

1. Scope

This specification applies to MLI-F Series of multi-layer ferrite chip bead.

2. Product Description and Identification (Part Number)

- 1) Description:
MLI -F Series of multi-layer ferrite chip bead.
- 2) Product Identification (Part Number)



3. Rating

Operating Temperature: $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

Storage Temperature: $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (after PCB)

$-5^{\circ}\text{C} \sim 40^{\circ}\text{C}$, Humidity 40% ~ 70% (before PCB)

4. Shape and Dimensions

- 1) Dimensions and recommended PCB pattern for reflow soldering: See Fig.4-1, Fig.4-2 and Table 4-1.
- 2) Structure: See Fig. 4-3 and Fig. 4-4.



[Table 4-1]

Unit: mm [inch]

| Type | L | W | T | a | A | B | C |
|----------------|--|---------------------------|---------------------------|---------------------------|-----------|-----------|-----------|
| 1005 [0402] | 1.0±0.15 [0.039±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] | 0.45~0.55 | 0.40~0.50 | 0.45~0.55 |
| 1608 [0603] | 1.6±0.15 [0.063±0.006] | 0.8±0.15 [0.031±0.006] | 0.8±0.15 [0.031±0.006] | 0.3±0.2 [0.012±0.008] | 0.60~0.80 | 0.60~0.80 | 0.60~0.80 |
| 2012 [0805] | 2.0 (+0.3, -0.1) [0.079(+0.012,-0.004)] | 1.25±0.2 [0.049±0.008] | 0.85±0.2 [0.033±0.008] | 0.5±0.3 [0.020±0.012] | 0.80~1.20 | 0.80~1.20 | 0.90~1.60 |
| 3216 [1206] | 3.2±0.2 [0.126±0.008] | 1.6±0.2 [0.063±0.008] | 0.85±0.2 [0.033±0.008] | 0.5±0.3 [0.020±0.012] | 1.80~2.50 | 1.00~1.50 | 1.20~2.00 |

Appendix A: Electrical Characteristics
I. MLI1005F Series of Inductors

| Part Number | L (μH) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|------------------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|--------------------------|
| MLI1005F-47NKT | 0.047 | 10 | 50 | 220 | 0.45 | 25 | |
| MLI1005F-68NKT | 0.068 | 10 | 50 | 210 | 0.45 | 25 | |
| MLI1005F-82NKT | 0.082 | 10 | 50 | 200 | 0.45 | 25 | |
| MLI1005F-R10KT | 0.1 | 10 | 25 | 200 | 0.8 | 25 | |
| MLI1005F-R12KT | 0.12 | 10 | 25 | 165 | 0.8 | 25 | |
| MLI1005F-R15KT | 0.15 | 10 | 25 | 140 | 0.9 | 25 | |
| MLI1005F-R18KT | 0.18 | 10 | 25 | 120 | 0.9 | 25 | |
| MLI1005F-R22KT | 0.22 | 10 | 25 | 110 | 1.2 | 25 | |
| MLI1005F-R27KT | 0.27 | 15 | 25 | 95 | 1.2 | 25 | 0.5±0.15 |
| MLI1005F-R33KT | 0.33 | 15 | 25 | 85 | 1.25 | 18 | [0.020±0.006] |
| MLI1005F-R39KT | 0.39 | 20 | 10 | 85 | 0.6 | 15 | |
| MLI1005F-R47KT | 0.47 | 20 | 10 | 80 | 0.7 | 15 | |
| MLI1005F-R56KT | 0.56 | 20 | 10 | 75 | 0.8 | 15 | |
| MLI1005F-R68KT | 0.68 | 20 | 10 | 70 | 0.9 | 15 | |
| MLI1005F-R82KT | 0.82 | 20 | 10 | 65 | 0.9 | 15 | |
| MLI1005F-1R0KT | 1.0 | 20 | 10 | 40 | 0.9 | 15 | |
| MLI1005F-1R2KT | 1.2 | 20 | 10 | 35 | 1.2 | 15 | |
| MLI1005F-1R5KT | 1.5 | 20 | 10 | 30 | 1.2 | 15 | |
| MLI1005F-1R8KT | 1.8 | 20 | 10 | 30 | 1.45 | 15 | |
| MLI1005F-2R2KT | 2.2 | 20 | 10 | 28 | 1.7 | 10 | |
| MLI1005F-2R7KT | 2.7 | 20 | 10 | 28 | 2.4 | 10 | |
| MLI1005F-3R3KT | 3.3 | 20 | 10 | 28 | 2.7 | 10 | |

II. MLI1608F Series of Inductors

| Part Number | L (μH) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|------------------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|--------------------------|
| MLI1608F-47NKT | 0.047 | 10 | 50 | 260 | 0.3 | 50 | |
| MLI1608F-68NKT | 0.068 | 10 | 50 | 250 | 0.3 | 50 | |
| MLI1608F-82NKT | 0.082 | 10 | 50 | 245 | 0.3 | 50 | |
| MLI1608F-R10KT | 0.1 | 15 | 25 | 240 | 0.5 | 50 | |
| MLI1608F-R12KT | 0.12 | 15 | 25 | 205 | 0.5 | 50 | |
| MLI1608F-R15KT | 0.15 | 15 | 25 | 180 | 0.6 | 50 | |
| MLI1608F-R18KT | 0.18 | 15 | 25 | 165 | 0.6 | 50 | |
| MLI1608F-R22KT | 0.22 | 15 | 25 | 150 | 0.8 | 50 | |
| MLI1608F-R27KT | 0.27 | 15 | 25 | 136 | 0.8 | 50 | 0.8±0.15 |
| MLI1608F-R33KT | 0.33 | 15 | 25 | 125 | 0.85 | 35 | [0.031±0.006] |
| MLI1608F-R39KT | 0.39 | 15 | 25 | 110 | 1.0 | 35 | |
| MLI1608F-R47KT | 0.47 | 15 | 25 | 105 | 1.35 | 35 | |
| MLI1608F-R56KT | 0.56 | 15 | 25 | 95 | 1.55 | 35 | |
| MLI1608F-R68KT | 0.68 | 15 | 25 | 90 | 1.7 | 35 | |
| MLI1608F-R82KT | 0.82 | 15 | 25 | 85 | 2.1 | 35 | |
| MLI1608F-1R0KT | 1.0 | 35 | 10 | 75 | 0.6 | 25 | |
| MLI1608F-1R2KT | 1.2 | 35 | 10 | 65 | 0.8 | 25 | |
| MLI1608F-1R5KT | 1.5 | 35 | 10 | 60 | 0.8 | 25 | |
| MLI1608F-1R8KT | 1.8 | 35 | 10 | 55 | 0.95 | 25 | |
| MLI1608F-2R2KT | 2.2 | 35 | 10 | 50 | 1.15 | 15 | |
| MLI1608F-2R7KT | 2.7 | 35 | 10 | 45 | 1.35 | 15 | |
| MLI1608F-3R3KT | 3.3 | 35 | 10 | 40 | 1.55 | 15 | |

II. MLI1608F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|---------------------------|
| MLI1608F-3R9KT | 3.9 | 35 | 10 | 35 | 1.7 | 15 | 0.8±0.15 [0.031±0.008] |
| MLI1608F-4R7KT | 4.7 | 35 | 10 | 33 | 2.1 | 15 | |
| MLI1608F-5R6KT | 5.6 | 35 | 4 | 22 | 1.55 | 5 | |
| MLI1608F-6R8KT | 6.8 | 35 | 4 | 20 | 1.7 | 5 | |
| MLI1608F-8R2KT | 8.2 | 35 | 4 | 18 | 2.1 | 5 | |
| MLI1608F-100KT | 10 | 30 | 2 | 17 | 1.85 | 3 | |
| MLI1608F-120KT | 12 | 30 | 2 | 15 | 2.1 | 3 | |
| MLI1608F-150KT | 15 | 20 | 1 | 14 | 1.7 | 1 | |
| MLI1608F-180KT | 18 | 20 | 1 | 13 | 1.85 | 1 | |
| MLI1608F-220KT | 22 | 20 | 1 | 11 | 2.1 | 1 | |
| MLI1608F-270KT | 27 | 20 | 1 | 10 | 2.75 | 1 | |
| MLI1608F-330KT | 33 | 20 | 1 | 9 | 2.95 | 1 | |

III. MLI2012F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|----------------------------|
| MLI2012F-47NKT | 0.047 | 15 | 50 | 320 | 0.2 | 300 | 0.85±0.15 [0.033±0.008] |
| MLI2012F-68NKT | 0.068 | 15 | 50 | 280 | 0.2 | 300 | |
| MLI2012F-82NKT | 0.082 | 15 | 50 | 255 | 0.2 | 300 | |
| MLI2012F-R10KT | 0.1 | 20 | 25 | 235 | 0.3 | 250 | |
| MLI2012F-R12KT | 0.12 | 20 | 25 | 220 | 0.3 | 250 | |
| MLI2012F-R15KT | 0.15 | 20 | 25 | 200 | 0.4 | 250 | |
| MLI2012F-R18KT | 0.18 | 20 | 25 | 185 | 0.4 | 250 | |
| MLI2012F-R22KT | 0.22 | 20 | 25 | 170 | 0.5 | 250 | |
| MLI2012F-R27KT | 0.27 | 20 | 25 | 150 | 0.5 | 250 | |
| MLI2012F-R33KT | 0.33 | 20 | 25 | 145 | 0.55 | 250 | |
| MLI2012F-R39KT | 0.39 | 25 | 25 | 135 | 0.65 | 200 | |
| MLI2012F-R47KT | 0.47 | 25 | 25 | 125 | 0.65 | 200 | |
| MLI2012F-R56KT | 0.56 | 25 | 25 | 115 | 0.75 | 150 | |
| MLI2012F-R68KT | 0.68 | 25 | 25 | 105 | 0.8 | 150 | |
| MLI2012F-R82KT | 0.82 | 25 | 25 | 100 | 1 | 150 | |
| MLI2012F-1R0KT | 1.0 | 45 | 10 | 75 | 0.4 | 50 | |
| MLI2012F-1R2KT | 1.2 | 45 | 10 | 65 | 0.5 | 50 | |
| MLI2012F-1R5KT | 1.5 | 45 | 10 | 60 | 0.5 | 50 | |
| MLI2012F-1R8KT | 1.8 | 45 | 10 | 55 | 0.6 | 50 | |
| MLI2012F-2R2KT | 2.2 | 45 | 10 | 50 | 0.65 | 30 | |
| MLI2012F-2R7KT | 2.7 | 45 | 10 | 45 | 0.75 | 30 | |
| MLI2012F-3R3KT | 3.3 | 45 | 10 | 41 | 0.8 | 30 | |
| MLI2012F-3R9KT | 3.9 | 45 | 10 | 38 | 0.9 | 30 | |
| MLI2012F-4R7KT | 4.7 | 45 | 10 | 35 | 1 | 30 | |
| MLI2012F-5R6KT | 5.6 | 50 | 4 | 32 | 0.9 | 15 | |
| MLI2012F-6R8KT | 6.8 | 50 | 4 | 29 | 1 | 15 | |
| MLI2012F-8R2KT | 8.2 | 50 | 4 | 26 | 1.1 | 15 | |
| MLI2012F-100KT | 10 | 50 | 2 | 24 | 1.15 | 15 | |

III. MLI2012F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|----------------------------|
| MLI2012F-120KT | 12 | 50 | 2 | 22 | 1.25 | 15 | 0.85±0.15 [0.033±0.008] |
| MLI2012F-150KT | 15 | 30 | 1 | 19 | 0.8 | 5 | |
| MLI2012F-180KT | 18 | 30 | 1 | 18 | 0.9 | 5 | |
| MLI2012F-220KT | 22 | 30 | 1 | 16 | 1.1 | 5 | |

III. MLI2012F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|----------------------------|
| MLI2012F-270KT | 27 | 30 | 1 | 14 | 1.15 | 5 | 1.25±0.15 [0.049±0.008] |
| MLI2012F-330KT | 33 | 30 | 0.4 | 13 | 1.25 | 5 | |
| MLI2012F-390KT | 39 | 35 | 2 | 8 | 2.9 | 4 | |
| MLI2012F-470KT | 47 | 35 | 2 | 7.5 | 3 | 4 | |
| MLI2012F-560KT | 56 | 25 | 2 | 7 | 3.1 | 4 | |
| MLI2012F-680KT | 68 | 25 | 1 | 6.5 | 2.9 | 2 | |
| MLI2012F-820KT | 82 | 25 | 1 | 6 | 3 | 2 | |
| MLI2012F-101KT | 100 | 25 | 1 | 5.5 | 3.1 | 2 | |

IV. MLI3216F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|----------------------------|
| MLI3216F-47NKT | 0.047 | 20 | 50 | 320 | 0.15 | 300 | 0.85±0.15 [0.033±0.008] |
| MLI3216F-68NKT | 0.068 | 20 | 50 | 280 | 0.25 | 300 | |
| MLI3216F-82NKT | 0.082 | 20 | 50 | 280 | 0.25 | 300 | |
| MLI3216F-R10KT | 0.1 | 20 | 25 | 235 | 0.25 | 250 | |
| MLI3216F-R12KT | 0.12 | 20 | 25 | 220 | 0.3 | 250 | |
| MLI3216F-R15KT | 0.15 | 20 | 25 | 200 | 0.3 | 250 | |
| MLI3216F-R18KT | 0.18 | 20 | 25 | 185 | 0.4 | 250 | |
| MLI3216F-R22KT | 0.22 | 20 | 25 | 170 | 0.4 | 250 | |
| MLI3216F-R27KT | 0.27 | 20 | 25 | 150 | 0.5 | 250 | |
| MLI3216F-R33KT | 0.33 | 20 | 25 | 145 | 0.5 | 250 | |
| MLI3216F-R39KT | 0.39 | 25 | 25 | 135 | 0.5 | 200 | |
| MLI3216F-R47KT | 0.47 | 25 | 25 | 125 | 0.6 | 200 | |
| MLI3216F-R56KT | 0.56 | 25 | 25 | 115 | 0.7 | 150 | |
| MLI3216F-R68KT | 0.68 | 25 | 25 | 105 | 0.8 | 150 | |
| MLI3216F-R82KT | 0.82 | 25 | 25 | 100 | 0.9 | 150 | |
| MLI3216F-1R0KT | 1.0 | 45 | 10 | 75 | 0.4 | 100 | |
| MLI3216F-1R2KT | 1.2 | 45 | 10 | 65 | 0.5 | 100 | |
| MLI3216F-1R5KT | 1.5 | 45 | 10 | 60 | 0.5 | 50 | |
| MLI3216F-1R8KT | 1.8 | 45 | 10 | 55 | 0.5 | 50 | |
| MLI3216F-2R2KT | 2.2 | 45 | 10 | 50 | 0.6 | 50 | |

IV.MLI3216F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|--------------------------|
| MLI3216F-2R7KT | 2.7 | 45 | 10 | 45 | 0.6 | 50 | |
| MLI3216F-3R3KT | 3.3 | 45 | 10 | 41 | 0.7 | 50 | |
| MLI3216F-3R9KT | 3.9 | 45 | 10 | 38 | 0.8 | 50 | |
| MLI3216F-4R7KT | 4.7 | 45 | 10 | 35 | 0.9 | 50 | |
| MLI3216F-5R6KT | 5.6 | 50 | 4 | 32 | 0.7 | 25 | |
| MLI3216F-6R8KT | 6.8 | 50 | 4 | 29 | 0.8 | 25 | 0.85±0.15 |
| MLI3216F-8R2KT | 8.2 | 50 | 4 | 26 | 0.9 | 25 | [0.033±0.008] |
| MLI3216F-100KT | 10 | 50 | 2 | 24 | 1 | 25 | |
| MLI3216F-120KT | 12 | 50 | 2 | 22 | 1.05 | 15 | |
| MLI3216F-150KT | 15 | 35 | 1 | 19 | 0.7 | 5 | |
| MLI3216F-180KT | 18 | 35 | 1 | 18 | 0.7 | 5 | |
| MLI3216F-220KT | 22 | 35 | 1 | 16 | 0.9 | 5 | |
| MLI3216F-270KT | 27 | 35 | 1 | 14 | 0.9 | 5 | |

IV.MLI3216F Series of Inductors

| Part Number | L (μ H) | Q Min. | L, Q Test. Freq. (MHz) | S.R.F Min. (MHz) | DCR Max. (Ω) | I _r Max. (mA) | Thickness (mm) [inch] |
|----------------|-----------------|-----------|------------------------------|------------------------|--------------------------|--------------------------------|--------------------------|
| MLI3216F-330KT | 33 | 35 | 0.4 | 13 | 1.05 | 5 | |
| MLI3216F-390KT | 39 | 40 | 2 | 11 | 3 | 5 | |
| MLI3216F-470KT | 47 | 40 | 2 | 10 | 3.4 | 5 | 1.1±0.15 |
| MLI3216F-560KT | 56 | 10 | 2 | 9.5 | 3.8 | 4 | [0.043±0.008] |
| MLI3216F-680KT | 68 | 10 | 1 | 9.5 | 3 | 4 | |
| MLI3216F-820KT | 82 | 10 | 1 | 9 | 3.4 | 4 | |
| MLI3216F-101KT | 100 | 10 | 1 | 8 | 3.8 | 4 | |

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