



CUSTOMER : STD
PRODUCTS : Wire Wound Ferrite Chip Inductors
PART NO : MCQLC Series
CUST P/ NO :
DATE : 2025.04.16
SALES DEP :
E-MAIL :

VERSION : REV.A
CHANGE PROJECT : -
BEFORE : -
AFTER : -
CHANGE DATE : -
CUSTOMER SIGNATURE : -

APPROVAL BY :	CHECK BY :	DRAWN BY :
Honey Wei	Leo Wang	May Gao



CHANGE HISTORY

[illegible]

MCQLC Series



- Wire Wound Ferrite Chip Inductors
- Operating Temperature up to $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
- High Current up to 1600mA
- Low DCR down to 10 mOhms
- Environmental Lead free
- Environmental RoHS2.0 compliant
- Environmental halogen free
- Storage Temperature : $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Packaging 7"Reel, Plastic tape: 8 mm wide

FEATURES

- . Ferrite core wire wound construction.
- . Provide low DC resistance and high current.
- . Precision inductance tolerance is available.
- . Small footprint as well as profile.
- . All support Lead-Free Parts.

Applications

- .Personal computers, Hard disk drives.
- . ADSL modem and Cable modem.
- .Digital camera or portable product.
- .Measuring instruments.

PRODUCT IDENTIFICATION

MC QLC 1608 Z 20N □□
 ① ② ③ ④ ⑤ ⑥

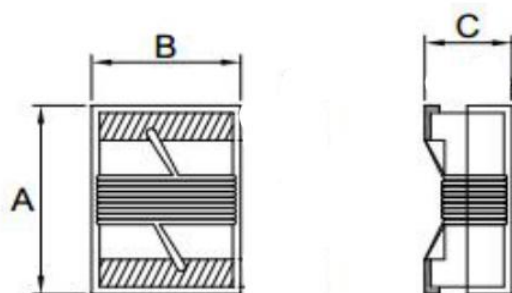
- ① Brand & Product classification
- ② Product Series NO.(QLC: Wire Wound Chip Inductors)
- ③ External Dimensions.(1608: L:1.6 × W:0.8 × H:0.8) [mm]
- ④ Separator code.
- ⑤ Nominal Inductance

Example	Nominal Value
1N0	1.0 nH
20N	20.0 nH
R82	0.82 μH
1R0	1.0 μH

- ⑥ Inductance Tolerance.(S : $\pm 0.3\text{nH}$, G: $\pm 2\%$, J: $\pm 5\%$, K: $\pm 10\%$, M: $\pm 20\%$)

Mechanical & Dimensions

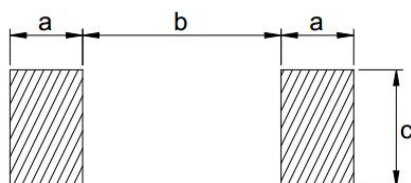
(Unit: mm)



Code	Dimensions
A	1.19 Max
B	0.70 Max
C	0.64 Max

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	0.40 Ref
b	0.64 Ref
c	0.64 Ref

Electrical Characteristics

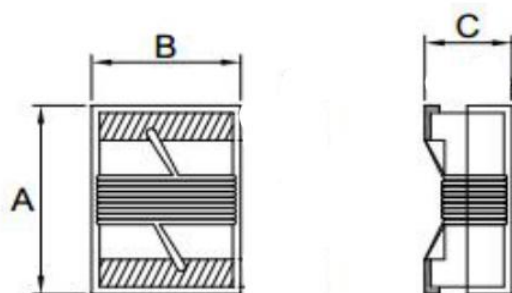
Part Number	Inductance ¹ (nH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.		
MCQLC1005Z20N□□	20	0.050	1600	2600		
MCQLC1005Z22N□□	22	0.065	1300	2500		
MCQLC1005Z33N□□	33	0.060	1400	2300		
MCQLC1005Z36N□□	36	0.075	1300	2300		
MCQLC1005Z39N□□	39	0.115	830	2200		
MCQLC1005Z51N□□	51	0.070	1100	1930		
MCQLC1005Z56N□□	56	0.095	1000	1900		
MCQLC1005Z72N□□	72	0.100	1000	1650		
MCQLC1005Z78N□□	78	0.130	970	1600		
MCQLC1005ZR10□□	100	0.160	900	1400		
MCQLC1005ZR14□□	140	0.260	630	1220		
MCQLC1005ZR18□□	180	0.280	560	1150		
MCQLC1005ZR20□□	200	0.440	400	1000		
MCQLC1005ZR22□□	220	0.530	380	1150		
MCQLC1005ZR25□□	250	0.360	520	900		
MCQLC1005ZR27□□	270	0.900	360	860		

Note:

1. Inductance is measured at 500mV and 7.9MHz.
2. The nominal DCR is measured at 20°C ambient temperature.
3. The Rated Current is Operating Current.

Mechanical & Dimensions

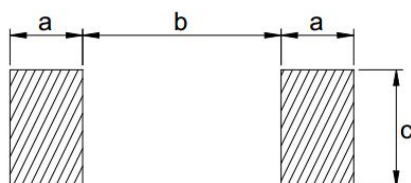
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Electrical Characteristics

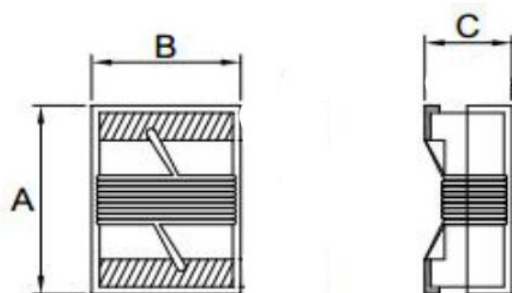
Part Number	Inductance ¹ (nH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.		
MCQLC1005ZR30□□	300	0.410	420	860		
MCQLC1005ZR33□□	330	0.560	350	820		
MCQLC1005ZR36□□	360	0.575	300	810		
MCQLC1005ZR39□□	390	1.000	300	760		
MCQLC1005ZR42□□	420	0.700	340	700		
MCQLC1005ZR47□□	470	0.730	310	650		
MCQLC1005ZR56□□	560	1.200	200	600		
MCQLC1005ZR82□□	820	5.850	90	385		

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Mechanical & Dimensions

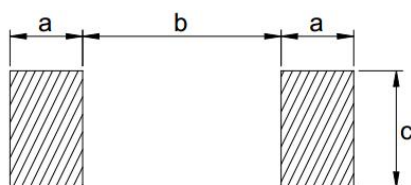
(Unit: mm)



Code	Dimensions
A	1.80 Max
B	1.25 Max
C	1.20 Max

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	0.64 Ref
b	0.64 Ref
c	1.02 Ref

Electrical Characteristics

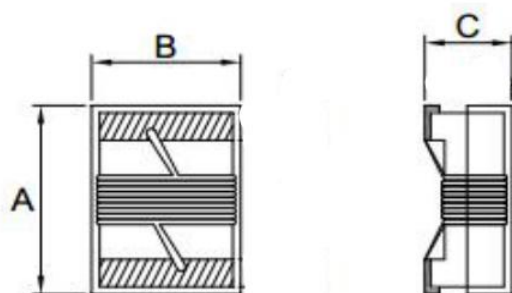
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC1608ZR10□□	0.10	0.13	1000	1150	7.9	12
MCQLC1608ZR18□□	0.18	0.20	1000	950	7.9	12
MCQLC1608ZR22□□	0.22	0.30	700	775	7.9	12
MCQLC1608ZR27□□	0.27	0.30	700	775	7.9	12
MCQLC1608ZR33□□	0.33	0.32	600	725	7.9	12
MCQLC1608ZR39□□	0.39	0.51	500	620	7.9	12
MCQLC1608ZR47□□	0.47	0.62	420	540	7.9	12
MCQLC1608ZR51□□	0.51	0.65	400	600	7.9	12
MCQLC1608ZR56□□	0.56	0.65	400	600	7.9	12
MCQLC1608ZR68□□	0.68	1.00	380	500	7.9	12
MCQLC1608ZR75□□	0.75	1.30	350	500	7.9	12
MCQLC1608ZR82□□	0.82	1.30	350	500	7.9	12
MCQLC1608Z1R0□□	1.00	1.50	330	400	7.9	12
MCQLC1608Z1R2□□	1.20	1.70	320	380	7.9	12
MCQLC1608Z1R5□□	1.50	1.90	310	300	7.9	12
MCQLC1608Z1R8□□	1.80	2.20	300	180	7.9	12

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Mechanical & Dimensions

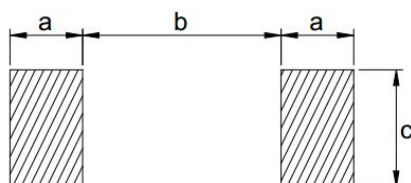
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Electrical Characteristics

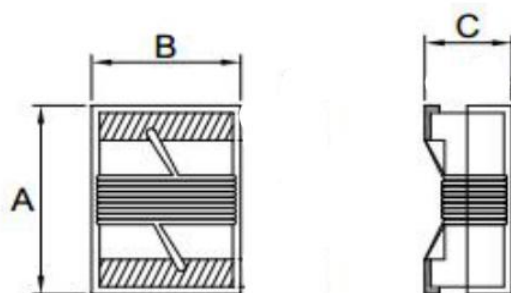
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC1608Z2R0□□	2.0	2.30	280	180	7.9	12
MCQLC1608Z2R2□□	2.2	2.30	280	180	7.9	12
MCQLC1608Z2R7□□	2.7	2.60	250	150	7.9	12
MCQLC1608Z3R3□□	3.3	2.90	230	150	7.9	12
MCQLC1608Z3R9□□	3.9	3.20	210	120	7.9	12
MCQLC1608Z4R7□□	4.7	4.00	200	100	7.9	12
MCQLC1608Z5R1□□	5.1	2.60	240	32	7.9	15
MCQLC1608Z5R6□□	5.6	2.60	240	32	7.9	15
MCQLC1608Z6R8□□	6.8	3.90	200	31	7.9	12
MCQLC1608Z8R2□□	8.2	4.20	190	26	7.9	12
MCQLC1608Z100□□	10.0	4.80	180	25	2.5	10
MCQLC1608Z150□□	15.0	8.50	170	23	2.5	10
MCQLC1608Z180□□	18.0	10.00	160	22	2.5	10
MCQLC1608Z220□□	22.0	12.00	100	10	2.5	10

Note:

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Mechanical & Dimensions

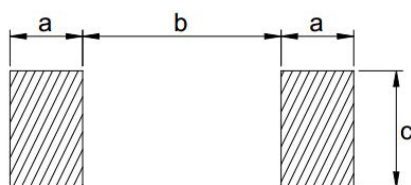
(Unit: mm)



Code	Dimensions
A	2.40 Max
B	1.73 Max
C	1.52 Max

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	1.02 Ref
b	0.76 Ref
c	1.78 Ref

Electrical Characteristics

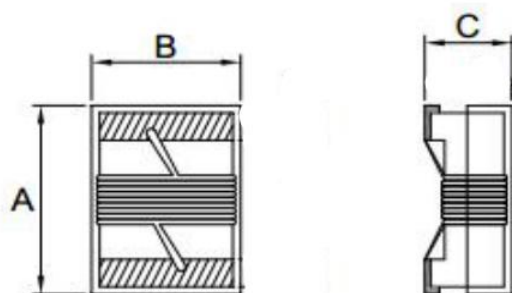
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC2012ZR10□□	0.10	0.69	500	340	7.9	19
MCQLC2012ZR15□□	0.15	0.30	600	480	7.9	19
MCQLC2012ZR22□□	0.22	0.40	600	480	7.9	19
MCQLC2012ZR33□□	0.33	0.31	720	500	7.9	19
MCQLC2012ZR39□□	0.39	0.31	720	500	7.9	19
MCQLC2012ZR47□□	0.47	0.31	720	500	7.9	19
MCQLC2012ZR68□□	0.68	0.46	590	400	7.9	19
MCQLC2012ZR88□□	0.88	1.00	520	360	7.9	12
MCQLC2012ZR91□□	0.91	1.00	500	360	7.9	12
MCQLC2012Z1R0□□	1.00	1.00	430	360	7.9	12
MCQLC2012Z1R2□□	1.20	1.15	410	350	7.9	12
MCQLC2012Z1R5□□	1.50	1.20	400	300	7.9	12
MCQLC2012Z1R8□□	1.80	1.35	380	300	7.9	12
MCQLC2012Z2R2□□	2.20	1.50	350	170	7.9	12
MCQLC2012Z2R7□□	2.70	1.70	320	100	7.9	12
MCQLC2012Z3R3□□	3.30	1.80	300	90	7.9	12

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Mechanical & Dimensions

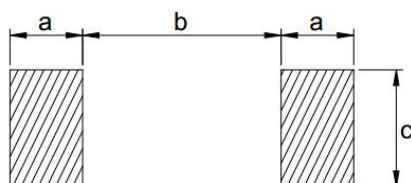
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A	2.40 Max
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Recommend Land Pattern Dimensions

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Electrical Characteristics

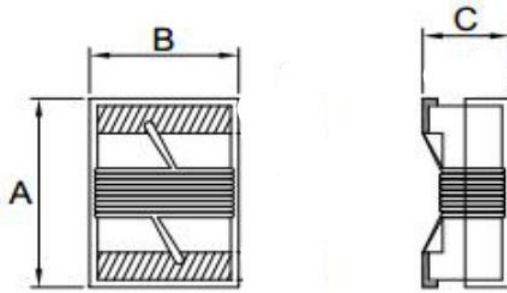
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC2012Z3R9□□	3.9	1.95	280	90	7.9	12
MCQLC2012Z4R7□□	4.7	2.05	250	85	7.9	12
MCQLC2012Z5R6□□	5.6	2.30	240	70	7.9	12
MCQLC2012Z6R8□□	6.8	2.60	220	55	7.9	12
MCQLC2012Z8R0□□	8.0	3.00	180	50	7.9	12
MCQLC2012Z8R2□□	8.2	3.00	180	50	7.9	12
MCQLC2012Z100□□	10.0	3.20	150	30	2.5	10
MCQLC2012Z120□□	12.0	3.50	100	17	2.5	10
MCQLC2012Z150□□	15.0	4.20	100	16	2.5	10

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Mechanical & Dimensions

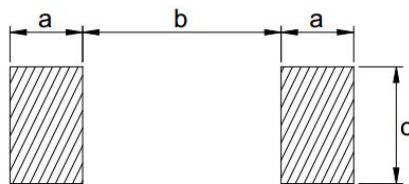
(Unit: mm)



Code	Dimensions
A	2.92 Max
B	2.80 Max
C	2.23 Max

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	1.02 Ref
b	1.27 Ref
c	2.54 Ref

Electrical Characteristics

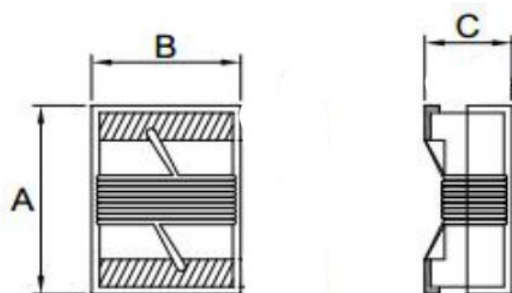
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC2520ZR56□□	0.56	0.62	700	230	7.9	12
MCQLC2520ZR68□□	0.68	0.62	700	230	7.9	12
MCQLC2520ZR82□□	0.82	0.62	700	230	7.9	12
MCQLC2520Z1R0□□	1.00	0.62	700	230	7.9	18
MCQLC2520Z1R2□□	1.20	0.68	650	210	7.9	18
MCQLC2520Z1R5□□	1.50	0.76	630	190	7.9	18
MCQLC2520Z1R8□□	1.80	0.84	600	170	7.9	18
MCQLC2520Z2R2□□	2.20	1.10	520	150	7.9	18
MCQLC2520Z2R7□□	2.70	1.28	490	135	7.9	18
MCQLC2520Z3R3□□	3.30	1.46	450	120	7.9	18
MCQLC2520Z3R9□□	3.90	1.56	420	105	7.9	18
MCQLC2520Z4R7□□	4.70	2.00	400	90	7.9	18
MCQLC2520Z5R6□□	5.60	1.80	380	80	7.9	15
MCQLC2520Z6R8□□	6.80	2.00	360	70	7.9	15
MCQLC2520Z8R2□□	8.20	2.65	330	65	7.9	15
MCQLC2520Z100□□	10.0	2.95	300	60	2.5	12

Note:

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Mechanical & Dimensions

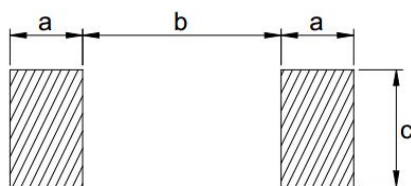
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C	2.23 Max

Recommend Land Pattern Dimensions

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Electrical Characteristics

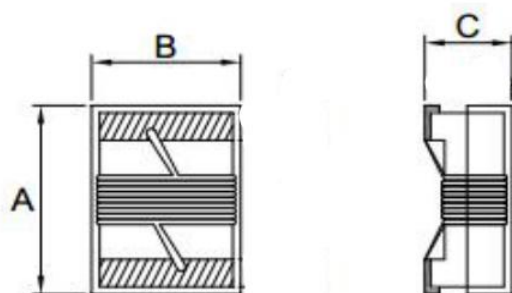
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC2520Z180□□	18.0	4.00	160	26	2.5	12
MCQLC2520Z220□□	22.0	6.14	270	22	2.5	12
MCQLC2520Z300□□	30.0	6.80	200	12	2.5	10
MCQLC2520Z330□□	33.0	7.00	200	12	2.5	10
MCQLC2520Z390□□	39.0	10.00	170	16	2.5	10
MCQLC2520Z470□□	47.0	10.70	160	10	2.5	10
MCQLC2520Z560□□	56.0	12.00	170	8	2.5	10
MCQLC2520Z680□□	68.0	13.50	145	6	2.5	10
MCQLC2520Z820□□	82.0	20.00	100	6	2.5	8

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Mechanical & Dimensions

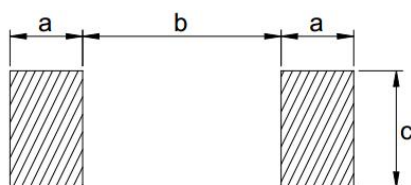
(Unit: mm)



Code	Dimensions
A	3.50 Max
B	2.90 Max
C	2.25 Max

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	1.02 Ref
b	1.78 Ref
c	2.54 Ref

Electrical Characteristics

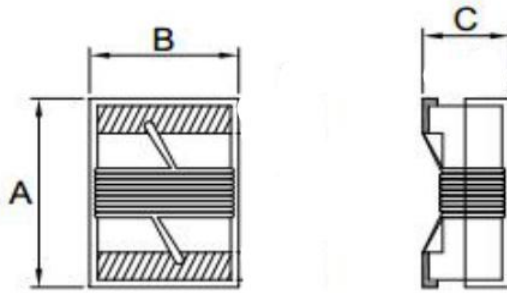
Part Number	Inductance ¹ (uH)	DCR ² (Ω) Max	Rated Current ³ (mA) Max	SRF(MHz) Min.	Test Frequency L,Q (MHz)	Q Min
MCQLC3225ZR56□□	0.56	0.55	450	180	25.0	20
MCQLC3225Z1R0□□	1.0	1.85	820	340	25.0	45
MCQLC3225Z1R5□□	1.5	0.40	450	200	7.9	20
MCQLC3225Z1R8□□	1.8	0.80	450	195	7.9	20
MCQLC3225Z2R2□□	2.2	0.80	450	175	7.9	20
MCQLC3225Z4R7□□	4.7	1.30	350	60	7.9	18
MCQLC3225Z5R6□□	5.6	2.00	320	50	2.5	18
MCQLC3225Z100□□	10.0	1.00	300	30	2.5	15
MCQLC3225Z150□□	15.0	2.00	225	22	2.5	15
MCQLC3225Z180□□	18.0	2.05	215	22	2.5	15
MCQLC3225Z220□□	22.0	2.40	210	20	2.5	15
MCQLC3225Z270□□	27.0	2.70	180	18	2.5	10
MCQLC3225Z330□□	33.0	2.90	160	15	2.5	15
MCQLC3225Z470□□	47.0	5.20	140	10	2.5	15
MCQLC3225Z560□□	56.0	5.60	125	8	2.5	8
MCQLC3225Z680□□	68.0	13.00	100	10	1.0	6

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Mechanical & Dimensions

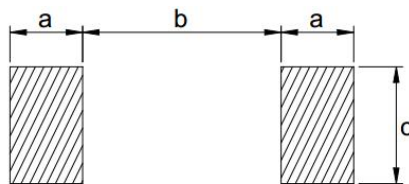
(Unit: mm)



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Recommend Land Pattern Dimensions

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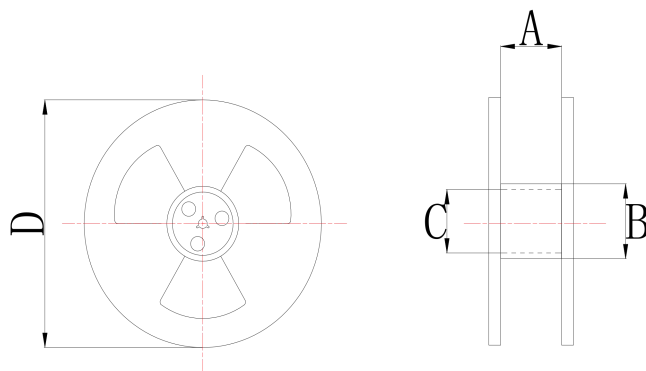
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MCQLC3225Z820□□	82	13.0	100	10	1	6
MCQLC3225Z101□□	100	13.0	100	10	1	6
MCQLC3225Z121□□	120	13.0	100	10	1	6
MCQLC3225Z151□□	150	20.0	80	4	1	10
MCQLC3225Z181□□	180	14.5	70	3	1	8
MCQLC3225Z201□□	200	30.0	65	3	1	8
MCQLC3225Z221□□	220	30.0	65	3	1	8
MCQLC3225Z271□□	270	33.0	60	2	1	8
MCQLC3225Z331□□	330	35.0	55	2	1	8
MCQLC3225Z471□□	470	42.0	40	2	1	8
MCQLC3225Z561□□	560	60.0	10	2	1	8
MCQLC3225Z621□□	620	85.0	10	2	1	8

Note:

1. Inductance is measured at 500mV.
2. The nominal DCR is measured at 20°C ambient temperature.
3. The Rated Current is Operating Current.

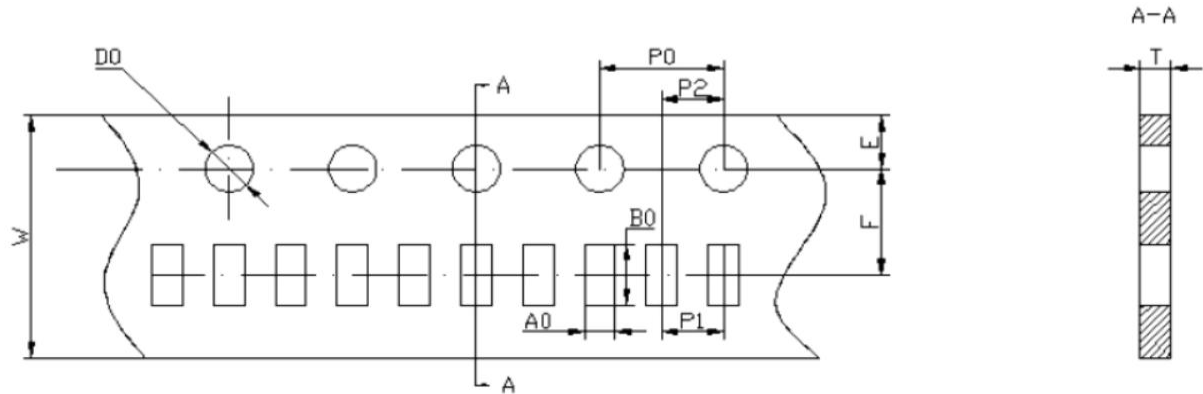
Reel Dimension:

[illegible]

Packaging

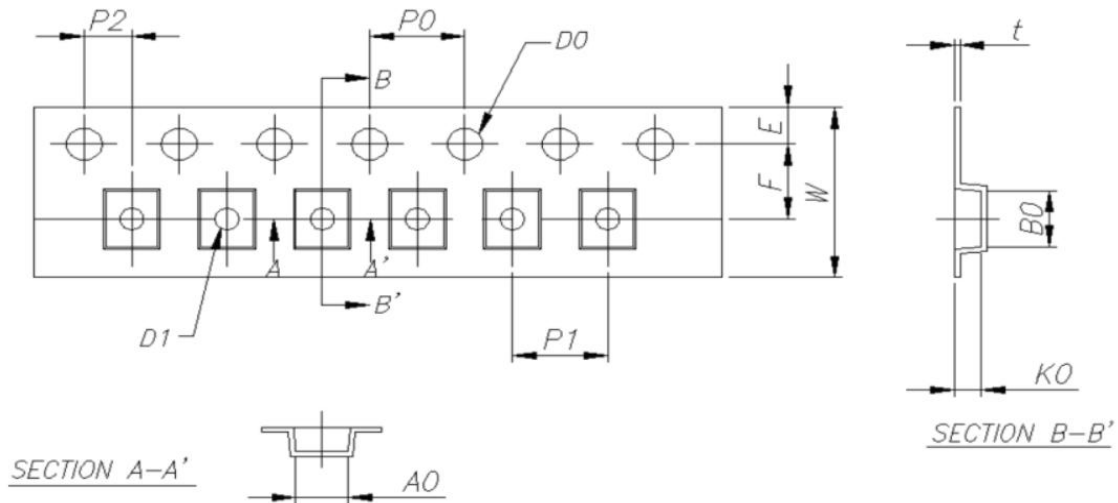
Tape Dimension:

Material of taping is paper



P/N	Ao	Bo	T	E	F	D	P1	P2	W	P0
MCQLC1005	0.74±0.1	1.23±0.1	0.60±0.1	1.75±0.1	3.5±0.1	1.55±0.1	2.0±0.1	2.0±0.1	8.0±0.3	4.0±0.1

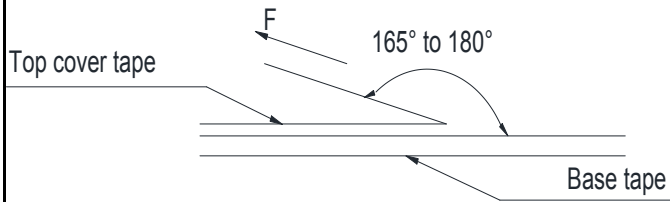
Material of taping is plastic



P/N	Ao	Bo	K0	E	F	D	P1	P2	W	P0
MCQLC1608	1.25±0.1	1.83±0.1	0.95±0.1	1.75±0.1	3.5±0.1	1.55±0.1	2.0±0.1	2.0±0.1	8.0±0.3	4.0±0.1
MCQLC2012	1.85±0.1	2.50±0.1	1.45±0.1	1.75±0.1	3.5±0.1	1.55±0.1	2.0±0.1	2.0±0.1	8.0±0.3	4.0±0.1
MCQLC2520	2.73±0.1	2.90±0.1	2.34±0.1	1.75±0.1	3.5±0.1	1.55±0.1	2.0±0.1	2.0±0.1	8.0±0.3	4.0±0.1
MCQLC3225	2.96±0.1	3.60±0.1	2.40±0.1	1.75±0.1	3.5±0.1	1.55±0.1	2.0±0.1	2.0±0.1	8.0±0.3	4.0±0.1

Packaging

Tearing Off Force:



The force tearing off cobe tape is 10 to 130 g.f			
in the arrow direction under the following conditions			
Room Temp (°C)	Room Humidity (%)	Room atrn (hPa)	Teaming Speed (mm/min)
5~35	45~85	860~1060	300

※Storage Conditions

1. Temperature and humidity conditions:
-40°C ~ +85°C and 70% RH.
2. Recommended products should be used within 6 months form the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

※Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Recommended Soldering Conditions

Figure 1. Re-flow Soldering

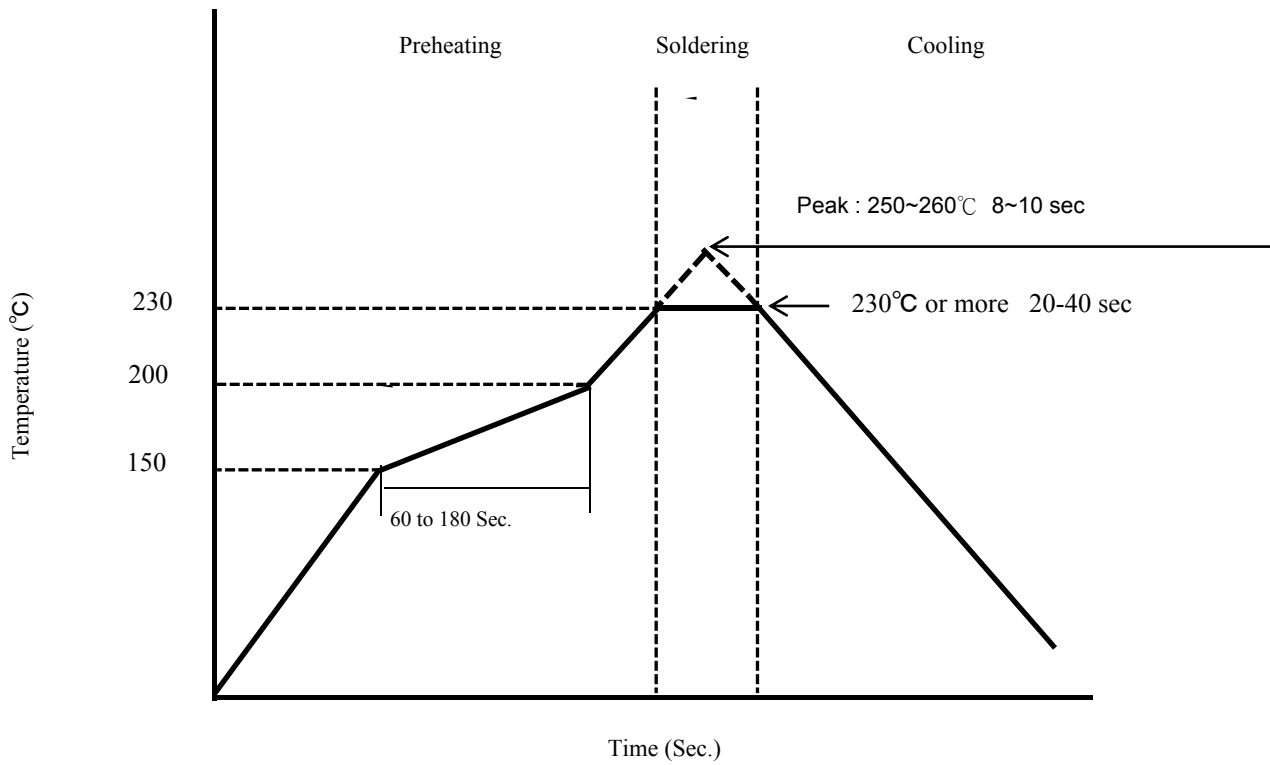
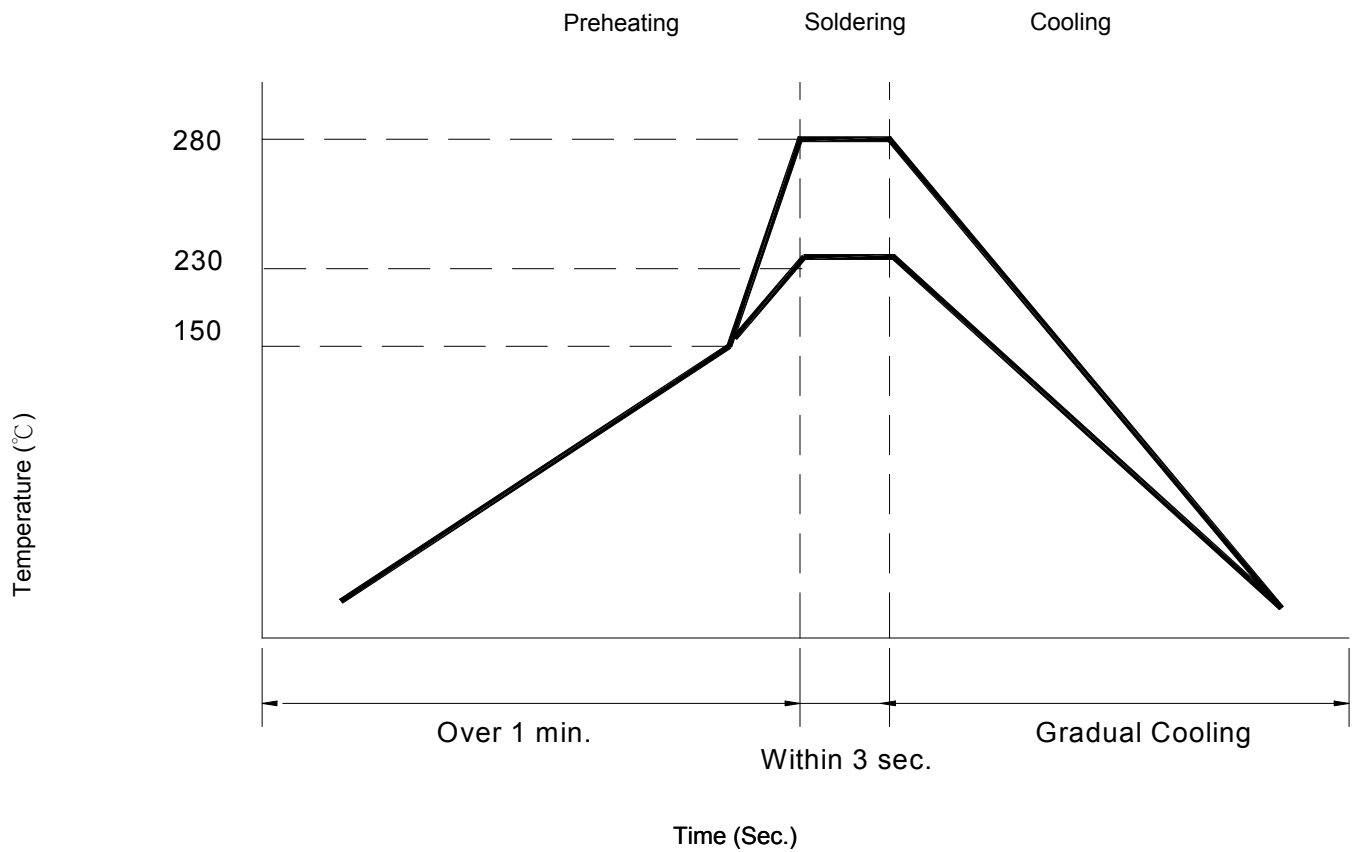
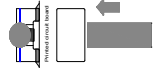


Figure 2. Hand Soldering



Reliability and Testing Conditions

Item	Specification	Conditions															
Operating temperature range	-40℃ ~+85℃ (Including self-temperature rise)																
Storage temperature and humidity range	-40℃ ~+85℃ , 70% RH Max																
Solderability	More than 95% of the terminal electrode should be covered with solder.	- Preheat: 150℃ , 60 sec - Solder: Sn96.5%-Ag3%-Cu0.5% - Temperature: 245±5℃ - Flux for lead free: Rosin 9.5% - Dip time: 4±1 sec - Depth: completely cover the termination															
Resistance to Soldering Heat	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value. No disconnection or short circuit. The appearance shall not break.	- Solder technique simulation: SMD - Temperature (°C): 260 ± 5 (solder temp) - Time (s): 10 ± 1 - Temperature ramp / immersion and emersion rate: 25 mm/s ± 6 mm/s - Number of heat cycles: 1															
Resistance to High Temperature	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value. No disconnection or short circuit. The appearance shall not break.	After 500 hours in 85±2℃ and 2 hour drying under normal condition.															
Resistance to Low Temperature	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value. No disconnection or short circuit. The appearance shall not break.	After 500 hours in -40±2℃ and 2 hour drying under normal condition.															
Resistance to Humidity	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value. No disconnection or short circuit. The appearance shall not break.	After 500 hours in 60±2℃ and 90% to 95% RH, and 2 hour drying under normal condition.															
Thermal shock	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value. No disconnection or short circuit. The appearance shall not break.	After 30 cycles of following condition. <table border="1"> <thead> <tr> <th>Step</th><th>Temperature (°C)</th><th>Times (min.)</th></tr> </thead> <tbody> <tr> <td>1</td><td>-40±2℃</td><td>30</td></tr> <tr> <td>2</td><td>Room Temperature</td><td>Within 3</td></tr> <tr> <td>3</td><td>85±5℃</td><td>30</td></tr> <tr> <td>4</td><td>Room Temperature</td><td>Within 3</td></tr> </tbody> </table>	Step	Temperature (°C)	Times (min.)	1	-40±2℃	30	2	Room Temperature	Within 3	3	85±5℃	30	4	Room Temperature	Within 3
Step	Temperature (°C)	Times (min.)															
1	-40±2℃	30															
2	Room Temperature	Within 3															
3	85±5℃	30															
4	Room Temperature	Within 3															
Vibration Test	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value and no mechanical damaged.	After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes.															
Terminal strength	The terminal electrode and the ferrite must be no damage	Solder a chip to test substrate, and then laterally apply a force (< 1005:2N , ≤2012:5N , > 2012:10N) in the arrow direction, Duration :5.0s 															
Drop Test	Electrical Characteristics (Impedance or Inductance) within ±30% of initial value and appearance shall not break.	Drop 3 times on a concrete floor from a height of 75cm by inimum packing															