

## General Line Series

### ❖ Features

- High Q, stable inductance in wide frequency
- Good reliability (Monolithic structure)
- Magnetically shielded
- Fast mounting speed
- RoHS compliant

### ❖ Applications

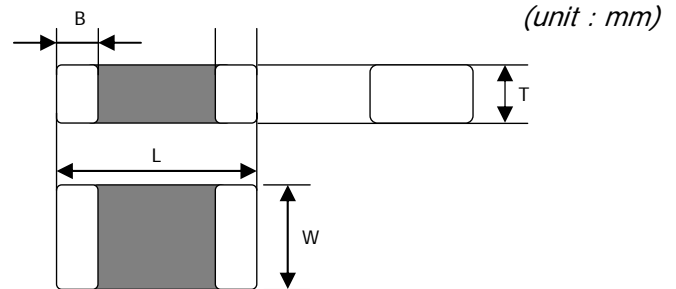
- Computer and its peripherals
- Hard-disk drivers
- Audio/ Visual Equipment

### ❖ General Code



- Series Code  
CM : Chip Ferrite Inductors
- Dimension Code  
The first two digits : length(mm)  
The last two digits : width(mm)
- Material Code  
F : Ferrite
- Inductance Value Code  
22N = 22 nH    2R2 = 2.2  $\mu$ H  
220 = 22  $\mu$ H    R22 = 0.22  $\mu$ H
- Tolerance Code  
K :  $\pm 10\%$     M :  $\pm 20\%$
- Packaging Code  
T : Reel paper packaging  
E : Reel embossed tape packaging

### ❖ Dimensions

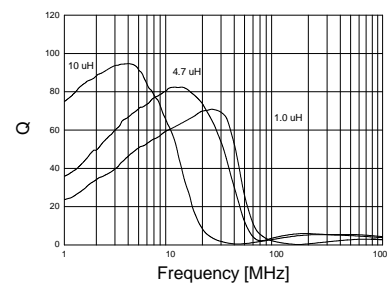


Size	L	W	T	B
1005	1.0 $\pm$ 0.10	0.5 $\pm$ 0.10	0.5 $\pm$ 0.10	0.25 $\pm$ 0.1
1608	1.6 $\pm$ 0.15	0.8 $\pm$ 0.15	0.8 $\pm$ 0.15	0.3 $\pm$ 0.2
2012	2.0 $\pm$ 0.20	1.25 $\pm$ 0.2	0.85 $\pm$ 0.2 ----- 1.25 $\pm$ 0.2	0.5 $\pm$ 0.3
3216	3.2 $\pm$ 0.20	1.6 $\pm$ 0.20	1.1 $\pm$ 0.20	0.5 $\pm$ 0.3

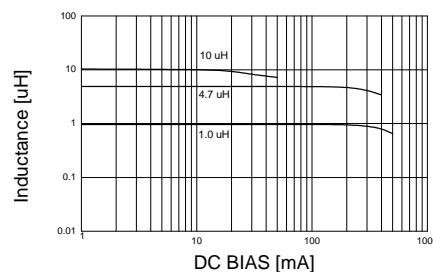
### ❖ Temperature Range

- Operating Temp. -40 ~ +85
- Storage Temp. -10 ~ +40

### ❖ Q Characteristics



### ❖ DC Bias Characteristics



This description in the this catalogue is subject to change without notice

## ❖ 1005 SIZE

Part No.	Inductance		Q min.	Test Frequency (MHz)	SRF (MHz) min.	DC Resistance ( ) max.	Rated Current (mA) max.	T (mm)
	( $\mu$ H)	Tolerance						
CM1005FR10	0.10	±10%	15	25	190	0.6	25	0.5 ± 0.1
CM1005FR12	0.12		15	25	180	0.7	25	
CM1005FR15	0.15		15	25	165	0.9	25	
CM1005FR18	0.18		15	25	150	1.0	25	
CM1005FR22	0.22		15	25	135	1.1	25	
CM1005FR27	0.27		15	25	120	1.2	25	
CM1005FR33	0.33		15	25	105	1.25	25	
CM1005FR39	0.39		20	25	85	0.6	15	
CM1005FR47	0.47		20	25	80	0.7	15	
CM1005FR56	0.56		20	25	75	0.8	15	
CM1005FR68	0.68		20	25	70	0.9	15	
CM1005FR82	0.82		20	25	65	1.0	15	
CM1005F1R0	1.00		20	10	60	1.1	15	
CM1005F1R2	1.20		20	10	55	1.25	15	

## Measuring Equipment

-. L : HP4291B / E4991A

-. Rdc : HP4338B

CHIP INDUCTOR, General Line Series

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## ❖ 1608 SIZE

Part No.	Inductance		Q min.	Test Frequency (MHz)	SRF (MHz) min.	DC Resistance ( ) max.	Rated Current (mA) max.	T (mm)
	( $\mu$ H)	Tolerance						
CM1608FR18	0.18	$\pm 10\%$ $\pm 20\%$	15	25	165	0.60	50	0.8 $\pm 0.15$
CM1608FR22	0.22		15	25	150	0.80	50	
CM1608FR27	0.27		15	25	136	0.80	50	
CM1608FR33	0.33		15	25	125	0.85	35	
CM1608FR39	0.39		15	25	110	1.00	35	
CM1608FR47	0.47		15	25	105	1.35	35	
CM1608FR56	0.56		15	25	95	1.55	35	
CM1608FR68	0.68		15	25	80	1.70	35	
CM1608FR82	0.82		15	25	75	2.10	35	
CM1608F1R0	1.00		35	10	70	0.60	25	
CM1608F1R2	1.20		35	10	60	0.80	25	
CM1608F1R5	1.50		35	10	55	0.80	25	
CM1608F1R8	1.80		35	10	50	0.95	25	
CM1608F2R2	2.20		35	10	45	1.15	15	
CM1608F2R7	2.70		35	10	40	1.35	15	
CM1608F3R3	3.30		35	10	38	1.55	15	
CM1608F3R9	3.90		35	10	36	1.70	15	
CM1608F4R7	4.70		35	10	33	2.10	15	
CM1608F100	10.0		35	2	17	2.55	5	

## Measuring Equipment

-. L : HP4291B / E4991A

-. Rdc : HP4338B

CHIP INDUCTOR, General Line Series

## ❖ 2012 SIZE

Part No.	Inductance		Q min.	Test Frequency (MHz)	SRF (MHz) min.	DC Resistance ( ) max.	Rated Current (mA) max.	T (mm)
	( $\mu$ H)	Tolerance						
CM2012FR22	0.22	±10% ±20%	20	25	170	0.50	250	0.85 1.25 ±0.2
CM2012FR27	0.27		20	25	150	0.50	250	
CM2012FR33	0.33		20	25	145	0.55	250	
CM2012FR47	0.47		25	25	125	0.65	200	
CM2012FR56	0.56		25	25	115	0.75	150	
CM2012FR68	0.68		25	25	105	0.80	150	
CM2012FR82	0.82		25	25	100	1.00	150	
CM2012F1R0	1.0		45	10	75	0.40	50	
CM2012F1R5	1.5		45	10	60	0.50	50	
CM2012F1R8	1.8		45	10	55	0.60	50	
CM2012F2R2	2.2		45	10	50	0.65	30	
CM2012F2R7	2.7		45	10	45	0.75	30	
CM2012F3R3	3.3		45	10	41	0.80	30	
CM2012F3R9	3.9		45	10	38	0.90	30	
CM2012F4R7	4.7		45	10	35	1.00	30	
CM2012F5R6	5.6		50	4	32	0.90	15	
CM2012F6R8	6.8		50	4	29	1.00	15	
CM2012F8R2	8.2		50	4	26	1.10	15	
CM2012F100	10		50	2	24	1.15	15	
CM2012F120	12		50	2	22	1.25	15	
CM2012F150	15	30	1	19	0.80	5		
CM2012F220	22	30	1	16	1.10	5		

CHIP INDUCTOR, General Line Series

## Measuring Equipment

-. L : HP4291B / E4991A

-. Rdc : HP4338B

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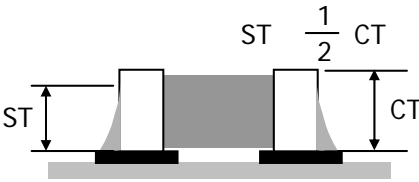
## ❖ 3216 SIZE

Part No.	Inductance		Q min.	Test Frequency (MHz)	SRF (MHz) min.	DC Resistance ( ) max.	Rated Current (mA) max.	T (mm)
	( $\mu$ H)	Tolerance						
CM3216F1R0	1.0	±10%	45	10	75	0.40	100	1.10 ±0.2
CM3216F1R5	1.5		45	10	60	0.50	50	
CM3216F1R8	1.8		45	10	55	0.50	50	
CM3216F2R2	2.2		45	10	50	0.60	50	
CM3216F3R3	3.3		45	10	41	0.70	50	
CM3216F4R7	4.7		45	10	35	0.80	50	
CM3216F5R6	5.6		50	4	32	0.60	25	
CM3216F6R8	6.8		50	4	29	0.60	25	
CM3216F8R2	8.2		50	4	26	0.90	25	
CM3216F100	10		50	2	24	0.70	25	
CM3216F120	12		50	2	22	1.05	25	
CM3216F150	15		35	1	19	1.10	25	

## Measuring Equipment

- L : HP4291B / E4991A
- Rdc : HP4338B

## Reliability & Test Condition

Item	Requirements	Test Conditions
Operating temperature range	- 40 ~ + 85	-
Storage temperature range	40 max., 70% RH max.	at packing condition
Solderability	More than 90% of the terminal electrode shall be covered with new solder	Preheat temperature : 100 ~ 150 Preheat time : 60 sec. Solder temperature : 245 ± 5 Soldering time : 10 ± 1 sec.
Resistance to soldering heat	<ol style="list-style-type: none"> <li>1. No damage such as cracks should be caused in chip element</li> <li>2. More than 75% of the terminal electrode shall be covered with new solder</li> <li>3. Inductance shall not change more than ± 10 %</li> <li>4. Q shall not change more than ± 20 %</li> </ol>	Preheat temperature : 100 ~ 150 Preheat time : 60 sec. Solder temperature : 270 ± 10 Soldering time : 10 ± 0.5 sec.
Reflow soldering	<p>More than 50% of the terminal electrode shall be covered with new solder</p> 	Preheat temperature : 150 Preheat time : 60 sec. Solder temperature : 245 ± 5 Soldering time : 10 sec. max. (Reflow soldering profile)
High temperature resistance		Temperature : 85 ± 3 Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours
High temperature load resistance	<ol style="list-style-type: none"> <li>1. No mechanical damage</li> <li>2. Inductance shall not change more than ± 10 %</li> <li>3. Q shall not change more than ± 20 %</li> </ol>	Temperature : 85 ± 3 Applied current : rated current Time : 1000 ± 12 hours Measurement at room ambient temperature after placing for 24 hours
Humidity resistance		Temperature : 40 ± 2 Humidity : 90 ± 2 % RH Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours

## Reliability & Test Condition

Item	Requirements	Test Conditions				
Humidity load resistance	1. No mechanical damage 2. Inductance shall not change more than $\pm 10\%$ 3. Q shall not change more than $\pm 20\%$	Temperature : $40 \pm 2$ Humidity : $90 \pm 2\%$ RH Applied current : rated current Time : $500 \pm 12$ hours Measurement at room ambient temperature after placing for 24 hours				
Low temperature resistance		Temperature : $-40 \pm 3$ Time : $1000 \pm 12$ hours Measurement at room ambient temperature after placing for 24 hours				
Thermal shock		1. $-40 \pm 3$ for 30 minutes 2. $85 \pm 3$ for 30 minutes 3. repeat 100 cycle				
Vibration		Frequency : 10 ~ 55 Hz Amplitude : 1.5 mm Direction : X, Y, Z Sweep time : 2 hours for each axis				
Drop		Drop 10 times on a concrete floor from a height of 100 cm				
Flexure strength	No mechanical damage					
	ITEM		<b>1005</b>	<b>1608</b>	<b>2012</b>	<b>3216</b>
	A (mm)		0.7	1.0	1.0	1.3
	B (mm)		0.5	0.8	1.0	1.5
	C (mm)		0.7	1.3	1.3	3.0
W (kgf)	0.7	2.0	4.0	5.0		
Bending strength	The terminal electrode shall be neither break off nor the chip damage					

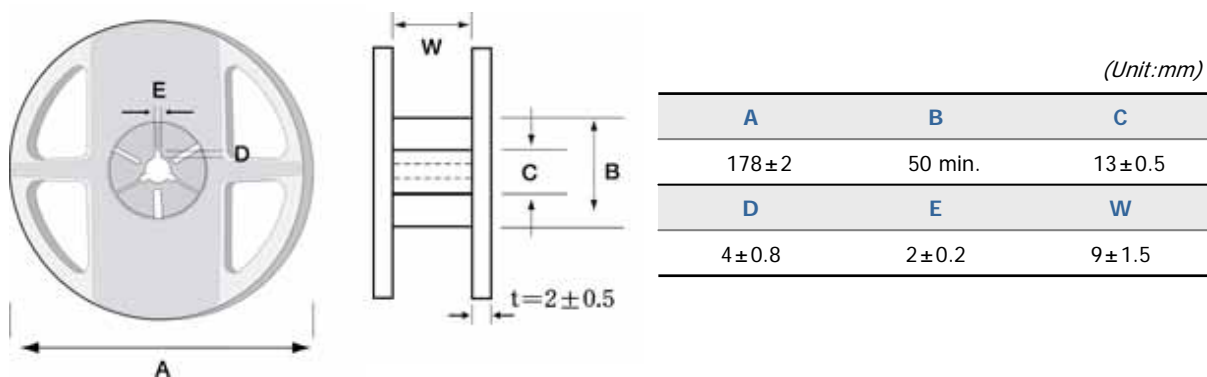
CHIP INDUCTOR, Reliability & Test Condition

## Packaging

### ❖ Standard Quantity

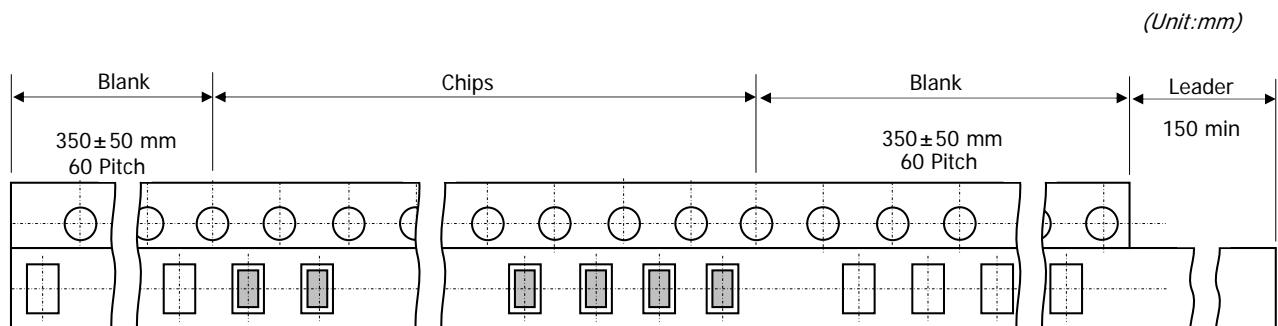
Size	Q'TY(PCS)	Remarks
1005	10,000	
1608	4,000	
2012	4,000	0.85 T size
	3,000	1.25 T size
3216	3,000	

### ❖ Reel Dimension



CHIP INDUCTOR, Packaging

### ❖ Leader & Blank Portion

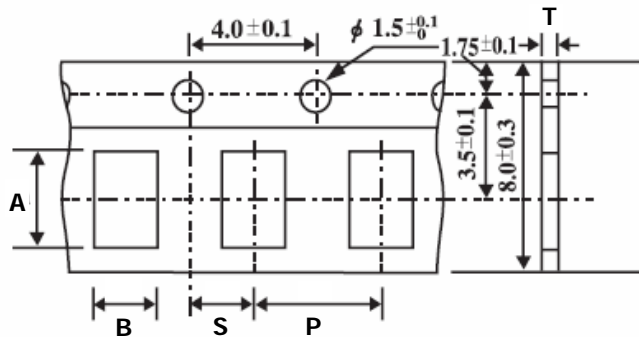


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## Packaging

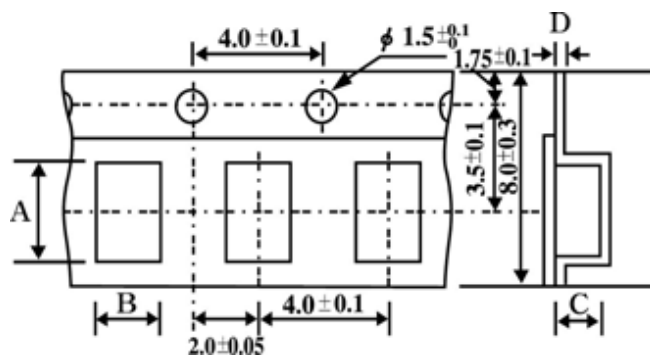
### ❖ Taping Dimensions (Paper tape)



(Unit:mm)

Type	A ±0.1	B ±0.1	P ±0.1	S ±0.1	T (Max.)
1005	1.15	0.65	2.0	1.0	0.8
1608	1.80	1.00	4.0	2.0	1.1
2012	2.30	1.55	4.0	2.0	1.1

### ❖ Taping Dimensions (Emboss tape)

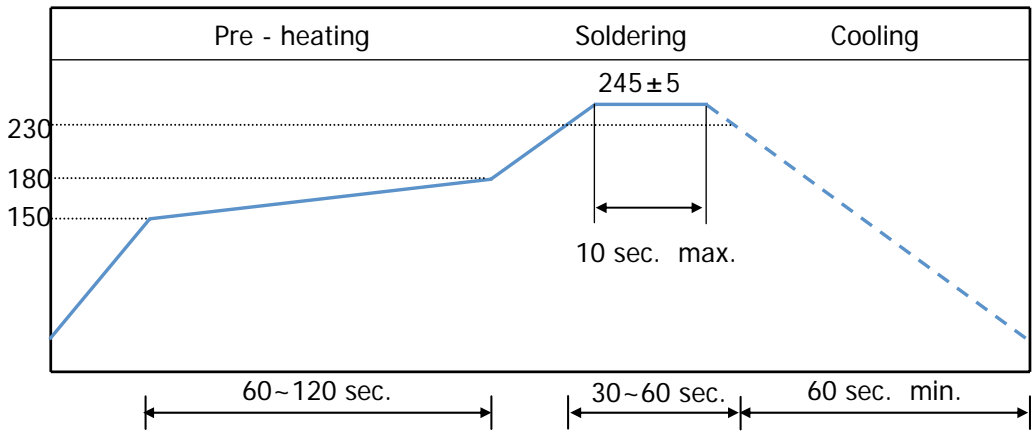


(Unit:mm)

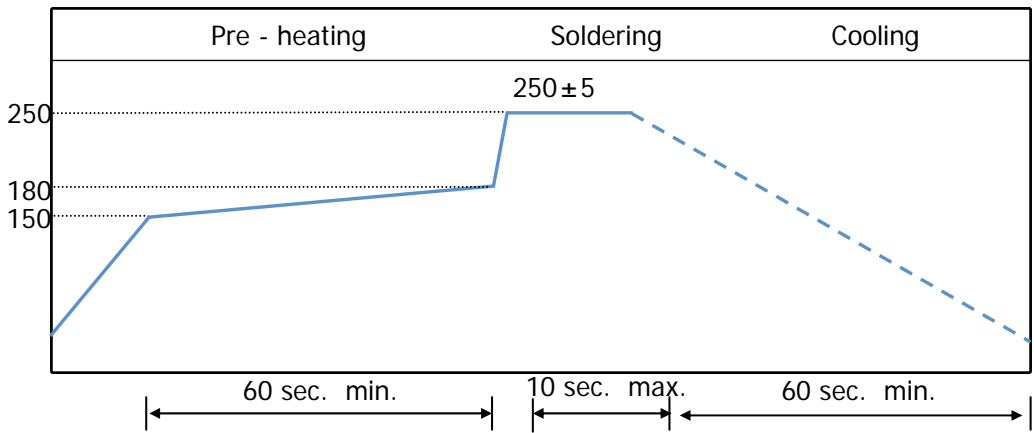
Type	A ±0.1	B ±0.1	C ±0.1	D ±0.1
2012	2.25	1.45	1.50	0.23
3216	3.50	1.85	1.25	0.23

## Soldering Profile

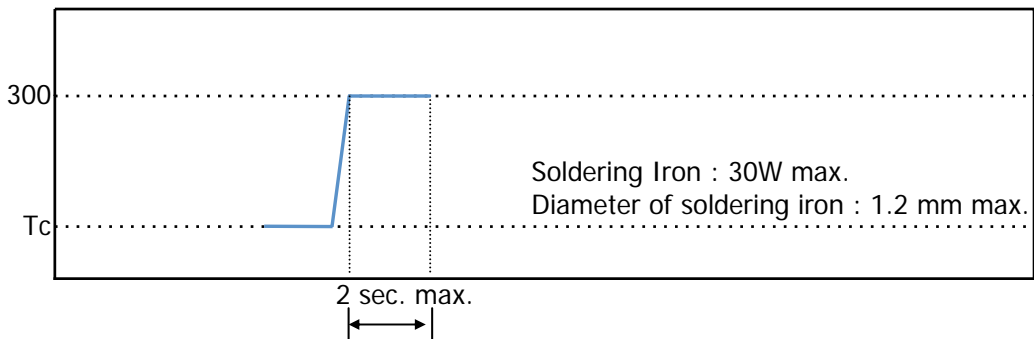
### ❖ Reflow Soldering



### ❖ Flow Soldering



### ❖ Manual Soldering



CHIP INDUCTOR, Soldering Profile