Remarks	BK, BKP, BKH Series:	
	Temperature : $40 \pm 2^\circ\text{C}$ Humidity : 90 to 95%RH Applied current : Rated current Duration : $500 \pm 24 / -0$ hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. (See Note 1)	
	LK, CK, CKS, CKP, NK, HK, HKQ, AQ Series:	
	Temperature : $40 \pm 2^\circ\text{C}$ (LK, CK, CKS, CKP, NM Series) : $60 \pm 2^\circ\text{C}$ (HK, HKQ, AQ Series) Humidity : 90 to 95%RH Applied current : Rated current Duration : 500 ± 12 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. (See Note 1)	

Note on standard condition: "standard condition" referred to herein is defined as follows:

5 to 35°C 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 $20 \pm 2^\circ\text{C}$ of temperature, 60 to 70% relative humidity, and 86 to 106kPa of air pressure.

Unless otherwise specified, all the tests are conducted under the "standard condition."

(Note 1) Measurement shall be made after 48 ± 2 hrs of recovery under the standard condition.

16. Loading at High Temperature			
Specified Value	BK0402		Appearance: No significant abnormality Impedance change: Within ±30%
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY	BK2010	
		BK3216	
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	MCF 0605		
	MCF 0806		Appearance: No significant abnormality Impedance change: Within ±20%
	MCF 1210		
	MCF 2010		
	CK1608		
	CK2125		Inductance change: Within ±20% Q change: Within ±30%
	CKS2125		No mechanical damage. Inductance change: Within ±20%
	CKP1608		No mechanical damage. Inductance change: Within ±30%
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005		No mechanical damage. Inductance change: Within ±10% Q change: Within ±30%
	LK1608		No mechanical damage. Inductance change: 0.047~12.0 μH: Within ±10% 15.0~33.0 μH: Within ±15% Q change: Within ±30%
	LK2125		No mechanical damage. Inductance change: Within ±20% Q change: Within ±30%
	HK0402		No mechanical damage. Inductance change: Within ±10% Q change: Within ±20%
	HK0603		
	HK1005		
HK1608			
HK2125			
HKQ0402			
HKQ0603W			
HKQ0603C			
HKQ0603S			
HKQ0603U			
AQ105			
Test Methods and Remarks	BK, BKH, BKP Series、MCF Series: Temperature : 125±3℃ (BK, BKH Series) : 85±3℃ (BKP, MCF Series) Applied current : Rated current Duration : 500+24/—0 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. (See Note 1)		
	LK, CK, CKS, CKP, NM, HK, HKQ, AQ Series: Temperature : 85±2℃ (LK, CK, CKS, CKP, NM Series) : 85±2℃ (HK1608, 2125) : 85±2℃ (HK1005, AQ105 operating temperature range—55~+85℃) : 125±2℃ (HK0402, HKQ0402, HK0603, HK1005, HKQ0603S, HKQ0603U, HKQ0603W, HKQ0603C, AQ105 operating temperature range—55~+125℃) Applied current : Rated current Duration : 500±12 hrs Recovery : 2 to 3 hrs of recovery under the standard condition after the test. (See Note 1)		
Note on standard condition: “standard condition” referred to herein is 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, 60 to 70% relative humidity, and 86 to 106kPa of air pressure. Unless otherwise specified, all the tests are conducted under the “standard condition.” (Note 1) Measurement shall be made after 48±2 hrs of recovery under the standard condition.			

Precautions on the use of Multilayer chip inductors

Multilayer chip inductors for high frequency, Multilayer chip bead inductors

Multilayer common mode choke coils(MC series F type)

PRECAUTIONS

1. Circuit Design	
Precautions	◆Verification of operating environment, electrical rating and performance 1. A malfunction in medical equipment, spacecraft, nuclear reactors, etc. may cause serious harm to human life or have severe social ramifications. As such, any inductors to be used in such equipment may require higher safety and/or reliability considerations and should be clearly differentiated from components used in general purpose applications. ◆Operating Current (Verification of Rated current) 1. The operating current for inductors must always be lower than their rated values. 2. Do not apply current in excess of the rated value because the inductance may be reduced due to the magnetic saturation effect.

2. PCB Design	
Precautions	◆Pattern configurations (Design of Land-patterns) 1. When inductors are mounted on a PCB, the size of land patterns and the amount of solder used (size of fillet) can directly affect inductor performance. Therefore, the following items must be carefully considered in the design of solder land patterns: (1) The amount of solder applied can affect the ability of chips to withstand mechanical stresses which may lead to breaking or cracking. Therefore, when designing land-patterns it is necessary to consider the appropriate size and configuration of the solder pads which in turn determines the amount of solder necessary to form the fillets. (2) When more than one part is jointly soldered onto the same land or pad, the pad must be designed so that each component's soldering point is separated by solder-resist. (3) The larger size of land patterns and amount of solder, the smaller Q value after mounting on PCB. It makes higher the Q value to design land patterns smaller than terminal electrode of chips. ◆Pattern configurations (Inductor layout on panelized[breakaway] PC boards) 1. After inductors have been mounted on the boards, chips can be subjected to mechanical stresses in subsequent manufacturing processes (PCB cutting, board inspection, mounting of additional parts, assembly into the chassis, wave soldering the reflow soldered boards etc.) For this reason, planning pattern configurations and the position of SMD inductors should be carefully performed to minimize stress.

◆Pattern configurations (Design of Land-patterns)

1. The following diagrams and tables show some examples of recommended patterns to prevent excessive solder amounts (larger fillets which extend above the component end terminations). Examples of improper pattern designs are also shown.

(1) Recommended land dimensions for a typical chip inductor land patterns for PCBs

The diagram illustrates the recommended land dimensions for wave-soldering a chip inductor. It consists of two views: a side view and a top view. The side view shows a chip inductor (a rectangle) mounted on a PCB. The land pattern is shown as a shaded area. Dimensions are labeled: C is the height of the land pattern, B is the distance from the component end to the land edge, A is the land width, and B is the distance from the land edge to the component end. The top view shows the land pattern as a rectangle with dimensions L (length) and W (width). Labels include 'Chip inductor', 'Land pattern', 'Solder-resist', and 'Chip inductor'.

Recommended land dimensions for wave-soldering (Unit: mm)

Type	1608	2012	2125	2016	2520	3216
Size	L	1.6	2.0	2.0	2.5	3.2
	W	0.8	1.25	1.25	1.6	2.0
A	0.8~1.0	1.0~1.4	1.0~1.4	1.0~1.4	1.0~1.4	1.8~2.5
B	0.5~0.8	0.8~1.5	0.8~1.5	0.8~1.5	0.6~1.0	0.8~1.7
C	0.6~0.8	0.9~1.2	0.9~1.2	1.3~1.6	1.6~2.0	1.2~1.6

Recommended land dimensions for reflow-soldering (Unit: mm)

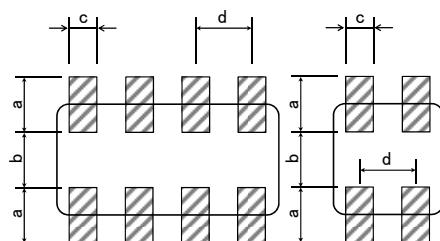
Type	0402	0603	1005	105	1608	2012
Size	L	0.4	0.6	1.0	1.0	1.6
	W	0.2	0.3	0.5	0.6	0.8
A	0.15~0.25	0.20~0.30	0.45~0.55	0.50~0.55	0.8~1.0	0.8~1.2
B	0.10~0.20	0.20~0.30	0.40~0.50	0.30~0.40	0.6~0.8	0.8~1.2
C	0.15~0.30	0.25~0.40	0.45~0.55	0.60~0.70	0.6~0.8	0.9~1.6

Type	2125	2016	2520	3216
Size	L	2.0	2.5	3.2
	W	1.25	1.6	2.0
A	0.8~1.2	0.8~1.2	1.0~1.4	1.8~2.5
B	0.8~1.2	0.8~1.2	0.6~1.0	0.6~1.5
C	0.9~1.6	1.2~2.0	1.8~2.2	1.2~2.0

Technical
considerations

► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>) .

Excess solder can affect the ability of chips to withstand mechanical stresses. Therefore, please take proper precautions when designing land-patterns.



Recommended land dimension for Reflow-soldering

Type		3216	2010	1210	0806	0605
Size	L	3.2	2.0	1.25	0.85	0.65
	W	1.6	1.0	1.0	0.65	0.50
a		0.7~0.9	0.5~0.6	0.45~0.55	0.25~0.35	0.27~0.33
b		0.8~1.0	0.5~0.6	0.7~0.8	0.25~0.35	0.17~0.23
c		0.4~0.5	0.2~0.3	0.25~0.35	0.25~0.35	0.20~0.26
d		0.8	0.5	0.55	0.5	0.4

(Unit: mm)

((2) Examples of good and bad solder application

Item	Not recommended	Recommended
Mixed mounting of SMD and leaded components	Lead wire of component 	Solder-resist
Component placement close to the chassis	Chassis Solder (for grounding) Electrode pattern 	Solder-resist
Hand-soldering of leaded components near mounted components	Lead wire of component Soldering iron 	Solder-resist
Horizontal component placement		Solder-resist

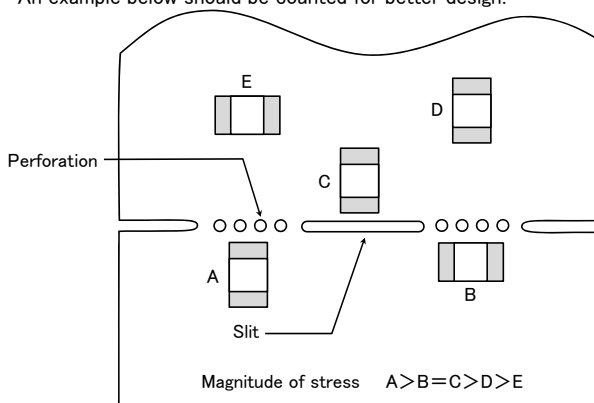
◆Pattern configurations (Inductor layout on panelized[breakaway] PC boards)

1-1. The following are examples of good and bad inductor layout; SMD inductors should be located to minimize any possible mechanical stresses from board warp or deflection.

Item	Not recommended	Recommended
Deflection of the board		 Position the component at a right angle to the direction of the mechanical stresses that are anticipated.

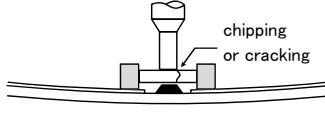
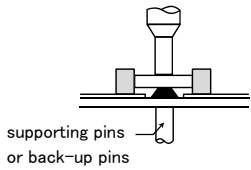
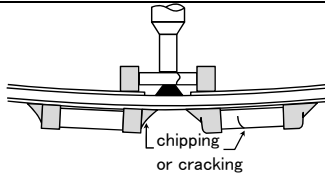
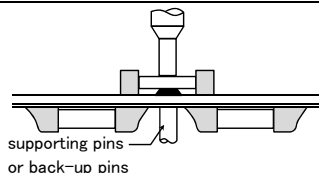
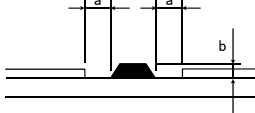
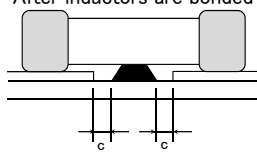
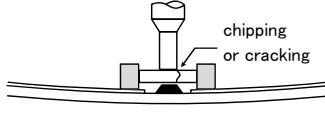
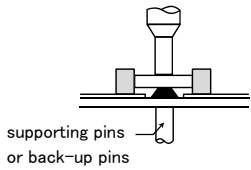
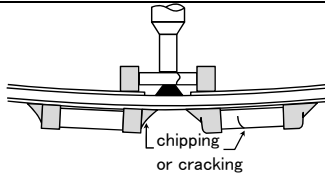
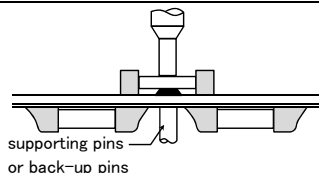
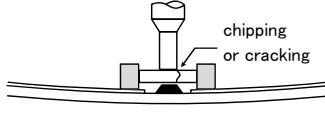
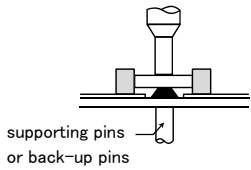
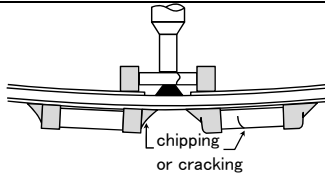
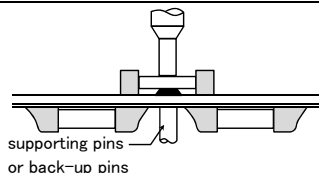
1-2. To layout the inductors for the breakaway PC board, it should be noted that the amount of mechanical stresses given will vary depending on inductor layout.

An example below should be counted for better design.



1-3. When breaking PC boards along their perforations, the amount of mechanical stress on the inductors can vary according to the method used. The following methods are listed in order from least stressful to most stressful: push-back, slit, V-grooving, and perforation. Thus, any ideal SMD inductor layout must also consider the PCB splitting procedure.

3. Considerations for automatic placement

Precautions	◆Adjustment of mounting machine - Excessive impact load should not be imposed on the inductors when mounting onto the PC boards. - The maintenance and inspection of the mounter should be conducted periodically. ◆Selection of Adhesives - Mounting inductors with adhesives in preliminary assembly, before the soldering stage, may lead to degraded inductor characteristics unless the following factors are appropriately checked; the size of land patterns, type of adhesive, amount applied, hardening temperature and hardening period. Therefore, it is imperative to consult the manufacturer of the adhesives on proper usage and amounts of adhesive to use.																	
Technical considerations	◆Adjustment of mounting machine - If the lower limit of the pick-up nozzle is low, too much force may be imposed on the inductors, causing damage. To avoid this, the following points should be considered before lowering the pick-up nozzle: - The lower limit of the pick-up nozzle should be adjusted to the surface level of the PC board after correcting for deflection of the board. - The pick-up pressure should be adjusted between 1 and 3N static loads. - To reduce the amount of deflection of the board caused by impact of the pick-up nozzle, supporting pins or back-up pins should be used under the PC board. The following diagrams show some typical examples of good pick-up nozzle placement: <table><tr><th>Item</th><th>Improper method</th><th>Proper method</th></tr><tr><td>Single-sided mounting</td><td></td><td></td></tr><tr><td>Double-sided mounting</td><td></td><td></td></tr></table> - As the alignment pin wears out, adjustment of the nozzle height can cause chipping or cracking of the inductors because of mechanical impact on the inductors. To avoid this, the monitoring of the width between the alignment pin in the stopped position, and maintenance, inspection and replacement of the pin should be conducted periodically. ◆Selection of Adhesives - Some adhesives may cause reduced insulation resistance. The difference between the shrinkage percentage of the adhesive and that of the inductors may result in stresses on the inductors and lead to cracking. Moreover, too little or too much adhesive applied to the board may adversely affect component placement, so the following precautions should be noted in the application of adhesives. - Required adhesive characteristics - The adhesive should be strong enough to hold parts on the board during the mounting & solder process. - The adhesive should have sufficient strength at high temperatures. - The adhesive should have good coating and thickness consistency. - The adhesive should be used during its prescribed shelf life. - The adhesive should harden rapidly. - The adhesive must not be contaminated. - The adhesive should have excellent insulation characteristics. - The adhesive should not be toxic and have no emission of toxic gasses. - When using adhesives to mount inductors on a PCB, inappropriate amounts of adhesive on the board may adversely affect component placement. Too little adhesive may cause the inductors to fall off the board during the solder process. Too much adhesive may cause defective soldering due excessive flow of adhesive on to the land or solder pad. [Recommended conditions] <table><tr><th>Figure</th><th>0805 case sizes as examples</th></tr><tr><td>a</td><td>0.3mm min</td></tr><tr><td>b</td><td>100~120 μm</td></tr><tr><td>c</td><td>Area with no adhesive</td></tr></table> Amount of adhesives  After inductors are bonded 	Item	Improper method	Proper method	Single-sided mounting			Double-sided mounting			Figure	0805 case sizes as examples	a	0.3mm min	b	100~120 μm	c	Area with no adhesive
Item	Improper method	Proper method																
Single-sided mounting																		
Double-sided mounting																		
Figure	0805 case sizes as examples																	
a	0.3mm min																	
b	100~120 μm																	
c	Area with no adhesive																	

4. Soldering

Precautions	◆Selection of Flux - Since flux may have a significant effect on the performance of inductors, it is necessary to verify the following conditions prior to use; - Flux used should be with less than or equal to 0.1 wt% (Chlorine conversion method) of halogenated content. Flux having a strong acidity content should not be applied. - When soldering inductors on the board, the amount of flux applied should be controlled at the optimum level. - When using water-soluble flux, special care should be taken to properly clean the boards. ◆Soldering - Temperature, time, amount of solder, etc. are specified in accordance with the following recommended conditions, and please contact us about peak temperature when you use lead-free paste.
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◆ Selection of Flux

- 1-1. When too much halogenated substance (Chlorine, etc.) content is used to activate the flux, or highly acidic flux is used, an excessive amount of residue after soldering may lead to corrosion of the terminal electrodes or degradation of insulation resistance on the surface of the Inductor.
- 1-2. Flux is used to increase solderability in flow soldering, but if too much is applied, a large amount of flux gas may be emitted and may detrimentally affect solderability. To minimize the amount of flux applied, it is recommended to use a flux-bubbling system.
- 1-3. Since the residue of water-soluble flux is easily dissolved by water content in the air, the residue on the surface of Inductor in high humidity conditions may cause a degradation of insulation resistance and therefore affect the reliability of the components. The cleaning methods and the capability of the machines used should also be considered carefully when selecting water-soluble flux.

◆ Soldering

1-1. Preheating when soldering

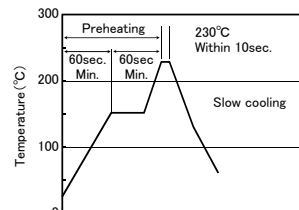
Heating: Chip inductor components should be preheated to within 100 to 130°C of the soldering. Cooling: The temperature difference between the components and cleaning process should not be greater than 100°C.

Chip inductors are susceptible to thermal shock when exposed to rapid or concentrated heating or rapid cooling. Therefore, the soldering process must be conducted with a great care so as to prevent malfunction of the components due to excessive thermal shock.

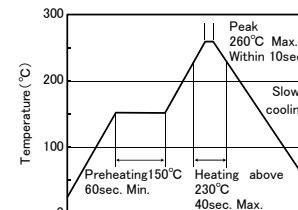
Recommended conditions for soldering

[Reflow soldering]

Temperature profile



Pb free soldering

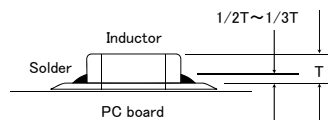


※Ceramic chip components should be preheated to within 100 to 130°C of the soldering.

※Assured to be reflow soldering for 2 times.

Caution

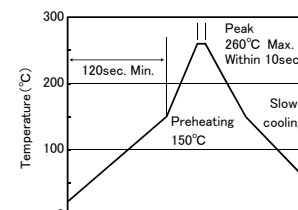
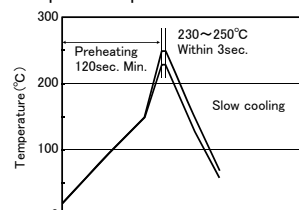
1. The ideal condition is to have solder mass (fillet) controlled to 1/2 to 1/3 of the thickness of the inductor, as shown below:



2. Because excessive dwell times can detrimentally affect solderability, soldering duration should be kept as close to recommended times as possible.

[Wave soldering]

Temperature profile



※Ceramic chip components should be preheated to within 100 to 130°C of the soldering.

※Assured to be wave soldering for 1 time.

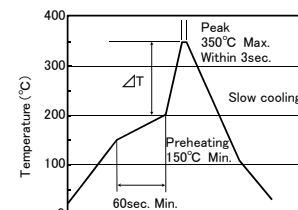
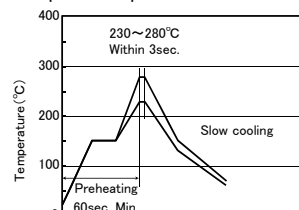
※Except for reflow soldering type.

Caution

1. Make sure the inductors are preheated sufficiently.
2. The temperature difference between the inductor and melted solder should not be greater than 100 to 130°C.
3. Cooling after soldering should be as gradual as possible.
4. Wave soldering must not be applied to the inductors designated as for reflow soldering only.

[Hand soldering]

Temperature profile



(※ $\Delta T \leq 190^\circ\text{C}$ (3216 Type max), $\Delta T \leq 130^\circ\text{C}$ (3225 Type min)

※It is recommended to use 20W soldering iron and the tip is 1 φ or less.

※The soldering iron should not directly touch the components.

※Assured to be soldering iron for 1 time.

Note: The above profiles are the maximum allowable soldering condition, therefore these profiles are not always recommended.

Technical
considerations

	Caution 1. Use a 20W soldering iron with a maximum tip diameter of 1.0 mm. 2. The soldering iron should not directly touch the inductor.						
5. Cleaning							
Precautions	◆Cleaning conditions 1. When cleaning the PC board after the Inductors are all mounted, select the appropriate cleaning solution according to the type of flux used and purpose of the cleaning (e.g. to remove soldering flux or other materials from the production process.) 2. Cleaning conditions should be determined after verifying, through a test run, that the cleaning process does not affect the inductor's characteristics.						
Technical considerations	◆Cleaning conditions 1. The use of inappropriate solutions can cause foreign substances such as flux residue to adhere to the inductor, resulting in a degradation of the inductor's electrical properties (especially insulation resistance). 2. Inappropriate cleaning conditions (insufficient or excessive cleaning) may detrimentally affect the performance of the inductors. (1) Excessive cleaning a. In the case of ultrasonic cleaning, too much power output can cause excessive vibration of the PC board which may lead to the cracking of the inductor or the soldered portion, or decrease the terminal electrodes' strength. Thus the following conditions should be carefully checked; <table> <tr> <td>Ultrasonic output</td><td>Below 20W/l</td></tr> <tr> <td>Ultrasonic frequency</td><td>Below 40kHz</td></tr> <tr> <td>Ultrasonic washing period</td><td>5 min. or less</td></tr> </table>	Ultrasonic output	Below 20W/l	Ultrasonic frequency	Below 40kHz	Ultrasonic washing period	5 min. or less
Ultrasonic output	Below 20W/l						
Ultrasonic frequency	Below 40kHz						
Ultrasonic washing period	5 min. or less						
6. Post cleaning processes							
Precautions	◆Application of resin coatings, moldings, etc. to the PCB and components. 1. With some type of resins a decomposition gas or chemical reaction vapor may remain inside the resin during the hardening period or while left under normal storage conditions resulting in the deterioration of the inductor's performance. 2. When a resin's hardening temperature is higher than the inductor's operating temperature, the stresses generated by the excess heat may lead to inductor damage or destruction. 3. Stress caused by a resin's temperature generated expansion and contraction may damage inductors. The use of such resins, molding materials etc. is not recommended.						
7. Handling							
Precautions	◆Breakaway PC boards (splitting along perforations) 1. When splitting the PC board after mounting inductors and other components, care is required so as 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. ◆General handling precautions 1. Always wear static control bands to protect against ESD. 2. Keep the inductors away from all magnets and magnetic objects. 3. Use non-magnetic tweezers when handling inductors. 4. Any devices used with the inductors (soldering irons, measuring instruments) should be properly grounded. 5. Keep bare hands and metal products (i.e., metal desk) away from chip electrodes or conductive areas that lead to chip electrodes. 6. Keep inductors away from items that generate magnetic fields such as speakers or coils. ◆Mechanical considerations 1. Be careful not to subject the inductors to excessive mechanical shocks. (1) If inductors are dropped on the floor or a hard surface they should not be used. (2) When handling the mounted boards, be careful that the mounted components do not come in contact with or bump against other boards or components.						
8. Storage conditions							
Precautions	◆Storage 1. To maintain the solderability of terminal electrodes and to keep the packaging material in good condition, care must be taken to control temperature and humidity in the storage area. Humidity should especially be kept as low as possible. Recommended conditions Ambient temperature Below 40°C Humidity Below 70% RH The ambient temperature must be kept below 30°C. Even under ideal storage conditions inductor electrode solderability decreases as time passes, so inductors should be used within 6 months from the time of delivery. *The packaging material should be kept where no chlorine or sulfur exists in the air.						
Technical considerations	◆Storage 1. If the parts are stocked in a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/package materials may take place. For this reason, components should be used within 6 months from the time of delivery. If exceeding the above period, please check solderability before using the inductors.						

电源用片状磁珠电感器 (FB 系列M 型)



波峰焊

回流焊

■ 型号标示法

※使用温度范围: -40~+125℃ (包含产品本身发热)

F	B	△	M	J	3	2	1	6	H	S	8	0	0	—	T	△
①			②	③		④			⑤		⑥			⑦	⑧	⑨

△=空格

①类型

代码	类型
FB	铁氧体磁珠电感器

②外型

代码	外型
M	矩形

③特性

代码	特性
J	标准品
H	高阻抗品

④尺寸(L×W)

代码	外型 (inch)	尺寸 (L×W) [mm]
1608	1608 (0603)	1.6 × 0.8
2125	2125 (0805)	2.0 × 1.25
2012	2012 (0805)	
2016	2016 (0806)	
3216	3216 (1206)	3.2 × 1.6
3225	3225 (1210)	3.2 × 2.5
4516	4516 (1806)	4.5 × 1.6
4525	4525 (1810)	4.5 × 2.5
4532	4532 (1812)	4.5 × 3.2

⑤材料

代码	材料
HS	材料不同时, 阻抗值也有所变化。
HM	
HL	

⑥标称阻抗值

代码 (例)	标称阻抗值 [Ω]
330	33
111	110
132	1300

⑦阻抗值公差

代码	公差
—	±25%
N	±30%

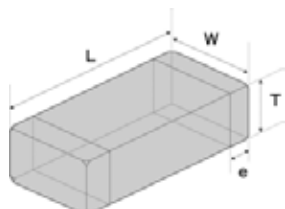
⑧包装

代码	包装
T	卷盘带装

⑨本公司管理记号

代码	本公司管理记号
△	标准品

■ 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。



Type	A	B	C
FB MJ1608	1.0	1.0	1.0
FB MJ2125	1.4	1.2	1.65
FB MJ3216	1.4	2.2	2.0
FB MJ4516	1.75	3.5	2.0
FB MH1608	1.0	1.0	1.0
FB MH2012	1.4	1.2	1.65
FB MH2016	1.4	1.2	2.0
FB MH3216	1.4	2.2	2.0
FB MH3225	1.4	2.2	2.9
FB MH4516	1.75	3.5	2.0
FB MH4525	1.75	3.5	2.9
FB MH4532	1.75	3.5	3.7

单位: mm

Type	L	W	T	e	标准数量 [pcs]	
					纸带	压纹带
FB MJ1608 (0603)	1.6 ± 0.2 (0.063 ± 0.008)	0.8 ± 0.2 (0.031 ± 0.008)	0.8 ± 0.2 (0.031 ± 0.008)	0.3 ± 0.2 (0.012 ± 0.008)	4000	—
FB MJ2125 (0805)	2.0 ± 0.2 (0.079 ± 0.008)	1.25 ± 0.2 (0.049 ± 0.008)	0.85 ± 0.2 (0.033 ± 0.008)	0.5 ± 0.3 (0.020 ± 0.012)	4000	—
FB MJ3216 (1206)	3.2 ± 0.3 (0.126 ± 0.012)	1.6 ± 0.2 (0.063 ± 0.008)	1.1 ± 0.2 (0.043 ± 0.008)	0.5 ± 0.3 (0.020 ± 0.012)	—	2000
FB MJ4516 (1806)	4.5 ± 0.3 (0.177 ± 0.012)	1.6 ± 0.2 (0.063 ± 0.008)	1.1 ± 0.2 (0.043 ± 0.008)	0.5 ± 0.3 (0.020 ± 0.012)	—	2000
FB MH1608 (0603)	1.6 ± 0.1 (0.063 ± 0.004)	0.8 ± 0.1 (0.031 ± 0.004)	0.8 ± 0.1 (0.031 ± 0.004)	0.3 ± 0.15 (0.012 ± 0.006)	4000	—
FB MH2012 (0805)	2.0 ± 0.2 (0.079 ± 0.008)	1.25 ± 0.2 (0.049 ± 0.008)	0.85 ± 0.2 (0.033 ± 0.008)	0.5 ± 0.3 (0.020 ± 0.012)	4000	—
FB MH2016 (0806)	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 ± 0.3 (0.020 ± 0.012)	—	2000
FB MH3216 (1206)	3.2 ± 0.3 (0.126 ± 0.012)	1.6 ± 0.2 (0.063 ± 0.008)	1.6 ± 0.2 (0.063 ± 0.008)	0.5 ± 0.3 (0.020 ± 0.012)	—	2000
FB MH3225 (1210)	3.2 ± 0.3 (0.126 ± 0.012)	2.5 ± 0.3 (0.098 ± 0.012)	2.5 ± 0.3 (0.098 ± 0.012)	0.5 ± 0.3 (0.020 ± 0.012)	—	1000
FB MH4516 (1806)	4.5 ± 0.3 (0.177 ± 0.012)	1.6 ± 0.2 (0.063 ± 0.008)	1.6 ± 0.2 (0.063 ± 0.008)	0.5 ± 0.3 (0.020 ± 0.012)	—	2000
FB MH4525 (1810)	4.5 ± 0.4 (0.177 ± 0.016)	2.5 ± 0.3 (0.098 ± 0.012)	2.5 ± 0.3 (0.098 ± 0.012)	0.9 ± 0.6 (0.035 ± 0.024)	—	1000
FB MH4532 (1812)	4.5 ± 0.4 (0.177 ± 0.016)	3.2 ± 0.3 (0.126 ± 0.012)	3.2 ± 0.3 (0.126 ± 0.012)	0.9 ± 0.6 (0.035 ± 0.024)	—	2000

单位: mm (inch)

▶ 本产品目录根据版面大小, 仅记载了代表性产品规格, 若考虑使用本公司产品时, 请确认供货规格型号明细表中的详细规格。
有关各商品的详细信息 (特性图、可靠性信息、使用时的注意事项等), 请参阅本公司网站 (<http://www.ty-top.com/>)。

标准品

●FB MJ1608

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MJ1608HS280NT	RoHS	28	±30%	100	0.007	4.0	0.8 ±0.2
FB MJ1608HM230NT	RoHS	23	±30%	100	0.007	4.0	0.8 ±0.2

●FB MJ2125

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MJ2125HS250NT	RoHS	25	±30%	100	0.004	6.0	0.85 ±0.2
FB MJ2125HS420-T	RoHS	42	±25%	100	0.008	4.0	0.85 ±0.2
FB MJ2125HM210NT	RoHS	21	±30%	100	0.004	6.0	0.85 ±0.2
FB MJ2125HM330-T	RoHS	33	±25%	100	0.008	4.0	0.85 ±0.2
FB MJ2125HL8R0NT	RoHS	8	±30%	100	0.008	4.0	0.85 ±0.2

●FB MJ3216

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MJ3216HS480NT	RoHS	48	±30%	100	0.005	6.0	1.1 ±0.2
FB MJ3216HS800-T	RoHS	80	±25%	100	0.010	4.0	1.1 ±0.2
FB MJ3216HM380NT	RoHS	38	±30%	100	0.005	6.0	1.1 ±0.2
FB MJ3216HM600-T	RoHS	60	±25%	100	0.010	4.0	1.1 ±0.2
FB MJ3216HL160NT	RoHS	16	±30%	100	0.012	4.0	1.1 ±0.2

●FB MJ4516

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MJ4516HS720NT	RoHS	72	±30%	100	0.007	6.0	1.1 ±0.2
FB MJ4516HS111-T	RoHS	110	±25%	100	0.014	4.0	1.1 ±0.2
FB MJ4516HM560NT	RoHS	56	±30%	100	0.007	6.0	1.1 ±0.2
FB MJ4516HM900-T	RoHS	90	±25%	100	0.014	4.0	1.1 ±0.2
FB MJ4516HL230NT	RoHS	23	±30%	100	0.014	3.5	1.1 ±0.2

高阻抗品

●FB MH1608

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH1608HM470-T	RoHS	47	±25%	100	0.020	3.5	0.8 ±0.1
FB MH1608HM600-T	RoHS	60	±25%	100	0.025	3.0	0.8 ±0.1
FB MH1608HM101-T	RoHS	100	±25%	100	0.035	2.5	0.8 ±0.1
FB MH1608HM151-T	RoHS	150	±25%	100	0.050	2.1	0.8 ±0.1
FB MH1608HM221-T	RoHS	220	±25%	100	0.070	1.8	0.8 ±0.1
FB MH1608HM331-T	RoHS	330	±25%	100	0.130	1.2	0.8 ±0.1
FB MH1608HM471-T	RoHS	470	±25%	100	0.150	1.0	0.8 ±0.1
FB MH1608HM601-T	RoHS	600	±25%	100	0.170	0.9	0.8 ±0.1
FB MH1608HM102-T	RoHS	1000	±25%	100	0.350	0.6	0.8 ±0.1
FB MH1608HL300-T	RoHS	30	±25%	100	0.028	2.6	0.8 ±0.1
FB MH1608HL600-T	RoHS	60	±25%	100	0.045	2.1	0.8 ±0.1
FB MH1608HL121-T	RoHS	120	±25%	100	0.130	1.2	0.8 ±0.1
FB MH1608HL221-T	RoHS	220	±25%	100	0.170	0.9	0.8 ±0.1
FB MH1608HL331-T	RoHS	330	±25%	100	0.210	0.8	0.8 ±0.1
FB MH1608HL471-T	RoHS	470	±25%	100	0.350	0.6	0.8 ±0.1
FB MH1608HL601-T	RoHS	600	±25%	100	0.450	0.5	0.8 ±0.1

●FB MH2012

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH2012HM800-T	RoHS	80	±25%	100	0.025	2.7	0.85 ±0.2
FB MH2012HM121-T	RoHS	120	±25%	100	0.032	2.5	0.85 ±0.2
FB MH2012HM221-T	RoHS	220	±25%	100	0.060	2.0	0.85 ±0.2
FB MH2012HM331-T	RoHS	330	±25%	100	0.080	1.8	0.85 ±0.2

●FB MH2016

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH2016HM121NT	RoHS	120	±30%	100	0.015	4.5	1.6 ±0.2
FB MH2016HM251NT	RoHS	250	±30%	100	0.050	2.0	1.6 ±0.2

●FB MH3216

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH3216HM221NT	RoHS	220	±30%	100	0.020	4.0	1.6 ±0.2
FB MH3216HM501NT	RoHS	500	±30%	100	0.070	2.0	1.6 ±0.2

●FB MH3225

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH3225HM601NT	RoHS	600	±30%	100	0.042	3.0	2.5 ±0.3
FB MH3225HM102NT	RoHS	1000	±30%	100	0.100	2.0	2.5 ±0.3
FB MH3225HM202NT	RoHS	2000	±30%	100	0.130	1.2	2.5 ±0.3

■ 型号一览

● FB MH4516

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH4516HM851NT	RoHS	850	±30%	100	0.100	1.5	1.6 ±0.2

● FB MH4525

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH4525HM102NT	RoHS	1000	±30%	100	0.060	3.0	2.5 ±0.3
FB MH4525HM162NT	RoHS	1600	±30%	100	0.130	2.0	2.5 ±0.3

● FB MH4532

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MH4532HM681-T	RoHS	680	±25%	100	0.028	4.0	3.2 ±0.3
FB MH4532HM132-T	RoHS	1300	±25%	100	0.060	3.0	3.2 ±0.3
FB MH4532HM202-T	RoHS	2000	±25%	100	0.130	1.3	3.2 ±0.3

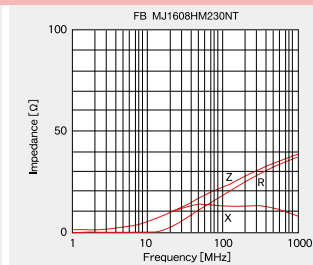
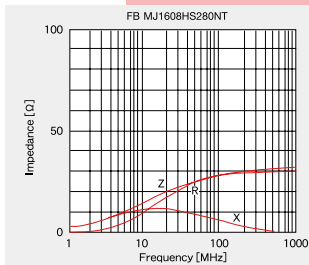
● 大电流型

型号	EHS	阻抗值 (Ω)	阻抗值公差	测试频率 [MHz]	直流电阻 [Ω] (max.)	额定电流 [A] (max.)	厚度 [mm]
FB MJ1608HS220NTR	RoHS	22	±30%	100	0.004	7.5	0.8 ±0.2
FB MJ1608HS280NTR	RoHS	28	±30%	100	0.006	6.0	0.8 ±0.2
FB MJ1608HM180NTR	RoHS	18	±30%	100	0.004	7.5	0.8 ±0.2
FB MJ1608HM230NTR	RoHS	23	±30%	100	0.006	6.0	0.8 ±0.2

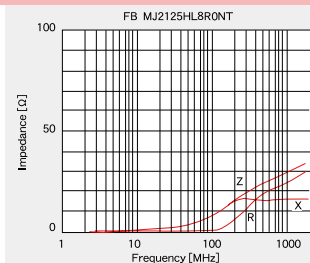
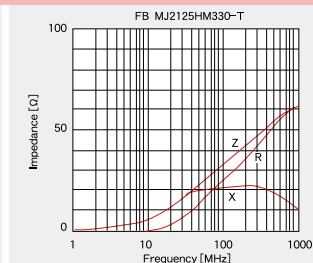
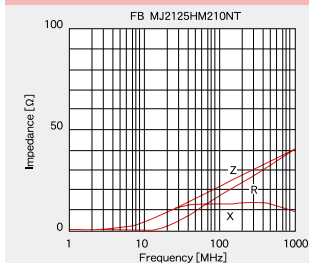
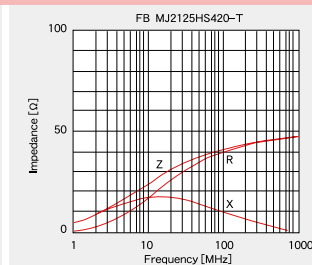
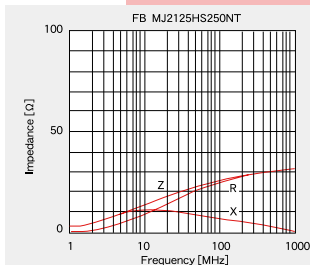
► 本产品目录根据版面大小，仅记载了代表性产品规格，若考虑使用本公司产品时，请确认供货规格型号明细表中的详细规格。
有关各商品的详细信息(特性图、可靠性信息、使用时的注意事项等)，请参阅本公司网站(<http://www.ty-top.com/>)。

■ 特性图

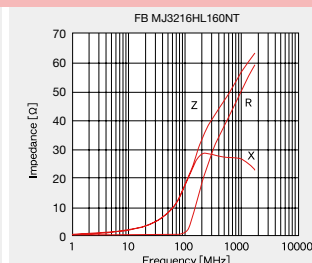
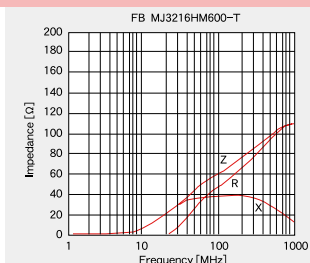
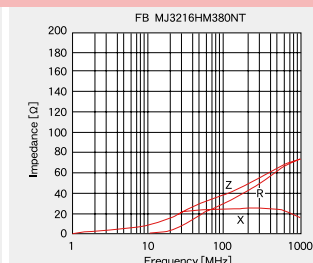
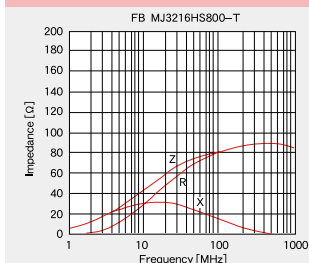
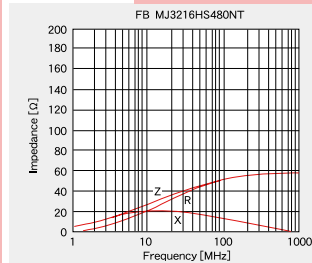
■ FB MJ1608



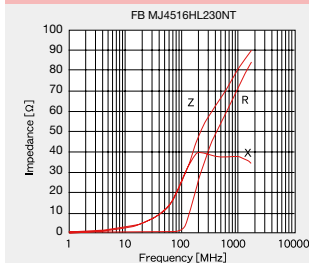
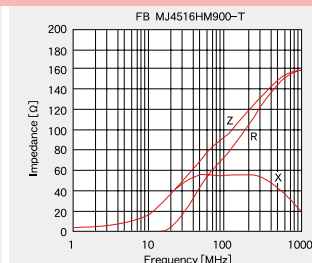
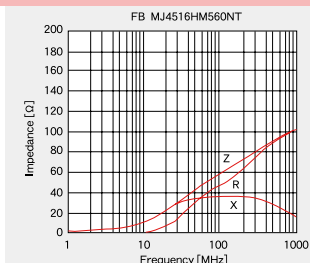
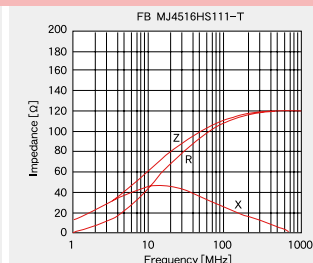
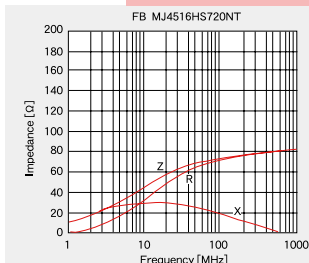
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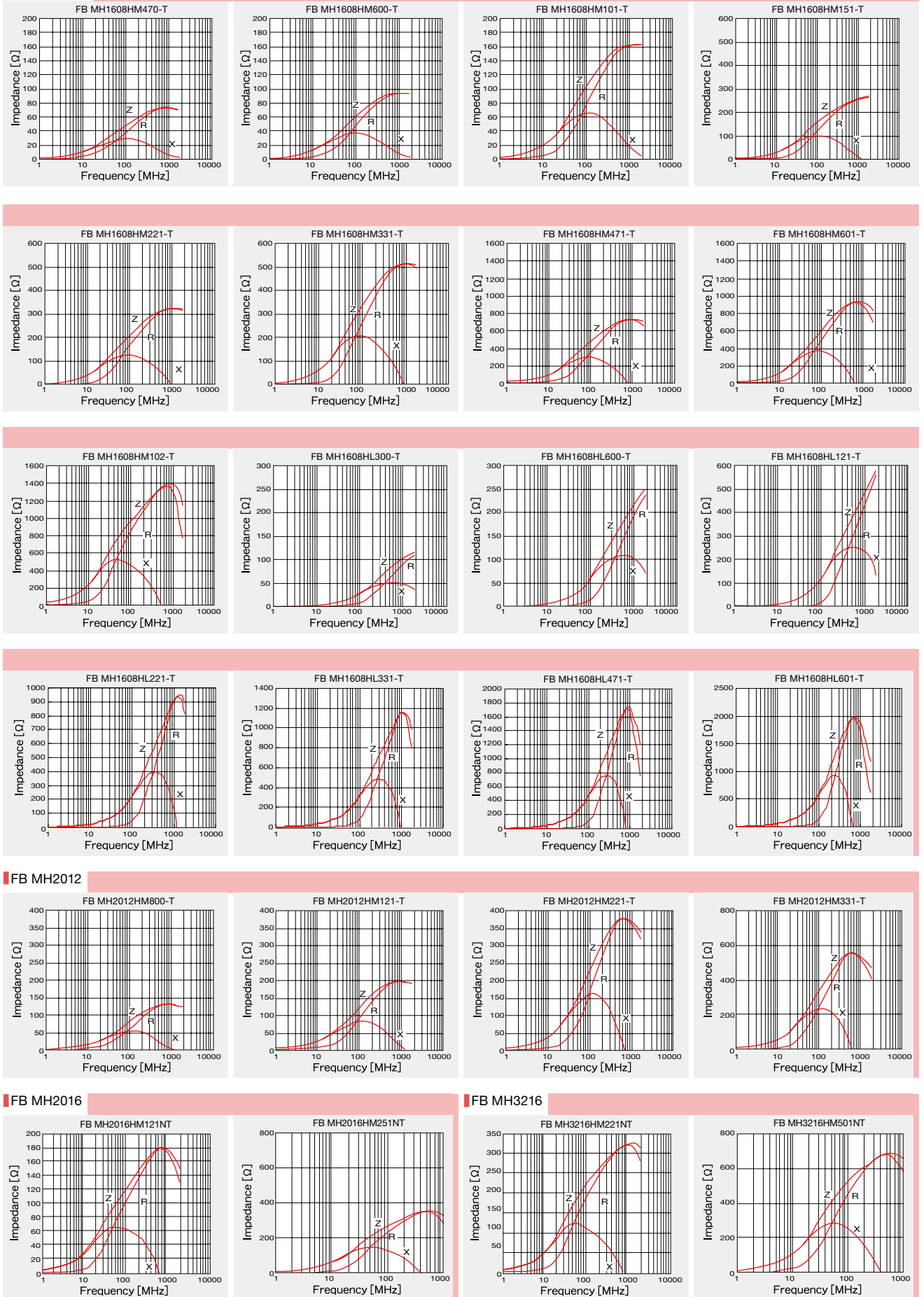
■ FB MJ3216



■ FB MJ4516



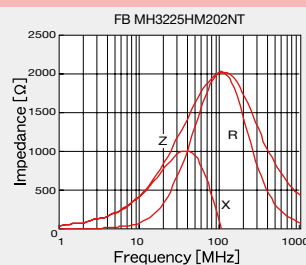
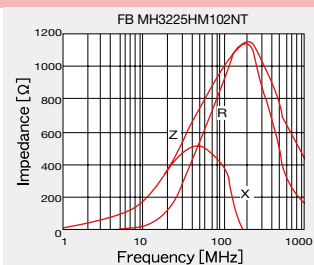
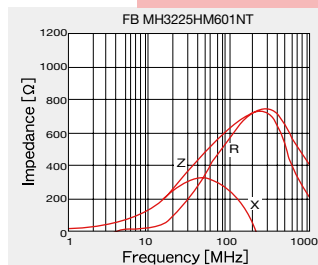
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有关商品的详细信息(特性图、可靠性信息、使用时的注意事项等)，请参阅本公司网站(<http://www.ty-top.com/>)。



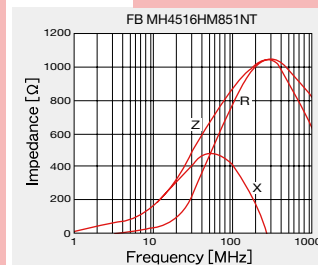
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高阻抗品

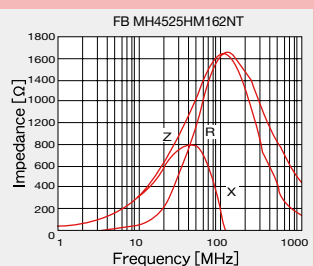
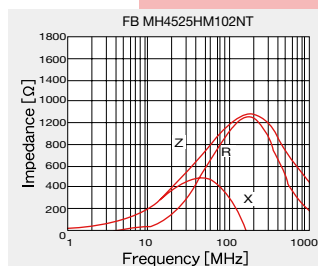
■ FB MH3225



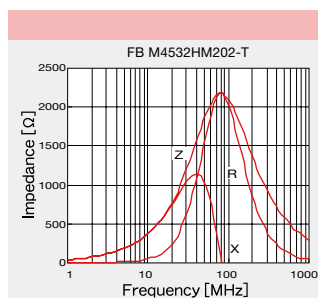
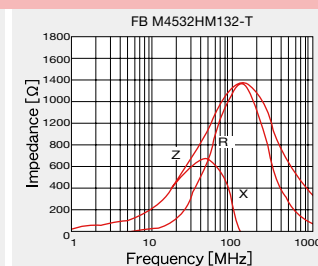
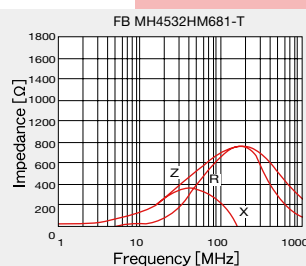
■ FB MH4516



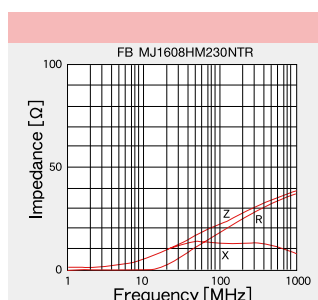
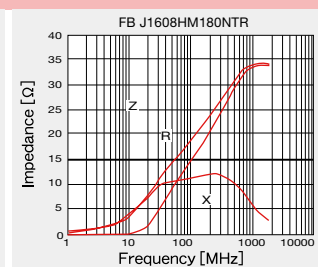
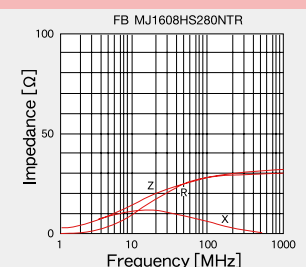
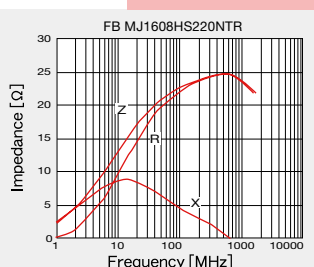
■ FB MH4525



■ FB MH4532



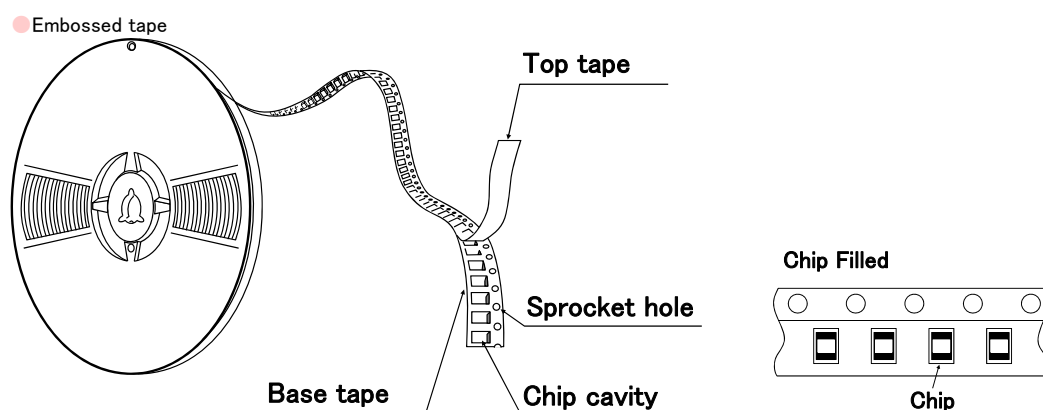
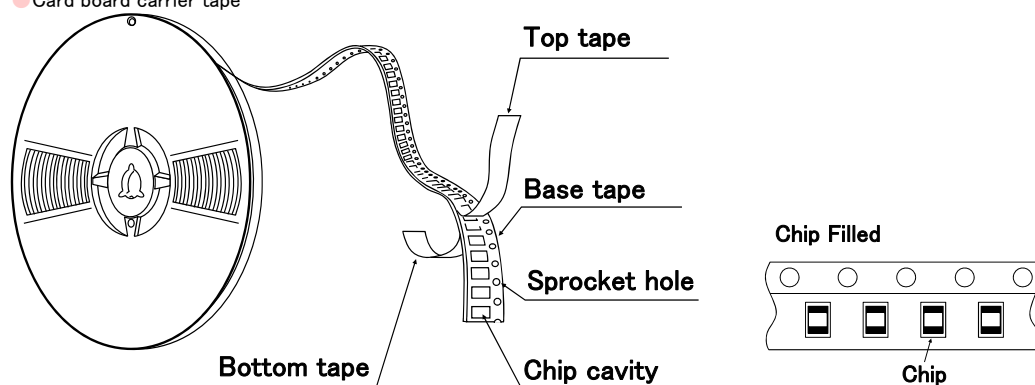
■ 大电流型



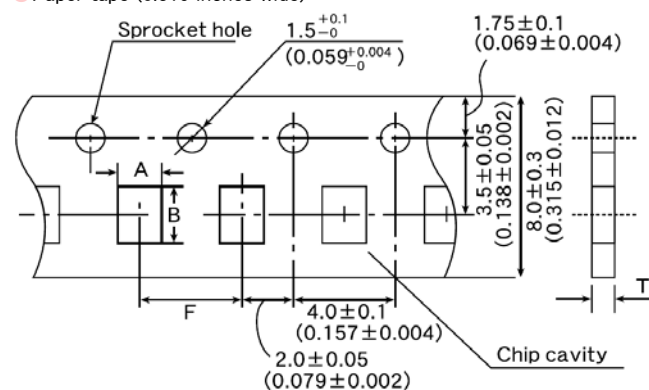
■ PACKAGING

Type	Standard Quantity[pcs]	
	Paper Tape	Embossed Tape
1608(0603)	4000	—
2125(0805)	4000	—
2012(0805)	4000	—
2016(0806)	—	2000
3216(1206)	—	2000
3225(1210)	—	1000
4516(1806)	—	2000
4525(1810)	—	1000
4532(1812)	—	2000

- Card board carrier tape



- Paper tape (0.315 inches wide)

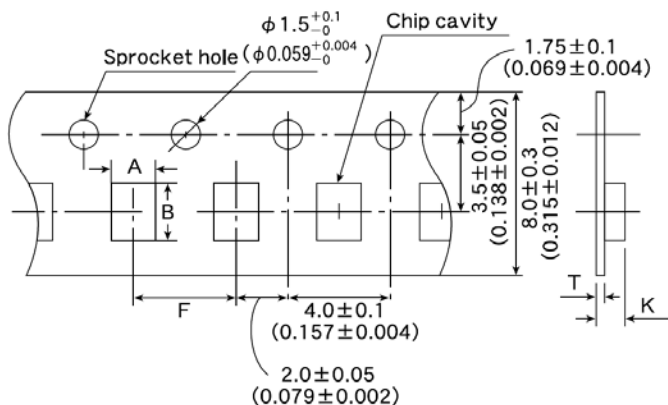


chipbeads_pack_e-E02R01

Type	Chip Cavity		Insertion Pitch	Tape Thickness
	A	B	F	T
FBMJ1608 FBMH1608 (0603)	1.0±0.2 (0.039±0.008)	1.8±0.2 (0.071±0.008)	4.0±0.2 (0.157±0.008)	1.1max (0.043max)
FBMJ2125 FBMH2012 (0805)	1.5±0.2 (0.059±0.008)	2.3±0.2 (0.091±0.008)	4.0±0.2 (0.157±0.008)	1.1max (0.043max)

Unit : mm (inch)

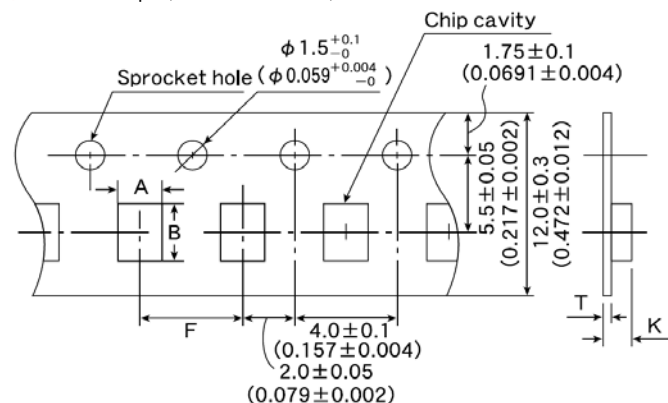
● Embossed tape (0.315 inches wide)



Type	Chip Cavity		Insertion Pitch	Tape Thickness	
	A	B	F	K	T
FBMH2016 (0806)	1.8±0.2 (0.071±0.008)	2.2±0.2 (0.087±0.008)	4.0±0.2 (0.157±0.008)	2.6max (0.102max)	0.6max (0.024max)
FBMJ3216 (1206)	1.9±0.2 (0.075±0.008)	3.5±0.2 (0.138±0.008)	4.0±0.2 (0.157±0.008)	1.5max (0.059max)	0.3max (0.012max)
FBMH3216 (1206)	1.9±0.2 (0.075±0.008)	3.5±0.2 (0.138±0.008)	4.0±0.2 (0.157±0.008)	2.6max (0.102max)	0.6max (0.024max)
FBMH3225 (1210)	2.8±0.2 (0.110±0.008)	3.5±0.2 (0.138±0.008)	4.0±0.2 (0.157±0.008)	4.0max (0.157max)	0.6max (0.024max)

Unit : mm (inch)

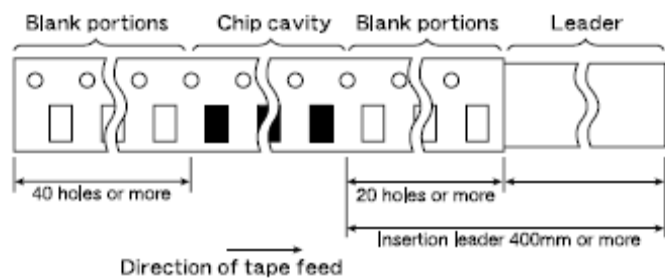
● Embossed tape (0.472 inches wide)



Type	Chip Cavity		Insertion Pitch	Tape Thickness	
	A	B	F	K	T
FBMJ4516 (1806)	1.9±0.2 (0.075±0.008)	4.9±0.2 (0.193±0.008)	4.0±0.2 (0.157±0.008)	1.5max (0.059max)	0.3max (0.012max)
FBMH4516 (1806)	1.9±0.2 (0.075±0.008)	4.9±0.2 (0.193±0.008)	4.0±0.2 (0.157±0.008)	2.6max (0.102max)	0.6max (0.024max)
FBMH4525 (1810)	2.9±0.2 (0.114±0.008)	4.9±0.2 (0.193±0.008)	4.0±0.2 (0.157±0.008)	4.0max (0.157max)	0.6max (0.024max)
FBMH4532 (1812)	3.6±0.2 (0.142±0.008)	4.9±0.2 (0.193±0.008)	8.0±0.2 (0.315±0.008)	4.0max (0.157max)	0.6max (0.024max)

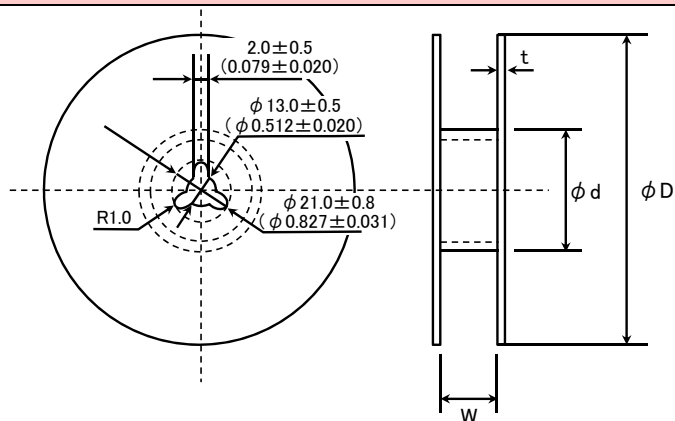
Unit : mm (inch)

④Leader and Blank portion



Insertion leader is 400 mm or more (including 20 empty cavities)
Empty cavities at end of reel: 40 holes or more

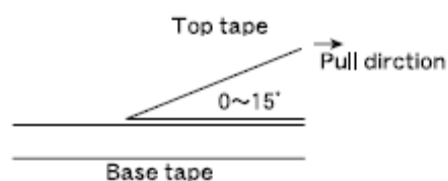
⑤Reel size



Type	ϕ D	ϕ d	W	t
FBMJ1608	$180+0/-3$ ($7.09+0/-0.118$)	$60+1/-0$ ($2.36+0.039/-0$)	10.0 ± 1.5 (0.394 ± 0.059)	2.5max (0.098max)
FBMJ2125			14.0 ± 1.5 (0.551 ± 0.059)	
FBMJ3216				
FBMJ4516			10.0 ± 1.5 (0.394 ± 0.059)	
FBMH1608				
FBMH2012			14.0 ± 1.5 (0.551 ± 0.059)	
FBMH2016				
FBMH3216			14.0 ± 1.5 (0.551 ± 0.059)	
FBMH3225				
FBMH4516				
FBMH4525				
FBMH4532	330 ± 2.0 (12.99 ± 0.080)	100 ± 1.0 (3.94 ± 0.039)	14.0 ± 2.0 (0.551 ± 0.080)	3.0max (1.181max)

Unit : mm (inch)

⑥Top tape strength



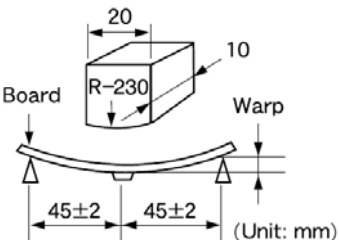
The top tape requires a peel-off force of 0.1 to 0.7N in the direction of the arrow as illustrated below.

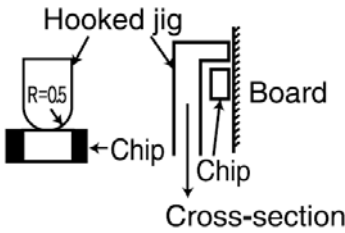
CHIP BEAD INDUCTORS FOR POWER LINE (FB SERIES M TYPE)

RELIABILITY DATA

1. Operating Temperature Range		
Specified Value	−40℃～+125℃ Including self-generated heat	
2. Storage Temperature Range		
Specified Value	−40℃～+85℃	
Test Methods and Remarks	*Note: −5 to +40℃ in taped packaging	
3. Impedance		
Specified Value	Within the specified tolerance	
Test Methods and Remarks	Measuring equipment : Impedance analyzer (HP4291A) or its equivalent Measuring frequency : 100±1 MHz	
4. DC Resistance		
Specified Value	Within the specified range	
Test Methods and Remarks	Four-terminal method Measuring equipment : Milliohm High-Tester 3226 (Hioki Denki) or its equivalent	
5. Rated Current		
Specified Value	Within the specified range	
6. Vibration		
Specified Value	Appearance : No significant abnormality Impedance change : Within ±30% of the initial value	
Test Methods and Remarks	According to JIS C 0040. Vibration type : A Time : 2 hrs each in X,Y, and Z directions Total: 6 hrs Frequency range : 10 to 55 to 10Hz (/min.) Amplitude : 1.5 mm (shall not exceed acceleration 196m/s ²) Mounting method : Soldering onto PC board	
7. Solderability		
Specified Value	90% or more of immersed surface of terminal electrode shall be covered with fresh solder.	
Test Methods and Remarks	Solder temperature : 230±5℃ Immersion time : 4±1 sec. Preconditioning : Immersion into flux. Immersion and Removal speed : 25mm/sec.	
8. Resistance to Soldering Heat		
Specified Value	Appearance : No significant abnormality Impedance change : Within ±30% of the initial value	
Test Methods and Remarks	Preheating : 150℃ for 3 min. Resistance to Soldering Heat : 260±5℃ Duration : 10±0.5 sec. Preconditioning : Immersion into flux. Immersion and Removal speed : 25mm/sec. Recovery : 2 to 3 hrs of recovery under the standard condition after the test.	

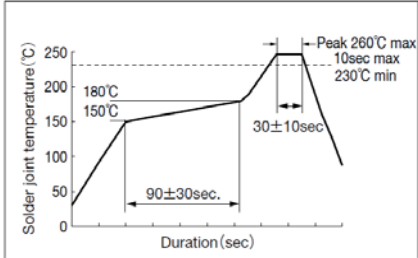
► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification.
For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

9. Thermal Shock		
Specified Value	Appearance	: No significant abnormality
	Impedance change	: Within +50/−10% of the initial value
Test Methods and Remarks	According to JIS C 0025.	
	Conditions for 1 cycle	
	Step	Temperature (°C) Duration (min.)
	1	−40±3°C 30±3
	2	Room Temperature Within 3
	3	85±2°C 30±3
	4	Room Temperature Within 3
	Number of cycles	: 100
	Mounting method	: Soldering onto PC board
	Recovery	: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.
10. Resistance to Humidity (steady state)		
Specified Value	Appearances	: No significant abnormality
	Impedance change	: Within ±30% of the initial value
Test Methods and Remarks	Temperature	: 40±2°C
	Humidity	: 90 to 95% RH
	Duration	: 500+24/−0
	Mounting method	: Soldering onto PC board
	Recovery	: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.
11. Loading under Damp Heat		
Specified Value	Appearance	No significant abnormality
	Impedance change	Within ±30% of the initial value
Test Methods and Remarks	Temperature	: 40±2°C
	Humidity	: 90 to 95%RH
	Applied current	: Rated current
	Duration	: 500+24/−0 hrs
	Mounting method	: Soldering onto PC board
	Recovery	: 2 to 3hrs of recovery under the standard condition after the removal from test chamber.
12. High Temperature Loading Test		
Specified Value	Appearance	: No significant abnormality
	Impedance change	: Within ±30% of the initial value
Test Methods and Remarks	Temperature	: 85±2°C
	Duration	: 500+24/−0 hrs
	Applied current	: Rated current
	Mounting method	: Soldering onto PC board
	Recovery	: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber.
13. Bending Strength		
Specified Value	Appearance : No mechanical damage.	
Test Methods and Remarks	Warp	: 2mm
	Testing board	: Glass epoxy-resin substrate
	Thickness	: 0.8mm
		

14. Adhesion of Electrode	
Specified Value	No separation or indication of separation of electrode.
Test Methods and Remarks	Applied force : 5N Duration : 10 sec.  Note on standard condition: "standard condition" referred to herein is defined as follows: 5 to 35°C 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 $20 \pm 2^{\circ}\text{C}$ of temperature, 60 to 70% relative humidity and 86 to 106kPa of air pressure. Unless otherwise specified, all the tests are conducted under the "standard condition."

CHIP BEAD INDUCTORS FOR POWER LINE (FB SERIES M TYPE)

■ PRECAUTIONS

1. Circuit Design	
Precautions	◆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. ◆Rated current 1. Rated current of this product is shown in this catalogue, but please be sure to have the base board designed with adequate inspection in case of the generation of heat becomes high within the rated current range when the base board is in high resistance or in bad heating conditions.
2. PCB Design	
Precautions	◆Land pattern design 1. Please refer to a recommended land pattern.
3. Considerations for automatic placement	
Precautions	◆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.
Technical considerations	◆Adjustment of mounting machine 1. When installing products, care should be taken not to apply distortion stress as it may deform the products.
4. Soldering	
Precautions	◆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. ◆Lead free soldering 1. When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, etc. sufficiently. ◆Preheating when soldering Heating : The temperature difference between soldering and remaining heat should not be greater than 150°C. Cooling : The temperature difference between the components and cleaning process should not be greater than 100°C. ◆Recommended conditions for using a soldering iron 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 directly touch the inductor.
Technical considerations	◆Wave, Reflow, Lead free soldering 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. 【Recommended reflow condition】  ◆Preheating when soldering 1. There is a case that products get damaged by a heat shock. ◆Recommended conditions for using a soldering iron 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. Handling	
Precautions	◆Handling 1. Keep the inductors away from all magnets and magnetic objects. ◆Setting PC boards 1. When setting a chip mounted base board, please make sure that there is no residual stress to the chip by distortion in the board or at screw part. ◆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.
Technical considerations	◆Handling 1. There is a case that a characteristic varies with magnetic influence. ◆Setting PC boards 1. There is a case that a characteristic varies with residual stress. ◆Breakaway PC boards (splitting along perforations) 1. Planning pattern configurations and the position of products should be carefully performed to minimize stress. ◆Mechanical considerations 1. There is a case to be damaged by a mechanical shock.
6. Storage conditions	
Precautions	◆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°C - Humidity Below 70% RH The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, inductors should be used within 6 months from the time of delivery.
Technical considerations	◆Storage 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.

导线型铁氧体磁珠电感器 (FB 系列 A 型/R 型)



波峰焊

■ 型号标示法

※使用温度范围: -25~+85°C (包含产品本身发热)

F	B	A	0	4	H	A	4	5	0	B	B	—	0	0
①	②	③	④	⑤	⑥	⑦								

△=空格

①类型

代码	类型
FB	铁氧体磁珠电感器

②外型

代码	外型
A	轴向导线
R	径向导线

③磁芯尺寸(D)

代码	尺寸(D) [mm]
03	φ 2.5
04	φ 3.5
05	5.0
06	6.0
07	7.5

④材料代码

代码	材料
HA	材料不同时, 阻抗值也有所变化。
VA	

⑤标称阻抗值

代码(例)	标称阻抗值 [Ω 以上]
850	85
121	120

03 型除外

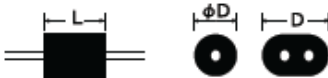
⑥导线加工形状

代码	导线加工形状 [mm]
AB	宽 26.0mm 直式导线型编带盒装
BB	宽 52.0mm 直式导线型编带盒装
KD	10.0mm 间距 ∩ 形散装
KE	12.5mm 间距 ∩ 形散装
KF	15.0mm 间距 ∩ 形散装
NA	2.5mm 间距导线型散装 (FBR) 直式导线型散装 (FBA)
NB	5.0mm 间距导线散装
SA	2.5mm 间距直式导线型带装
SB	5.0mm 间距直式导线型带装
TB	5.0mm 间距直式导线型带装
UB	5.0mm 间距径向成形带装
US	5.0mm 间距径向成形散装
VB	5.0mm 间距双导线型成形带装
VS	5.0mm 间距双导线型成形散装

⑦本公司管理记号

代码	本公司管理记号
—00	标准品

■ 标准外型尺寸 / 标准数量



Type	Configurations				Dimensions		Standard Quantity (pcs)		
	Taping		Bulk		□	L	Type	Lead Configuration	Bulk
FBA	Straight	Formed	Straight	Formed	2.5±0.2 (0.098±0.008)	4.5±0.3 (0.177±0.012)	FBA03	NA, KD, US	1000
								KE, KF, VS	500
								AB, BB	2000
								UB, VB	3000
	Straight	Formed	Straight	Formed	3.5±0.2 (0.138±0.008)	4.5±0.3 (0.177±0.012)	FBA04	NA, KD, US	1000
								KE, KF, VS	500
								AB, BB	1000
								UB, VB	3000
	Straight	Formed	Straight	Formed	3.5±0.2 (0.138±0.008)	6.0±0.5 (0.236±0.020)	FBA04	NA, KD, US	1000
								KE, KF, VS	500
								AB, BB	1000
								UB, VB	3000

▶ 本产品目录根据版面大小, 仅记载了代表性产品规格, 若考虑使用本公司产品时, 请确认供货规格型号明细表中的详细规格。
有关各商品的详细信息(特性图、可靠性信息、使用时的注意事项等), 请参阅本公司网站(<http://www.ty-top.com/>)。

FBR	05VA121□-00		SA P P: 12.7(0.500)	NA F: 2.5(0.098)	6.0 max. (0.197 max.)	7.5 (0.295)	FBR05	NA	1000	—
	06HA850NA-00 06VA850NA-00		NA F: 2.5(0.098)	6.0±0.5 (0.236±0.020)	5.0 (0.197)	7.0 (0.276)	FBR06	NA	1000	—
	06HA121NA-00 06VA121NA-00		NA F: 2.5(0.098)	6.0±0.5 (0.236±0.020)	5.0 (0.197)	7.0 (0.276)	FBR06	NA	1000	—
	07HA850□-00 07VA850□-00		SB, TB P: 12.7(0.500) H: 5.0±0.5 TB: 16±0.5	NB F: 3.0(0.118)	7.5±0.5 (0.295±0.020)	5.5 (0.217)	FBR07	NB	1000	—
	07HA121□-00 07VA121□-00		SB, TB P: 12.7(0.500) H: 5.0±0.5 TB: 16±0.5	NB F: 3.0(0.118)	7.5±0.5 (0.295±0.020)	5.5 (0.217)	FBR07	SB, TB	—	2000

单位: mm(inch)

请在型号的□中指定导线加工形状代码。

※导线线径φd的尺寸为0.65±0.05mm 但 FBR07 型φd的尺寸为0.6±0.05mm

型号一览

FBA

型号	EHS	阻抗值 [Ω](min.)	阻抗值测试频率 [MHz]		额定电流 [A](max.)		直流电阻 [Ω](max.)	绝缘阻抗 [MΩ](min.)
			材料		材料			
			HA	VA	HA	VA		
FBA03△450□-00	RoHS	35.0	50	100	7.0	7.0	0.01	1.0
FBA04△450□-00	RoHS	45.0	50	100	7.0	7.0	0.01	1.0
FBA04△600□-00	RoHS	60.0	50	100	7.0	7.0	0.01	1.0
FBA04△900□-00	RoHS	90.0	50	100	7.0	7.0	0.01	1.0

FBR

型号	EHS	阻抗值 [Ω] (min.)	阻抗值测试频率 [MHz]		额定电流 [A] (max.)		直流电阻 [Ω] (max.)	绝缘阻抗 [MΩ] (min.)
			材料		材料			
			HA	VA	HA	VA		
FBR05VA121□-00	RoHS	120.0	-	100	-	7.0	0.01	1.0
FBR06△850NA-00	RoHS	85.0	50	100	7.0	7.0	0.01	1.0
FBR06△121NA-00	RoHS	120.0	50	100	7.0	7.0	0.01	1.0
FBR07△850□-00	RoHS	85.0	50	100	7.0	7.0	0.01	1.0
FBR07△121□-00	RoHS	120.0	50	100	7.0	7.0	0.01	1.0

※请在型号的△中指定材料代码(HA,VA)，在□中指定导线加工形状代码。

LEADED FERRITE BEAD INDUCTORS

PACKAGING

① Minimum Quantity

● Axial lead (FBA)

Type	Lead Configuration	Standard quantity [pcs]	
		Bulk	Taped Ammo
FBA03	NA, KD, US	1000	—
	KE, KF, VS	500	—
	AB, BB	—	2000
	UB, VB	—	3000
FBA04	NA, KD, US	1000	—
	KE, KF, VS	500	—
	AB, BB	—	1000
	VB, UB	—	3000

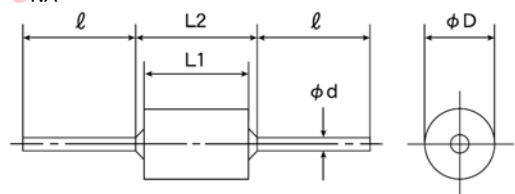
● Radial lead (FBR)

Type	Lead Configuration	Standard quantity [pcs]	
		Bulk	Taped Ammo
FBR05	NA	1000	—
	SA	—	2000
FBR06	NA	1000	—
FBR07	NB	1000	—
	SB	—	2000

② Bulk dimensions

Axial lead (FBA)

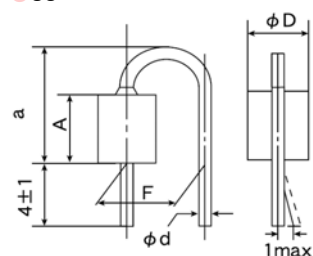
● NA



Type	Dimensions				
	ϕD	L1	L2	ϕd	l
FBA03□450	2.5 ± 0.2 (0.098 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	6.5 max. (0.256 max.)	0.65 ± 0.05 (0.026 ± 0.002)	18 min. (0.709 min.)
FBA04□450	3.5 ± 0.2 (0.138 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	6.5 max. (0.256 max.)		
FBA04□600	3.5 ± 0.2 (0.138 ± 0.008)	$6.0 + 0.5 / -0$ ($0.236 + 0.020 / -0$)	8.5 max. (0.335 max.)		
FBA04□900	3.5 ± 0.2 (0.138 ± 0.008)	9.0 ± 0.5 (0.354 ± 0.020)	11.0 max. (0.433 max.)		

Unit : mm (inch)

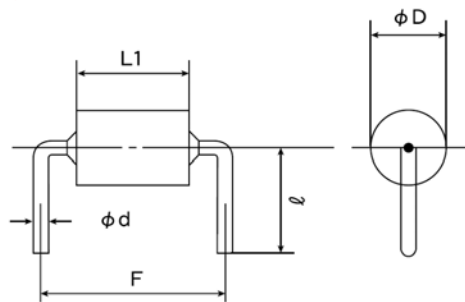
● US



Type	Dimensions				
	ϕD	A	a	F	ϕd
FBA03□450	2.5 ± 0.2 (0.098 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	9.0 max. (0.354 max.)	5.0 ± 1.0 (0.197 ± 0.039)	0.65 ± 0.05 (0.026 ± 0.002)
FBA04□450	3.5 ± 0.2 (0.138 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	9.0 max. (0.354 max.)		

Unit : mm (inch)

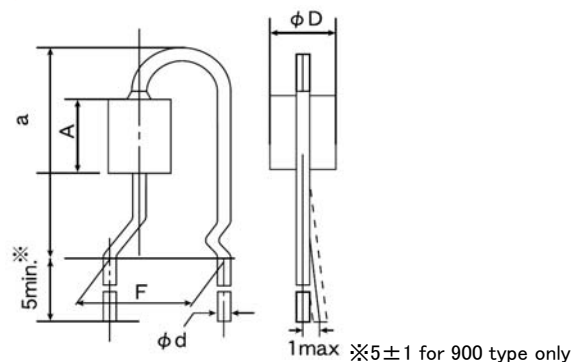
● KD/KE/KF



Type	Lead Symbol	Dimensions				
		ϕD	F	L1	ϕd	ℓ
FBA03□450	KD	2.5 ± 0.2 (0.098 ± 0.008)	10.0 ± 1.0 (0.394 ± 0.039)	4.5 ± 0.3 (0.177 ± 0.012)	0.65 ± 0.05 (0.026 ± 0.020)	7.0 ± 2.0 (0.276 ± 0.079)
FBA04□450		3.5 ± 0.2 (0.138 ± 0.008)	10.0 ± 1.0 (0.394 ± 0.039)	4.5 ± 0.3 (0.177 ± 0.012)		7.5 ± 2.0 (0.295 ± 0.079)
FBA04□600		3.5 ± 0.2 (0.138 ± 0.008)	10.0 ± 1.0 (0.394 ± 0.039)	$6.0 + 0.5 / - 0$ ($0.236 + 0.020 / - 0$)		7.5 ± 2.0 (0.295 ± 0.079)
FBA03□450	KE	2.5 ± 0.2 (0.098 ± 0.008)	12.5 ± 1.0 (0.492 ± 0.039)	4.5 ± 0.3 (0.177 ± 0.012)	0.65 ± 0.05 (0.026 ± 0.020)	7.0 ± 2.0 (0.276 ± 0.079)
FBA04□450		3.5 ± 0.2 (0.138 ± 0.008)	12.5 ± 1.0 (0.492 ± 0.039)	4.5 ± 0.3 (0.177 ± 0.012)		7.5 ± 2.0 (0.295 ± 0.079)
FBA04□600		3.5 ± 0.2 (0.138 ± 0.008)	12.5 ± 1.0 (0.492 ± 0.039)	$6.0 + 0.5 / - 0$ ($0.236 + 0.020 / - 0$)		7.5 ± 2.0 (0.295 ± 0.079)
FBA04□900		3.5 ± 0.2 (0.138 ± 0.008)	12.5 ± 1.0 (0.492 ± 0.039)	9.0 ± 0.5 (0.354 ± 0.020)		7.5 ± 2.0 (0.295 ± 0.079)
FBA03□450	KF	2.5 ± 0.2 (0.098 ± 0.008)	15.0 ± 1.0 (0.591 ± 0.039)	4.5 ± 0.3 (0.177 ± 0.012)	0.65 ± 0.05 (0.026 ± 0.020)	7.0 ± 2.0 (0.276 ± 0.079)
FBA04□450		3.5 ± 0.2 (0.138 ± 0.008)	15.0 ± 1.0 (0.591 ± 0.039)	4.5 ± 0.3 (0.177 ± 0.012)		7.5 ± 2.0 (0.295 ± 0.079)
FBA04□600		3.5 ± 0.2 (0.138 ± 0.008)	15.0 ± 1.0 (0.591 ± 0.039)	$6.0 + 0.5 / - 0$ ($0.236 + 0.020 / - 0$)		7.5 ± 2.0 (0.295 ± 0.079)
FBA04□900		3.5 ± 0.2 (0.138 ± 0.008)	15.0 ± 1.0 (0.591 ± 0.039)	9.0 ± 0.5 (0.354 ± 0.020)		7.5 ± 2.0 (0.295 ± 0.079)

Unit : mm (inch)

● VS

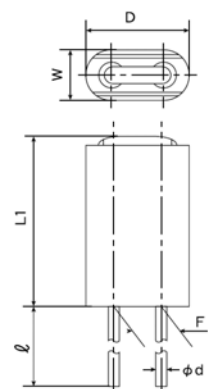


Type	Dimensions				
	ϕD	A	a	F	ϕd
FBA03□450	2.5 ± 0.2 (0.098 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	12.5 max. (0.492 max.)	5.0 ± 1.0 (0.197 ± 0.039)	0.65 ± 0.05 (0.026 ± 0.002)
FBA04□450	3.5 ± 0.2 (0.138 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	12.5 max. (0.492 max.)	5.0 ± 1.0 (0.197 ± 0.039)	0.65 ± 0.05 (0.026 ± 0.002)
FBA04□600	3.5 ± 0.2 (0.138 ± 0.008)	$6.0 + 0.5 / - 0$ ($0.236 + 0.020 / - 0$)	12.5 max. (0.492 max.)	5.0 ± 1.0 (0.197 ± 0.039)	0.65 ± 0.05 (0.026 ± 0.002)
FBA04□900	3.5 ± 0.2 (0.138 ± 0.008)	9.0 ± 0.5 (0.354 ± 0.020)	16.0 max. (0.630 max.)	5.0 ± 1.0 (0.197 ± 0.039)	0.65 ± 0.05 (0.026 ± 0.002)

Unit : mm (inch)

Radial lead (FBR)

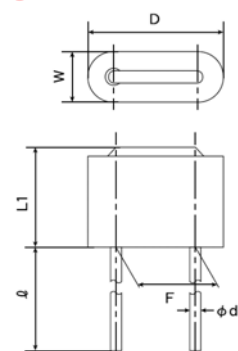
● NA



Type	Dimensions					
	D	L1	φ d	ℓ	W	F
FBR05VA121	5.0 max. (0.197 max.)	9.0 max. (0.354 max.)	0.65±0.05 (0.026±0.002)	10.0+3/−5 (0.394+0.118/−0.197)	2.5 max. (0.098 max.)	2.5±1.0 (0.098±0.039)
FBR06□850	6.0±0.5 (0.236±0.020)	7.0 max. (0.276 max.)	0.65±0.05 (0.026±0.002)	10.0+3/−5 (0.394+0.118/−0.197)	3.0±0.5 (0.118±0.020)	2.5±1.0 (0.098±0.039)
FBR06□121	6.0±0.5 (0.236±0.020)	9.0 max. (0.354 max.)	0.65±0.05 (0.026±0.002)	10.0+3/−5 (0.394+0.118/−0.197)	3.0±0.5 (0.118±0.020)	2.5±1.0 (0.098±0.039)

Unit : mm (inch)

● NB

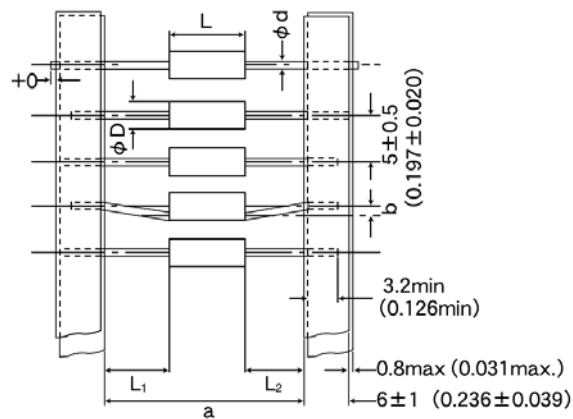


Type	Dimensions					
	D	L1	φ d	ℓ	W	F
FBR07□850	7.5±0.5 (0.295±0.020)	7.0 max. (0.276 max.)	0.6±0.05 (0.024±0.002)	5.0+1/−2 (0.197+0.039/−0.079)	2.5 max. (0.098 max.)	5.0+1/−0.5 (0.197+0.039/−0.020)
FBR07□121	7.5±0.5 (0.295±0.020)	9.0 max. (0.354 max.)	0.6±0.05 (0.024±0.002)	5.0+1/−2 (0.197+0.039/−0.079)	2.5 max. (0.098 max.)	5.0+1/−0.5 (0.197+0.039/−0.020)

Unit : mm (inch)

③Taping Dimensions

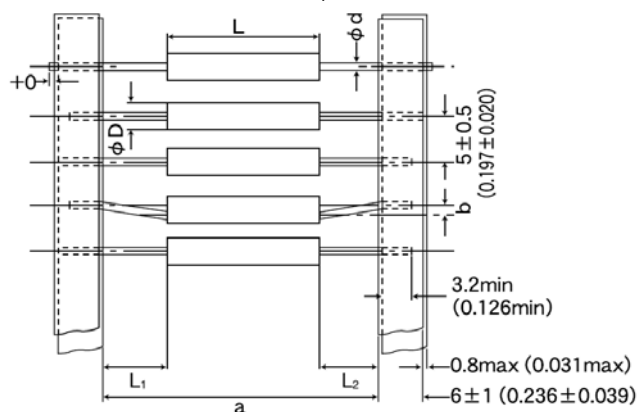
● AB (a: 26mm) (1.02inch lead space)



Type	Dimensions						Minimum insertion pitch
	φD	L	a	b	L ₁ -L ₂	φd	
FBA03	2.5 ± 0.2 (0.098 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	26.0 + 1.5 / - 0 (1.02 + 0.059 / - 0)	0.8max (0.031max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	10.0 (0.394)
FBA04□450	3.5 ± 0.2 (0.138 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	26.0 + 1.5 / - 0 (1.02 + 0.059 / - 0)	0.8max (0.031max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	10.0 (0.394)
FBA04□600		6.0 + 0.5 / - 0 (0.236 + 0.020 / - 0)	26.0 + 1.5 / - 0 (1.02 + 0.059 / - 0)	0.8max (0.031max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	10.0 (0.394)
FBA04□900		9.0 ± 0.5 (0.354 ± 0.020)	26.0 + 1.5 / - 0 (1.02 + 0.059 / - 0)	0.8max (0.031max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	12.5 (0.492)

Unit: mm (inch)

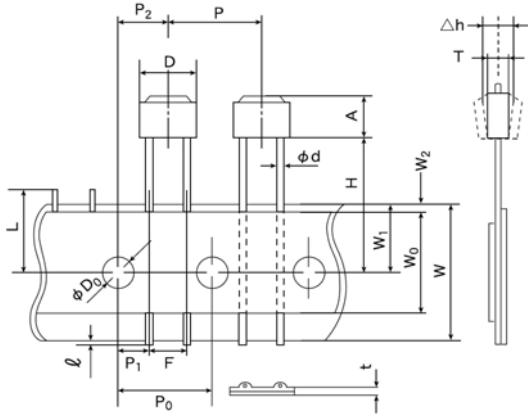
● BB (a: 52mm) (2.05inches lead space)



Type	Dimensions						Minimum insertion pitch
	φD	L	a	b	L ₁ -L ₂	φd	
FBA03	2.5 ± 0.2 (0.098 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	52.0 + 2 / - 1 (2.05 + 0.079 / - 0.039)	1.2 max (0.047 max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	10.0 (0.394)
FBA04□450	3.5 ± 0.2 (0.138 ± 0.008)	4.5 ± 0.3 (0.177 ± 0.012)	52.0 + 2 / - 1 (2.05 + 0.079 / - 0.039)	1.2max (0.047max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	10.0 (0.394)
FBA04□600		6.0 + 0.5 / - 0 (0.236 + 0.020 / - 0)	52.0 + 2 / - 1 (2.05 + 0.079 / - 0.039)	1.2max (0.047 max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	10.0 (0.394)
FBA04□900		9.0 ± 0.5 (0.354 ± 0.020)	52.0 + 2 / - 1 (2.05 + 0.079 / - 0.039)	1.2max (0.047 max)	1.0 max (0.039 max)	0.65 ± 0.05 (0.026 ± 0.002)	12.5 (0.492)

Unit: mm (inch)

● SA (F: 2.5mm pitch) (0.098 inches)

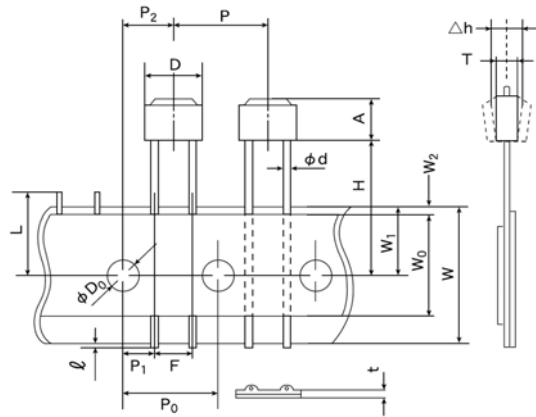


Type	Symbol	Dimensions	Symbol	Dimensions	Symbol	Dimensions
FBR05	A	121: 9.0 max. (0.354 max.)	P ₂	6.35±1.3 (0.250±0.051)	ℓ	1.0 max. (0.039 max.)
	T	2.5 max. (0.098 max.)	F	2.5+1.0/−0.5 (0.098+0.039/−0.020)	ϕD ₀	4.0±0.3 (0.157±0.012)
	D	5.0 max. (0.197 max.)	Δh	0.0±2.0 (0.0±0.079)	ϕd	0.65±0.05 (0.026±0.002)
	H	18.0+2.0/−0 (0.709+0.079/−0)	W	18.0+1.0/−0.5 (0.709+0.039/−0.020)	L	11.0 max. (0.433 max.)
	P	12.7±1.0 (0.500±0.039)	W ₀	12.5 min. (0.492 min.)	t	0.7±0.2 (0.028±0.008)
	P ₀	12.7±0.3 ※ ¹ (0.500±0.012)	W ₁	9.0+0.75/−0.5 (0.354+0.030/−0.020)	Unit: mm (inch)	
	P ₁	5.1±0.7 (0.201±0.028)	W ₂	3.0 max. ※ ² (0.118 max.)		

※¹ Accumulated error for 20 pitches is ±2mm.

※² Bonding tape must not protrude from the base tape.

● SB/TB (F: 5mm pitch) (0.197 inches)



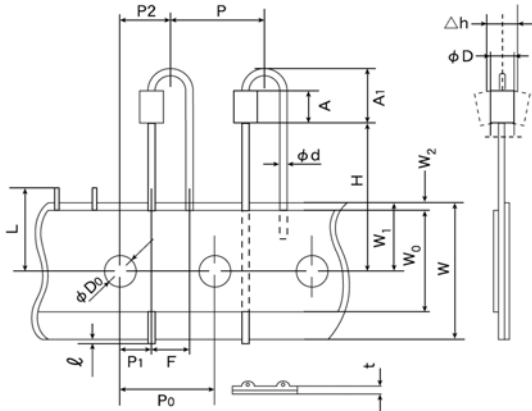
Type	Symbol	Dimensions	Symbol	Dimensions	Symbol	Dimensions
FBR07	A	121: 9.0 max. (0.354 max.)	P ₀	12.7±0.3 ※ ¹ (0.500±0.012)	W ₁	9.0+0.75/−0.5 (0.354+0.039/−0.020)
		850: 7.0 max. (0.276 max.)	P ₁	3.85±0.8 (0.152±0.028)	W ₂	3.0 max. ※ ² (0.118 max.)
	T	2.5 max. (0.098 max.)	P ₂	6.35±1.3 (0.250±0.051)	ℓ	1.0 max. (0.039 max.)
	D	7.5±0.5 (0.925±0.020)	F	5.0+1.0/−0.5 (0.197+0.039/−0.020)	ϕD ₀	4.0±0.3 (0.157±0.012)
	H	SB: 18.0+2.0/−0 (0.709+0.079/−0)	Δh	0.0±2.0 (0.0±0.079)	ϕd	0.65±0.05 (0.02±0.002)
		TB: 16.0±0.5 (0.630±0.020)	W	18.0+1.0/−0.5 (0.709+0.039/−0.020)	L	11.0 max. (0.433 max.)
	P	12.7±1.0 (0.500±0.039)	W ₀	12.5 min. (0.492 min.)	t	0.7±0.2 (0.028±0.008)

Unit: mm (inch)

※¹ Accumulated error for 20 pitches is ±2mm.

※² Bonding tape must not protrude from the base tape.

● UB

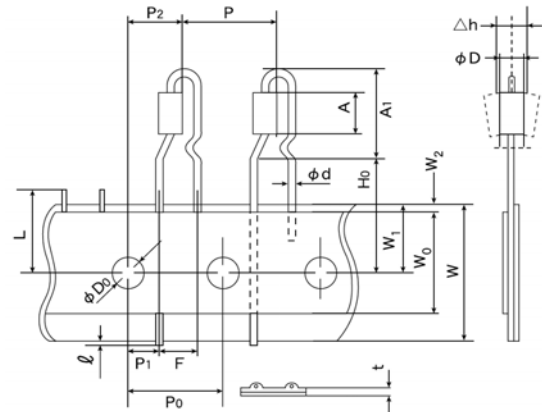


Type	Symbol	Dimensions	Symbol	Dimensions	Symbol	Dimensions
FBA03□450 FBA04□450	A	4.5±0.3 (0.177±0.012)	P ₁	3.85±0.8 (0.152±0.032)	W ₂	3.0 max. ※ ² (0.118 max.)
	A ₁	9.0 max. (0.354 max.)	P ₂	6.35±1.3 (0.250±0.051)	l	1.0 max. (0.039 max.)
	ϕD	03: 2.7 max. (0.106 max.)	F	5.0±1.0 (0.197±0.039)	ϕD ₀	4.0±0.3 (0.157±0.012)
		04: 3.7 max. (0.146 max.)	Δh	0.0±2.0 (0.0±0.079)	ϕd	0.65±0.05 (0.026±0.002)
	H	20.0+0.5/−1.0 (0.787+0.020/−0.039)	W	18.0+1.0/−0.5 (0.709+0.039/−0.020)	L	11.0 max. (0.433 max.)
	P	12.7±1.0 (0.500±0.039)	W ₀	12.5 min. (0.492 min.)	t	0.7±0.2 (0.028±0.008)
	P ₀	12.7±0.3 ※ ¹ (0.500±0.012)	W ₁	9.0+0.75/−0.5 (0.354+0.030/−0.020)	Unit: mm (inch)	

※¹ Accumulated error for 20 pitches is ±2mm.

※² Bonding tape must not protrude from the base tape.

● VB 形状



Type	Symbol	Dimensions	Symbol	Dimensions	Symbol	Dimensions
FBA03□450 FBA04□450 FBA04□600 FBA04□900	A	450: 4.5±0.3 (0.177±0.012)	P ₀	12.7±0.3 ※ ¹ (0.500±0.012)	W ₂	3.0 max. ※ ² (0.118 max.)
		600: 6.0+0.5/−0 (0.236+0.020/−0)	P ₁	3.85±0.8 (0.152±0.032)	l	1.0 max. (0.039 max.)
		900: 9.0±0.5 (0.354±0.020)	P ₂	6.35±1.3 (0.250±0.051)	ϕD ₀	4.0±0.3 (0.157±0.012)
	A ₁	450: 12.5 max. (0.492 max.)	F	5.0±1.0 (0.197±0.039)	ϕd	0.65±0.05 (0.026±0.002)
		600: (0.492 max.)	Δh	0.0±2.0 (0.0±0.079)	L	11.0 max. (0.433 max.)
		900: 16.0 max. (0.630 max.)	W	18.0+1.0/−0.5 (0.709+0.039/−0.020)	t	0.7±0.2 (0.028±0.008)
	ϕD	3.7 max. (0.146 max.)	W ₀	12.5 min. (0.492 min.)	Unit: mm (inch)	
	H ₀	16.0±0.5 (0.650±0.020)	W ₁	9.0+0.75/−0.5 (0.354+0.030/−0.020)		
	P	12.7±1.0 (0.500±0.039)				

※¹ Accumulated error for 20 pitches is ±2mm.

※² Bonding tape must not protrude from the base tape.

AXIAL LEADED INDUCTORS (CAL Type)、 RADIAL LEADED INDUCTORS (LH Type)、 LEADED FERRITE BEAD INDUCTORS (FB Series A Type/R Type)

RELIABILITY DATA

1. Operating temperature Range			
Specified Value	CAL45 Type	-25 ~ + 105°C	
	LHL□□□		
	FBA/FBR	-25 ~ + 85°C	
Test Methods and Remarks	CAL45 Type	: Including self-generated heat	
	LHL□□□	: Including self-generated heat	

2. Storage temperature Range			
Specified Value	CAL45 Type	-40 ~ + 85°C	
	LHL□□□		
	FBA/FBR		

3. Rated current		
Specified Value	CAL45 Type	Within the specified tolerance
	LHL□□□	
	FBA/FBR	
Test Methods and Remarks	CAL45 Type : The maximum DC value having inductance within 10% and temperature increase within 40℃ by the application of DC bias.	
	LHL□□□ : The maximum DC value having inductance decrease within 10% (LHLC08, LHLC10:within 30%) and temperature increase within the following specified temperature by the application of DC bias.	
	Reference temperature : 25℃ (LHL08, LHL10, LHL13) : 30℃ (LHL16, LHLP□□) : 40℃ (LHLC08, LHLC10)	
	FBA/FBR : No disconnection or appearance abnormality by continuous current application for 30 min. Change after the application shall be within ±20% of the initial value. This is not guaranteed for electrical characteristics during current application.	

4. Impedance			
Specified Value	CAL45 Type		
	LHL□□□		
	FBA/FBR		Within the specified tolerance
Test Methods and Remarks	FBA/FBR :		
	Measuring equipment	: Impedance analyzer (HP4191A) or its equivalent	
	Measuring frequency	: Specified frequency	

5. Inductance			
Specified Value	CAL45 Type		Within the specified tolerance
	LHL□□□		
	FBA/FBR		
Test Methods and Remarks	CAL45 Type :		
	Measuring equipment	: LCR meter (HP4285A + HP42851A or its equivalent)	
	Measuring frequency	: Specified frequency	
	LHL□□□ :		
	Measuring equipment	: LCR meter (HP4285A + HP42851A or its equivalent)	
		: LCR meter (HP4263A) or its equivalent (at 1kHz)	
	Measuring frequency	: Specified frequency	

▶ This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

6. Q

7. DC Resistance					

8. Self resonance frequency	
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9. Temperature characteristic

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10. Tensile strength test

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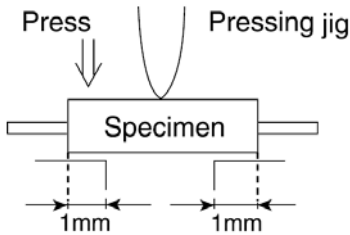
11. Over current		
Specified Value	CAL45 Type	No emission of smoke no firing.
	LHL□□□	There shall be no scorch or short of wire. LHLC08, LHLC10 : There shall be no firing.
	FBA/FBR	
Test Methods and Remarks	LHL□□□・CAL45 Type : Measuring current : Rated current × 2 Duration : 5 min. Number of measuring : one time	

12. Terminal strength : bending														
Specified Value	CAL45 Type		No abnormality such as cut lead, or looseness.											
	LHL□□□													
	FBA/FBR													
Test Methods and Remarks	CAL45 Type :													
	Suspend a weight of specified mass at the end of the terminals and incline the body through the angle of 90 degrees and return it to the initial position. This operation is done over a period of 2-3 sec. Then second bend in the opposite direction shall be made.													
	Number of bends : Two times.													
	<table><tr><td>Nominal wire diameter tensile</td><td>Bending force</td><td>Mass reference weight</td></tr><tr><td>0.3< ϕ d≤0.5</td><td>2.5</td><td>0.25</td></tr><tr><td>0.5< ϕ d≤0.8</td><td>5</td><td>0.50</td></tr></table>			Nominal wire diameter tensile	Bending force	Mass reference weight	0.3< ϕ d≤0.5	2.5	0.25	0.5< ϕ d≤0.8	5	0.50		
	Nominal wire diameter tensile	Bending force	Mass reference weight											
	0.3< ϕ d≤0.5	2.5	0.25											
	0.5< ϕ d≤0.8	5	0.50											
LHL□□□・FBA/FBR :														
Suspend a weight of specified mass at the end of the terminals and incline the body through the angle of 90 degrees and return it to the initial position. This operation is done over a period of 2-3 sec. Then second bend in the opposite direction shall be made.														
Number of bends : Two times.														
<table><tr><td>Nominal wire diameter tensile</td><td>Bending force</td><td>Mass reference weight</td></tr><tr><td>0.3< ϕ d≤0.5</td><td>2.5</td><td>0.25</td></tr><tr><td>0.5< ϕ d≤0.8</td><td>5</td><td>0.5</td></tr><tr><td>0.8< ϕ d≤1.2</td><td>10</td><td>1.0</td></tr></table>			Nominal wire diameter tensile	Bending force	Mass reference weight	0.3< ϕ d≤0.5	2.5	0.25	0.5< ϕ d≤0.8	5	0.5	0.8< ϕ d≤1.2	10	1.0
Nominal wire diameter tensile	Bending force	Mass reference weight												
0.3< ϕ d≤0.5	2.5	0.25												
0.5< ϕ d≤0.8	5	0.5												
0.8< ϕ d≤1.2	10	1.0												

13. Insulation resistance : between the terminals and body		
Specified Value	CAL45 Type	
	LHL□□□	100MΩ min.
	FBA/FBR	
Test Methods and Remarks	LHL□□□ : Applied voltage : 500 VDC Duration : 60 sec.	

14. Insulation resistance : between terminals and core		
Specified Value	CAL45 Type	
	LHL□□□	
	FBA/FBR	1MΩ min.
Test Methods and Remarks	FBA/FBR : Applied voltage : 100 VDC Duration : 60±5 sec.	

15. Withstanding : between the terminals and body		
Specified Value	CAL45 Type	
	LHL□□□	No abnormality such as insulation damage
	FBA/FBR	
Test Methods and Remarks	LHL□□□ : According to JIS C5102. 7. 1. 3 (C) Metal global method Applied voltage : 500 VDC Duration : 60 sec.	

16. DC bias characteristic		
Specified Value	CAL45 Type	$\Delta L/L$: Within -10%
	LHL□□□	
	FBA/FBR	
Test Methods and Remarks	CAL45 Type : Measure inductance with application of rated current using LCR meter to compare it with the initial value.	
17. Body strength		
Specified Value	CAL45 Type	No abnormality as damage.
	LHL□□□	
	FBA/FBR	No abnormality such as cracks on body.
Test Methods and Remarks	CAL45 Type : Applied force :50N Duration : 10 sec. Speed : Shall attain to specified force in 2 sec. FBA : Applied force : 50 ± 3N Duration : 30 ± 1 sec. Press  Pressing jig Specimen 1mm 1mm	
18. Resistance to vibration		
Specified Value	CAL45 Type	$\Delta L/L$: Within $\pm5\%$
	LHL□□□	Appearance : No abnormality $\Delta L/L$: Within $\pm5\%$ Q change : Within $\pm30\%$ (LHLP : only $\Delta L/L$)
	FBA/FBR	Appearance : No abnormality Impedance change : Within $\pm20\%$
Test Methods and Remarks	CAL45 Type : Directions : 2 hrs 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 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs. LHL□□□・FBA/FBR : Directions : 2 hrs 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.	
19. Resistance to shock		
Specified Value	CAL45 Type	No significant abnormality in appearance
	LHL□□□	
	FBA/FBR	
Test Methods and Remarks	CAL45 Type : Drop test Impact material : concrete or vinyl tile Height : 1m Total number of drops : 10 times	

20. Solderability		
Specified Value	CAL45 Type	At least 75% of terminal electrode is covered by new solder.
	LHL□□□	At least 75% of terminal electrode is covered by new solder.
	FBA/FBR	At least 90% of terminal electrode is covered by new solder.
Test Methods and Remarks	CAL45 Type : Solder temperature : 230±5°C Duration : 2±0.5 sec. LHL□□□ : Solder temperature : 235±5°C Duration : 2±0.5 sec. Immersion depth : Up to 1.5mm from bottom of case. FBA/FBR : Solder temperature : 230±5°C Duration : 3±1 sec. Immersion depth : Up to 1.5mm from terminal root.	

21. Resistance to soldering heat		
Specified Value	CAL45 Type	ΔL/L : Within ±5%
	LHL□□□	No significant abnormality in appearance Inductance change : Within ±5% Q change : Within ±30%(LHLP : only ΔL/L)
	FBA/FBR	No significant abnormality in appearance Impedance change : Within ±20%
Test Methods and Remarks	CAL45 Type : Solder temperature : 270±5°C Duration : 5±0.5 sec. One time Immersed conditions : Inserted into substrate with t=1.6mm Recovery : At least 1hr of recovery under the standard condition after the test, followed by the measurement within 2hrs. LHL□□□ : Solder bath method : Solder temperature : 260±5°C Duration : 10±1 sec. : Up to 1.5mm from the bottom of case. Manual soldering : Solder temperature : 350±10°C (At the tip of soldering iron) Duration : 5±1 sec. : Up to 1.5mm from the bottom of case. Caution : No excessive pressing shall be applied to terminals. Recovery : 4 to 24hrs of recovery under the standard condition after the test. FBA/FBR : Solder bath method: Condition 1 : Solder temperature : 260±5°C Duration : 10±1 sec. Immersion depth : Up to 1.5mm from the terminal root. Condition 2 : Solder temperature : 350±5°C Duration : 3±1 sec. Immersion depth : Up to 1.5mm from the terminal root. Recovery : 3hrs of recovery under the standard condition after the test.	

22. Resistance to solvent		
Specified Value	CAL45 Type	Please avoid the ultrasonic cleaning of this product.
	LHL□□□	
	FBA/FBR	No significant abnormality in appearance Impedance change : Within ±20%
Test Methods and Remarks	FBA/FBR : Solvent temperature : 20~25°C Duration : 30±5 sec. Solvent type : Acetone Recovery : 3hrs of recovery under the standard condition after the test.	

23. Thermal shock		
Specified Value	CAL45 Type	$\Delta L/L$: Within $\pm 10\%$
	LHL□□□	Appearance : No abnormality Inductance change : Within $\pm 10\%$ Q change : Within $\pm 30\%$ (LHLP: only $\Delta L/L$)
	FBA/FBR	Appearance : No abnormality Impedance change : Within $\pm 20\%$
Test Methods and Remarks	CAL45 Type: Conditions for 1 cycle	
	Step	Temperature (°C)
	1	$-25 \pm 0/-3$
	2	Room temperature
	3	$+85 \pm 2/-0$
	4	Room temperature
	Duration (min.)	
	30 $\pm$ 3	
	Within 3	
	30 $\pm$ 3	
	Within 3	
	Number of cycles : 5 cycles	
	Recovery : At least 1hr of recovery under the standard condition after the removal from test chamber, followed by the measurement within 2hrs.	
	LHL□□□•FBA/FBR: According to JIS C0025	
	Conditions for 1 cycle	
	Step	Temperature (°C)
	1	Minimum operating temperature $+0/-3$
	2	Room temperature
	3	Minimum operating temperature $+2/-0$
	4	Room temperature
	Duration (min.)	
	30 $\pm$ 3	
	Within 3	
	30 $\pm$ 3	
	Within 3	
	Number of cycles : 10 cycles [LHL□□□]	
	Recovery : 5 cycles (FBA/ FBR)	
	: 4 to 24hrs of recovery under the standard condition after the removal from the test chamber. [LHL□□□]	
	: 3hrs of recovery under the standard condition after the removal from the test chamber. (FBA/ FBR)	

24. Damp heat		
Specified Value	CAL45 Type	$\Delta L/L$: Within $\pm 10\%$
	LHL□□□	
	FBA/FBR	Appearance: No abnormality Impedance change: Within $\pm 20\%$
Test Methods and Remarks	CAL45 Type :	
	Temperature	: $40 \pm 2^\circ\text{C}$
	Humidity	: 90~95%RH
	Duration	: 1000 hrs
	Recovery	: At least 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs.
	FBA/FBR :	
	Temperature	: $60 \pm 2^\circ\text{C}$
	Humidity	: 90~95%RH
	Duration	: 1000 hrs
	Recovery	: 1 to 2hrs of recovery under the standard condition after the removal from the test chamber.

25. Loading under damp heat		
Specified Value	CAL45 Type	$\Delta L/L$: Within $\pm 10\%$
	LHL□□□	Appearance : No abnormality Inductance change : Within $\pm 10\%$ Q change : Within $\pm 30\%$ (LHLP : only $\Delta L/L$)
	FBA/FBR	
Test Methods and Remarks	CAL45 Type : Temperature : $40\pm 2^{\circ}\text{C}$ Humidity : $90\sim 95\%\text{RH}$ Duration : 1000 hrs Applied current : Rated current Recovery : At least 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs. LHL□□□ : Temperature : $40\pm 2^{\circ}\text{C}$ Humidity : $90\sim 95\%\text{RH}$ Duration : $1000+48/-0$ hrs Applied current : Rated current Recovery : 1 to 2hrs of recovery under the standard condition after the removal from the test chamber.	
26. Loading at high temperature		
Specified Value	CAL45 Type	$\Delta L/L$: Within $\pm 10\%$
	LHL□□□	
	FBA/FBR	
Test Methods and Remarks	CAL45 Type : Temperature : $85\pm 2^{\circ}\text{C}$ Duration : 1000 hrs Applied current : Rated current Recovery : At least 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs.	
27. Low temperature life test		
Specified Value	CAL45 Type	$\Delta L/L$: Within $\pm 10\%$
	LHL□□□	Appearance : No abnormality Inductance change : Within $\pm 10\%$ Q change : Within $\pm 30\%$ (LHLP : only $\Delta L/L$)
	FBA/FBR	
Test Methods and Remarks	CAL45 Type : Temperature : $-25\pm 2^{\circ}\text{C}$ Duration : 1000 hrs Recovery : At least 1hr of recovery under the standard removal from test chamber, followed by the measurement within 2hrs. LHL□□□ : Temperature : $-40\pm 3^{\circ}\text{C}$ Duration : $1000+48/-0$ hrs Recovery : 1 to 2hrs of recovery under the standard condition after the removal from the test chamber.	
28. High temperature life test		
Specified Value	CAL45 Type	
	LHL□□□	Appearance : No abnormality Inductance change : Within $\pm 10\%$ Q change : Within $\pm 30\%$ (LHLP : only $\Delta L/L$)
	FBA/FBR	
Test Methods and Remarks	LHL□□□ : Temperature : $105\pm 2^{\circ}\text{C}$ Duration : $1000+48/-0$ hrs Recovery : 1 to 2hrs of recovery under the standard condition after the removal from the test chamber.	

AXIAL LEADED INDUCTORS (CAL Type)、 RADIAL LEADED INDUCTORS (LH Type)、 LEADED FERRITE BEAD INDUCTORS (FB Series A Type/R Type)

■ PRECAUTIONS

1. Circuit Design	
Precautions	◆ 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	
Precautions	◆ Design 1. Please design insertion pitches as matching to that of leads of the component on PCBs.
Technical considerations	◆ Design 1. When Inductors are mounted onto a PC board, hole dimensions on the board should match the lead pitch of the component, if not, it will cause breakage of the terminals or cracking of terminal roots covered with resin as excess stress travels through the terminal legs.
3. Considerations for automatic placement	
Precautions	◆ 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.
Technical considerations	◆ Adjustment of mounting machine 1. When installing products, care should be taken not to apply distortion stress as it may deform the products.
4. Soldering	
Precautions	◆ Wave soldering 1. Please refer to the specifications in the catalog for a wave soldering. 2. Do not immerse the entire inductor in the flux during the soldering operation. ◆ Lead free soldering 1. When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, soldering etc sufficiently. ◆ Recommended conditions for using a soldering iron: • 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 directly touch the inductor. ◆ Reflow soldering 1. As for reflow soldering, please contact our sales staff.
Technical considerations	◆ Lead free soldering 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. ◆ Recommended conditions for using a soldering iron 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	
Precautions	◆ Cleaning conditions 1. CAL type, LH type Please do not do cleaning by a supersonic wave.
Technical considerations	◆ Cleaning conditions 1. CAL type, LH type, If washing by supersonic waves, supersonic waves may deform products.

6. Handling	
Precautions	◆Handling 1. Keep the inductors away from all magnets and magnetic objects. ◆Mechanical considerations 1. Please do not give the inductors any excessive mechanical shocks. 2. LH type If inductors are dropped onto the floor or a hard surface they should not be used. ◆Packing 1. Please do not give the inductors any excessive mechanical shocks. In loading, please pay attention to handling indication mentioned in a packing box (a loading direction / number of maximum loading / fragile item).
Technical considerations	◆Handling 1. There is a case that a characteristic varies with magnetic influence. ◆Mechanical considerations 1. There is a case to be damaged by a mechanical shock. 2. LH type There is a case to be broken by a fall. ◆Packing 1. There is a case that a lead wire could be deformed by a fall or an excessive shock.
7. Storage conditions	
Precautions	◆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°C •Humidity Below 70% RH The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, inductors should be used within one year from the time of delivery. In case of storage over 6 months, solderability shall be checked before actual usage.
Technical considerations	◆Storage 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.