

Specification for Approval

Date: 2024/1/1

Customer: _____

BYTEK P/N: FCDI SERIES

CUSTOMER P/N: _____

DESCRIPTION: _____

QUANTITY: _____ pcs

REMARK:		
Customer Approval Feedback		

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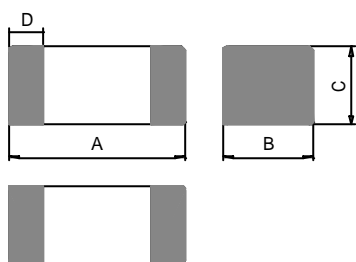
Multilayer Chip Ferrite Chip Inductors

FCDI SERIES

1.Features

- 1.Monolithic inorganic material construction.
- 2.Closed magnetic circuit avoids crosstalk.
- 3.S.M.T. type.
- 4.Suitable for flow and reflow soldering.
- 5.Shapes and dimensions follow E.I.A. spec.
- 6.Available in various sizes.
- 7.Excellent solderability and heat resistance.
- 8.High reliability.
- 9.This component is compliant with RoHS legislation and also support lead-free soldering.

2.Dimensions



单位Unit: mm (inch)

Size	A	B	C	D
100505	1.0±0.15 (0.040±0.006)	0.5±0.15 (0.020±0.006)	0.5±0.15 (0.020±0.006)	0.25±0.1 (0.010±0.004)
160808	1.6±0.20 (0.063±0.008)	0.8±0.20 (0.031±0.008)	0.8±0.20 (0.031±0.008)	0.3±0.2 (0.01±0.008)
201209	2.0±0.20 (0.079±0.008)	1.2±0.20 (0.047±0.008)	0.9±0.20 (0.035±0.008)	0.5±0.3 (0.020±0.012)
201212	2.0±0.20 (0.079±0.008)	1.2±0.20 (0.047±0.008)	1.2±0.20 (0.047±0.008)	0.5±0.3 (0.020±0.012)
321609	3.2±0.20 (0.126±0.008)	1.6±0.20 (0.063±0.008)	0.9±0.20 (0.035±0.008)	0.5±0.3 (0.020±0.012)
321611	3.2±0.20 (0.126±0.008)	1.6±0.20 (0.063±0.008)	1.1±0.20 (0.043±0.008)	0.5±0.3 (0.020±0.012)
322513	3.2±0.20 (0.126±0.008)	2.5±0.20 (0.098±0.008)	1.3±0.20 (0.051±0.008)	0.5±0.3 (0.020±0.012)
453215	4.5±0.20 (0.180±0.008)	3.2±0.20 (0.126±0.008)	1.5±0.20 (0.060±0.008)	0.5±0.3 (0.020±0.012)

3. Part Numbering

FCDI **100505** - **1R0** **K** - **02**
 A B C D E

- A: Series
- B: Dimension L x W
- C: Inductance 1R0=1.0uH
- D: Inductance Tolerance K=± 10%, J=± 5%, M=± 20%
- E: code

4. Specification

Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI100505-47NK-02	±10	0.047	10	0.45	50	50	220	25
FCDI100505-56NK-02	±10	0.056	10	0.45	50	50	210	25
FCDI100505-68NK-02	±10	0.068	10	0.45	50	50	210	25
FCDI100505-82NK-02	±10	0.082	10	0.45	50	50	200	25
FCDI100505-R10K-02	±10	0.10	15	0.70	25	50	200	25
FCDI100505-R12K-02	±10	0.12	15	0.70	25	50	165	25
FCDI100505-R15K-02	±10	0.15	15	0.80	25	50	140	25
FCDI100505-R18K-02	±10	0.18	15	0.80	25	50	120	25
FCDI100505-R22K-02	±10	0.22	15	1.00	25	50	110	25
FCDI100505-R27K-02	±10	0.27	15	1.20	25	50	95	25
FCDI100505-R33K-02	±10	0.33	15	1.20	25	50	85	25
FCDI100505-R39K-02	±10	0.39	15	1.30	10	50	70	20
FCDI100505-R47K-02	±10	0.47	15	1.50	10	50	68	20
FCDI100505-R56K-02	±10	0.56	15	2.00	10	50	55	20
FCDI100505-R68K-02	±10	0.68	15	2.30	10	50	50	20
FCDI100505-R82K-02	±10	0.82	15	3.00	10	50	45	18
FCDI100505-1R0K-02	±10	1.0	20	0.90	10	50	40	25
FCDI100505-1R2K-02	±10	1.2	20	1.20	10	50	35	25

Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI160808-47NK-02	±10	0.047	15	0.20	50	50	260	50
FCDI160808-56NK-02	±10	0.056	15	0.20	50	50	260	50
FCDI160808-68NK-02	±10	0.068	15	0.20	50	50	250	50
FCDI160808-82NK-02	±10	0.082	15	0.20	50	50	245	50
FCDI160808-R10K-02	±10	0.10	20	0.25	25	50	240	50
FCDI160808-R12K-02	±10	0.12	20	0.30	25	50	205	50
FCDI160808-R15K-02	±10	0.15	20	0.30	25	50	180	50
FCDI160808-R18K-02	±10	0.18	20	0.30	25	50	165	50
FCDI160808-R22K-02	±10	0.22	20	0.40	25	50	150	50
FCDI160808-R27K-02	±10	0.27	20	0.45	25	50	136	50
FCDI160808-R33K-02	±10	0.33	20	0.50	25	50	125	50
FCDI160808-R39K-02	±10	0.39	20	0.60	25	50	110	50
FCDI160808-R47K-02	±10	0.47	20	0.70	25	50	105	50
FCDI160808-R56K-02	±10	0.56	20	0.70	25	50	95	50
FCDI160808-R68K-02	±10	0.68	20	0.90	25	50	90	50
FCDI160808-R82K-02	±10	0.82	20	1.00	25	50	85	50
FCDI160808-1R0K-02	±10	1.0	25	0.50	10	50	75	25
FCDI160808-1R2K-02	±10	1.2	25	0.55	10	50	65	25
FCDI160808-1R5K-02	±10	1.5	25	0.70	10	50	60	25
FCDI160808-1R8K-02	±10	1.8	25	0.75	10	50	55	25
FCDI160808-2R2K-02	±10	2.2	25	0.80	10	50	50	25
FCDI160808-2R7K-02	±10	2.7	25	0.90	10	50	45	15
FCDI160808-3R3K-02	±10	3.3	25	1.00	10	50	40	15
FCDI160808-3R9K-02	±10	3.9	25	1.30	10	50	35	15
FCDI160808-4R7K-02	±10	4.7	25	1.50	10	50	33	15
FCDI160808-5R6K-02	±10	5.6	12	1.55	4	50	22	5
FCDI160808-6R8K-02	±10	6.8	12	1.55	4	50	20	5
FCDI160808-8R2K-02	±10	8.2	12	1.65	4	50	18	5
FCDI160808-100K-02	±10	10	20	1.75	2	50	17	3
FCDI160808-120K-02	±10	12	20	1.85	2	50	15	3
FCDI160808-150M-02	±20	15	20	2.50	1	50	14	1
FCDI160808-180M-02	±20	18	20	2.70	1	50	13	1
FCDI160808-220M-02	±20	22	20	3.00	1	50	12	1

Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI201209-47NK-02	±10	0.047	25	0.15	50	50	320	300
FCDI201209-56NK-02	±10	0.056	25	0.15	50	50	320	300
FCDI201209-68NK-02	±10	0.068	25	0.20	50	50	280	300
FCDI201209-82NK-02	±10	0.082	25	0.20	50	50	280	300
FCDI201209-R10K-02	±10	0.10	20	0.20	25	50	235	250
FCDI201209-R12K-02	±10	0.12	20	0.25	25	50	220	250
FCDI201209-R15K-02	±10	0.15	20	0.25	25	50	200	250
FCDI201209-R18K-02	±10	0.18	20	0.30	25	50	185	250
FCDI201209-R22K-02	±10	0.22	20	0.30	25	50	170	250
FCDI201209-R27K-02	±10	0.27	20	0.40	25	50	150	250
FCDI201209-R33K-02	±10	0.33	20	0.40	25	50	145	250
FCDI201209-R39K-02	±10	0.39	25	0.50	25	50	135	200
FCDI201209-R47K-02	±10	0.47	25	0.50	25	50	125	200
FCDI201209-R56K-02	±10	0.56	25	0.60	25	50	115	150
FCDI201209-R68K-02	±10	0.68	25	0.65	25	50	105	150
FCDI201209-R82K-02	±10	0.82	25	0.70	25	50	100	150
FCDI201209-1R0K-02	±10	1.0	35	0.40	10	50	75	50
FCDI201209-1R2K-02	±10	1.2	35	0.40	10	50	65	50
FCDI201209-1R5K-02	±10	1.5	35	0.40	10	50	60	50
FCDI201209-1R8K-02	±10	1.8	35	0.40	10	50	55	50
FCDI201209-2R2K-02	±10	2.2	35	0.60	10	50	50	50
FCDI201209-2R7K-02	±10	2.7	35	0.60	10	50	45	50
FCDI201209-3R3K-02	±10	3.3	35	0.60	10	50	41	50
FCDI201209-3R9K-02	±10	3.9	35	0.80	10	50	38	50
FCDI201209-4R7K-02	±10	4.7	35	0.90	10	50	35	30
FCDI201209-5R6K-02	±10	5.6	30	1.00	4	50	32	15
FCDI201209-6R8K-02	±10	6.8	30	1.05	4	50	29	15
FCDI201209-8R2K-02	±10	8.2	30	1.05	4	50	26	15
FCDI201209-100K-02	±10	10	30	1.15	2	50	24	15
FCDI201209-120K-02	±10	12	30	1.15	2	50	22	15
FCDI201209-150K-02	±10	15	25	1.15	1	50	19	5
FCDI201209-180K-02	±10	18	25	1.20	1	50	18	5

Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI201209-220K-02	±10	22	25	1.20	1	50	16	5
FCDI201209-270K-02	±10	27	25	1.50	1	50	16	5
FCDI201209-330M-02	±20	33	25	1.50	1	50	16	5
FCDI201212-390M-02	±20	39	25	1.50	1	50	16	5
FCDI201212-470M-02	±20	47	25	1.70	1	50	15	5
FCDI201212-560M-02	±20	56	25	2.60	1	50	10	5
FCDI201212-680M-02	±20	68	25	2.60	<u>1</u>	50	10	<u>5</u>

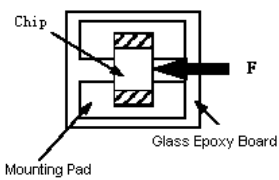
Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI321609-47NK-02	±10	0.047	30	0.15	50	50	320	300
FCDI321609-56NK-02	±10	0.056	30	0.20	50	50	320	300
FCDI321609-68NK-02	±10	0.068	30	0.25	50	50	280	300
FCDI321609-82NK-02	±10	0.082	30	0.25	50	50	280	300
FCDI321609-R10K-02	±10	0.10	25	0.25	25	50	235	250
FCDI321609-R12K-02	±10	0.12	25	0.25	25	50	220	250
FCDI321609-R15K-02	±10	0.15	25	0.25	25	50	200	250
FCDI321609-R18K-02	±10	0.18	25	0.30	25	50	185	250
FCDI321609-R22K-02	±10	0.22	25	0.30	25	50	170	250
FCDI321609-R27K-02	±10	0.27	25	0.30	25	50	150	250
FCDI321609-R33K-02	±10	0.33	25	0.30	25	50	145	250
FCDI321609-R39K-02	±10	0.39	30	0.50	25	50	135	200
FCDI321609-R47K-02	±10	0.47	30	0.50	25	50	125	200
FCDI321609-R56K-02	±10	0.56	30	0.50	25	50	115	150
FCDI321609-R68K-02	±10	0.68	30	0.50	25	50	105	150
FCDI321609-R82K-02	±10	0.82	30	0.60	25	50	100	150
FCDI321609-1R0K-02	±10	1.0	35	0.30	10	50	75	100
FCDI321609-1R2K-02	±10	1.2	35	0.40	10	50	65	100
FCDI321609-1R5K-02	±10	1.5	35	0.40	10	50	60	50
FCDI321609-1R8K-02	±10	1.8	35	0.40	10	50	55	50
FCDI321609-2R2K-02	±10	2.2	35	0.50	10	50	50	50
FCDI321609-2R7K-02	±10	2.7	35	0.50	10	50	45	50
FCDI321609-3R3K-02	±10	3.3	35	0.50	10	50	41	50
FCDI321609-3R9K-02	±10	3.9	35	0.60	10	50	38	50
FCDI321609-4R7K-02	±10	4.7	35	0.65	10	50	35	25
FCDI321609-5R6K-02	±10	5.6	35	0.80	4	50	32	25
FCDI321609-6R8K-02	±10	6.8	35	0.80	4	50	29	25
FCDI321609-8R2K-02	±10	8.2	35	0.80	4	50	26	25
FCDI321609-100K-02	±10	10	35	0.80	2	50	24	25
FCDI321609-120K-02	±10	12	35	0.90	2	50	22	15
FCDI321609-150K-02	±10	15	30	1.00	1	50	19	5
FCDI321609-180K-02	±10	18	30	1.00	1	50	18	5
FCDI321609-220K-02	±10	22	30	1.20	1	50	16	5

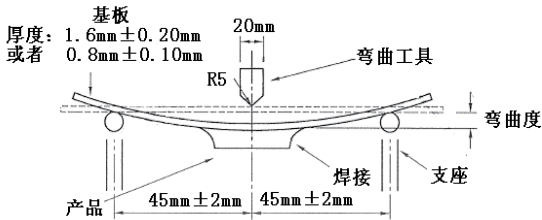
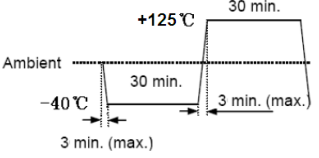
Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI321609-270K-02	±10	27	30	1.20	1	50	14	5
FCDI321609-330K-02	±10	33	30	1.30	1	50	13	5
FCDI321609-390K-02	±10	39	30	1.30	1	50	13	5
FCDI321611-470K-02	±10	47	30	1.60	1	50	12	5
FCDI321611-560M-02	±20	56	30	1.80	1	50	12	5
FCDI321611-680M-02	±20	68	30	2.00	1	50	11	5
FCDI321611-820M-02	±20	82	30	2.40	1	50	11	5
FCDI321611-101M-02	±20	100	30	3.00	1	50	8	5

Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI322513-1R0K-02	±10	1.0	40	0.20	10	50	70	600
FCDI322513-1R2K-02	±10	1.2	40	0.20	10	50	70	600
FCDI322513-1R5K-02	±10	1.5	40	0.30	10	50	70	500
FCDI322513-1R8K-02	±10	1.8	40	0.30	10	50	70	500
FCDI322513-2R2K-02	±10	2.2	40	0.30	10	50	50	500
FCDI322513-2R7K-02	±10	2.7	40	0.30	10	50	50	500
FCDI322513-3R3K-02	±10	3.3	40	0.40	10	50	50	500
FCDI322513-3R9K-02	±10	3.9	40	0.40	10	50	30	500
FCDI322513-4R7K-02	±10	4.7	40	0.50	10	50	30	500
FCDI322513-5R6K-02	±10	5.6	35	0.60	4	50	30	450
FCDI322513-6R8K-02	±10	6.8	35	0.60	4	50	20	450
FCDI322513-8R2K-02	±10	8.2	35	0.70	4	50	20	400
FCDI322513-100K-02	±10	10	35	0.70	2	50	20	400
FCDI322513-120K-02	±10	12	35	0.70	2	50	20	400
FCDI322513-150K-02	±10	15	35	0.70	1	50	20	300
FCDI322513-180K-02	±10	18	35	0.70	1	50	10	300
FCDI322513-220K-02	±10	22	35	0.75	1	50	10	250
FCDI322513-270K-02	±10	27	35	0.75	1	50	10	250
FCDI322513-330K-02	±10	33	35	0.80	1	50	10	250
FCDI322513-390K-02	±10	39	35	0.80	1	50	10	250
FCDI322513-470K-02	±10	47	35	1.00	1	50	10	200
FCDI322513-560M-02	±20	56	35	1.20	1	50	5	200
FCDI322513-680M-02	±20	68	35	1.30	1	50	5	150
FCDI322513-820M-02	±20	82	35	1.50	1	50	5	150
FCDI322513-101M-02	±20	100	35	1.50	1	50	5	150
FCDI322513-121M-02	±20	120	35	1.80	1	50	5	150

Part NO	Tolerance (%)	Inductance (μH)	(min)	RDC (Ω) max	Test frequency (MHz)	Test voltage (mV)	SRF (MHz) min	Rated current (mA)max
FCDI453215-1R0K-02	±10	1.0	35	0.55	10	50	50	650
FCDI453215-1R2K-02	±10	1.2	35	0.55	10	50	50	650
FCDI453215-1R5K-02	±10	1.5	35	0.55	10	50	45	600
FCDI453215-1R8K-02	±10	1.8	35	0.65	10	50	45	600
FCDI453215-2R2K-02	±10	2.2	35	0.65	10	50	40	500
FCDI453215-2R7K-02	±10	2.7	35	0.70	10	50	40	500
FCDI453215-3R3K-02	±10	3.3	35	0.75	10	50	35	500
FCDI453215-3R9K-02	±10	3.9	35	0.80	10	50	35	500
FCDI453215-4R7K-02	±10	4.7	30	0.90	10	50	25	500
FCDI453215-5R6K-02	±10	5.6	30	0.90	4	50	20	500
FCDI453215-6R8K-02	±10	6.8	30	1.00	4	50	18	500
FCDI453215-8R2K-02	±10	8.2	30	1.00	4	50	17	450
FCDI453215-100K-02	±10	10	30	1.00	2	50	16	450
FCDI453215-120K-02	±10	12	35	1.00	2	50	15	450
FCDI453215-150K-02	±10	15	35	1.00	1	50	14	400
FCDI453215-180K-02	±10	18	35	1.00	1	50	13	400
FCDI453215-220K-02	±10	22	35	1.30	1	50	12	300
FCDI453215-270K-02	±10	27	35	1.30	1	50	10	300
FCDI453215-330K-02	±10	33	40	1.50	1	50	10	250
FCDI453215-390K-02	±10	39	40	1.50	1	50	10	250
FCDI453215-470K-02	±10	47	40	1.65	1	50	8	250
FCDI453215-560K-02	±10	56	40	1.80	1	50	8	250
FCDI453215-680M-02	±20	68	40	2.00	1	50	6	200
FCDI453215-820M-02	±20	82	40	2.30	1	50	6	200
FCDI453215-101M-02	±20	100	40	2.30	1	50	6	150
FCDI453215-121M-02	±20	120	40	2.50	1	50	6	150

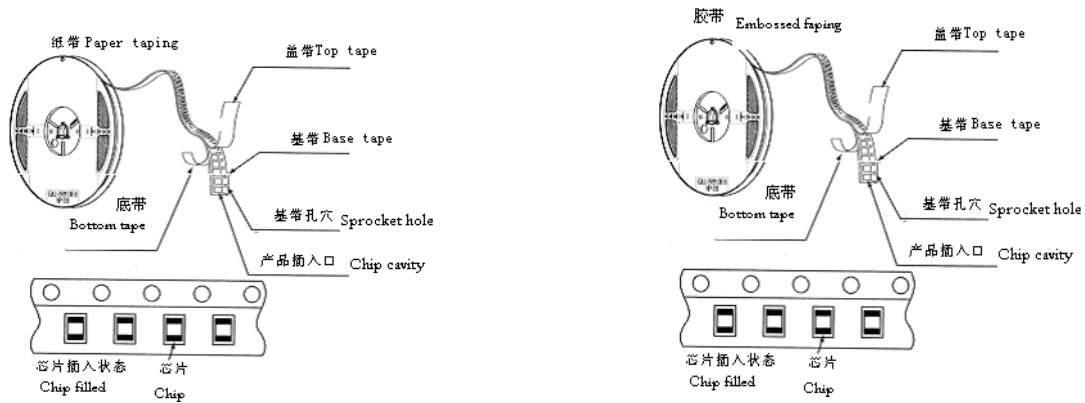
5. Reliability and Test Condition

No.	Items	Requirements	Test Methods and Remarks
1	Operating Temperature Range	-40°C ~ +85°C	including the IRMS for surface of the products
2	Solder ability	At least 95% of terminal electrode should be covered with solder	Preheating temperature: 120 to 150 Preheating time: 60s Solder 96.5%Sn/3.0%Ag/0.5%Cu of the Sn solder. Solder temperature: 245±5 Immersion tin depth: 10mm Duration : 5±1s Dip performance to a flux of about: 3 ~ 5 s
3	Resistance to Soldering	At least 95% of terminal electrode should be covered with solder. No mechanical damage. Inductance : Q value change (ferrite): within ±30%	Preheating temperature: 120 °C to 150 °C Preheating time: 60s Solder 96.5%Sn/3.0%Ag/0.5%Cu of the Sn solder. Solder temperature: 260 °C ±5 °C Immersion tin depth: 10mm Duration : 10±1s Dip performance to a flux of about: 3 ~ 5 s
4	Adhesion of electrode	The termination and body should be no damage.	Applied force: 5N force for 1005 and 1608 series; 10N force for 2012、3216 series; 15N force for 3225、4532 series; Keep time : 10±1S 
5	Low temperature resistance	No mechanical damage. Inductance change: within ±20%	Temperature: -40±2°C +24 Testing time: 1000 ⁻⁰ _h

No.	Items	Requirements	Test Methods and Remarks
6	Bending strength	No mechanical damage	<p>Testing board: glass epoxy-resin substrate For 1 mm/s compression speed, curvature: 2mm, hold time 30 s.</p> 
7	Vibration	No mechanical damage. Inductance change: within $\pm 10\%$ Q value change(ferrite): within $\pm 30\%$	Amplitude modulation: 1.5mm Test time: A period of 2h in each of 3 mutually perpendicular directions. Frequency range: 10Hz to 55Hz to 10Hz for 1min.
8	High temperature resistance	No mechanical damage. Inductance change: within $\pm 10\%$ Q value change(ferrite): within $\pm 30\%$	Testing time: $1000 \begin{matrix} +24h \\ -0 \end{matrix}$ Temperature: $85 \pm 2^\circ\text{C}$
9	Static Humidity	No mechanical damage. Inductance change: within $\pm 20\%$	Humidity: 90% to 95% RH Temperature: $60^\circ\text{C} \pm 2^\circ\text{C} + \begin{matrix} 24 \\ -0 \end{matrix}$ h Testing time: $1000 \begin{matrix} +24h \\ -0 \end{matrix}$ h
10	High temperature load	No mechanical damage. Inductance change: within $\pm 20\%$	impose current: at room Testing time: $1000 \begin{matrix} +24h \\ -0 \end{matrix}$ Temperature: $85 \pm 2^\circ\text{C}$
11	Temperature Shock	No mechanical damage. Inductance change: within $\pm 10\%$ Q value change(ferrite): within $\pm 30\%$	Temperature: -40°C for 30 ± 3 min $+85^\circ\text{C}$ for 30 ± 3 min Number of cycles: 32 

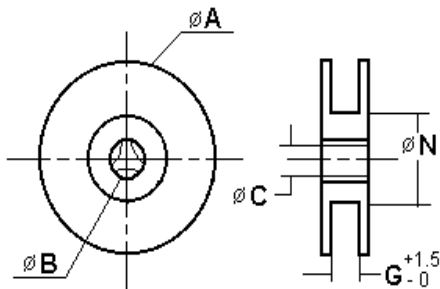
6. Packaging

6-1 Taping drawings

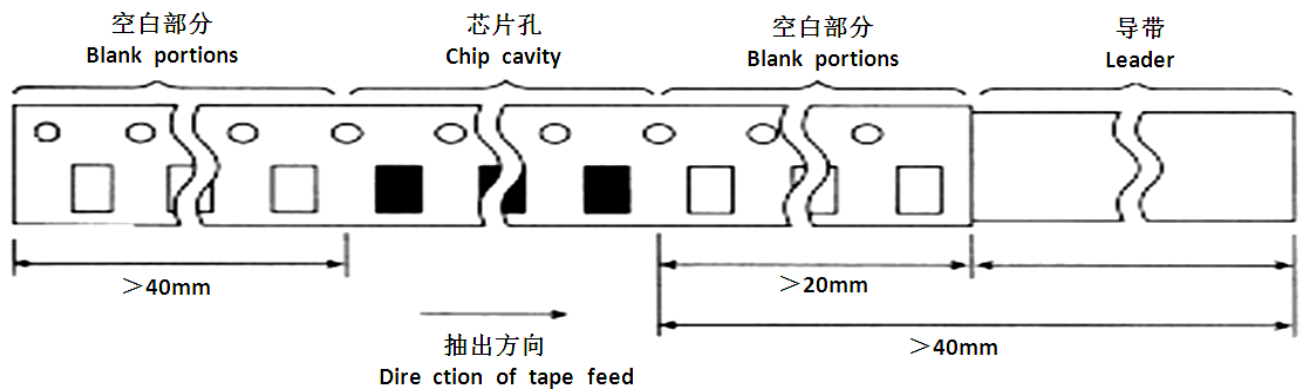


6-2 Reel dimensions (Unit: mm)

序号 No.	A		C	N	G
CF-8	178±2.0	22.0±2.0	12.5±1.5	57±2.0	8
CF-12	330±2.0	22.0±2.0	12.5±1.5	98±2.0	12

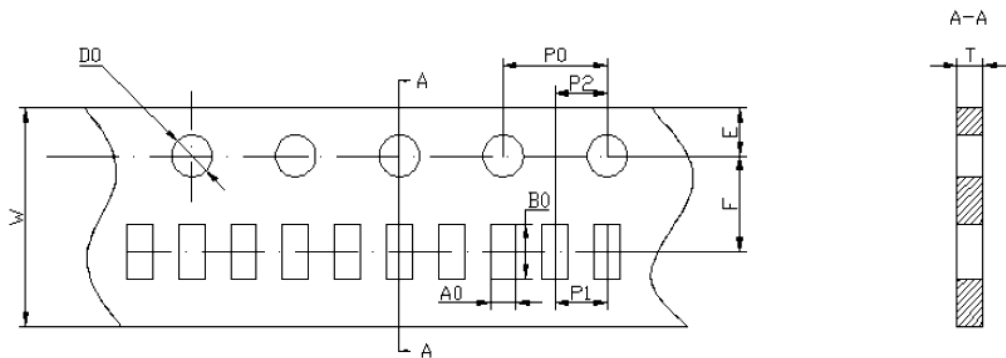


6-3 Leader and blank portion



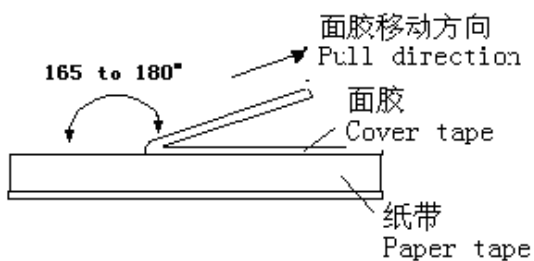
6-4 Taping dimensions (Unit: mm)

Paper tape



Part NO.	A0	B0	W	F	E	P1	P2	P0	D0	T
100505	0.65±0.1	1.15±0.1	8.0±0.2	3.5±0.1	1.75±0.2	2.0±0.1	2.0±0.1	4.0±0.2	1.55±0.1	0.60±0.1
160808	1.10±0.2	1.90±0.2	8.0±0.2	3.5±0.1	1.75±0.2	4.0±0.2	2.0±0.1	4.0±0.2	1.55±0.1	0.95±0.1
201209	1.50±0.2	2.30±0.2	8.0±0.2	3.5±0.1	1.75±0.2	4.0±0.2	2.0±0.1	4.0±0.2	1.55±0.1	0.95±0.1
321609	1.90±0.2	3.50±0.2	8.0±0.2	3.5±0.1	1.75±0.2	4.0±0.2	2.0±0.1	4.0±0.2	1.55±0.1	0.95±0.1

6-5 Peeling off force



Peeling force should be 0.1~0.7N pulling in the direction of arrow.

Speed of peeling off: 300mm/min.

The cover bond should not be damaged and bond the tape when it peeled off.

6-6.Packaging number (Unit: Pcs)

SIZE	453215	322513	321611	321609	201212	201209	160808	100505
REEL	3000	3000	3000	4000	3000	4000	4000	10000
BOX	12000	30000	30000	40000	30000	40000	40000	100000
CASE	36000	180000	180000	240000	180000	240000	240000	600000