■

Feature

*

*

*

* COG COH

*X7R X7S X7T X6S X6T X5R

GB/T 21041-2007 GB/T 21042-2007

Application

*

0805 | CG | 102 | J | 500 | N | T

	× (L×W)	× (L×W)
1005	0.01×0.005	0.40×0.20
0201	0.02×0.01	0.60×0.30
0402	0.04×0.02	1.00×0.50
0603	0.06×0.03	1.60×0.80
0805	0.08×0.05	2.00×1.25
1206	0.12×0.06	3.20×1.60
1210	0.12×0.10	3.20×2.50
1808	0.18×0.08	4.50×2.00
1812	0.18×0.12	4.50×3.20

0R5	0.5
1R0	1.0
102	10 10^2
R	0

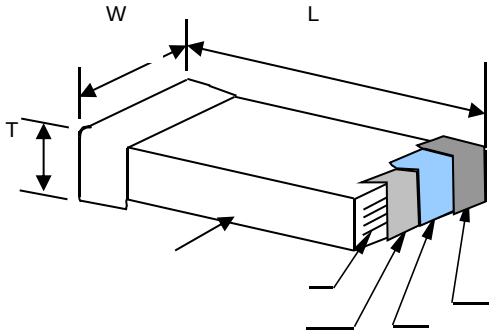
V	
6R3	6.3
500	50 10^0
201	20 10^1
R	0

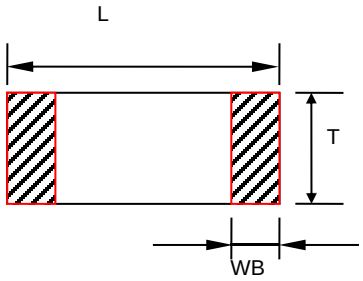
B	
T	

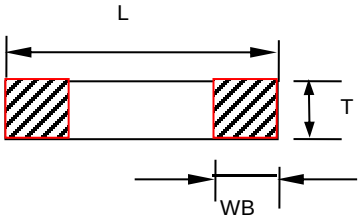
CG	C0G
X	X5R
B	X7R
BS	X7S
BT	X7T
DS	X6S
DT	X6T

A	±0.05pF	A B C D ≤ 10pF
B	±0.10pF	
C	±0.25pF	
D	±0.50pF	
F	±1%	
G	±2%	
J	±5%	
K	±10%	
M	±20%	
S	-20% +50%	
Z	-20% +80%	

	C
	N







		L	W	T	WB
1005	0402	0.4±0.02	0.2±0.02		

1 “T” “ ” 2 .

/ Temperature Coefficient /Characteristics

COG	20℃	0±30 ppm/	-55 125
X7R	20℃	±15%	-55 125
X7S	20℃	±22%	-55 125
X7T	20℃	-33%~+22%	-55 125
X6S	20℃	±22%	-55 105
X6T	20℃	-33%~+22%	-55 105
X5R	20℃	±15%	-55 85

20℃ 85℃

20℃

*

COG

/	1005 (0.4mm*0.2mm) 10V	16V	25V	50V	0201 (0.6mm*0.3mm) 25V	50V	0402 (1.0mm*0.5mm) 25V	50V	0603 (1.6mm*0.8mm) 25V	50V
0.1pF										
0.2pF										
0.5pF										
1pF										
1.2pF										
1.5pF										
1.8pF										
2.0pF										
2.2pF										
2.7pF										
3.0pF										
3.3pF										
3.6pF										
3.9pF										
4.7pF										
5.0pF		0.2±0.02				0.3±0.03				
5.6pF										
6.8pF										
8.0pF										
8.2pF										
10pF					0.3±0.03		0.50±0.05	0.50±0.05		
12pF										
15pF										
18pF										
22pF									0.80±0.10	0.80±0.10
27pF										
33pF										
39pF										
47pF										
56pF										
68pF										
100pF										
120pF										
150pF										
180pF										
220pF										
270pF										
330										

	COG							
	0805 (2.0mm*1.25mm)		1206 (3.2mm*1.6mm)		1210 (3.2mm*2.5mm)		1812 (4.5mm*3.2mm)	
/	25V	50V	25V	50V	25V	50V	25V	50V
0.1pF	0.8±0.02		0.8±0.02					
0.22pF								
0.3pF								
0.47pF								
1pF								
1.2pF								
1.5pF								
1.8pF								
2.0pF								
2.2pF								
2.7pF								
3.0pF								
3.3pF								
3.6pF								
3.9pF								
4.7pF								
5.0pF								
5.6pF								
6.8pF								
8.0pF								
8.2pF								
10pF					1.25±0.20		1.6±0.30	
12pF								
15pF								
18pF								
22pF								
27pF								
33pF								
39pF								
47pF								
56pF								
68pF								
100pF								
120pF								
150pF								
180pF								
220pF								
270pF								
330pF								
390pF								
470pF								
560pF								
680pF								
1nF								
1.5nF								
1.8nF								
2.2nF								
2.7nF								
3.3nF								
4.7nF								
6.8nF								
10nF			1.25±0.20					
12nF	1.25±0.20		1.60±0.30					
22nF								
33nF								
47nF								
100nF								

1 mm 2

*11

	1005 (0.4mm*0.2mm)														
	X7R			X7S			X7T			X6S/X6T			X5R		
/	6.3V	10V	16V	6.3V	10V	16V	6.3V	10V	16V	6.3V	10V	16V	6.3V	10V	16V
120pF	0.2 0.02			0.2 0.02			0.2±0.02			0.2±0.02			0.2±0.02		
180pF															
220pF															
270pF															
330pF															
390pF															
470pF															
560pF															
680pF															
1nF															
1.2nF															
1.5nF															
1.8nF															
2.2nF															
2.7nF															
3.3nF															
3.9nF															
4.7nF															
5.6nF															
6.8nF															
10nF															
15nF													0.2±0.02		

	0201 (0.6mm*0.3mm)																							
	X7R					X7S					X7T					X6S/X6T					X5R				
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
120pF		0.3±0.03				0.3±0.03					0.3±0.03					0.3±0.03									
180pF																									
220pF																									
330pF																									
470pF																									
560pF																									
680pF																									
1nF																									
2.2nF		0.3±0.03				0.3±0.03					0.3±0.03					0.3±0.03									
3.9nF																									
4.7nF																									0.30±0.03
5.6nF		0.3±0.03				0.3±0.03					0.3±0.03					0.3±0.03									
6.8nF																									
10nF																									
15nF		0.3±0.03				0.3±0.03															0.30±0.03				
18nF																									
22nF																									
33nF																									

1 mm 2

0201
(0.6mm*0.3mm)

	X7R	X7S	X7T	X6S/X6T	X5R
/	6.3V 10V 16V 25V 50V	6.3V 10V 16V 25V			

0805

(2.0mm*1.25mm)

	X7R					X7S					X7T					X6S/X6T					X5R				
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V

	0805 (2.0mm*1.25mm)																							
	X7R					X7S					X7T					X6S/X6T					X5R			
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
18nF	0.8 0.2					0.8 0.2					0.8 0.2					0.8 0.2									
22nF																									
33nF																									
47nF																									
56nF																									
68nF																									
100nF																									
220nF																									
330nF																									
470nF	1.25 0.2					1.25 0.2					1.25 0.2					1.25 0.2									
680nF																									
1μF																					1.25 0.2				
2.2μF																									
3.3μF	1.25 0.2					1.25 0.2																			
4.7μF																									
6.8μF	1.25 0.2					1.25 0.2					1.25 0.2					1.25 0.2									
10μF																									
15μF																1.25 0.2					1.25 0.2				
22μF																									
47μF																1.25 0.2					1.25 0.2				

	1206 (3.2mm*1.6mm)																							
	X7R					X7S					X7T					X6S/X6T					X5R			
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
330pF	0.8±0.2					0.8±0.2					0.8±0.2					0.8±0.2									
470pF																									
560pF																									
680pF																									
1nF																									
2.2nF																									
3.9nF																									
4.7nF																									
5.6nF																									
6.8nF																									
10nF																									
15nF																									
18nF																									
22nF																									
33nF																									
47nF																									
56nF																									
68nF																									
100nF																									
220nF																									
330nF	1.25±0.2					1.25±0.2					1.25±0.2					1.25±0.2									
470nF																									
680nF																									
1μF	1.6±0.3					1.6±0.3					1.6±0.3					1.6±0.3					1.6±0.3				
2.2μF																									

1 mm 2

	1206 (3.2mm*1.6mm)																							
	X7R					X7S					X7T					X6S/X6T					X5R			
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
3.3μF	1.6 0.3					1.6 0.3					1.6 0.3					1.6 0.3					1.6 0.3				

1nF																									
2.2nF																									
3.9nF																									
4.7nF																									
5.6nF																									
6.8nF																									
10nF																									
15nF																									
18nF																									
22nF																									
33nF																									
47nF																									
56nF																									
68nF																									
100nF																									
220nF																									
330nF																									
470nF																									
680nF																									
1μF																									
2.2μF	1.6±0.3					1.6±0.3					1.6±0.3					1.6±0.3					1.6±0.3				
3.3μF																									
4.7μF																									
6.8μF																									

	1812 (4.5㎜*3.2㎜)																								
	X7R					X7S					X7T					X6S/X6T					X5R				
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
330pF	1.60±0.20					1.60±0.20					1.60±0.20					1.60±0.20					1.60±0.20				
470pF																									
560pF																									
680pF																									
1nF																									
2.2nF																									
3.9nF																									
4.7nF																									
5.6nF																									
6.8nF																									
10nF																									
15nF																									
18nF																									
22nF																									
33nF																									
47nF																									
56nF																									
68nF																									
100nF																									
220nF																									

	1812 (4.5㎜*3.2㎜)																								
	X7R					X7S					X7T					X6S/X6T					X5R				
/	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
330nF	1.60±0.20					1.60±0.20					1.60±0.20					1.60±0.20					1.60±0.20				
470nF																									

680nF								
1μF								
2.2μF	2.0±0.20	2.0±0.20	2.0±0.20	2.0±0.20				2.0±0.20
3.3μF								
4.7μF								
6.8μF								

1 mm 2

			≤1000pF	1MHz±10%	1.0±0.2Vrms
			1000 pF	1KHz±10%	
			25 ±3 C≤10μF : 1KHz±10% : 1.0±0.2Vrms C 10μF : 120±24 Hz :0.5±0.1Vrms		
(IR)		C≤10 nF, Ri≥50000MΩ C 10 nF, Ri•C_R≥500S	500V : 60±5 ≤75% 25 ±3 ≤50mA		
		C≤25 nF, Ri≥10000MΩ C 25 nF, Ri•C_R 100S			
	S=Ω·F				
(DF, tanδ)		DF			
		≤1/ 400+20C	C 30 pF	1MHz±10%	1.0±0.2Vrms
		≤0.1%	C≥30pF		

(DF, tanδ)		DF(×10⁻⁴)	1005	0201	0402	0603	0805	1206	C≤10μF : 1KHz ±10% : 1.0 ±0.2Vrms C 10μF X7R X5R X7T X6S : 120 ±24 Hz :0.5±0.1Vrms
	50V	≤250	——	——	≤10nF	100nF	——	≤680nF	
		≤350	——	≤3.3nF	≤47nF	470nF	≤1uF	≤2.2uF	
		≤500	——	≤10nF	≤0.1μF	——	——	——	
		≤750	——	——	——	——	≤2.2uF	≤4.7uF	
		≤1000	——	——	——	≤2.2μF	≤10μF	≤10μF	
	25V	≤250	——	——	≤10nF	100nF	——	≤680nF	
		≤350	——F	≤3.3nF	≤47nF	470nF	≤1uF	——	
		≤500	——	≤10nF	0.22μF	——	——	——	
		≤750	——	10nF	——	——	≤2.2μF	≤10μF	
		≤1000	——	≤100nF	≤2.2μF	≤10μF	≤22μF	≤22μF	
	16V	250	——	——	≤10nF	100nF	——	≤680nF	
		≤350	≤1nF	≤3.3nF	≤47nF	470nF	≤1uF	——	
		≤500	——	≤15nF	≤220nF	——	——	——	
		≤750	≤10nF	≤47nF	——	——	≤4.7μF	≤10μF	
		≤1000	——	≤100nF	≤4.7μF	≤10μF	≤22μF	≤47μF	
	10V	≤250	——	——	≤10nF	100nF	——	≤680nF	
		≤350	≤1nF	≤3.3nF	≤47nF	470nF	≤1uF	——	
		≤500	——	≤15nF	≤220nF	——	——	——	
		≤750	≤10nF	≤100nF	——	——	≤2.2μF	≤10μF	
		≤1000	——	≤2.2μF	≤10μF	≤22μF	≤47μF	≤100μ	
	≤6.3V	≤250	——	——	≤10nF	100nF	——	≤680nF	
		≤350	≤1nF	≤3.3nF	47nF	470nF	≤1uF	——	
		≤500	——	≤15nF	≤220nF	——	——	——	
		≤750	≤10nF	≤47nF	——	——	≤2.2uF	≤10μF	
		≤1000	——	≤2.2μF	≤10μF	≤47μF	≤47μF	≤100uF	

(DWV)		300% 250% 1~5 / 50mA (MLCC)
	95% .	80~120 10~30 . Sn/Pb 63/37 : 235±5 : 2±0.5s : 245±5 : 2±0.5s

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<tr><td></td><td>
<table>
<tr><td>Item</td><td></td><td></td></tr>
<tr><td>ΔC/C</td><td>≤ ±2.5% ±0.25pF
≤ ±2.5% or ±0.25PF</td><td>±15%</td></tr>
<tr><td>DF</td><td colspan="2"></td></tr>
<tr><td>IR</td><td colspan="2"></td></tr>
<tr><td colspan="3">≥95%</td></tr>
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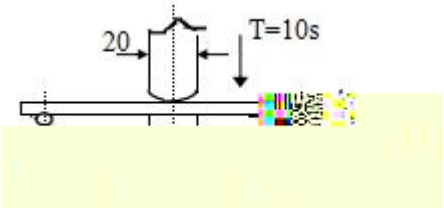
</td><td>100~200 60-120 .
: 265±5
: 10±1s
10 .
24±2</td></tr>
<tr><td></td><td>.
ΔC/C:
≤ ±5% ±0.5pF ,
≤ ±10%</td><td>PCB 1mm
1mm/sec. mm
 
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60+1
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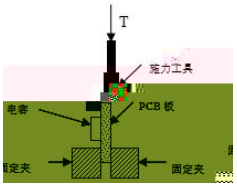
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<tr><td>Item</td><td></td><td></td></tr>
<tr><td>ΔC/C</td><td>≤ ±1% ±1PF
≤ ±1% or ±1pF</td><td>-15% ~+15%</td></tr>
</table>
</td><td>1 24±1h
5 4
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<tr><td></td><td></td><td></td></tr>
<tr><td>1</td><td>:-55</td><td>30min</td></tr>
<tr><td>2</td><td>: +20</td><td>2 3min</td></tr>
<tr><td>3</td><td>COG/X7R/X7T/X7S: +125
X5R:+85 X6S/X6T:+105)</td><td>30min</td></tr>
<tr><td>4</td><td>: +20</td><td>2 3min</td></tr>
</table>
24±2h</td></tr>
</table>

Δ C/C	: ±7.5% ±0.75pF, : : ≤ ±12.5% Class : ±7.5% or ±0.75pF, whichever is larger. Class : ≤ ±12.5%	
DF	≤2	
IR	Class	Ri ≥ 5000MΩ Ri•C_R ≥ 50S .
	Class	Ri ≥ 1000MΩ Ri•C_R ≥ 10S .

140 ~150 1h ± 10min
24 ± 2h
40 ± 2
90~95%RH

500

24 ± 2h
0201 ≥ 47nF 0402 ≥ 33nF 0603 ≥ 1 μ F
0805 ≥ 4.7 μ F 1206 ≥ 10 μ F
150 1h 24 ± 2h
.

Δ C/C		≤ ±3% ±0.3pF,
		- 20% ~ +20%
DF		≤2
IR		Ri ≥ 4000MΩ Ri•C_R ≥ 40S
		Ri ≥ 2000MΩ Ri•C_R ≥ 50S .

140 ~150 1h ± 10min 24 ± 2h
100V 1000
2 1
125 C0G X7R X7S 85 X5R 105 X6S
X6T
50mA.
24 ± 2h
0201 ≥ 47nF 0402 ≥ 33nF 0603 ≥ 1 μ F 0805 ≥ 4.7
μ F 1206 ≥ 10 μ F 150 1h
24 ± 2h .

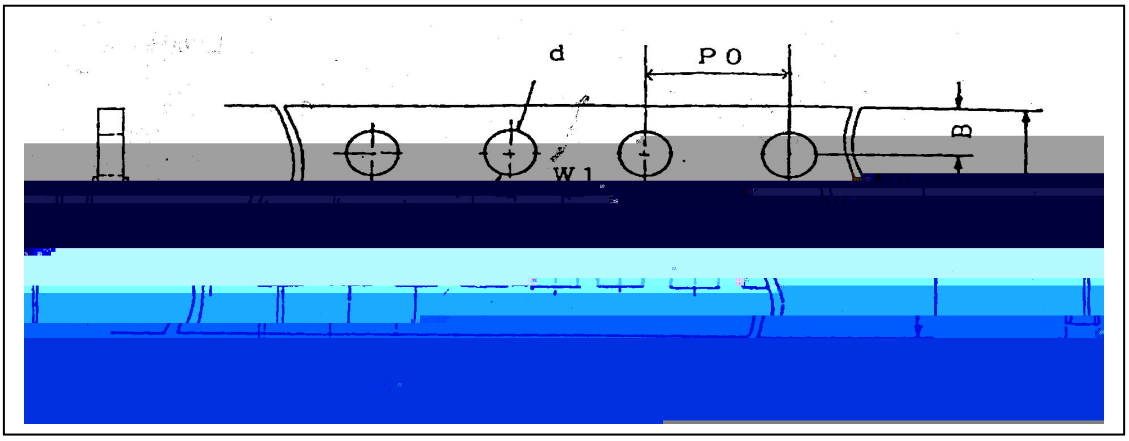
1(table 1)

0201 ≥ 10nF 0805 ≥ 0.47uF
1.5Ur 1.5Ur

*

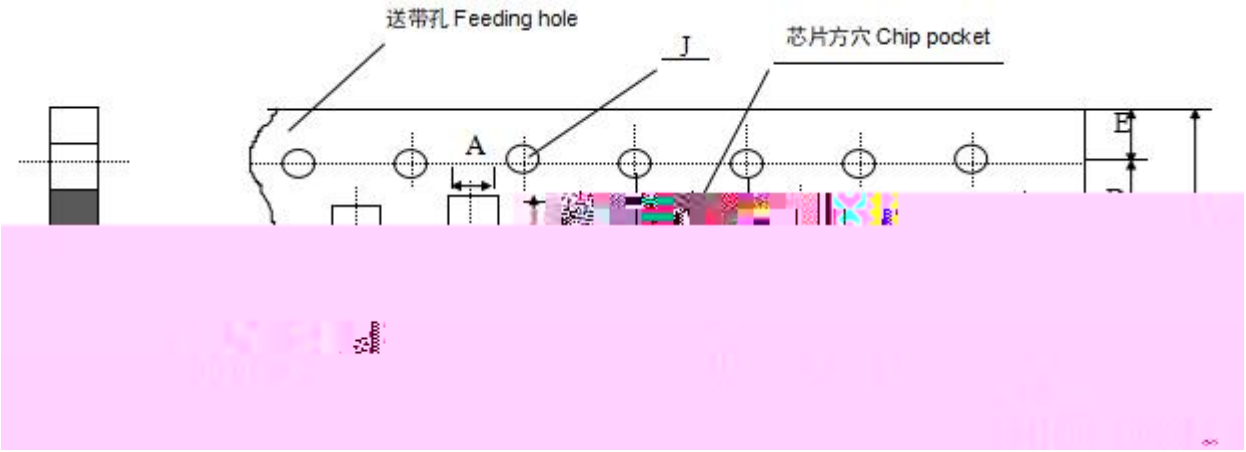
	E		B0
	±0.0		±0.02

* 1005 0201 0402



	W1	L1	D	C	B	P1	P2	P0	d	t
1005	0.24 ±0.02	0.45 ±0.02	8.00 ±0.10	3.50 ±0.05	1.75 ±0.10	2.00 ±0.05	2.00 ±0.05	4.00 ±0.10	1.50 -0/+0.10	0.30 Below
0201	0.37 ±0.10	0.67 ±0.10	8.00 ±0.10	3.50 ±0.05	1.75 ±0.10	2.00 ±0.05	2.00 ± 0.05	4.00 ±0.10	1.50 -0/+0.10	0.80 Below
0402	0.65 ±0.10	1.15 ±0.10	8.00 ±0.10	3.50 ±0.05	1.75 ±0.10	2.00 ±0.05	2.00 ±0.05	4.00 ±0.10	1.50 -0/+0.10	0.80 Below

* ‘0603 0805 1206’

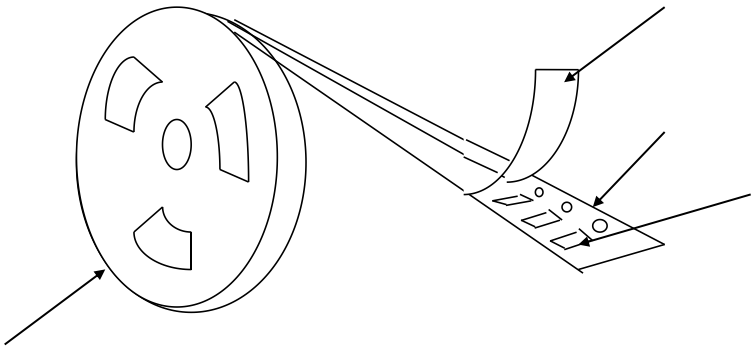


Unit mm

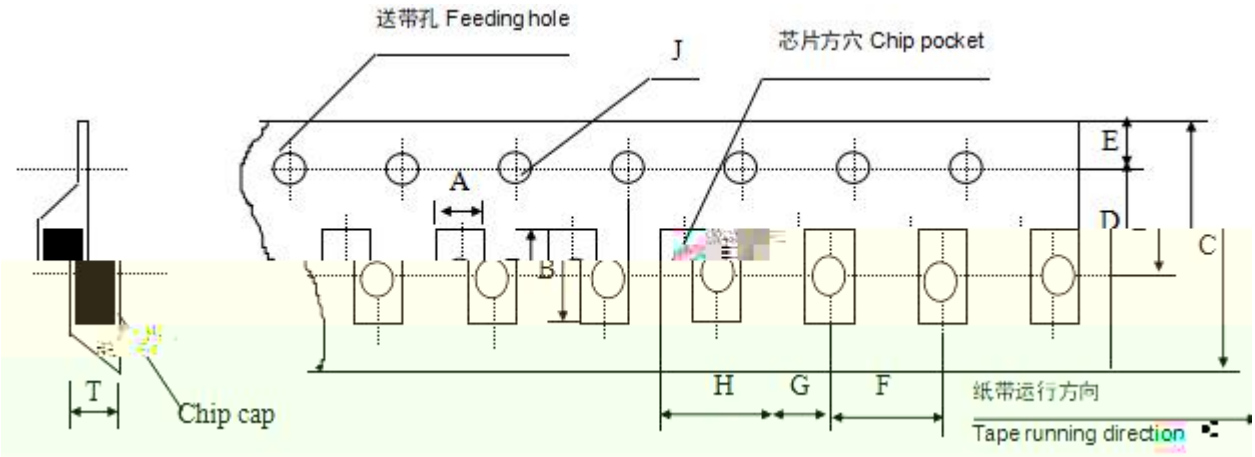
	A	B	C	D*	E	F	G*	H	J	T
0603	1.10 ± 0.10	1.90 ± 0.10	8.00 ± 0.10	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 -0/+0.10	1.10 Max
0805	1.45 ± 0.15	2.30 ± 0.15	8.0 ± 0.15	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 -0/+0.10	1.10 Max
1206	1.80 ± 0.20	3.40 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 -0/+0.10	1.10 Max

*

*



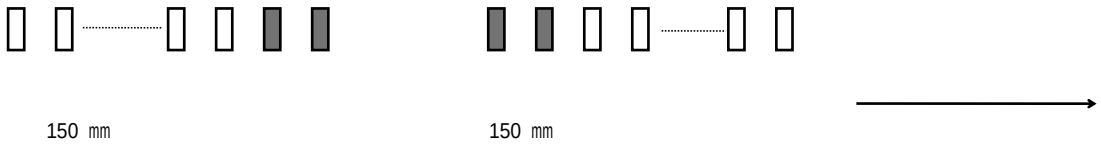
*　　(　　‘ 0805~1812 ’　　)



	A	B	C	D*	E	F	G*	H	J	T
0805	1.55 ± 0.20	2.35 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 -0/+0.10	1.50 Max
1206	1.95 ± 0.20	3.60 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.1	1.50 -0/+0.10	1.85 Max
1210	2.70 ± 0.10	3.42 ± 0.10	8.00 ± 0.10	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	3.2 Max
1808	2.20 ± 0.10	4.95 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.50 -0/+0.10	3.0 Max
1812	3.66 ± 0.10	4.95 ± 0.10	12.00 ± 0.10	5.50 ± 0.05	1.75 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	4.00 ± 0.10	1.55 -0/+0.10	4.0 Max

*

*



*

	A	B	C	D	E	F	G
7′REEL	φ178±2.0	3.0	φ13±0.5	φ21±0.8	φ50 φ50 or more	10.0±1.5	12max

*

Paper Tapin

*

0.1N<　　<0.7N

,

*

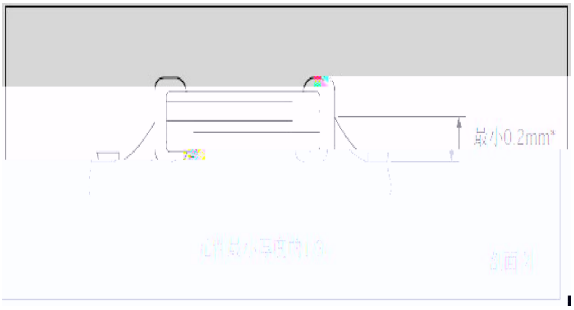
unit :mm

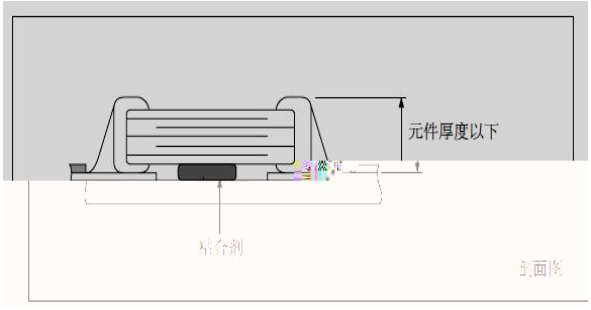
	A	B	T	C	D	E
	6.80±0.10	8.80±1.00	12.00±0.10	15.00+0.10/-0	2.00+0/-0.10	4.70±0.10
	F	W	G	H	L	I
	31.50+0.20/-0	36.00+0/-0.20	19.00±0.35	7.00±0.35	110.00±0.70	5.00±0.35

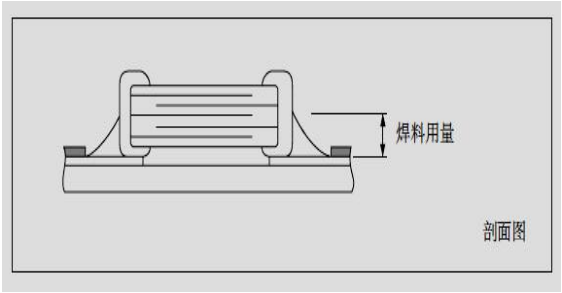
*

1005	——	20000	——	——	——
0201	——	15000	——	——	——
0402	------	10000	------	20000	5000
0603	------	4000	------	15000	5000
0805	------	4000	3000	10000	5000
1206	------	4000	T≤1.35㎜ 3000 T 1.35㎜ 2000	5000	5000
1210	------	-------	T≤1.80㎜ 2000 T 1.80㎜ 1000	-------	2000
1808	------	-------	2000	-------	2000
1812	------	--------	T≤1.85㎜ 1000 T 1.85㎜ 500	-------	2000

*







*

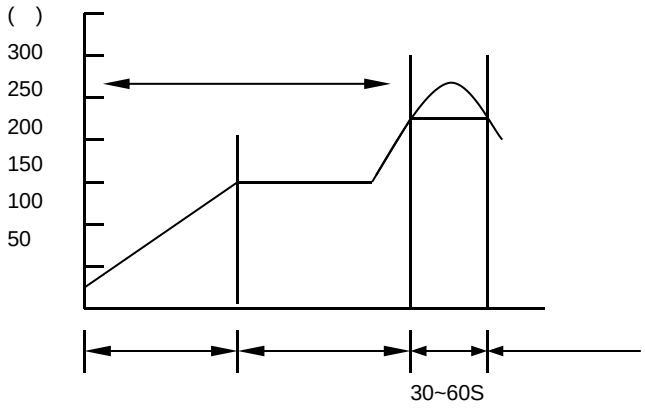
1005	C0G	/	/	R
	X7R/X5R/X7T/X6S	/	/	R
0201	C0G	/	/	R
	X7R/X5R/X7T/X6S	/	/	R

*

0402	COG	/	/	R
	X7R/X5R/X7T/X6S	/	/	R
0603	COG	/	/	R/W
	X7R/X5R/X7T/X6S	/	C≥1uf	R
			C 1uf	R/W
0805	COG	/	/	R/W
	X7R/X5R/X7T/X6S	/	C≥4.7uf	R
			C 4.7uf	R/W
1206	COG	/	/	R/W
	X7R/X5R/X7T/X6S	/	C≥10uf	R
			C 10uf	R/W
≥1210	COG	/	/	R
	X7R/X5R/X7T/X6S	/	/	R

R—
W—

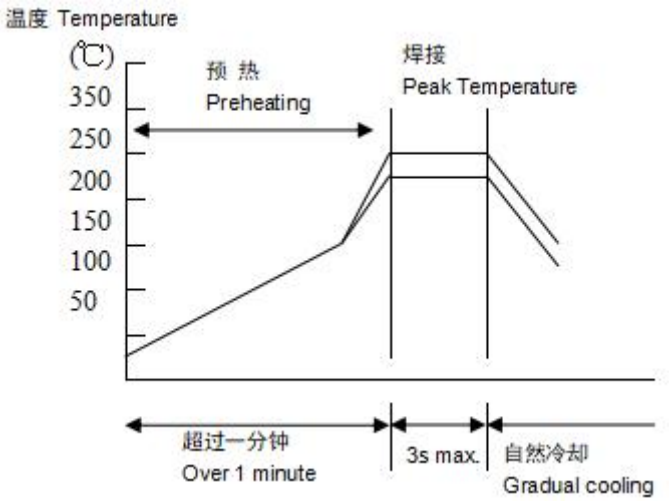
*



	Pb-Sn	
	230 250	240 260

T≤150

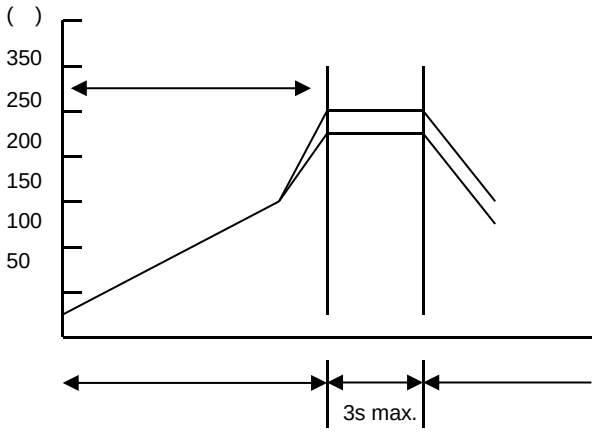
*



	Pb-Sn	
	230 260	240 270

T ≤ 150

*



Conditions

≤ 130	350	20W	1mm	3s	≤ 1/2	

*