Chip Inductors

Japan
Singapore

Series: **Chip**

Type: **RE, ND, NC, NA, FD, FC, FA, SA, FB, PC, PA,**

Type RE (Size 1608)	Type □D (Size 2012)	Type □C (Size 2520)	Type □A (Size 3225)	Type □B (Size 4532)
NEW	NEW			

Non winding (RE) and wire wound types chip inductors for automatic mounting and high-density mounting

Industrial Property: Patents 4

■ Features

- High Q
- Good for mounting
- Wide allowable range (1.5 nH to 1000 μH)

■ Recommended Applications

- CTV, VTR, HIC, HDD, FDD, Cordless telephones, Portable telephones
  Pager, Video camera

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11
E	L	J	F	A	R	2	2	M	F	
Product Code			Type		Nominal inducatance			Tolerance	Packaging	Option

2N2→	2.2 nH
22N→	22 nH
R22→	0.22 μH
2R2→	2.2 μH
220→	22 μH
221→	220 μH
102→	1000 μH

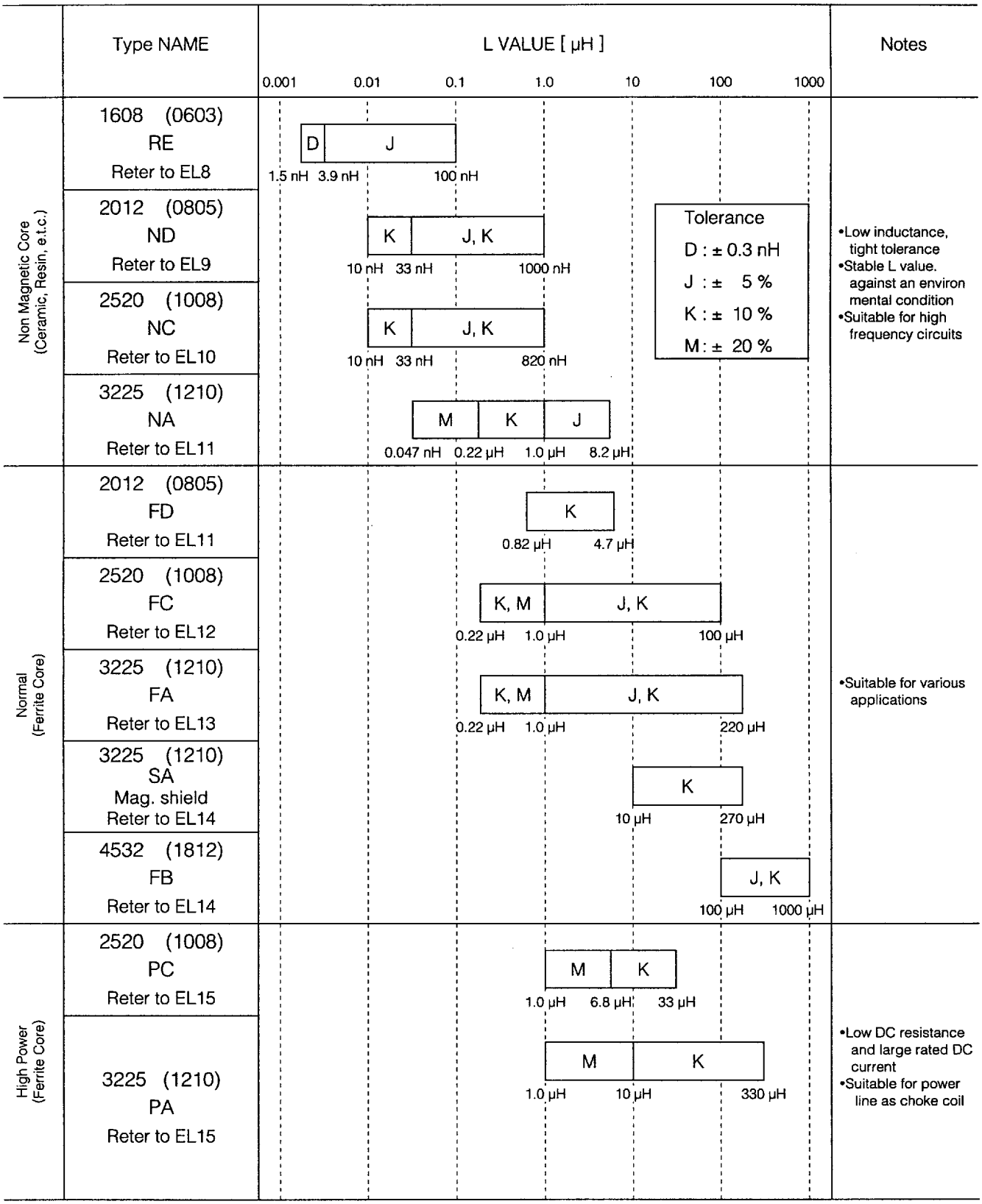
D	±0.3 nH
J	± 5 %
K	±10 %
M	±20 %

F	Tape & φ178Reel

Types \ Styles	E 1608 (0603)	D 2012 (0805)	C 2520 (1008)	A 3225 (1210)	B 4532 (1812)
Coreless	RE	ND	NC	NA	–
Regular	–	FD	FC	FA	FB
Shield	–	–	–	SA	–
Power	–	–	PC	PA	–

Size unit: mm (inch)

■ Inductance, Size Guide



Size unit : mm (inch)

1. Non Magnetic Core Types RE, ND, NC, NA

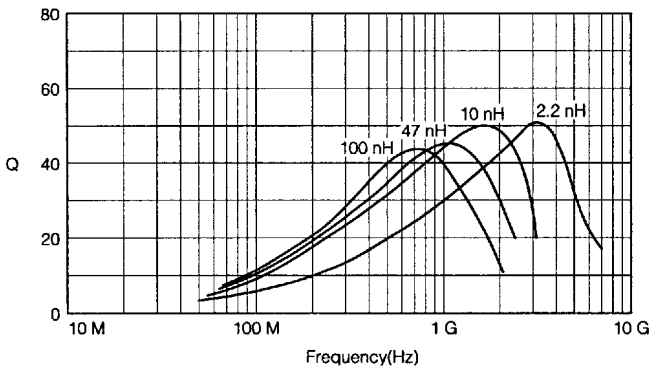
■ Examples : Type 1608(0603)RE

Part No.	Inductance*1		Q*1 min. (100 MHz)	Q*2 Typical (800 MHz)	SRF*3 min. (MHz)	DCR*4 max. (Ω)	Rated DC Current max. (mA)
	nH (100 MHz)	Tolerance					
ELJRE1N5DF2	1.5	±0.3 nH	8	47	6000	0.07	500
ELJRE1N8DF2	1.8		8	45	6000	0.08	500
ELJRE2N2DF2	2.2		8	35	6000	0.09	500
ELJRE2N7DF2	2.7		8	35	6000	0.10	500
ELJRE3N3DF2	3.3		9	35	5500	0.12	500
ELJRE3N9JF2	3.9	± 5 %	9	36	5500	0.15	450
ELJRE4N7JF2	4.7		9	36	4800	0.17	450
ELJRE5N6JF2	5.6		9	36	4600	0.18	430
ELJRE6N8JF2	6.8		9	36	3550	0.20	430
ELJRE8N2JF2	8.2		9	36	3500	0.28	400
ELJRE10NJF2	10		10	37	2800	0.32	400
ELJRE12NJF2	12		10	37	2800	0.35	400
ELJRE15NJF2	15		10	38	2500	0.41	350
ELJRE18NJF2	18		10	39	2300	0.45	350
ELJRE22NJF2	22		10	40	2000	0.50	300
ELJRE27NJF2	27		10	41	2000	0.55	300
ELJRE33NJF2	33		10	40	1800	0.60	300
ELJRE39NJF2	39		11	39	1800	0.80	300
ELJRE47NJF2	47		11	38	1800	0.95	250
ELJRE56NJF3	56		12	35	1800	1.20	250
ELJRE68NJF3	68		12	35	1500	1.30	250
ELJRE82NJF3	82		12	33	1500	1.50	250
ELJRER10JF3	100		12	30	1300	1.80	200

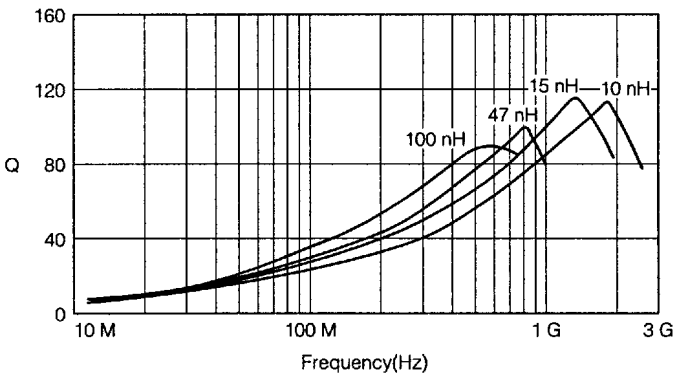
* Test Instrument * 1 : HP4191A * 2 : HP4291A * 3 : Self Resonant Frequency * 4 : DC Resistance

■ Q-Frequency Characteristics

Type: RE



Type: ND



■ Examples : Type 2012(0805)ND

Part No.	Inductance*1		Q*1 min. (100 MHz)	L · Q Test-Freq. (MHz)	SRF*2*3 min. (MHz)	R DC ±30 % (Ω)	IDC max. (mA)
	nH (100 MHz)	Tolerance					
ELJND10NKF	10	±10 %	10	100	2500	0.14	540
ELJND12NKF	12				2500	0.18	535
ELJND15NKF	15		12		2500	0.18	520
ELJND18NKF	18				2000	0.22	480
ELJND22NKF	22		15		2000	0.22	465
ELJND27NKF	27				1800	0.26	455
ELJND33NJ/KF	33	± 5 % ±10 %			1500	0.30	395
ELJND39NJ/KF	39				1500	0.31	390
ELJND47NJ/KF	47				1000	0.35	385
ELJND56NJ/KF	56				1000	0.39	360
ELJND68NJ/KF	68				800	0.44	340
ELJND82NJ/KF	82				800	0.48	330
ELJNDR10J/KF	100		8	25.2	800	0.66	285
ELJNDR12J/KF	120				600	0.76	275
ELJNDR15J/KF	150		10		600	1.13	230
ELJNDR18J/KF	180				600	1.24	195
ELJNDR22J/KF	220				500	1.41	170
ELJNDR27J/KF	270				300	1.50	165
ELJNDR33J/KF	330				200	1.66	160
ELJNDR39J/KF	390				150	1.82	150
ELJNDR47J/KF	470				150	1.97	145
ELJNDR56J/KF	560				100	2.07	140
ELJNDR68J/KF	680				100	2.32	130
ELJNDR82J/KF	820				80	2.60	125
ELJND1ROJ/KF	1000		8	7.96	80	2.98	120

* Test Instrument * 1 : HP4191A * 2 : HP8753B * 3 : Self Resonant Frequency

■ Examples : Type 2520(1008)NC

Part No.	Inductance		Q min.	L, Q Test Freq. MHz	SRF* MHz min.	DCR** Ω max.	Rated DC Current mA max.
	μH	Tolerance					
ELJNC10NKF	0.010	±10 %	10	100	2500	0.32	280
ELJNC12NKF	0.012				2200	0.34	270
ELJNC15NKF	0.015				1800	0.38	255
ELJNC18NKF	0.018				1550	0.40	250
ELJNC22NKF	0.022		15		1350	0.43	240
ELJNC27NKF	0.027				1150	0.47	230
ELJNC33NK/JF	0.033	±10 % ± 5 %			1000	0.51	220
ELJNC39NK/JF	0.039				890	0.55	215
ELJNC47NK/JF	0.047				770	0.59	205
ELJNC56NK/JF	0.056				670	0.63	200
ELJNC68NK/JF	0.068				590	0.68	190
ELJNC82NK/JF	0.082				520	0.73	185
ELJNCR10K/JF	0.10		10	25.2	460	0.80	175
ELJNCR12K/JF	0.12				400	0.87	170
ELJNCR15K/JF	0.15				340	0.98	160
ELJNCR18K/JF	0.18				300	1.05	155
ELJNCR22K/JF	0.22				260	1.15	145
ELJNCR27K/JF	0.27				230	1.25	140
ELJNCR33K/JF	0.33				200	1.37	135
ELJNCR39K/JF	0.39				180	1.47	130
ELJNCR47K/JF	0.47				160	1.58	125
ELJNCR56K/JF	0.56				145	1.70	120
ELJNCR68K/JF	0.68				130	1.85	110
ELJNCR82K/JF	0.82				100	2.10	100

* Self-Resonant Frequency
** DC Resistance

■ Examples : Type 3225(1210)NA

Part No.	Inductance			Q		SRF MHz min.	DCR Ω max.	Rated DC Current mA max.
	μH	Freq. MHz	Tolerance	min.	Freq. MHz			
ELJNA47NMF	0.047	100	±20 %	10	100	680	0.20	450
ELJNA56NMF	0.056					600	0.22	420
ELJNA68NMF	0.068					540	0.25	400
ELJNA82NMF	0.082					500	0.27	380
ELJNAR10MF	0.10					450	0.30	360
ELJNAR12MF	0.12	25.2			25.2	400	0.67	240
ELJNAR15MF	0.15					350	0.72	230
ELJNAR18MF	0.18					320	0.81	220
ELJNAR22KF	0.22	1.0	±10 %			280	0.90	210
ELJNAR27KF	0.27					250	1.0	200
ELJNAR33KF	0.33					220	1.1	190
ELJNAR39KF	0.39					200	1.2	180
ELJNAR47KF	0.47					180	1.4	175
ELJNAR56KF	0.56					160	1.5	170
ELJNAR68KF	0.68					150	1.7	155
ELJNAR82KF	0.82					135	1.9	145
ELJNA1R0JF	1.0		± 5 %	13	7.96	120	2.1	125
ELJNA1R2JF	1.2					110	2.3	120
ELJNA1R5JF	1.5					95	2.7	115
ELJNA1R8JF	1.8					85	3.0	110
ELJNA2R2JF	2.2					80	3.2	110
ELJNA2R7JF	2.7					70	3.6	105
ELJNA3R3JF	3.3					62	4.2	100
ELJNA3R9JF	3.9					57	4.4	95
ELJNA4R7JF	4.7					52	7.7	70
ELJNA5R6JF	5.6					46	8.7	65
ELJNA6R8JF	6.8					42	10	60
ELJNA8R2JF	8.2					38	11	60

2.Normal Types FD, FC, FA, SA, FB

■ Examples : Type 2012(0805)FD

Part No.	Inductance*1		Q*1 min.	L · Q Test-Freq. (MHz)	SRF*2*3 min. (MHz)	R DC ±30 % (Ω)	IDC max. (mA)
	μH	Tolerance					
ELJFDR82KF	0.82	±10 %	8	25.2	370	1.36	190
ELJFD1R0KF	1.0		15	7.96	300	1.56	160
ELJFD1R2KF	1.2				200	1.60	155
ELJFD1R5KF	1.5				100	1.85	150
ELJFD1R8KF	1.8				80	1.95	145
ELJFD2R2KF	2.2				70	2.27	145
ELJFD2R7KF	2.7				60	2.53	140
ELJFD3R3KF	3.3				50	2.84	140
ELJFD3R9KF	3.9				40	2.92	130
ELJFD4R7KF	4.7				30	3.38	130

* Test Instrument * 1 : HP4191A * 2 : HP8753B * 3 : Self Resonant Frequency

■ Examples : Type 2520(1008)FC

Part No.	Inductance		Q min.	L, Q Test Freq. MHz	SRF* MHz min.	DCR** Ω max.	Rated DC Current mA max.
	μH	Tolerance					
ELJFCR22M/KF	0.22	±20 % ±10 %	25	25.2	230	0.70	190
ELJFCR27M/KF	0.27				210	0.75	180
ELJFCR33M/KF	0.33				190	0.85	170
ELJFCR39M/KF	0.39				175	0.95	160
ELJFCR47M/KF	0.47				160	1.0	155
ELJFCR56M/KF	0.56				150	1.1	150
ELJFCR68M/KF	0.68				135	1.25	140
ELJFCR82M/KF	0.82				125	1.4	130
ELJFC1R0K/JF	1.0	±10 % ± 5 %		7.96	115	0.65	195
ELJFC1R2K/JF	1.2				100	0.75	180
ELJFC1R5K/JF	1.5				90	0.85	170
ELJFC1R8K/JF	1.8				85	0.95	160
ELJFC2R2K/JF	2.2				80	1.05	155
ELJFC2R7K/JF	2.7				75	1.2	145
ELJFC3R3K/JF	3.3				65	1.3	135
ELJFC3R9K/JF	3.9				60	1.4	130
ELJFC4R7K/JF	4.7				55	1.55	125
ELJFC5R6K/JF	5.6				50	1.75	120
ELJFC6R8K/JF	6.8				45	1.95	115
ELJFC8R2K/JF	8.2				40	2.2	105
ELJFC100K/JF	10			2.52	32	3.5	80
ELJFC120K/JF	12				30	3.8	75
ELJFC150K/JF	15				28	4.4	70
ELJFC180K/JF	18				25	5.0	65
ELJFC220K/JF	22				22	5.8	60
ELJFC270K/JF	27		20		21	6.3	115
ELJFC330K/JF	33				20	7.1	110
ELJFC390K/JF	39				18	9.5	90
ELJFC470K/JF	47				17	11.0	80
ELJFC560K/JF	56				16	12.1	75
ELJFC680K/JF	68				15	16.6	70
ELJFC820K/JF	82				13	19.0	65
ELJFC101K/JF	100		15	0.796	12	21.0	60

* Self-Resonant Frequency
** DC Resistance

■ Examples : Type 3225(1210)FA

Part No.	Inductance		Q min.	L, Q Test Freq. MHz	SRF* MHz min.	DCR** Ω max.	Rated DC Current mA max.
	μH	Tolerance					
ELJFAR22M/KF2	0.22	±20 % ±10 %	25	25.2	230	0.29	360
ELJFAR27M/KF2	0.27				210	0.32	345
ELJFAR33M/KF2	0.33				190	0.35	330
ELJFAR39M/KF2	0.39				175	0.39	305
ELJFAR47M/KF2	0.47				160	0.44	290
ELJFAR56M/KF2	0.56				150	0.49	275
ELJFAR68M/KF2	0.68				135	0.55	260
ELJFAR82M/KF2	0.82				125	0.61	245
ELJFA1R0K/JF2	1.0	±10 % ± 5 %	30	7.96	115	0.69	230
ELJFA1R2K/JF2	1.2				100	0.75	215
ELJFA1R5K/JF	1.5				90	0.75	210
ELJFA1R8K/JF	1.8				85	0.82	200
ELJFA2R2K/JF	2.2				80	0.95	190
ELJFA2R7K/JF	2.7				75	1.1	180
ELJFA3R3K/JF	3.3				65	1.2	180
ELJFA3R9K/JF	3.9				60	1.3	175
ELJFA4R7K/JF	4.7				55	1.5	165
ELJFA5R6K/JF	5.6				50	1.6	160
ELJFA6R8K/JF	6.8				45	1.8	150
ELJFA8R2K/JF	8.2				40	2.0	140
ELJFA100K/JF	10			2.52	36	2.1	140
ELJFA120K/JF	12				33	2.5	125
ELJFA150K/JF	15				30	2.8	120
ELJFA180K/JF	18				27	3.3	110
ELJFA220K/JF	22				25	3.7	105
ELJFA270K/JF	27				22	5.0	90
ELJFA330K/JF	33				20	5.6	85
ELJFA390K/JF	39				20	6.4	80
ELJFA470K/JF	47				15	7.0	75
ELJFA560K/JF	56				15	8.0	70
ELJFA680K/JF	68				15	9.0	65
ELJFA820K/JF	82				11	10	60
ELJFA101K/JF	100		20	0.796	10	10	60
ELJFA121K/JF	120				10	11	55
ELJFA151K/JF	150				8	15	50
ELJFA181K/JF	180				7	17	50
ELJFA221K/JF	220				7	21	45

* Self-Resonant Frequency
** DC Resistance

■ Examples : Type 3225(1210)SA

Part No.	Inductance			Q		SRF MHz min.	DCR Ω max.	Rated DC Current mA max.
	μH	Freq. MHz	Tolerance	min.	Freq. MHz			
ELJSA100KF	10	1.0	±10 %	40	5.0	30	1.8	18
ELJSA120KF	12					28	2.0	17
ELJSA150KF	15					25	2.2	15
ELJSA180KF	18					23	2.5	13
ELJSA220KF	22					20	2.8	12
ELJSA270KF	27					18	3.2	10
ELJSA330KF	33					17	3.5	10
ELJSA390KF	39					15	3.8	9
ELJSA470KF	47					14	4.0	8
ELJSA560KF	56					13	4.5	7
ELJSA680KF	68				1.5	12	5.0	6
ELJSA820KF	82					11	6.0	6
ELJSA101KF	100					10	7.0	5
ELJSA121KF	120					9	8.0	5
ELJSA151KF	150	0.1				5	9.0	5
ELJSA181KF	180					5	11.0	5
ELJSA221KF	220					4	12.0	5
ELJSA271KF	270					4	14.0	5

■ Examples : Type 4532(1812)FB

Part No.	Inductance			Q		SRF* MHz min.	DCR** Ω max.	Rated DC Current mA max.
	μH	Freq. MHz	Tolerance	min.	Freq. MHz			
ELJFB101K/JF	100	0.1	±10 % ± 5 %	40	2.52	6.7	8.8	105
ELJFB121K/JF	120				1.5	6.1	10	100
ELJFB151K/JF	150					5.5	11	95
ELJFB181K/JF	180					5.1	13	85
ELJFB221K/JF	220				0.796	4.5	13	85
ELJFB271K/JF	270					4.1	14	80
ELJFB331K/JF	330					3.7	16	75
ELJFB391K/JF	390					3.3	19	70
ELJFB471K/JF	470			30		3.3	31	55
ELJFB561K/JF	560					2.7	35	50
ELJFB681K/JF	680					2.5	39	50
ELJFB821K/JF	820					2.4	45	45
ELJFB102K/JF	1000					2.1	53	40

* Self-Resonant Frequency
** DC Resistance

3. High Power Types PC, PA

■ Examples : Type 2520(1008)PC

Part No.	Inductance		Q min.	L, Q Test Frequency MHz	SRF* MHz min.	DCR** Ω max.	Rated DC Current mA max.
	μH	Tolerance					
ELJPC1R0MF	1.0	±20 %	10	7.96	95	0.45	475
ELJPC1R5MF	1.5				85	0.55	435
ELJPC2R2MF	2.2				65	0.65	390
ELJPC3R3MF	3.3		8		55	0.85	340
ELJPC4R7MF	4.7				43	1.2	285
ELJPC6R8KF2	6.8	±10 %			39	1.3	275
ELJPC100KF	10.0		20	2.52	32	2.2	210
ELJPC120KF	12.0				25	2.7	195
ELJPC150KF	15.0				21	3.2	175
ELJPC220KF	22.0				18	4.0	160
ELJPC330KF	33.0				16	6.5	120

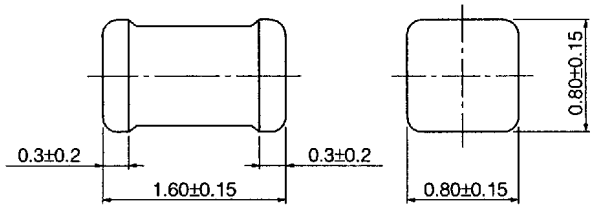
* Self-Resonant Frequency
** DC Resistance

■ Examples : Type 3225(1210)PA

Part No.	Inductance		Q min.	L, Q Test Freq. MHz	SRF* MHz min.	DCR** Ω max.	Rated DC Current mA max.
	μH	Tolerance					
ELJPA1R0MF	1.0	±20 %	7	7.96	150	0.15	600
ELJPA1R5MF	1.5				110	0.18	550
ELJPA2R2MF	2.2				80	0.23	500
ELJPA3R3MF	3.3				58	0.28	400
ELJPA4R7MF	4.7				46	0.34	350
ELJPA6R8MF	6.8				38	0.42	300
ELJPA100KF	10	±10 %	15	2.52	23	0.50	240
ELJPA120KF	12				21	0.60	230
ELJPA150KF	15				18	0.74	220
ELJPA180KF	18				17	0.90	205
ELJPA220KF	22				15	1.15	185
ELJPA270KF	27				13	1.45	165
ELJPA330KF	33				12	1.65	155
ELJPA390KF	39				11	1.90	145
ELJPA470KF	47				9.5	2.25	135
ELJPA560KF	56				8.5	3.30	110
ELJPA680KF	68				7.5	3.70	105
ELJPA820KF	82				7.0	4.20	100
ELJPA101KF	100		20	0.796	6.5	5.00	90
ELJPA121KF	120				6.0	7.00	75
ELJPA151KF	150				5.5	8.00	70
ELJPA181KF	180				5.0	9.50	65
ELJPA221KF	220				4.0	11.0	60
ELJPA271KF	270				3.5	14.5	55
ELJPA331KF	330				3.0	16.0	50

* Self-Resonant Frequency
** DC Resistance

■ Dimensions in mm (not to scale)



Type RE
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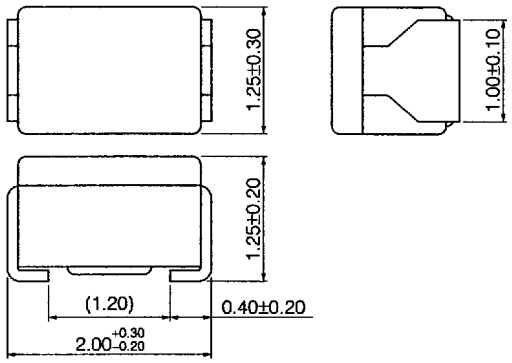
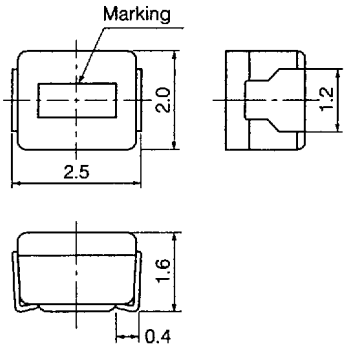
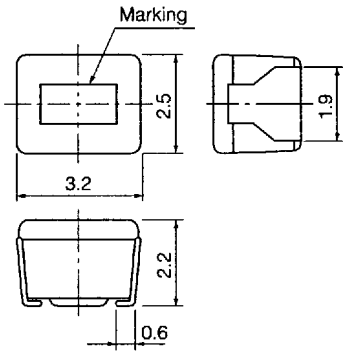


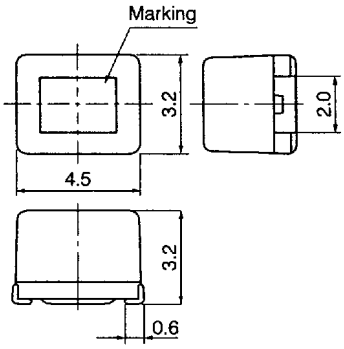
Types ND, FD
(2.0×1.25×1.25)



Types FC, NC, PC
(2.5×2.0×1.6)

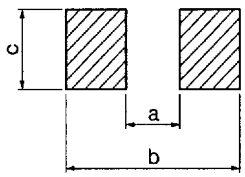


Types FA, SA, NA, PA
(3.2×2.5×2.2)



Type FB
(4.5×3.2×3.2)

■ Recommended Land Pattern in mm (not to scale)

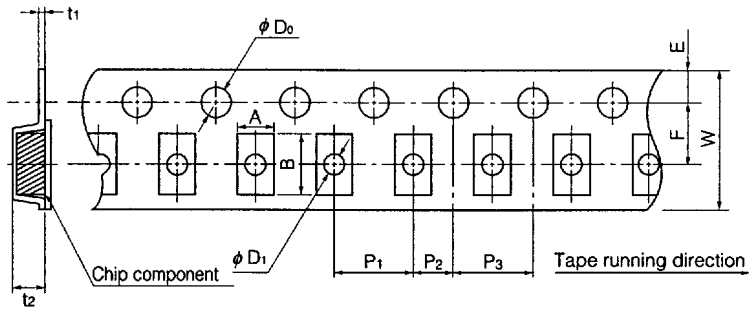


	a	b	c
Type RE	0.8~1.0	2.0~2.6	0.7~0.9
Type □D	1.0~1.2	3.0~3.8	0.9~1.3
Type □C	1.4~1.5	3.5~4.0	1.2~1.6
Type □A	1.6~2.0	4.0~4.6	1.9~2.4
Type FB	2.4~2.6	5.5~6.0	2.0~3.0

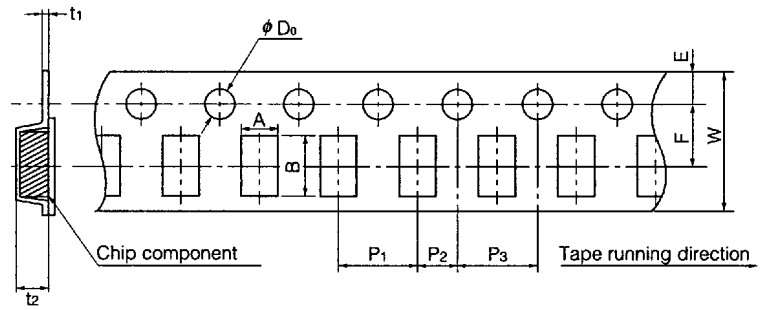
□D: ND, FD □C: NC, FC, PC □A: NA, FA, SA, PA

■ Embossed Carrier Tape Dimensions in mm (not to scale)

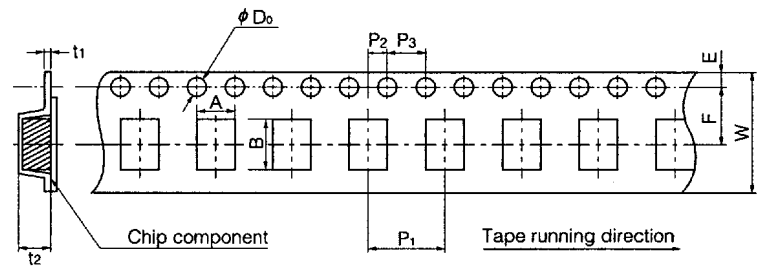
Types RE, ND, NC, FD, FC, PC (W=8 mm)



Types NA, FA, SA, PA (W=8 mm)



Type FB (W=12 mm)



Size/Types \ Dimensions		A	B	W	F	E	P_1	P_2	P_3	ϕD_0	ϕD_1	t_1	t_2
1608(0603)	RE	1.0	1.8	8	3.5	1.75	4.0	2.0	4.0	1.5	0.6	(0.27)	1.2
2012(0805)	ND, FD	1.45	2.25	8	3.5	1.75	4.0	2.0	4.0	1.5	1.0	(0.25)	1.55
2520(1008)	NC, FC, PC	2.4	2.9	8	3.5	1.75	4.0	2.0	4.0	1.5	1.1	(0.25)	1.85
3225(1210)	NA, FA, SA, PA	2.8	3.6	8	3.5	1.75	4.0	2.0	4.0	1.5	—	(0.25)	2.4
4532(1812)	FB	3.6	4.9	12	5.5	1.75	8.0	2.0	4.0	1.5	—	(0.3)	3.5

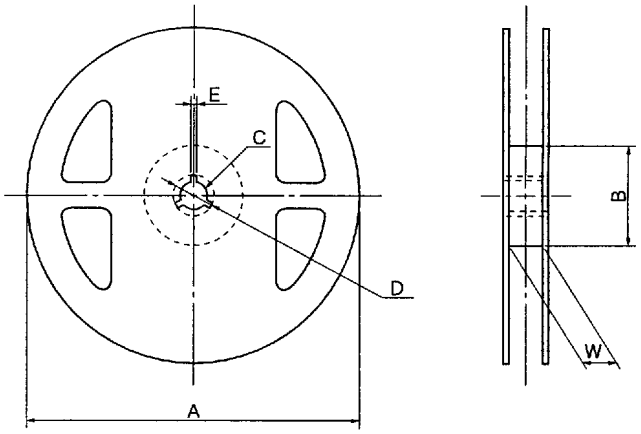
■ Packaging Methods

● Standard Packing Quantity and Mass

Quantity, Mass / Types	Quantity	Mass (Weight) Approx.
RE, ND, FD	3000 pcs.	90 g
NC, FC, PC	2000 pcs.	100 g
NA, FA, SA, PA	2000 pcs.	170 g
FB	500 pcs.	100 g

Dimensions / Types	A	B	C	D	E	W
RE, ND, FD, NC, FC PC, NA, FA, SA, PA	178	60 min.	ϕ13	21	2.0	9
FB	178	60 min.	ϕ13	21	2.0	13

■ Reel Dimensions in mm (not to scale)



⚠ Cautions for use

For securing upgraded reliability and safety, consider following caution items.

1. Land pattern design

Refer to the recommended land dimensions of each type at flow and reflow solderings.

Avoid placing the chip inductor on any metal pattern except the land because the drop of Q and mutual conductance may occur.

Provisions for venting of flux gases should be made for high density assemblies.

2. Mounting

Placement force should not exceed 20N(2 kg·f) because electric and magnetic characteristics change by applying strong force.

3. Soldering

ⓐ Flow soldering

Recommended conditions; 260 °C max., 5sec. max.(total time at 2 waves method)

ⓑ Reflow soldering

Infra-red reflow soldering

① Recommended conditions: 200 °C or high at electrode, 60sec. max. and peak 240 °C max., 5sec. max. If the solder at the two electrodes are not melt simultaneously, the chip inductor may not be mounted on the right place. It is recommended to fix by adhesive when the deviation is great.

② VPS reflow soldering

Recommended conditions: 215±5 °C, 20 to 60sec

4. Cleaning

① Do not use acid or alkari agents. Some cleaning solvents out of CFC may damage the products. Confirm the reliability in advance.

② If ultrasonic cleaning is employed, please inform us immediately for technical consultation.

5. Instructions for applying current

The rated current is defined as the smaller value of either the current value when the inductance drops 10 % down from the initial point, or the current value when the average temperature of coil inside rises 20 K up from initial point.

Do not operate this coils beyond the specified rated current.

6. Storage

① Be careful a high temperature, a large amount of moisture, gases and magnetic field.

② At long storage of more than 1 year, use the products after inspecting the outer structure because a rust or a decline in the solderability may