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Please read this notice before using the TAIYO YUDEN products.

REMINDERS

- Product information in this catalog is as of October 2013. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or usage of the Products.

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

- Please contact TAIYO YUDEN CO., LTD. for further details of product specifications as the individual specification is available.

- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.

- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,(automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact TAIYO YUDEN CO., LTD. for more detail in advance.

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

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

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

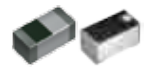
It is only applicable to the products purchased from any of TAIYO YUDEN' s official sales channel.

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- Caution for export

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

HIGH-Q MULTILAYER CHIP INDUCTORS FOR HIGH FREQUENCY APPLICATIONS(HK SERIES Q TYPE/AQ SERIES)



REFLOW

■ PARTS NUMBER

*Operating Temp. : -55~+125°C

H	K	Q	0	6	0	3	S	1	0	N	J	-	T
①			②				③			④		⑤	⑥

△=Blank space

① Series name

Code	Series name
HKQ	High-Q multilayer chip inductor for high frequency applications
AQ△	

② Dimensions (L×W)

Code	Type (inch)	Dimensions (L×W) [mm]
0402	0402(01005)	0.4×0.2
0603	0603(0201)	0.6×0.3
105△	105(0402)	1.0×0.6

③ Series code

Code	Series code
△	Standard
W	W
C	C
S	S
U	U

④ Nominal inductance

Code (example)	Nominal inductance [nH]
3N9	3.9
10N	10.0

※N=0.0 (nH type)

⑤ Inductance tolerance

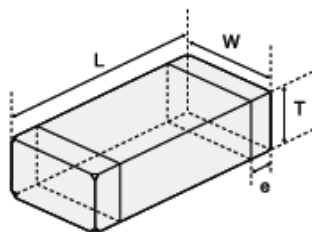
Code	Inductance tolerance
H	±3%
J	±5%
B	±0.1nH
C	±0.2nH
S	±0.3nH

⑥ Packaging

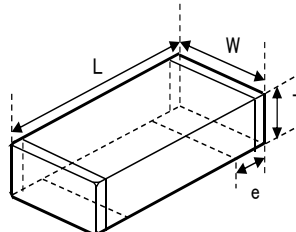
Code	Packaging
-T	Taping
-E	Taping (1mm pitch) 0402 type only

■ STANDARD EXTERNAL DIMENSIONS / STANDARD QUANTITY

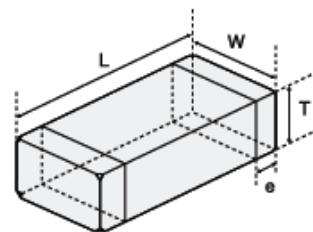
HKQ0402, HKQ0603S, HKQ0603U, AQ105



HKQ0603W, HKQ0603C
0N6~22N



27N~R10



Type	L	W	T	e	Standard quantity [pcs]	
					Paper tape	Embossed tape
HKQ0402 (01005)	0.4±0.02 (0.016±0.001)	0.2±0.02 (0.008±0.001)	0.2±0.02 (0.008±0.001)	0.1±0.03 (0.004±0.001)	20000	40000
HKQ0603W HKQ0603C (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	-
HKQ0603S HKQ0603U (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)	0.1±0.05 (0.004±0.002)	15000	-
AQ 105 (0402)	1.0±0.05 (0.039±0.002)	0.6±0.1 (0.024±0.004)	0.5±0.05 (0.020±0.002)	0.175±0.075 (0.007±0.003)	10000	-

Unit: mm (inch)

INDUCTORS \ INDUCTORS FOR HIGH FREQUENCY APPLICATIONS

► 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/>).

● HKQ0402

Parts number	EHS	Nominal inductance [nH]	Inductance tolerance	Q (min.)	LQ Measuring frequency [MHz]	Q (Typical) frequency [Hz]					Self-resonant frequency [MHz] (min.)	Resistance DC [Ω] (max.)	Rated current [mA] (max.)	Thickness [mm]
						500M	800M	1.8G	2.0G	2.4G				
HKQ0402 0N5□-△	RoHS	0.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	21	22	26	10000	0.08	500	0.20 ± 0.02
HKQ0402 0N6□-△	RoHS	0.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	23	24	28	10000	0.08	500	0.20 ± 0.02
HKQ0402 0N7□-△	RoHS	0.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	21	22	25	10000	0.09	470	0.20 ± 0.02
HKQ0402 0N8□-△	RoHS	0.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	12	15	25	26	30	10000	0.09	470	0.20 ± 0.02
HKQ0402 0N9□-△	RoHS	0.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	12	15	25	26	30	10000	0.09	470	0.20 ± 0.02
HKQ0402 1N0□-△	RoHS	1.0	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	12	15	25	27	30	10000	0.09	470	0.20 ± 0.02
HKQ0402 1N1□-△	RoHS	1.1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	12	15	24	26	30	10000	0.11	430	0.20 ± 0.02
HKQ0402 1N2□-△	RoHS	1.2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	12	15	24	26	29	10000	0.11	430	0.20 ± 0.02
HKQ0402 1N3□-△	RoHS	1.3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	24	26	29	10000	0.13	390	0.20 ± 0.02
HKQ0402 1N4□-△	RoHS	1.4	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	23	24	28	10000	0.17	340	0.20 ± 0.02
HKQ0402 1N5□-△	RoHS	1.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	13	23	25	28	10000	0.17	340	0.20 ± 0.02
HKQ0402 1N6□-△	RoHS	1.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	22	24	10000	0.19	320	0.20 ± 0.02
HKQ0402 1N7□-△	RoHS	1.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	22	25	10000	0.19	320	0.20 ± 0.02
HKQ0402 1N8□-△	RoHS	1.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	13	21	23	26	10000	0.19	320	0.20 ± 0.02
HKQ0402 1N9□-△	RoHS	1.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	22	25	10000	0.21	310	0.20 ± 0.02
HKQ0402 2N0□-△	RoHS	2.0	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	21	23	25	10000	0.23	290	0.20 ± 0.02
HKQ0402 2N1□-△	RoHS	2.1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	24	9700	0.27	270	0.20 ± 0.02
HKQ0402 2N2□-△	RoHS	2.2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	21	22	24	9300	0.27	270	0.20 ± 0.02
HKQ0402 2N3□-△	RoHS	2.3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	24	8300	0.27	270	0.20 ± 0.02
HKQ0402 2N4□-△	RoHS	2.4	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	21	22	25	8300	0.30	260	0.20 ± 0.02
HKQ0402 2N5□-△	RoHS	2.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	22	24	8300	0.30	260	0.20 ± 0.02
HKQ0402 2N6□-△	RoHS	2.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	24	8300	0.30	260	0.20 ± 0.02
HKQ0402 2N7□-△	RoHS	2.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	21	22	24	8200	0.30	260	0.20 ± 0.02
HKQ0402 2N8□-△	RoHS	2.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	22	25	8200	0.30	260	0.20 ± 0.02
HKQ0402 2N9□-△	RoHS	2.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	21	23	25	8000	0.30	260	0.20 ± 0.02
HKQ0402 3N0□-△	RoHS	3.0	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	23	8000	0.30	260	0.20 ± 0.02
HKQ0402 3N1□-△	RoHS	3.1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	24	7400	0.31	250	0.20 ± 0.02
HKQ0402 3N2□-△	RoHS	3.2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	23	7200	0.31	250	0.20 ± 0.02
HKQ0402 3N3□-△	RoHS	3.3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	23	6700	0.34	240	0.20 ± 0.02
HKQ0402 3N4□-△	RoHS	3.4	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	13	20	21	23	6600	0.34	240	0.20 ± 0.02
HKQ0402 3N5□-△	RoHS	3.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	10	12	19	20	22	6500	0.34	240	0.20 ± 0.02
HKQ0402 3N6□-△	RoHS	3.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	21	22	24	6500	0.35	240	0.20 ± 0.02
HKQ0402 3N7□-△	RoHS	3.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	21	23	25	6500	0.35	240	0.20 ± 0.02
HKQ0402 3N8□-△	RoHS	3.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	22	23	26	6500	0.35	240	0.20 ± 0.02
HKQ0402 3N9□-△	RoHS	3.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	8	500	11	14	21	23	25	6500	0.35	240	0.20 ± 0.02
HKQ0402 4N3□-△	RoHS	4.3	$\pm 0.3nH, \pm 3\%, \pm 5\%$	8	500	11	15	22	24	25	6200	0.37	230	0.20 ± 0.02
HKQ0402 4N7□-△	RoHS	4.7	$\pm 0.3nH, \pm 3\%, \pm 5\%$	8	500	11	14	22	23	25	5400	0.42	220	0.20 ± 0.02
HKQ0402 5N1□-△	RoHS	5.1	$\pm 0.3nH, \pm 3\%, \pm 5\%$	8	500	11	14	21	22	24	5400	0.68	170	0.20 ± 0.02
HKQ0402 5N6□-△	RoHS	5.6	$\pm 0.3nH, \pm 3\%, \pm 5\%$	8	500	11	14	22	23	25	5400	0.69	170	0.20 ± 0.02
HKQ0402 6N2□-△	RoHS	6.2	$\pm 3\%, \pm 5\%$	8	500	11	13	20	21	23	5400	0.91	150	0.20 ± 0.02
HKQ0402 6N8□-△	RoHS	6.8	$\pm 3\%, \pm 5\%$	8	500	11	14	20	21	23	5400	0.91	150	0.20 ± 0.02
HKQ0402 7N5□-△	RoHS	7.5	$\pm 3\%, \pm 5\%$	8	500	11	14	20	21	23	4700	0.93	150	0.20 ± 0.02
HKQ0402 8N2□-△	RoHS	8.2	$\pm 3\%, \pm 5\%$	8	500	11	13	19	19	20	4300	0.97	140	0.20 ± 0.02
HKQ0402 9N1□-△	RoHS	9.1	$\pm 3\%, \pm 5\%$	8	500	10	13	19	20	21	4300	0.97	140	0.20 ± 0.02
HKQ0402 10N□-△	RoHS	10	$\pm 3\%, \pm 5\%$	8	500	11	13	19	19	19	4000	1.23	130	0.20 ± 0.02
HKQ0402 12N□-△	RoHS	12	$\pm 3\%, \pm 5\%$	8	500	11	14	20	20	21	3800	1.23	130	0.20 ± 0.02
HKQ0402 15N□-△	RoHS	15	$\pm 3\%, \pm 5\%$	8	500	11	14	18	18	17	3000	1.54	110	0.20 ± 0.02
HKQ0402 18N□-△	RoHS	18	$\pm 3\%, \pm 5\%$	8	500	12	15	20	20	19	2800	1.69	110	0.20 ± 0.02
HKQ0402 22N□-△	RoHS	22	$\pm 3\%, \pm 5\%$	8	500	11	13	15	14	11	2100	2.01	100	0.20 ± 0.02
HKQ0402 27N□-△	RoHS	27	$\pm 3\%, \pm 5\%$	3	100	11	13	13	11	7	1700	2.24	90	0.20 ± 0.02

※ □ mark indicates the Inductance tolerance code.

※ △ mark indicates the Packing code.

PARTS NUMBER

HKQ0603W

Parts number	EHS	Nominal inductance [nH]	Inductance tolerance	Q (min.)	LQ Measuring frequency [MHz]	Q (Typical) frequency [Hz]					Self-resonant frequency [MHz] (min.)	Resistance DC [Ω] (max.)	Rated current [mA] (max.)	Thickness [mm]
						500M	800M	1.8G	2.0G	2.4G				
HKQ0603W0N6□-T	RoHS	0.6	±0.1nH, ±0.2nH, ±0.3nH	15	500	30<	40<	75<	80<	88<	10000	0.07	850	0.30 ±0.03
HKQ0603W0N7□-T	RoHS	0.7	±0.1nH, ±0.2nH, ±0.3nH	15	500	30<	40<	75<	80<	88<	10000	0.07	850	0.30 ±0.03
HKQ0603W0N8□-T	RoHS	0.8	±0.1nH, ±0.2nH, ±0.3nH	15	500	30<	40<	75<	80<	88<	10000	0.07	850	0.30 ±0.03
HKQ0603W0N9□-T	RoHS	0.9	±0.1nH, ±0.2nH, ±0.3nH	15	500	30<	40<	75<	80<	88<	10000	0.09	760	0.30 ±0.03
HKQ0603W1N0□-T	RoHS	1	±0.1nH, ±0.2nH, ±0.3nH	15	500	30<	40<	75<	80<	88<	10000	0.12	680	0.30 ±0.03
HKQ0603W1N1□-T	RoHS	1.1	±0.1nH, ±0.2nH, ±0.3nH	15	500	30<	40<	75<	80<	88<	10000	0.10	750	0.30 ±0.03
HKQ0603W1N2□-T	RoHS	1.2	±0.1nH, ±0.2nH, ±0.3nH	15	500	30	40	75	80	88	10000	0.10	750	0.30 ±0.03
HKQ0603W1N3□-T	RoHS	1.3	±0.1nH, ±0.2nH, ±0.3nH	15	500	30	40	70	74	85	10000	0.12	650	0.30 ±0.03
HKQ0603W1N4□-T	RoHS	1.4	±0.1nH, ±0.2nH, ±0.3nH	15	500	30	39	65	68	80	10000	0.12	650	0.30 ±0.03
HKQ0603W1N5□-T	RoHS	1.5	±0.1nH, ±0.2nH, ±0.3nH	15	500	30	38	60	63	75	10000	0.12	650	0.30 ±0.03
HKQ0603W1N6□-T	RoHS	1.6	±0.1nH, ±0.2nH, ±0.3nH	15	500	26	34	55	57	70	10000	0.14	610	0.30 ±0.03
HKQ0603W1N7□-T	RoHS	1.7	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	33	53	55	62	10000	0.14	610	0.30 ±0.03
HKQ0603W1N8□-T	RoHS	1.8	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	53	55	62	10000	0.14	610	0.30 ±0.03
HKQ0603W1N9□-T	RoHS	1.9	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	53	55	62	10000	0.14	610	0.30 ±0.03
HKQ0603W2N0□-T	RoHS	2	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	53	55	62	10000	0.14	610	0.30 ±0.03
HKQ0603W2N1□-T	RoHS	2.1	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	52	54	61	10000	0.14	610	0.30 ±0.03
HKQ0603W2N2□-T	RoHS	2.2	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	52	54	61	10000	0.14	610	0.30 ±0.03
HKQ0603W2N3□-T	RoHS	2.3	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	52	54	61	10000	0.16	560	0.30 ±0.03
HKQ0603W2N4□-T	RoHS	2.4	±0.1nH, ±0.2nH, ±0.3nH	15	500	25	32	51	53	61	10000	0.16	560	0.30 ±0.03
HKQ0603W2N5□-T	RoHS	2.5	±0.1nH, ±0.2nH, ±0.3nH	15	500	24	32	51	53	60	8500	0.16	560	0.30 ±0.03
HKQ0603W2N6□-T	RoHS	2.6	±0.1nH, ±0.2nH, ±0.3nH	15	500	24	32	50	52	56	8500	0.16	560	0.30 ±0.03
HKQ0603W2N7□-T	RoHS	2.7	±0.1nH, ±0.2nH, ±0.3nH	15	500	23	31	48	49	54	8500	0.19	510	0.30 ±0.03
HKQ0603W2N8□-T	RoHS	2.8	±0.1nH, ±0.2nH, ±0.3nH	15	500	23	31	48	50	53	8500	0.20	500	0.30 ±0.03
HKQ0603W2N9□-T	RoHS	2.9	±0.1nH, ±0.2nH, ±0.3nH	15	500	23	31	48	49	52	8500	0.20	500	0.30 ±0.03
HKQ0603W3N0□-T	RoHS	3	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	31	46	47	52	8500	0.20	500	0.30 ±0.03
HKQ0603W3N1□-T	RoHS	3.1	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	30	46	48	52	8500	0.20	500	0.30 ±0.03
HKQ0603W3N2□-T	RoHS	3.2	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	30	46	48	52	8500	0.20	500	0.30 ±0.03
HKQ0603W3N3□-T	RoHS	3.3	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	30	45	46	50	8000	0.20	500	0.30 ±0.03
HKQ0603W3N4□-T	RoHS	3.4	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	30	46	47	50	8000	0.20	500	0.30 ±0.03
HKQ0603W3N5□-T	RoHS	3.5	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	29	45	46	50	8000	0.20	500	0.30 ±0.03
HKQ0603W3N6□-T	RoHS	3.6	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	29	45	46	50	7000	0.20	500	0.30 ±0.03
HKQ0603W3N7□-T	RoHS	3.7	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	28	43	44	48	7000	0.20	500	0.30 ±0.03
HKQ0603W3N8□-T	RoHS	3.8	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	28	43	44	47	7000	0.20	500	0.30 ±0.03
HKQ0603W3N9□-T	RoHS	3.9	±0.1nH, ±0.2nH, ±0.3nH	15	500	22	28	43	43	47	7000	0.25	440	0.30 ±0.03
HKQ0603W4N3□-T	RoHS	4.3	±0.2nH, ±0.3nH, ±3%, ±5%	15	500	21	29	43	44	47	6000	0.30	400	0.30 ±0.03
HKQ0603W4N7□-T	RoHS	4.7	±0.2nH, ±0.3nH, ±3%, ±5%	15	500	21	29	42	42	45	6000	0.35	370	0.30 ±0.03
HKQ0603W5N1□-T	RoHS	5.1	±0.2nH, ±0.3nH, ±3%, ±5%	15	500	21	27	41	41	44	6000	0.35	370	0.30 ±0.03
HKQ0603W5N6□-T	RoHS	5.6	±0.2nH, ±0.3nH, ±3%, ±5%	15	500	21	28	40	40	43	6000	0.35	370	0.30 ±0.03
HKQ0603W6N2□-T	RoHS	6.2	±0.2nH, ±0.3nH, ±3%, ±5%	15	500	21	27	40	41	41	6000	0.40	340	0.30 ±0.03
HKQ0603W6N8□-T	RoHS	6.8	±3%, ±5%	15	500	21	27	39	39	40	6000	0.50	310	0.30 ±0.03
HKQ0603W7N5□-T	RoHS	7.5	±3%, ±5%	14	500	20	27	37	37	39	5000	0.60	300	0.30 ±0.03
HKQ0603W8N2□-T	RoHS	8.2	±3%, ±5%	14	500	20	27	37	37	40	5000	0.70	250	0.30 ±0.03
HKQ0603W9N1□-T	RoHS	9.1	±3%, ±5%	14	500	20	26	36	36	39	4000	0.70	250	0.30 ±0.03
HKQ0603W10N□-T	RoHS	10	±3%, ±5%	14	500	20	26	35	35	37	4000	0.85	220	0.30 ±0.03
HKQ0603W12N□-T	RoHS	12	±3%, ±5%	14	500	20	26	32	33	34	3000	0.85	220	0.30 ±0.03
HKQ0603W15N□-T	RoHS	15	±3%, ±5%	14	500	20	24	30	29	27	3000	0.90	200	0.30 ±0.03
HKQ0603W18N□-T	RoHS	18	±3%, ±5%	14	500	19	24	28	26	25	2500	1.20	180	0.30 ±0.03
HKQ0603W22N□-T	RoHS	22	±3%, ±5%	14	500	18	23	26	26	22	2500	1.60	160	0.30 ±0.03
HKQ0603W27N□-T	RoHS	27	±3%, ±5%	9	500	13	15	12	-	-	1700	1.60	160	0.30 ±0.03
HKQ0603W33N□-T	RoHS	33	±3%, ±5%	7	300	13	14	-	-	-	1500	1.60	160	0.30 ±0.03
HKQ0603W39N□-T	RoHS	39	±3%, ±5%	7	300	12	13	-	-	-	1300	2.00	140	0.30 ±0.03
HKQ0603W47N□-T	RoHS	47	±3%, ±5%	7	300	12	13	-	-	-	1200	2.10	140	0.30 ±0.03
HKQ0603W56N□-T	RoHS	56	±3%, ±5%	7	300	11	12	-	-	-	1000	3.00	120	0.30 ±0.03
HKQ0603W68N□-T	RoHS	68	±3%, ±5%	7	300	11	12	-	-	-	1000	3.10	120	0.30 ±0.03
HKQ0603W82N□-T	RoHS	82	±3%, ±5%	7	300	11	11	-	-	-	900	3.50	110	0.30 ±0.03
HKQ0603WR10□-T	RoHS	100	±3%, ±5%	6	300	10	8	-	-	-	800	4.10	100	0.30 ±0.03

※ □ mark indicates the Inductance tolerance code.

▶ 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/>).

INDUCTORS \ INDUCTORS FOR HIGH FREQUENCY APPLICATIONS

● HKQ0603C

Parts number	EHS	Nominal inductance [nH]	Inductance tolerance	Q (min.)	LQ Measuring frequency [MHz]	Q (Typical) frequency [Hz]					Self-resonant frequency [MHz] (min.)	Resistance DC [Ω] (max.)	Rated current [mA] (max.)	Thickness [mm]
						500M	800M	1.8G	2.0G	2.4G				
HKQ0603C0N6[-T]	RoHS	0.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36<	46<	78<	82<	91<	10000	0.07	850	0.30 ± 0.03
HKQ0603C0N7[-T]	RoHS	0.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36<	46<	78<	82<	91<	10000	0.07	850	0.30 ± 0.03
HKQ0603C0N8[-T]	RoHS	0.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36<	46<	78<	82<	91<	10000	0.07	850	0.30 ± 0.03
HKQ0603C0N9[-T]	RoHS	0.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36<	46<	78<	82<	91<	10000	0.09	760	0.30 ± 0.03
HKQ0603C1N0[-T]	RoHS	1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36<	46<	78<	82<	91<	10000	0.12	680	0.30 ± 0.03
HKQ0603C1N1[-T]	RoHS	1.1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36<	46<	78<	82<	91<	10000	0.10	750	0.30 ± 0.03
HKQ0603C1N2[-T]	RoHS	1.2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36	46	78	82	91	10000	0.10	750	0.30 ± 0.03
HKQ0603C1N3[-T]	RoHS	1.3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	36	44	71	75	85	10000	0.12	650	0.30 ± 0.03
HKQ0603C1N4[-T]	RoHS	1.4	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	35	44	69	72	82	10000	0.12	650	0.30 ± 0.03
HKQ0603C1N5[-T]	RoHS	1.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	34	43	65	69	77	10000	0.12	650	0.30 ± 0.03
HKQ0603C1N6[-T]	RoHS	1.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	30	38	60	62	71	10000	0.14	610	0.30 ± 0.03
HKQ0603C1N7[-T]	RoHS	1.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	28	35	54	57	64	10000	0.14	610	0.30 ± 0.03
HKQ0603C1N8[-T]	RoHS	1.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	27	34	53	55	62	10000	0.14	610	0.30 ± 0.03
HKQ0603C1N9[-T]	RoHS	1.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	27	34	53	55	62	10000	0.14	610	0.30 ± 0.03
HKQ0603C2N0[-T]	RoHS	2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	26	33	53	55	62	10000	0.14	610	0.30 ± 0.03
HKQ0603C2N1[-T]	RoHS	2.1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	25	32	52	54	61	10000	0.14	610	0.30 ± 0.03
HKQ0603C2N2[-T]	RoHS	2.2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	25	32	52	54	61	10000	0.14	610	0.30 ± 0.03
HKQ0603C2N3[-T]	RoHS	2.3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	25	32	52	54	61	10000	0.16	560	0.30 ± 0.03
HKQ0603C2N4[-T]	RoHS	2.4	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	25	32	51	53	61	10000	0.16	560	0.30 ± 0.03
HKQ0603C2N5[-T]	RoHS	2.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	24	32	51	53	60	8500	0.16	560	0.30 ± 0.03
HKQ0603C2N6[-T]	RoHS	2.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	24	32	50	52	56	8500	0.16	560	0.30 ± 0.03
HKQ0603C2N7[-T]	RoHS	2.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	23	31	48	49	54	8500	0.19	510	0.30 ± 0.03
HKQ0603C2N8[-T]	RoHS	2.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	23	31	48	50	53	8500	0.20	500	0.30 ± 0.03
HKQ0603C2N9[-T]	RoHS	2.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	23	31	48	49	52	8500	0.20	500	0.30 ± 0.03
HKQ0603C3N0[-T]	RoHS	3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	31	46	47	52	8500	0.20	500	0.30 ± 0.03
HKQ0603C3N1[-T]	RoHS	3.1	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	30	46	48	52	8500	0.20	500	0.30 ± 0.03
HKQ0603C3N2[-T]	RoHS	3.2	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	30	46	48	52	8500	0.20	500	0.30 ± 0.03
HKQ0603C3N3[-T]	RoHS	3.3	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	30	45	46	50	8000	0.20	500	0.30 ± 0.03
HKQ0603C3N4[-T]	RoHS	3.4	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	30	46	47	50	8000	0.20	500	0.30 ± 0.03
HKQ0603C3N5[-T]	RoHS	3.5	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	29	45	46	50	8000	0.20	500	0.30 ± 0.03
HKQ0603C3N6[-T]	RoHS	3.6	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	29	45	46	50	7000	0.20	500	0.30 ± 0.03
HKQ0603C3N7[-T]	RoHS	3.7	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	28	43	44	48	7000	0.20	500	0.30 ± 0.03
HKQ0603C3N8[-T]	RoHS	3.8	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	28	43	44	47	7000	0.20	500	0.30 ± 0.03
HKQ0603C3N9[-T]	RoHS	3.9	$\pm 0.1nH, \pm 0.2nH, \pm 0.3nH$	15	500	22	28	43	43	47	7000	0.25	440	0.30 ± 0.03
HKQ0603C4N3[-T]	RoHS	4.3	$\pm 0.2nH, \pm 0.3nH$	15	500	21	29	43	44	47	6000	0.30	400	0.30 ± 0.03
HKQ0603C4N7[-T]	RoHS	4.7	$\pm 0.2nH, \pm 0.3nH$	15	500	21	29	42	42	45	6000	0.35	370	0.30 ± 0.03
HKQ0603C5N1[-T]	RoHS	5.1	$\pm 0.2nH, \pm 0.3nH$	15	500	21	27	41	41	44	6000	0.35	370	0.30 ± 0.03
HKQ0603C5N6[-T]	RoHS	5.6	$\pm 0.2nH, \pm 0.3nH$	15	500	21	28	40	40	43	6000	0.35	370	0.30 ± 0.03
HKQ0603C6N2[-T]	RoHS	6.2	$\pm 0.2nH, \pm 0.3nH$	15	500	21	27	40	41	41	6000	0.40	340	0.30 ± 0.03
HKQ0603C6N8[-T]	RoHS	6.8	$\pm 3\%, \pm 5\%$	15	500	21	27	39	39	40	6000	0.50	310	0.30 ± 0.03
HKQ0603C7N5[-T]	RoHS	7.5	$\pm 3\%, \pm 5\%$	14	500	20	27	37	37	39	5000	0.60	300	0.30 ± 0.03
HKQ0603C8N2[-T]	RoHS	8.2	$\pm 3\%, \pm 5\%$	14	500	20	27	37	37	40	5000	0.70	250	0.30 ± 0.03
HKQ0603C9N1[-T]	RoHS	9.1	$\pm 3\%, \pm 5\%$	14	500	20	26	36	36	39	4000	0.70	250	0.30 ± 0.03
HKQ0603C10N[-T]	RoHS	10	$\pm 3\%, \pm 5\%$	14	500	20	26	35	35	37	4000	0.85	220	0.30 ± 0.03
HKQ0603C12N[-T]	RoHS	12	$\pm 3\%, \pm 5\%$	14	500	20	26	32	33	34	3000	0.85	220	0.30 ± 0.03
HKQ0603C15N[-T]	RoHS	15	$\pm 3\%, \pm 5\%$	14	500	20	24	30	29	27	3000	0.90	200	0.30 ± 0.03
HKQ0603C18N[-T]	RoHS	18	$\pm 3\%, \pm 5\%$	14	500	19	24	28	26	25	2500	1.20	180	0.30 ± 0.03
HKQ0603C22N[-T]	RoHS	22	$\pm 3\%, \pm 5\%$	14	500	18	23	26	26	22	2500	1.60	160	0.30 ± 0.03

※ □ mark indicates the Inductance tolerance code.

HKQ0603S

Parts number	EHS	Nominal inductance [nH]	Inductance tolerance	Q (min.)	LQ Measuring frequency [MHz]	Q (Typical) frequency [Hz]					Self-resonant frequency [MHz] (min.)	Resistance DC [Ω] (max.)	Rated current [mA] (max.)	Thickness [mm]
						500M	800M	1.8G	2.0G	2.4G				
HKQ0603S0N6-T	RoHS	0.6	$\pm 0.2nH, \pm 0.3nH$	13	500	>24	>31	>53	>56	>64	10000	0.06	600	0.30 ± 0.03
HKQ0603S0N7-T	RoHS	0.7	$\pm 0.2nH, \pm 0.3nH$	13	500	>24	>31	>53	>56	>64	10000	0.07	550	0.30 ± 0.03
HKQ0603S0N8-T	RoHS	0.8	$\pm 0.2nH, \pm 0.3nH$	13	500	>24	>31	>53	>56	>64	10000	0.07	550	0.30 ± 0.03
HKQ0603S0N9-T	RoHS	0.9	$\pm 0.2nH, \pm 0.3nH$	13	500	>24	>31	>53	>56	>64	10000	0.08	520	0.30 ± 0.03
HKQ0603S1N0-T	RoHS	1.0	$\pm 0.2nH, \pm 0.3nH$	13	500	24	31	53	56	64	10000	0.09	490	0.30 ± 0.03
HKQ0603S1N1-T	RoHS	1.1	$\pm 0.2nH, \pm 0.3nH$	13	500	19	26	44	47	54	10000	0.12	420	0.30 ± 0.03
HKQ0603S1N2-T	RoHS	1.2	$\pm 0.2nH, \pm 0.3nH$	13	500	19	25	42	44	51	10000	0.15	380	0.30 ± 0.03
HKQ0603S1N3-T	RoHS	1.3	$\pm 0.2nH, \pm 0.3nH$	13	500	19	25	40	42	47	10000	0.19	330	0.30 ± 0.03
HKQ0603S1N4-T	RoHS	1.4	$\pm 0.2nH, \pm 0.3nH$	13	500	19	24	39	41	47	10000	0.11	440	0.30 ± 0.03
HKQ0603S1N5-T	RoHS	1.5	$\pm 0.2nH, \pm 0.3nH$	13	500	19	24	39	41	46	10000	0.12	420	0.30 ± 0.03
HKQ0603S1N6-T	RoHS	1.6	$\pm 0.2nH, \pm 0.3nH$	13	500	19	24	39	41	46	10000	0.13	410	0.30 ± 0.03
HKQ0603S1N7-T	RoHS	1.7	$\pm 0.2nH, \pm 0.3nH$	13	500	19	24	39	41	46	10000	0.15	380	0.30 ± 0.03
HKQ0603S1N8-T	RoHS	1.8	$\pm 0.2nH, \pm 0.3nH$	13	500	18	24	39	41	46	10000	0.16	370	0.30 ± 0.03
HKQ0603S1N9-T	RoHS	1.9	$\pm 0.2nH, \pm 0.3nH$	13	500	18	23	38	40	45	10000	0.20	330	0.30 ± 0.03
HKQ0603S2N0-T	RoHS	2.0	$\pm 0.2nH, \pm 0.3nH$	13	500	17	23	37	39	44	10000	0.24	300	0.30 ± 0.03
HKQ0603S2N1-T	RoHS	2.1	$\pm 0.2nH, \pm 0.3nH$	13	500	17	23	37	39	44	10000	0.26	290	0.30 ± 0.03
HKQ0603S2N2-T	RoHS	2.2	$\pm 0.2nH, \pm 0.3nH$	13	500	17	23	37	39	43	10000	0.28	270	0.30 ± 0.03
HKQ0603S2N3-T	RoHS	2.3	$\pm 0.2nH, \pm 0.3nH$	13	500	17	23	36	38	43	10000	0.30	270	0.30 ± 0.03
HKQ0603S2N4-T	RoHS	2.4	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	36	38	42	10000	0.32	260	0.30 ± 0.03
HKQ0603S2N5-T	RoHS	2.5	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	34	35	39	9500	0.20	330	0.30 ± 0.03
HKQ0603S2N6-T	RoHS	2.6	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	9300	0.22	310	0.30 ± 0.03
HKQ0603S2N7-T	RoHS	2.7	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	9100	0.24	300	0.30 ± 0.03
HKQ0603S2N8-T	RoHS	2.8	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	8900	0.25	290	0.30 ± 0.03
HKQ0603S2N9-T	RoHS	2.9	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	8700	0.28	270	0.30 ± 0.03
HKQ0603S3N0-T	RoHS	3.0	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	8600	0.28	270	0.30 ± 0.03
HKQ0603S3N1-T	RoHS	3.1	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	8400	0.29	270	0.30 ± 0.03
HKQ0603S3N2-T	RoHS	3.2	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	8200	0.30	270	0.30 ± 0.03
HKQ0603S3N3-T	RoHS	3.3	$\pm 0.2nH, \pm 0.3nH$	13	500	17	22	33	35	39	8100	0.32	260	0.30 ± 0.03
HKQ0603S3N4-T	RoHS	3.4	$\pm 0.2nH, \pm 0.3nH$	13	500	16	22	33	35	39	8000	0.36	240	0.30 ± 0.03
HKQ0603S3N5-T	RoHS	3.5	$\pm 0.2nH, \pm 0.3nH$	13	500	16	22	33	35	39	7800	0.40	230	0.30 ± 0.03
HKQ0603S3N6-T	RoHS	3.6	$\pm 0.2nH, \pm 0.3nH$	13	500	16	22	33	35	39	7700	0.41	230	0.30 ± 0.03
HKQ0603S3N7-T	RoHS	3.7	$\pm 0.2nH, \pm 0.3nH$	13	500	16	22	33	35	38	7600	0.44	220	0.30 ± 0.03
HKQ0603S3N8-T	RoHS	3.8	$\pm 0.2nH, \pm 0.3nH$	13	500	16	22	33	35	38	7500	0.48	210	0.30 ± 0.03
HKQ0603S3N9-T	RoHS	3.9	$\pm 0.2nH, \pm 0.3nH$	13	500	16	22	33	35	38	7300	0.48	210	0.30 ± 0.03
HKQ0603S4N3-T	RoHS	4.3	$\pm 0.2nH, \pm 0.3nH$	13	500	16	21	32	34	37	6500	0.39	230	0.30 ± 0.03
HKQ0603S4N7-T	RoHS	4.7	$\pm 0.2nH, \pm 0.3nH$	13	500	16	21	32	34	37	6200	0.44	220	0.30 ± 0.03
HKQ0603S5N1-T	RoHS	5.1	$\pm 0.2nH, \pm 0.3nH$	13	500	16	21	32	34	37	5900	0.49	210	0.30 ± 0.03
HKQ0603S5N6-T	RoHS	5.6	$\pm 0.2nH, \pm 0.3nH$	13	500	16	21	32	34	37	5500	0.47	210	0.30 ± 0.03
HKQ0603S6N2-T	RoHS	6.2	$\pm 0.2nH, \pm 0.3nH$	13	500	16	21	32	33	36	5100	0.52	200	0.30 ± 0.03
HKQ0603S6N8-T	RoHS	6.8	$\pm 3\%, \pm 5\%$	13	500	16	21	31	32	35	4800	0.55	190	0.30 ± 0.03
HKQ0603S7N5-T	RoHS	7.5	$\pm 3\%, \pm 5\%$	13	500	16	20	30	32	34	4600	0.51	200	0.30 ± 0.03
HKQ0603S8N2-T	RoHS	8.2	$\pm 3\%, \pm 5\%$	13	500	16	20	30	31	33	4300	0.57	190	0.30 ± 0.03
HKQ0603S9N1-T	RoHS	9.1	$\pm 3\%, \pm 5\%$	13	500	16	20	30	30	32	4000	0.73	170	0.30 ± 0.03
HKQ0603S10N-T	RoHS	10	$\pm 3\%, \pm 5\%$	13	500	16	20	28	29	31	3800	0.85	160	0.30 ± 0.03
HKQ0603S12N-T	RoHS	12	$\pm 3\%, \pm 5\%$	12	500	16	20	27	27	27	3300	0.85	160	0.30 ± 0.03
HKQ0603S15N-T	RoHS	15	$\pm 3\%, \pm 5\%$	12	500	15	19	24	24	23	2600	0.89	150	0.30 ± 0.03
HKQ0603S18N-T	RoHS	18	$\pm 3\%, \pm 5\%$	11	500	15	19	23	23	21	2300	1.05	140	0.30 ± 0.03
HKQ0603S22N-T	RoHS	22	$\pm 3\%, \pm 5\%$	10	500	15	19	22	22	19	1900	1.29	130	0.30 ± 0.03

※ □ mark indicates the Inductance tolerance code.

AQ 105

Parts number	EHS	Nominal inductance [nH]	Inductance tolerance ※)	Q (min.)	LQ Measuring frequency [MHz]	Q (Typical) frequency [MHz]					Self-resonant frequency [MHz]		Resistance DC [Ω]		Rated current [mA] (max.)		Thickness [mm]
						300	800	900	1500	1800	(min.)	(typ.)	(max.)	(typ.)	-55~+125°C	-55~+85°C	
AQ 105 1N0□-T	RoHS	1.0	±0.3nH	8	100	53	129	147	217	244	10000	> 13000	0.07	0.014	710	930	0.50 ±0.05
AQ 105 1N2□-T	RoHS	1.2	±0.3nH	8	100	45	97	110	156	177	10000	> 13000	0.07	0.016	710	930	0.50 ±0.05
AQ 105 1N5□-T	RoHS	1.5	±0.3nH	8	100	35	69	76	104	116	8000	> 13000	0.07	0.030	710	930	0.50 ±0.05
AQ 105 1N8□-T	RoHS	1.8	±0.3nH	8	100	32	61	66	92	100	6000	11000	0.07	0.035	710	930	0.50 ±0.05
AQ 105 2N0□-T	RoHS	2.0	±0.3nH	8	100	38	68	73	94	103	6000	10500	0.08	0.035	660	870	0.50 ±0.05
AQ 105 2N2□-T	RoHS	2.2	±0.3nH	8	100	37	67	71	92	101	6000	10000	0.08	0.040	660	870	0.50 ±0.05
AQ 105 2N4□-T	RoHS	2.4	±0.3nH	8	100	34	54	59	74	86	6000	9600	0.09	0.050	630	820	0.50 ±0.05
AQ 105 2N7□-T	RoHS	2.7	±0.3nH	8	100	30	49	52	67	73	6000	9200	0.09	0.060	630	820	0.50 ±0.05
AQ 105 3N0□-T	RoHS	3.0	±0.3nH	8	100	31	51	54	70	76	6000	8700	0.11	0.070	570	740	0.50 ±0.05
AQ 105 3N3□-T	RoHS	3.3	±0.3nH	8	100	32	54	57	72	79	6000	8300	0.12	0.075	540	710	0.50 ±0.05
AQ 105 3N6□-T	RoHS	3.6	±0.3nH	8	100	33	53	56	71	77	5000	7800	0.14	0.080	500	650	0.50 ±0.05
AQ 105 3N9□-T	RoHS	3.9	±0.3nH	8	100	34	53	56	70	76	4000	7300	0.15	0.085	490	630	0.50 ±0.05
AQ 105 4N3□-T	RoHS	4.3	±0.3nH	8	100	29	47	50	64	71	4000	6900	0.16	0.090	470	610	0.50 ±0.05
AQ 105 4N7□-T	RoHS	4.7	±0.3nH	8	100	30	48	51	65	72	4000	6400	0.17	0.095	450	590	0.50 ±0.05
AQ 105 5N1□-T	RoHS	5.1	±0.3nH	8	100	30	48	51	64	71	4000	6300	0.19	0.110	430	560	0.50 ±0.05
AQ 105 5N6□-T	RoHS	5.6	±0.3nH	8	100	30	48	51	65	71	4000	6200	0.20	0.120	420	550	0.50 ±0.05
AQ 105 6N2□-T	RoHS	6.2	±0.3nH	8	100	31	49	52	66	72	3900	6100	0.22	0.130	400	520	0.50 ±0.05
AQ 105 6N8□-T	RoHS	6.8	±5%	8	100	28	44	49	59	64	3900	6000	0.23	0.130	390	510	0.50 ±0.05
AQ 105 7N5□-T	RoHS	7.5	±5%	8	100	28	45	50	60	65	3700	5500	0.25	0.135	370	490	0.50 ±0.05
AQ 105 8N2□-T	RoHS	8.2	±5%	8	100	29	46	50	62	66	3600	5000	0.27	0.140	360	470	0.50 ±0.05
AQ 105 9N1□-T	RoHS	9.1	±5%	8	100	29	45	49	59	62	3400	4800	0.29	0.150	350	450	0.50 ±0.05
AQ 105 10N□-T	RoHS	10	±5%	8	100	28	45	48	57	60	3200	4500	0.31	0.165	330	440	0.50 ±0.05
AQ 105 12N□-T	RoHS	12	±5%	8	100	26	40	45	51	52	2700	4300	0.39	0.165	300	390	0.50 ±0.05
AQ 105 15N□-T	RoHS	15	±5%	8	100	25	38	42	49	51	2300	4100	0.45	0.190	280	360	0.50 ±0.05

※ □ mark indicates the Inductance tolerance code. Please refer for the inductance tolerance except the above.

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

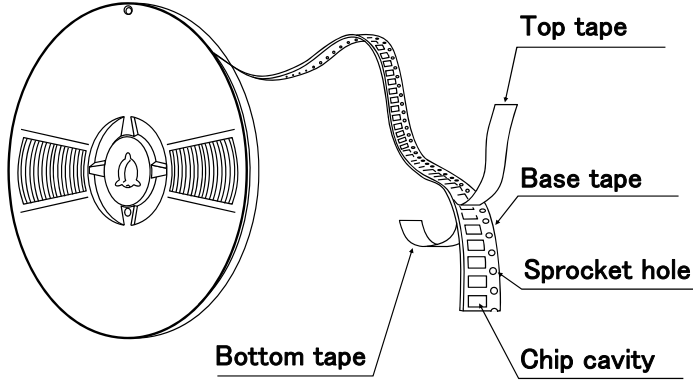
● Tape & Reel Packaging

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
	0.85(0.033)	4000	—
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

► 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/>).

② Taping material

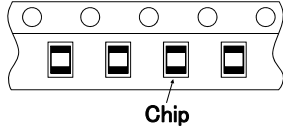
● Card board carrier tape



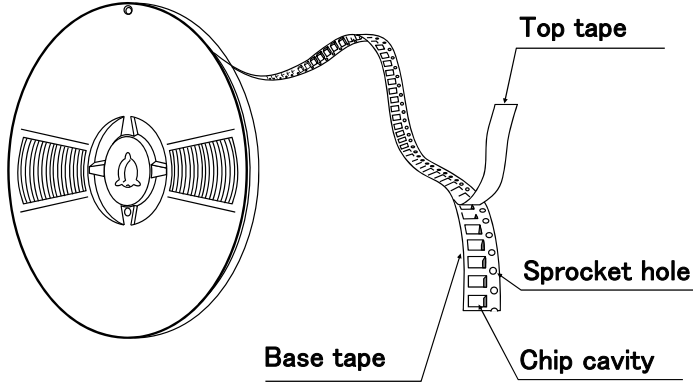
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CKP	1608
CK	2125
CKS	2125
LK	1005
LK	1608
LK	2125
HK	0402
HK	0603
HK	1005
HK	1608
HKQ	0402
HKQ	0603
AQ	105

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

Chip Filled



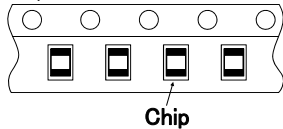
● Embossed Tape



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

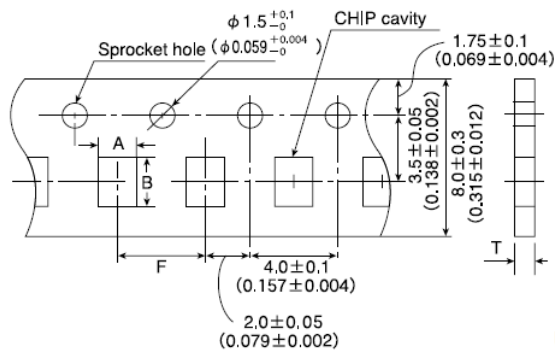
BK	2125
BK	3216
MCF	0806
MCF	1210
MCF	2010

Chip Filled



③ Taping Dimensions

● Paper tape (8mm wide)

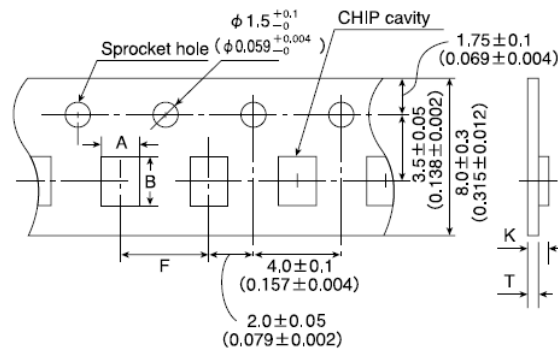


▶ This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>).

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)

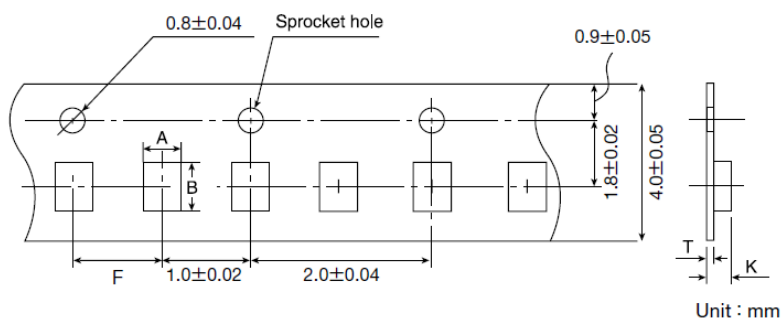


Unit : mm (inch)

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)



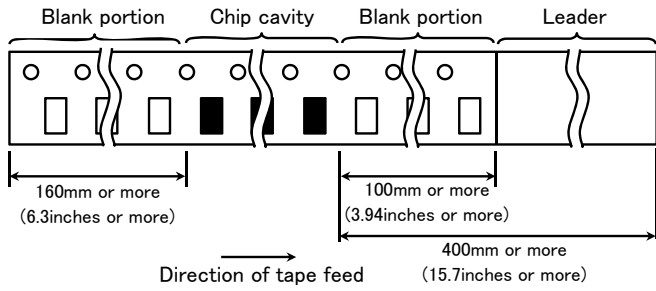
Unit : mm

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.

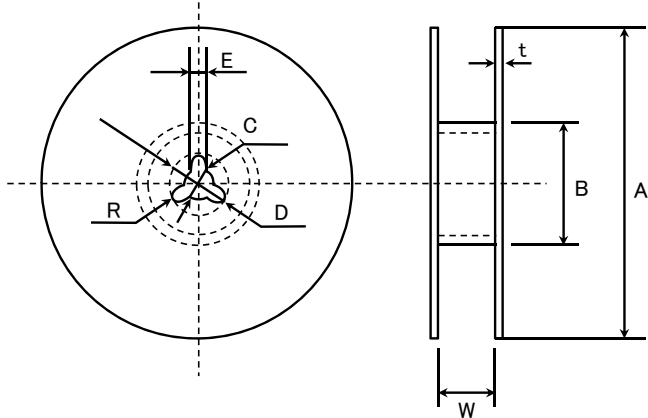
Unit : mm

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④ LEADER AND BLANK PORTION



⑤ Reel Size



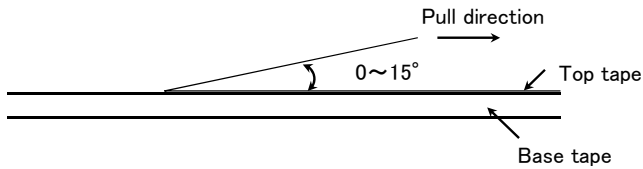
A	B	C	D	E	R
$\phi 178 \pm 2.0$	$\phi 50$ or more	$\phi 13.0 \pm 0.2$	$\phi 21.0 \pm 0.8$	2.0 ± 0.5	1.0

	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	
	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		

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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)		

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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 μH: ±20%
	CK2125	0.1~10.0 μH: ±20%
	CKS2125	1.0~10.0 μH: ±20%
	CKP1608	0.33~2.2 μH: ±20%
	CKP2012	0.47~4.7 μH: ±20%
	CKP2016	0.47~4.7 μH: ±20%
	CKP2520	0.47~4.7 μH: ±20%
	NM2012	0.82~1.0 μH: ±20%
	NM2520	1.0~2.2 μH: ±20%
	LK1005	0.12~2.2 μH: ±10 or 20%
	LK1608	0.047~33.0 μH: ±20% 0.10~12.0 μH: ±10%
LK2125	0.047~33.0 μH: ±20% 0.10~12.0 μH: ±10%	
HK0402	1.0~5.6nH: ±0.3nH 6.8~12nH: ±5%	
HK0603	1.0~6.2nH: ±0.3nH 6.8~100nH: ±5%	
HK1005	1.0~6.2nH: ±0.3nH 6.8~270nH: ±5%	
HK1608	1.0~5.6nH: ±0.3nH 6.8~470nH: ±5%	
HK2125	1.5~5.6nH: ±0.3nH 6.8~470nH: ±5%	
HKQ0402	0.5~3.9nH: ±0.1 or 0.2 or 0.3nH 4.3~5.6nH: ±0.3nH or 3% 6.2~27nH: ±3 or 5%	
HKQ0603W	0.6~3.9nH: ±0.1 or 0.2 or 0.3nH 4.3~6.2nH: ±0.2 or 0.3nH or 3 or 5% 6.8~100nH: ±3 or 5%	
HKQ0603C	0.6~3.9nH: ±0.1 or 0.2 or 0.3nH 4.3~6.2nH: ±0.2 or 0.3nH 6.8~22nH: ±3 or 5%	
HKQ0603S	0.6~6.2nH: ±0.2 or 0.3nH 6.8~22nH: ±3 or 5%	
HKQ0603U	0.6~4.2nH: ±0.1 or 0.2 or 0.3nH 4.3~6.5nH: ±0.2 or 0.3nH 6.8~22nH: ±3 or 5%	
AQ105	1.0~6.2nH: ±0.3nH 6.8~15nH: ±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 μH) • 0.1mA rms (5.6~33 μH)
	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

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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)		

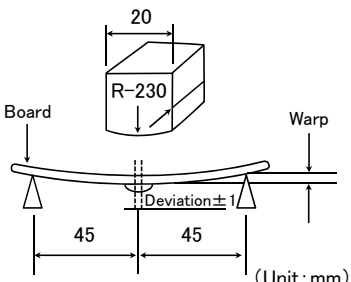
8. Self Resonance Frequency (SRF)

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		Inductance change: Within $\pm 10\%$	
	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 : $-30\sim +85^{\circ}\text{C}$ Reference temperature : $+20^{\circ}\text{C}$			

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	<p>Warp : 2mm (BK Series without 0402 size, BKP, BKH1005, CK, CKS, CKP, NM, LK, HK, HKQ0603S, HKQ0603U, AQ Series, MCF1210)</p> <p>: 1mm (BK0402, BKH0603, HK0402, HKQ0402, HKQ0603W, HKQ0603C Series, MCF Series without 1210 size.)</p> <p>Testing board : glass epoxy-resin substrate</p> <p>Thickness : 0.8mm</p>  <p>(Unit: mm)</p>		

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11. Solderability

Specified Value	BK0402	At least 75% of terminal electrode is covered by new solder.			
	BK0603				
	BK1005				
	BKH0603		At least 75% of terminal electrode is covered by new solder.		
	BKH1005				
	BK1608				
	BK2125				
	ARRAY			BK2010	
				BK3216	
	BKP0603			At least 75% of terminal electrode is covered by new solder.	
	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°C (JIS Z 3282 H60A or H63A)				
	Solder temperature : 245±3°C (Sn/3.0Ag/0.5Cu)				
	Duration : 4±1 sec.				

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12. Resistance to Soldering

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		
	MCF 0605		Appearance: No significant abnormality Impedance change: Within $\pm 20\%$
	MCF 0806		
	MCF 1210		
	MCF 2010		
	CK1608	No mechanical damage. Remaining terminal electrode: 70% min	
	CK2125		
	CKS2125	Inductance change R10~4R7: Within $\pm 10\%$ 6R8~100: Within $\pm 15\%$ CKS2125 : Within $\pm 20\%$ CKP1608、CKP2012、CKP2016、CKP2520、NM2012、NM2520: Within $\pm 30\%$	
CKP1608			
CKP2012			
CKP2016			
CKP2520			
NM2012			
NM2520			
LK1005	No mechanical damage. Remaining terminal electrode: 70% min. Inductance change: Within $\pm 15\%$		
LK1608	No mechanical damage. Remaining terminal electrode: 70% min. Inductance change 47N~4R7: Within $\pm 10\%$ 5R6~330: Within $\pm 15\%$		
LK2125			
HK0402	No mechanical damage. Remaining terminal electrode: 70% min. Inductance change: Within $\pm 5\%$		
HK0603			
HK1005			
HK1608			
HK2125			
HKQ0402			
HKQ0603W			
HKQ0603C			
HKQ0603S			
HKQ0603U			
AQ105			
Test Methods and Remarks	Solder temperature : $260 \pm 5^\circ\text{C}$ Duration : 10 ± 0.5 sec. Preheating temperature : 150 to 180°C 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)		

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13. Thermal Shock

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		
	MCF 0605		
	MCF 0806		
	MCF 1210		
	MCF 2010		
	CK1608		No mechanical damage.
	CK2125		Inductance change: Within $\pm 20\%$ Q change: Within $\pm 30\%$
	CKS2125		Inductance change: Within $\pm 20\%$ (CKS2125)
	CKP1608		No mechanical damage. Inductance change: Within $\pm 30\%$
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005		No mechanical damage.
LK1608	Inductance change: Within $\pm 10\%$ Q change: Within $\pm 30\%$		
LK2125	No mechanical damage. Inductance change: Within $\pm 10\%$ Q change: Within $\pm 20\%$		
HK0402			
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 $\pm 30\%$	
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY		BK2010
			BK3216
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	MCF 0605		
	MCF 0806		Appearance : No significant abnormality Impedance change : Within $\pm 20\%$
	MCF 1210		
	MCF 2010		
	CK1608	No mechanical damage.	
	CK2125	Inductance change : Within $\pm 20\%$ Q change : Within $\pm 30\%$	
	CKS2125	Inductance change : Within $\pm 20\%$	
	CKP1608	No mechanical damage. Inductance change : Within $\pm 30\%$	
	CKP2012		
	CKP2016		
	CKP2520		
	NM2012		
	NM2520		
	LK1005	No mechanical damage.	
	LK1608	Inductance change : Within $\pm 10\%$ 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, MCF Series: Temperature : $40 \pm 2^\circ\text{C}$ 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 : $40 \pm 2^\circ\text{C}$ (LK, CK, CKS, CKP, NM Series) : $60 \pm 2^\circ\text{C}$ (HK, HKQ, AQ Series) Humidity : 90 to 95%RH 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 $\pm 30\%$	
	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		
	HK0603		
	HK1005		
HK1608			
HK2125			
HKQ0402	No mechanical damage. Inductance change : Within $\pm 10\%$ Q change : Within $\pm 20\%$		
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 $\pm 30\%$	
	BK0603		
	BK1005		
	BKH0603		
	BKH1005		
	BK1608		
	BK2125		
	ARRAY		BK2010
			BK3216
	BKP0603		
	BKP1005		
	BKP1608		
	BKP2125		
	MCF 0605		Appearance: No significant abnormality Impedance change: Within $\pm 20\%$
	MCF 0806		
	MCF 1210		
	MCF 2010		
	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		
	LK1005	No mechanical damage. Inductance change: Within $\pm 10\%$ Q change: Within $\pm 30\%$	
	LK1608	No mechanical damage. Inductance change: 0.047~12.0 μ H: Within $\pm 10\%$ 15.0~33.0 μ 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, BKH, BKP Series, MCF Series: Temperature : 125 \pm 3 $^{\circ}$ C (BK, BKH Series) : 85 \pm 3 $^{\circ}$ C (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 \pm 2 $^{\circ}$ C (LK, CK, CKS, CKP, NM Series) : 85 \pm 2 $^{\circ}$ C (HK1608, 2125) : 85 \pm 2 $^{\circ}$ C (HK1005, AQ105 operating temperature range -55~+85 $^{\circ}$ C) : 125 \pm 2 $^{\circ}$ C (HK0402, HKQ0402, HK0603, HK1005, HKQ0603S, HKQ0603U, HKQ0603W, HKQ0603C, AQ105 operating temperature range -55~+125 $^{\circ}$ C) Applied current: Rated current Duration : 500 \pm 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 $^{\circ}$ 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 $^{\circ}$ 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 \pm 2 hrs of recovery under the standard condition.

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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

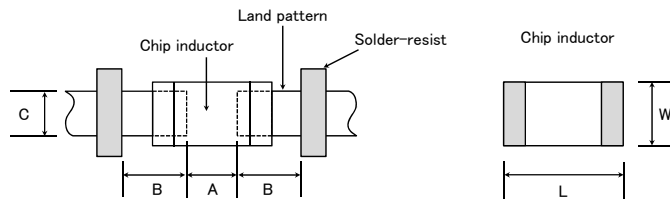
1. Circuit Design

- 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.

- Technical considerations**
- ◆ 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



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

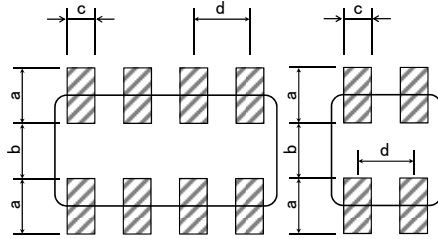
Recommended land dimensions for reflow-soldering (Unit: mm)

Type	0402	0603	1005	105	1608	2012
Size	L	0.4	0.6	1.0	1.6	2.0
	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	2.0	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

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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		
Component placement close to the chassis		
Hand-soldering of leaded components near mounted components		
Horizontal component placement		

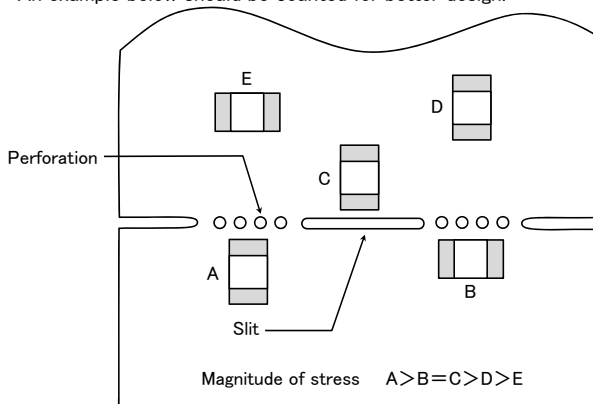
◆ Pattern configurations (Inductor layout on panelized [breakaway] PC boards)

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		

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.

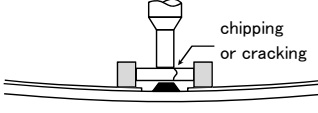
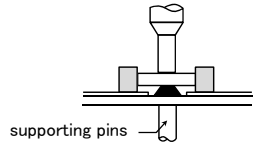
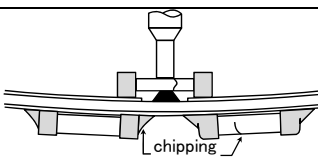
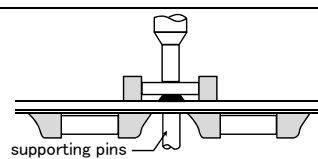
3. Considerations for automatic placement

Precautions

- ◆ Adjustment of mounting machine
 1. Excessive impact load should not be imposed on the inductors when mounting onto the PC boards.
 2. The maintenance and inspection of the mounter should be conducted periodically.
- ◆ Selection of Adhesives
 1. 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

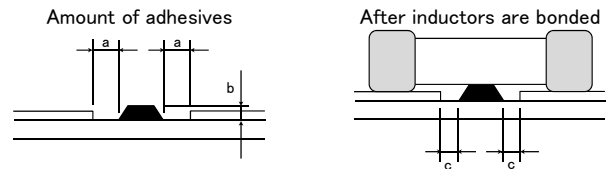
- ◆ Adjustment of mounting machine
 1. If the lower limit of the pick-up nozzle is low, too much force may be imposed on the inductors, causing damage. To avoid this, the following points should be considered before lowering the pick-up nozzle:
 - (1) The lower limit of the pick-up nozzle should be adjusted to the surface level of the PC board after correcting for deflection of the board.
 - (2) The pick-up pressure should be adjusted between 1 and 3N static loads.
 - (3) 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:

Item	Improper method	Proper method
Single-sided mounting		
Double-sided mounting		

2. 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
 1. 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.
 - (1) Required adhesive characteristics
 - a. The adhesive should be strong enough to hold parts on the board during the mounting & solder process.
 - b. The adhesive should have sufficient strength at high temperatures.
 - c. The adhesive should have good coating and thickness consistency.
 - d. The adhesive should be used during its prescribed shelf life.
 - e. The adhesive should harden rapidly.
 - f. The adhesive must not be contaminated.
 - g. The adhesive should have excellent insulation characteristics.
 - h. The adhesive should not be toxic and have no emission of toxic gasses.
 - (2) 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]

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
 1. Since flux may have a significant effect on the performance of inductors, it is necessary to verify the following conditions prior to use;
 - (1) 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.
 - (2) When soldering inductors on the board, the amount of flux applied should be controlled at the optimum level.
 - (3) When using water-soluble flux, special care should be taken to properly clean the boards.
- ◆ Soldering
 1. 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.

◆ 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

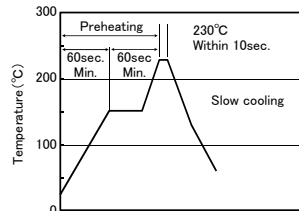
Heating: Chip inductor components should be preheated to within 100 to 130°C of the soldering. Cooling: The temperature difference between the components and cleaning process should not be greater than 100°C.

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.

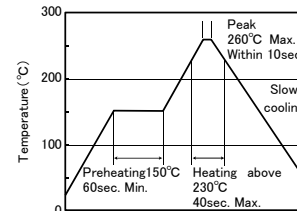
Recommended conditions for soldering

[Reflow soldering]

Temperature profile



Pb free soldering

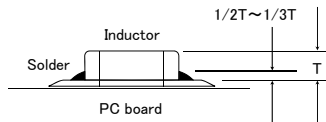


※Ceramic chip components should be preheated to within 100 to 130°C of the soldering.

※Assured to be reflow soldering for 2 times.

Caution

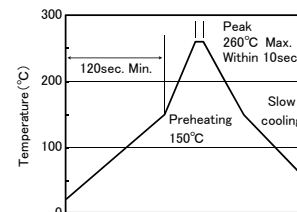
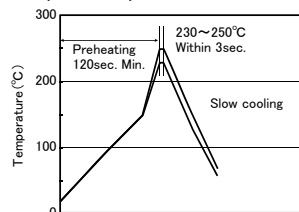
- 1. The ideal condition is to have solder mass (fillet) controlled to 1/2 to 1/3 of the thickness of the inductor, as shown below:



- 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.

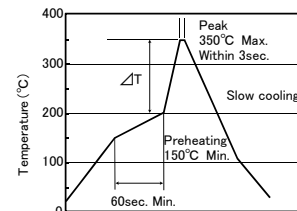
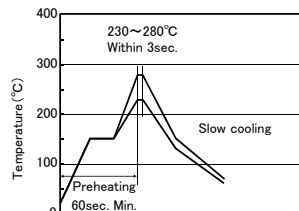
※Except for reflow soldering type.

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



(※ΔT ≤ 190°C (3216 Type max), ΔT ≤ 130°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

	<p>Caution</p> <ol style="list-style-type: none"> 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	<p>◆Cleaning conditions</p> <ol style="list-style-type: none"> 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	<p>◆Cleaning conditions</p> <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> (1) Excessive cleaning <ol style="list-style-type: none"> 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 border="0" style="margin-left: 40px;"> <tr> <td style="padding-right: 20px;">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
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6. Post cleaning processes							
Precautions	<p>◆Application of resin coatings, moldings, etc. to the PCB and components.</p> <ol style="list-style-type: none"> 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. <p>The use of such resins, molding materials etc. is not recommended.</p>						
7. Handling							
Precautions	<p>◆Breakaway PC boards (splitting along perforations)</p> <ol style="list-style-type: none"> 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. <p>◆General handling precautions</p> <ol style="list-style-type: none"> 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. <p>◆Mechanical considerations</p> <ol style="list-style-type: none"> 1. Be careful not to subject the inductors to excessive mechanical shocks. <ol style="list-style-type: none"> (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	<p>◆Storage</p> <ol style="list-style-type: none"> 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. <p style="margin-left: 40px;">Recommended conditions</p> <p style="margin-left: 40px;">Ambient temperature Below 40°C</p> <p style="margin-left: 40px;">Humidity Below 70% RH</p> <p>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.</p> <p>*The packaging material should be kept where no chlorine or sulfur exists in the air.</p>						
Technical considerations	<p>◆Storage</p> <ol style="list-style-type: none"> 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/packaging 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. 						