

FEATURES

- EIA SIZES, A (1210) and B (1812), NEW C (1008) NOW AVAILABLE
- EXCELLENT HIGH Q AND HIGH SELF-RESONANT FREQUENCY CHARACTERISTICS
- BOTH FLOW AND REFLOW SOLDERING APPLICABLE
- HIGH INDUCTANCE AVAILABLE IN SMALL SIZE
- SHIELDED TYPE AVAILABLE ON SIZE A (1210) AND C (1008)
- EMBOSSED PLASTIC TAPE PACKAGE FOR AUTOMATIC PICK-PLACE



AVAILABLE TYPE AND RANGE

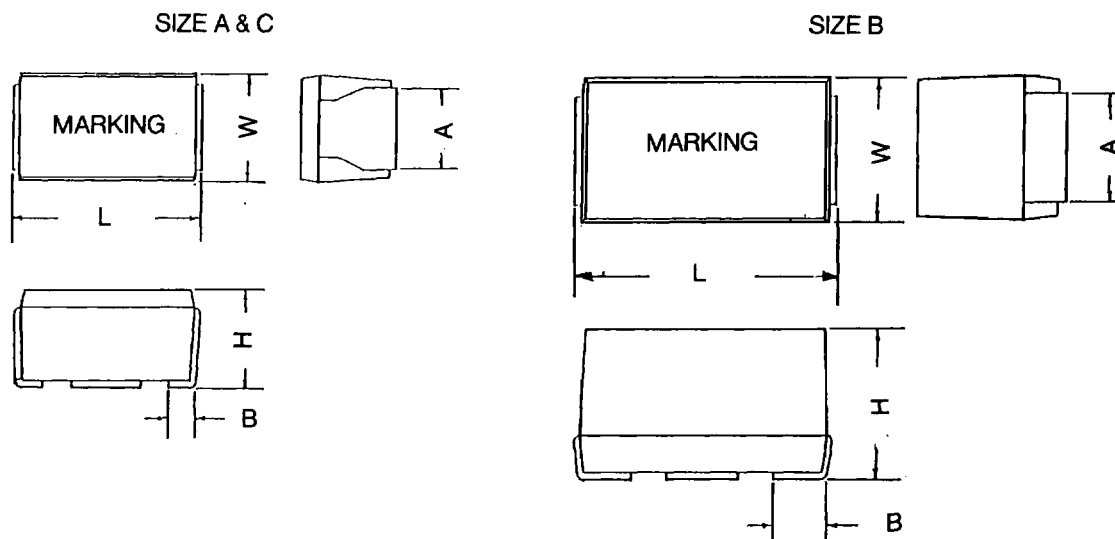
NIC Type	Description	Size (LxWxH) mm	EIA Size	Inductance Range
NIN-FC	Standard	2.5x2.0x1.6	C (1008)	0.22~22 μ H
NIN-SC	Shielded	2.5x2.0x1.6	C (1008)	27~100 μ H
NIN-NC	Hi-Frequency	2.5x2.0x1.6	C (1008)	0.01~0.47 μ H
NIN-NA	Hi-Frequency	3.2x2.5x2.2	A (1210)	0.047~0.18 μ H
NIN-FA	Standard	3.2x2.5x2.2	A (1210)	0.22~220 μ H
NIN-SA	Shielded	3.2x2.5x2.2	A (1210)	10.0~270 μ H
NIN-FB	Hi-Value	4.5x3.2x3.2	B (1812)	0.22~1000 μ H

SPECIFICATIONS

Item	Test Method & Conditions	Specifications
Operating Temperature Range		-20~+85°C
Q-Factor, Self-Resonant Frequency DC Resistance and Rated Current Inductance Tolerance		As Specified Individually In Product Listing
Withstanding Voltage		250 Vac for 1 Minute
High Temperature Load Life	After 500 hours at 85°C with rated DC current	Inductance Within $\pm 10\%$ of initial value
		Q Factor Within $\pm 20\%$ of initial value
		There shall be no evidence of damage
Humidity Load Life	After 500 hours at 60°C and 90-95%RH with rated current	Inductance Within $\pm 10\%$ of initial value
		Q Factor Within $\pm 20\%$ of initial value
		There shall be no evidence of damage
Temperature Characteristics	-20 ~ +85°C	Inductance Within $\pm 10\%$ of initial value
		Q Factor Within $\pm 20\%$ of initial value
Humidity Characteristics	After 500 hours at 60°C and 90-95%RH	Inductance Within $\pm 5\%$ of initial value
		Q Factor Within $\pm 20\%$ of initial value
Heat Resistance	After 500 hours at 85°C	There shall be no mechanical damage.
Thermal Shock	After 100 cycles of 30 minutes at -40°C and 30 minutes at +85°C	Inductance shall be within $\pm 5\%$ of initial value.
		Q factor shall be within $\pm 20\%$ of initial value.
Low Temperature Storage	After 500 hours at -40°C	
Solderability	After fluxing and dipping in molten solder at 230 ± 5 °C for 3 ± 0.5 seconds	90% of the effective area of terminals shall be covered by new adhering coat of solder. (95% coverage for NIN-FA Type)
Soldering Effect	After 5 seconds exposure at 260 ± 5 °C following 5 minutes preheating at 120°C	There shall be no mechanical damage. Inductance shall be within $\pm 5\%$ of initial value.
Low Frequency Vibration	After 6 hours, 2 hours each Frequency: 10-55Hz Amplitude: 1.5mm	Q factor shall be within $\pm 20\%$ of initial value.
Drop Shock	After 10 drops from 1 meter height onto 3 cm wooden board	
Terminal Pull Test	Inductor shall withstand a 1 Kg load in horizontal direction for 1 minute.	
Solvent Resist	Inductor shall withstand a cleaning by Freon® TF, TE, and TMS for 5 minutes.	



DIMENSIONS IN MM



Type	Size	Dim. L	Dim. W	Dim. H	Dim. A	Dim. B
FC/SC/NC	C	2.5 ^{+0.3} _{-0.2}	2.0±0.2	1.6±0.2	1.2±0.1	0.4±0.2
FA/SA/NA	A	3.2±0.3	2.5±0.2	2.2±0.2	1.9±0.1	0.6±0.2
FB	B	4.5±0.3	3.2±0.2	3.2±0.2	2.0±0.2	0.6±0.2

MARKING :

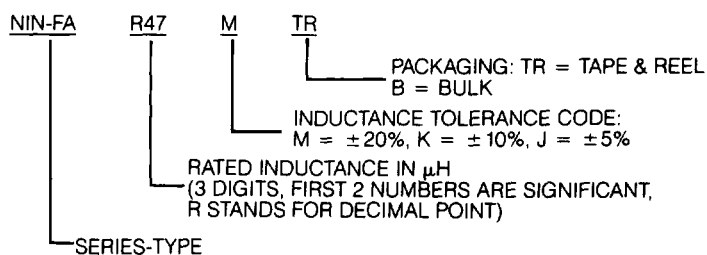
Inductance Tolerance	Marking for Tolerance	Example
± 20%	M	2R2M
± 10%	No Identification	470
± 5%	J	270J

- (1) 3 digits system in μH
- (2) R indicates decimal point in μH
- (3) N indicates μH (0.001 μH), Ex : 10N = 0.01 μH

APPLICATION INFORMATION:

- Recommended soldering conditions : Flow (wave): 250°C for 5 seconds max. following a preheating of 120°C for 5 minutes.
Reflow: 230°C for 10 seconds max. (preheating is also recommended)
- It is recommended to use NIN inductors below 70% of the specified DC current when it shall be operated at or near the maximum operating temperature.
- Avoid placing inductor over any metal pattern on the PCB, which may create mutual inductance problems.
- For mounting, it is suggested to secure chip inductor by means of epoxy adhesive curable by ultraviolet.
- Ultrasonic cleaning is not recommended. If it is necessary, the cleaning conditions must be examined so as not to create mechanical damage by unexpected resonant vibration. Please contact our engineering department.
- An excessive mechanical force may effect the electrical and magnetic properties of chip inductors. Make sure not to use any stress greater than 2Kg when component is placed.

PART NUMBERING SYSTEM:



STANDARD PRODUCT TABLE AND SPECIFICATIONS

NIN-FC TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Rated DC
	μ H	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	Current
			STD.	OP.			Min.	Max.	(mA) Max.
NIN-FCR22MX	0.22	25.2	± 20		25	25.2	230	0.70	190
FCR27MX	0.27	25.2	± 20		25	25.2	210	0.75	180
FCR33MX	0.33	25.2	± 20		25	25.2	190	0.85	170
FCR39MX	0.39	25.2	± 20		25	25.2	175	0.95	160
FCR47MX	0.47	25.2	± 20		25	25.2	160	1.0	155
FCR56MX	0.56	25.2	± 20		25	25.2	150	1.1	150
FCR68MX	0.68	25.2	± 20		25	25.2	135	1.25	140
FCR82MX	0.82	25.2	± 20		25	25.2	125	1.4	130
FC1R0MX	1.0	7.96	± 20		25	7.96	115	0.65	195
FC1R2MX	1.2	7.96	± 20		25	7.96	100	0.75	180
FC1R5MX	1.5	7.96	± 20		25	7.96	90	0.85	170
FC1R8MX	1.8	7.96	± 20		25	7.96	85	0.95	160
FC2R2MX	2.2	7.96	± 20		25	7.96	80	1.05	155
FC2R7MX	2.7	7.96	± 20		25	7.96	75	1.2	145
FC3R3MX	3.3	7.96	± 20		25	7.96	65	1.3	135
FC3R9MX	3.9	7.96	± 20		25	7.96	60	1.4	130
FC4R7MX	4.7	7.96	± 20		25	7.96	55	1.55	125
FC5R6MX	5.6	7.96	± 20		25	7.96	50	1.75	120
FC6R8MX	6.8	7.96	± 20		25	7.96	45	1.95	115
FC8R2MX	8.2	7.96	± 20		25	7.96	40	2.2	105
FC100KX	10	2.52	± 10		25	2.52	32	3.7	80
FC120KX	12	2.52	± 10		25	2.52	30	4.1	75
FC150KX	15	2.52	± 10		25	2.52	28	5.0	70
FC180KX	18	2.52	± 10		25	2.52	25	5.4	65
FC220KX	22	2.52	± 10		25	2.52	22	6.0	60

STANDARD PRODUCT TABLE AND SPECIFICATIONS

NIN-SC TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Rated DC
	(μ H)	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	Current
			STD.	OP.			Min.	Max.	(mA) Max.
NIN-SC270KX	27	2.52	± 10		40	2.52	20	4.5	18
SC330KX	33	2.52	± 10		40	2.52	18	5.2	14
SC390KX	39	2.52	± 10		40	2.52	15	5.7	13
SC470KX	47	2.52	± 10		40	2.52	14	6.6	12
SC560KX	56	2.52	± 10		40	2.52	13	7.1	10
SC680KX	68	2.52	± 10		25	2.52	13	6.5	17
SC820KX	82	2.52	± 10		25	2.52	13	7.4	14
SC101KX	100	0.796	± 10		25	0.796	12	8.4	10



STANDARD PRODUCT TABLE AND SPECIFICATIONS

NIN-NC TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Rated DC
	μ H	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	Current
			STD.	OP.			Min.	Max.	(mA) Max.
NIN-NC10NX	0.01	100	± 20	± 10	10	100	2500	0.32	280
NC12NX	0.012	100	± 20	± 10	10	100	2200	0.34	270
NC15NX	0.015	100	± 20	± 10	10	100	1800	0.38	255
NC18NX	0.018	100	± 20	± 10	10	100	1550	0.40	250
NC22NX	0.022	100	± 20	± 10	15	100	1350	0.43	240
NC27NX	0.027	100	± 20	± 10	15	100	1150	0.47	230
NC33NX	0.033	100	± 20	± 10	15	100	1000	0.51	220
NC39NX	0.039	100	± 20	± 10	15	100	890	0.55	215
NC47NX	0.047	100	± 20	± 10	15	100	770	0.59	205
NC56NX	0.056	100	± 20	± 10	15	100	670	0.63	200
NC68NX	0.068	100	± 20	± 10	15	100	590	0.68	190
NC82NX	0.082	100	± 20	± 10	15	100	520	0.73	185
NCR10X	0.1	25.2	± 20	± 10	10	25.2	460	0.80	175
NCR12X	0.12	25.2	± 20	± 10	10	25.2	400	0.87	170
NCR15X	0.15	25.2	± 20	± 10	10	25.2	340	0.98	160
NCR18X	0.18	25.2	± 20	± 10	10	25.2	300	1.05	155
NCR22K	0.22	25.2	± 10	-	10	25.2	260	1.15	145
NCR27K	0.27	25.2	± 10	-	10	25.2	230	1.25	140
NCR33K	0.33	25.2	± 10	-	10	25.2	200	1.37	135
NCR39K	0.39	25.2	± 10	-	10	25.2	180	1.47	130
NCR47K	0.47	25.2	± 10	-	10	25.2	160	1.58	125

SURFACE MOUNT

STANDARD PRODUCT TABLE AND SPECIFICATIONS

NIN-SA TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Rated DC
	μ H	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	Current
			STD.	OP.			Min.	Max.	(mA) Max.
NIN-SA100XX	10	1.0	± 10		40	5.0	30	1.8	18
SA120XX	12	1.0	± 10		40	5.0	28	2.0	17
SA150XX	15	1.0	± 10		40	5.0	25	2.2	15
SA180XX	18	1.0	± 10		40	5.0	23	2.5	13
SA220XX	22	1.0	± 10		40	5.0	20	2.8	12
SA270XX	27	1.0	± 10		40	5.0	18	3.2	10
SA330XX	33	1.0	± 10		40	5.0	17	3.5	10
SA390XX	39	1.0	± 10		40	5.0	15	3.8	9
SA470XX	47	1.0	± 10		40	5.0	14	4.0	8
SA560XX	56	1.0	± 10		40	5.0	13	4.5	7
SA680XX	68	1.0	± 10		40	1.5	12	5.0	6
SA820XX	82	1.0	± 10		40	1.5	11	6.0	6
SA101XX	100	1.0	± 10		40	1.5	10	7.0	5
SA121XX	120	1.0	± 10		40	1.5	9	8.0	5
SA151XX	150	0.1	± 10		40	1.5	5	9.0	5
SA181XX	180	0.1	± 10		40	1.5	5	11.0	5
SA221XX	220	0.1	± 10		40	1.5	4	12.0	5
SA271XX	270	0.1	± 10		40	1.5	4	14.0	5

STANDARD PRODUCT TABLE AND SPECIFICATIONS

NIN-NA TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Rated DC
	μ H	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	Current
			STD.	OP.			Min.	Max.	(mA) Max.
NIN-NA47NMX	0.047	100	± 20		10	100	680	0.20	450
NA56NMX	0.056	100	± 20		10	100	600	0.22	420
NA68NMX	0.068	100	± 20		10	100	540	0.25	400
NA82NMX	0.082	100	± 20		10	100	500	0.27	380
NAR10MX	0.10	100	± 20		10	100	450	0.30	360
NAR12MX	0.12	25.2	± 20		10	25.2	400	0.37	240
NAR15MX	0.15	25.2	± 20		10	25.2	350	0.72	230
NAR18MX	0.18	25.2	± 20		10	25.2	320	0.81	220



STANDARD PRODUCT TABLE AND SPECIFICATIONS

NIN-FA TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Rated DC
	μ H	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	Current
			STD	OP			Min.	Max.	(mA) Max.
NIN-FAR22XX	0.22	25.2	± 20		25	25.2	230	0.29	360
FAR27XX	0.27	25.2	± 20		25	25.2	210	0.32	345
FAR33XX	0.33	25.2	± 20		25	25.2	190	0.35	330
FAR39XX	0.39	25.2	± 20		25	25.2	175	0.39	305
FAR47XX	0.47	25.2	± 20		25	25.2	160	0.44	290
FAR56XX	0.56	25.2	± 20		25	25.2	150	0.49	275
FAR68XX	0.68	25.2	± 20		25	25.2	135	0.55	260
FAR82XX	0.82	25.2	± 20		25	25.2	125	0.61	245
FA1R0XX	1.0	7.96	± 20	± 10	30	7.96	115	0.69	230
FA1R2XX	1.2	7.96	± 20	± 10	30	7.96	100	0.75	215
FA1R5XX	1.5	7.96	± 20	± 10	30	7.96	90	0.75	210
FA1R8XX	1.8	7.96	± 20	± 10	30	7.96	85	0.82	200
FA2R2XX	2.2	7.96	± 20	± 10	30	7.96	80	0.95	190
FA2R7XX	2.7	7.96	± 20	± 10	30	7.96	75	1.1	180
FA3R3XX	3.3	7.96	± 20	± 10	30	7.96	65	1.2	180
FA3R9XX	3.9	7.96	± 20	± 10	30	7.96	60	1.3	175
FA4R7XX	4.7	7.96	± 20	± 10	30	7.96	55	1.5	165
FA5R6XX	5.6	7.96	± 20	± 10	30	7.96	50	1.6	160
FA6R8XX	6.8	7.96	± 20	± 10	30	7.96	45	1.8	150
FA8R2XX	8.2	7.96	± 20	± 10	30	7.96	40	2.0	140
FA100XX	10	2.52	± 10	± 5	30	2.52	36	2.1	140
FA120XX	12	2.52	± 10	± 5	30	2.52	33	2.5	125
FA150XX	15	2.52	± 10	± 5	30	2.52	30	2.8	120
FA180XX	18	2.52	± 10	± 5	30	2.52	27	3.3	110
FA220XX	22	2.52	± 10	± 5	30	2.52	25	3.7	105
FA270XX	27	2.52	± 10	± 5	30	2.52	22	5.0	90
FA330XX	33	2.52	± 10	± 5	30	2.52	20	5.6	85
FA390XX	39	2.52	± 10	± 5	30	2.52	20	6.4	80
FA470XX	47	2.52	± 10	± 5	30	2.52	15	7.0	75
FA560XX	56	2.52	± 10	± 5	30	2.52	15	8.0	70
FA680XX	68	2.52	± 10	± 5	30	2.52	15	9.0	65
FA820XX	82	2.52	± 10	± 5	30	2.52	11	10	60
FA101XX	100	0.796	± 10	± 5	20	0.796	10	10	60
FA121XX	120	0.796	± 10	± 5	20	0.796	10	11	55
FA151XX	150	0.796	± 10	± 5	20	0.796	8	15	50
FA181XX	180	0.796	± 10	± 5	20	0.796	7	17	50
FA221XX	220	0.796	± 10	± 5	20	0.796	7	21	45

SURFACE MOUNT



STANDARD PRODUCT
TABLE

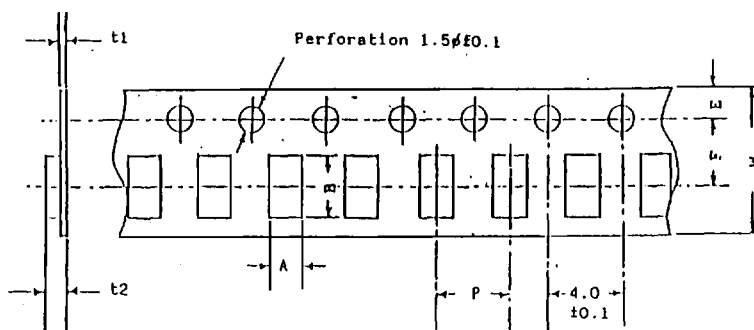
NIN-FB TYPE									
NIC Part Number	Inductance		Tolerance		Q Factor		SRF	DCR	Max. Rated DC Current (mA)
	μ H	at (MHz)	(%)		Min.	at (MHz)	(MHz)	(Ω)	
			STD	OP			Min.	Max.	
NIN-FBR22XX	0.22	1.0	± 20		30	25.2	230	0.30	700
FBR27XX	0.27	1.0	± 20		30	25.2	200	0.32	650
FBR33XX	0.33	1.0	± 20		30	25.2	180	0.35	630
FBR39XX	0.39	1.0	± 20		30	25.2	155	0.37	620
FBR47XX	0.47	1.0	± 20		30	25.2	135	0.40	580
FBR56XX	0.56	1.0	± 20		30	25.2	120	0.42	560
FBR68XX	0.68	1.0	± 20		30	25.2	105	0.48	530
FBR82XX	0.82	1.0	± 20		30	25.2	90	0.50	500
FB1R0XX	1.0	1.0	± 20	± 10	30	25.2	80	0.52	470
FB1R2XX	1.2	1.0	± 20	± 10	30	25.2	70	0.55	460
FB1R5XX	1.5	1.0	± 20	± 10	30	25.2	60	0.61	430
FB1R8XX	1.8	1.0	± 20	± 10	30	7.96	50	0.61	410
FB2R2XX	2.2	1.0	± 20	± 10	50	7.96	45	0.61	410
FB2R7XX	2.7	1.0	± 20	± 10	50	7.96	43	0.61	400
FB3R3XX	3.3	1.0	± 20	± 10	50	7.96	39	0.66	380
FB3R9XX	3.9	1.0	± 20	± 10	50	7.96	36	0.74	360
FB4R7XX	4.7	1.0	± 20	± 10	50	5.0	33	0.81	350
FB5R6XX	5.6	1.0	± 20	± 10	50	5.0	30	0.88	330
FB6R8XX	6.8	1.0	± 20	± 10	50	5.0	26	1.0	310
FB8R2XX	8.2	1.0	± 20	± 10	50	5.0	24	1.6	250
FB100XX	10	1.0	± 10	± 5	50	5.0	22	1.8	235
FB120XX	12	1.0	± 10	± 5	50	5.0	20	1.9	225
FB150XX	15	1.0	± 10	± 5	50	5.0	18	2.1	215
FB180XX	18	1.0	± 10	± 5	50	2.52	16	2.3	205
FB220XX	22	1.0	± 10	± 5	50	2.52	15	2.6	195
FB270XX	27	1.0	± 10	± 5	50	2.52	13	2.9	185
FB330XX	33	1.0	± 10	± 5	50	2.52	12	3.1	175
FB390XX	39	1.0	± 10	± 5	50	2.52	10	3.6	165
FB470XX	47	1.0	± 10	± 5	50	2.52	9.7	4.2	130
FB560XX	56	0.1	± 10	± 5	40	2.52	9.0	4.7	125
FB680XX	68	0.1	± 10	± 5	40	2.52	8.2	5.3	115
FB820XX	82	0.1	± 10	± 5	40	2.52	7.5	5.9	110
FB101XX	100	0.1	± 10	± 5	40	2.52	6.7	8.8	105
FB121XX	120	0.1	± 10	± 5	40	1.5	6.1	10	100
FB151XX	150	0.1	± 10	± 5	40	1.5	5.5	11	95
FB181XX	180	0.1	± 10	± 5	40	1.5	5.1	13	85
FB221XX	220	0.1	± 10	± 5	40	0.796	4.5	13	85
FB271XX	270	0.1	± 10	± 5	40	0.796	4.1	14	80
FB331XX	330	0.1	± 10	± 5	40	0.796	3.7	16	75
FB391XX	390	0.1	± 10	± 5	40	0.796	3.3	19	70
FB471XX	470	0.1	± 10	± 5	30	0.796	3.3	31	55
FB561XX	560	0.1	± 10	± 5	30	0.796	2.7	35	50
FB681XX	680	0.1	± 10	± 5	30	0.796	2.5	39	50
FB821XX	820	0.1	± 10	± 5	30	0.796	2.4	45	45
FB102XX	1000	0.1	± 10	± 5	30	0.796	2.1	53	40

SURFACE MOUNT



PACKAGING SPECIFICATIONS

SURFACE MOUNT

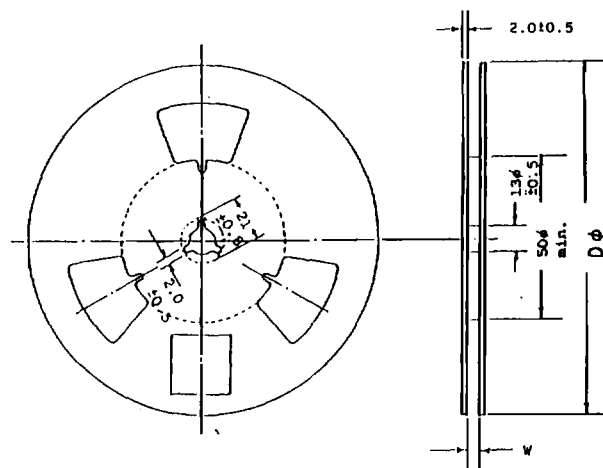


CARRIER TAPE DIMENSIONS IN mm

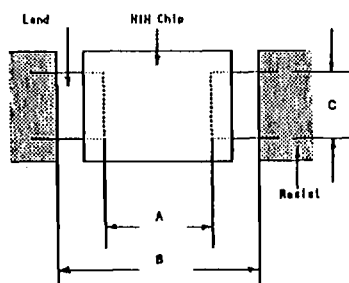
Type	Size	W ±0.3	A ±0.2	B ±0.2	P ±0.1	E ±0.1	F ±0.1	t1	t2
FC/SC/NC	C	8.0	2.4	2.9	4.0	1.75	3.5	(0.3)	(1.85)
FA/SA/NA	A	8.0	2.8	3.6	4.0	1.75	3.5	(0.3)	(2.3)
FB	B	12.0	3.6	4.9	8.0	1.75	5.5	(0.3)	(3.4)

Reel Dimensions in mm

Type	Dφ ± 2	W ± 1.5	Qty/Reel
FC/SC/NC	178	10.0	2000 pcs
FA/SA/NA	178	10.0	2000 pcs
FB	178	14.0	500 pcs



Recommended land pattern both for flow and reflow



Dim.	Size	A	B	C
FC/SC/NC	C	1.4~1.5	3.5~4.0	1.2~1.6
NA/FA/SA	A	1.6~2.0	4.0~4.6	1.9~2.4
FB Type	B	2.4~2.6	5.5~6.0	2.0~3.0

