

# Specification

Title: METAL-PLATE CHIP RESISTOR; LOW OHM

Style: RLP16,20,32,63, MLP20,63

RoHS COMPLIANCE ITEM

Halogen and Antimony Free

Product specification contained in this specification  
are subject to change at any time without notice  
If you have any questions or a Purchasing Specification for any quality  
Agreement is necessary, please contact our sales staff.



**釜屋電機株式會社**  
**KAMAYA ELECTRIC CO., LTD.**

Hokkaido Research Center

Approval by: T. Sannomiya

Drawing by: M. Shibuya

Note: Stock conditions

Temperature: +5°C ~ +35°C

Relative humidity: 25% ~ 75%

The period of guarantee: Within 2 year from shipment by the company.

Solderability shall be satisfied.

Title: METAL-PLATE CHIP RESISTOR; LOW OHM  
 RLP16, 20, 32, 63, MLP20,63

1. Scope

1.1 This specification covers the detail requirements for metal-plate chip resistor ; low ohm, style of RLP16, 20, 32, 63, MLP20,63.

1.2 Applicable documents

JIS C 5201-1: 1998, JIS C 5201-8: 1998, JIS C 5201-8-1: 1998  
 IEC60115-1: 1999, IEC60115-8: 1989 Amendment 1: 1992, IEC60115-8-1: 1989

2. Classification

Type designation shall be the following form.

(Example) 

|     |    |   |      |   |    |
|-----|----|---|------|---|----|
| RLP | 63 | K | R010 | F | TE |
| 1   | 2  | 3 | 4    | 5 | 6  |

Style

1 Metal - plate chip resistor; low ohm Style

2 Size

3 Temperature coefficient of resistance

|         |   |
|---------|---|
| N       | $\pm 70 \times 10^{-6} / ^\circ\text{C}$  |
| K       | $\pm 100 \times 10^{-6} / ^\circ\text{C}$ |
| -(Dash) | $\pm 150 \times 10^{-6} / ^\circ\text{C}$ |

4 Rated resistance

5 Tolerance on rated resistance

6 Packaging form

3. Rating

3.1 The ratings shall be in accordance with Table-1.

Table-1(1)

| Style | Rated dissipation (W) | Rated current (A) | Temperature coefficient of resistance ( $10^{-6} / ^\circ\text{C}$ ) |          | Rated resistance (m $\Omega$ ) | Tolerance on rated resistance    |
|-------|-----------------------|-------------------|--|----------|--------------------------------|----------------------------------|
| RLP16 | 0.33                  | 8.1               | K  | 100      | 5                              | F( $\pm 1\%$ )<br>J( $\pm 5\%$ ) |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
|       |                       | 5.7               | K  | 100      | 10                             |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
| RLP20 | 0.5                   | 11.1              | K  | 100      | 4                              |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
|       |                       | 10.0              | K  | 100      | 5                              |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
|       |                       | 9.1               | K  | 100      | 6                              |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
|       |                       | 7.9               | K  | 100      | 8                              |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
|       |                       | 7.4               | K  | 100      | 9                              |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
|       |                       | 7.0               | K  | 100      | 10                             |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |
| MLP20 | 1.0                   | 10.0              | K  | 100      | 10                             |                                  |
|       |                       |                   | N  | $\pm 70$ |                                |                                  |

Title: METAL-PLATE CHIP RESISTOR; LOW OHM  
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Table-1(2)

| Style | Rated dissipation (W) | Rated current (A) | Temperature coefficient of resistance ( $10^{-6}/^{\circ}\text{C}$ ) |           | Rated resistance (m $\Omega$ ) | Tolerance on rated resistance    |
|-------|-----------------------|-------------------|--|-----------|--------------------------------|----------------------------------|
| RLP32 | 1.0                   | 31.6              | -(Standard)  | $\pm 150$ | 1                              | F( $\pm 1\%$ )<br>J( $\pm 5\%$ ) |
|       |                       |                   | K  | $\pm 100$ |                                |                                  |
|       |                       | 22.3              | K  | $\pm 100$ | 2                              |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |
|       |                       | 18.2              | K  | $\pm 100$ | 3                              |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |
|       |                       | 15.8              | K  | $\pm 100$ | 4                              |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |
|       |                       | 14.1              | K  | $\pm 100$ | 5                              |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |
|       |                       | 12.9              | K  | $\pm 100$ | 6                              |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |
|       |                       | 11.9              | K  | $\pm 100$ | 7                              |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |
|       |                       | 11.1              | K  | $\pm 100$ | 8                              |                                  |
| N     | $\pm 70$              |                   |  |           |                                |                                  |
| 10.5  | K                     | $\pm 100$         | 9  |           |                                |                                  |
|       | N                     | $\pm 70$          |  |           |                                |                                  |
| 10    | K                     | $\pm 100$         | 10   |           |                                |                                  |
|       | N                     | $\pm 70$          |  |           |                                |                                  |
| 9.1   | K                     | $\pm 100$         | 12   |           |                                |                                  |
|       | N                     | $\pm 70$          |  |           |                                |                                  |
| 8.7   | K                     | $\pm 100$         | 13   |           |                                |                                  |
|       | N                     | $\pm 70$          |  |           |                                |                                  |
| 8.1   | K                     | $\pm 100$         | 15   |           |                                |                                  |
|       | N                     | $\pm 70$          |  |           |                                |                                  |

Table-1(3)

| Style | Rated dissipation (W) | Rated current (A) | Temperature coefficient of resistance ( $10^{-6}/^{\circ}\text{C}$ ) |           | Rated resistance (m $\Omega$ ) | Tolerance on rated resistance    |                                  |
|-------|-----------------------|-------------------|--|-----------|--------------------------------|----------------------------------|----------------------------------|
| RLP63 | 2.0                   | 44.7              | -(Standard)  | $\pm 150$ | 1                              | F( $\pm 1\%$ )<br>J( $\pm 5\%$ ) |                                  |
|       |                       |                   | K  | $\pm 100$ |                                |                                  |                                  |
|       | 1.0                   | 22.3              |  | K         | $\pm 100$                      |                                  | 2                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 18.2              |  | K         | $\pm 100$                      |                                  | 3                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 15.8              |  | K         | $\pm 100$                      |                                  | 4                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 14.1              |  | K         | $\pm 100$                      |                                  | 5                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 12.9              |  | K         | $\pm 100$                      |                                  | 6                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 11.9              |  | K         | $\pm 100$                      |                                  | 7                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 11.1              |  | K         | $\pm 100$                      |                                  | 8                                |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
| 10.5  |                       | K                 | $\pm 100$  | 9         |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| 10    |                       | K                 | $\pm 100$  | 10        |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| 9.1   |                       | K                 | $\pm 100$  | 12        |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| 8.1   |                       | K                 | $\pm 100$  | 15        |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| MLP63 | 2.0                   | 63.2              | K  | 100       | 0.5                            | J( $\pm 5\%$ )                   |                                  |
|       |                       |                   | N  | $\pm 70$  |                                |                                  |                                  |
|       |                       | 36.5              |  | K         | 100                            | 1.5                              | F( $\pm 1\%$ )<br>J( $\pm 5\%$ ) |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 31.6              |  | K         | 100                            | 2                                |                                  |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 28.2              |  | K         | 100                            | 2.5                              |                                  |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 25.8              |  | K         | 100                            | 3                                |                                  |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 22.3              |  | K         | 100                            | 4                                |                                  |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 20                |  | K         | 100                            | 5                                |                                  |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
|       |                       | 18.2              |  | K         | 100                            | 6                                |                                  |
|       |                       |                   |  | N         | $\pm 70$                       |                                  |                                  |
| 16.9  |                       | K                 | 100  | 7         |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| 15.8  |                       | K                 | 100  | 8         |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| 14.9  |                       | K                 | 100  | 9         |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |
| 14.1  |                       | K                 | 100  | 10        |                                |                                  |                                  |
|       |                       | N                 | $\pm 70$   |           |                                |                                  |                                  |

Table-1(4)

| Style | Isolation voltage (V) | Category temperature range (°C) |
|-------|-----------------------|---------------------------------|
| RLP16 | 100                   | -55~+155                        |
| RLP20 |                       |                                 |
| MLP20 |                       |                                 |
| RLP32 |                       |                                 |
| RLP63 |                       |                                 |
| MLP63 |                       |                                 |

3.2 Climatic category

55/155/56

Lower category temperature -55 °C  
 Upper category temperature +155 °C  
 Duration of the damp heat, steady state test 56days

3.3 Stability class

5%

Limits for change of resistance:  
 -for long-term tests ±5%  
 -for short-term tests ±1%

3.4 Derating

The derated values of dissipation at temperature in excess of 70 °C shall be as indicated by the following curve.

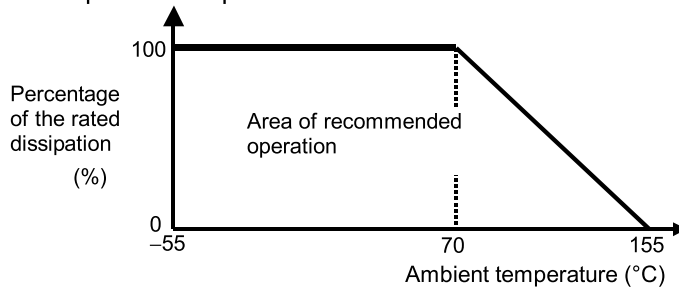


Figure-1 Derating curve

3.5 Rated voltage

d.c. or a.c. r.m.s. voltage calculated from the square root of the product of the rated resistance and the rated dissipation.

$$E = \sqrt{P \cdot R}$$

E: Rated voltage (V)  
 P: Rated dissipation (W)  
 R: Rated resistance (Ω)

3.6 Rated current

The rated current calculated from the square root of the quotient of the rated resistance and the rated dissipation.

$$I = \sqrt{P / R}$$

I: Rated current (A)  
 P: Rated dissipation (W)  
 R: Rated resistance (Ω)

The rated current shall be corresponding to rated voltage.

4. Packaging form

The standard packaging form shall be in accordance with Table-2.

Table-2

| Symbol | Packaging form  |                         | Standard packaging quantity / units | Application          |
|--------|-----------------|-------------------------|-------------------------------------|----------------------|
| TP     | Paper taping    | 8mm width, 4mm pitches  | 5,000 pcs.                          | RLP16, 20, 32, MLP20 |
| TE     | Embossed taping | 12mm width, 4mm pitches | 4,000 pcs.                          | RLP63, MLP63         |

5. Dimensions

5.1 The resistor shall be of the design and physical dimensions in accordance with Figure-2 and Table-3.

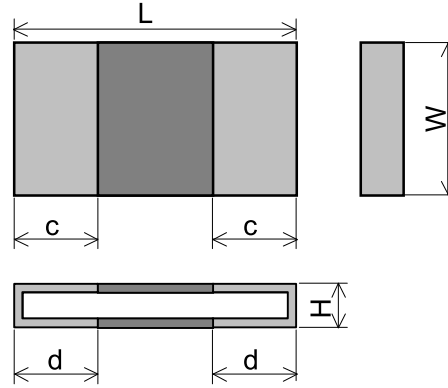


Figure-2

Table-3(1)

Unit: mm

| Style | Rated resistance (mΩ) | L         | W         | H         | c         | d         |           |          |          |
|-------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|
| RLP16 | 5                     | 1.6±0.1   | 0.8±0.1   | 0.35±0.10 | 0.2±0.1   | 0.6±0.1   |           |          |          |
|       | 10                    |           |           | 0.3±0.1   | 0.2±0.1   | 0.3±0.1   |           |          |          |
| RLP20 | 4                     | 2.0±0.15  | 1.25±0.15 | 0.35±0.10 | 0.3±0.1   | 0.7±0.2   |           |          |          |
|       | 5                     |           |           | 0.35±0.10 | 0.3±0.1   | 0.6±0.2   |           |          |          |
|       | 6                     |           |           | 0.35±0.10 | 0.3±0.1   | 0.47±0.20 |           |          |          |
|       | 8                     |           |           | 0.22±0.10 | 0.3±0.1   | 0.6±0.2   |           |          |          |
|       | 9                     |           |           | 0.22±0.10 | 0.3±0.1   | 0.52±0.20 |           |          |          |
|       | 10                    |           |           | 0.22±0.10 | 0.3±0.1   | 0.47±0.20 |           |          |          |
| MLP20 | 10                    |           |           | 0.22±0.10 | 0.3±0.1   | 0.47±0.20 |           |          |          |
| RLP32 | 1                     | 3.2±0.15  | 1.6±0.15  | 0.32±0.15 | 1.1±0.25  | 1.1±0.25  |           |          |          |
|       | 2                     |           |           | 0.32±0.15 | 0.5±0.25  | 0.5±0.25  |           |          |          |
|       | 3                     |           |           | 0.35±0.10 | 0.7±0.25  | 1.3±0.25  |           |          |          |
|       | 4                     |           |           | 0.35±0.10 | 1.1±0.25  | 1.1±0.25  |           |          |          |
|       | 5                     |           |           | 0.35±0.10 | 1.0±0.25  | 1.0±0.25  |           |          |          |
|       | 6                     |           |           | 0.35±0.10 | 0.85±0.25 | 0.85±0.25 |           |          |          |
|       | 7                     |           |           | 0.35±0.10 | 0.7±0.25  | 0.7±0.25  |           |          |          |
|       | 8                     |           |           | 0.35±0.10 | 0.6±0.25  | 0.6±0.25  |           |          |          |
|       | 9                     |           |           | 0.3±0.1   | 0.75±0.25 | 0.75±0.25 |           |          |          |
|       | 10                    |           |           | 0.28±0.10 | 0.5±0.25  | 0.5±0.25  |           |          |          |
|       | 12                    |           |           | 0.22±0.10 | 0.65±0.25 | 0.65±0.25 |           |          |          |
|       | 13                    |           |           | 0.22±0.10 | 0.65±0.25 | 0.65±0.25 |           |          |          |
|       | 15                    |           |           | 0.22±0.10 | 0.5±0.25  | 0.5±0.25  |           |          |          |
|       | RLP63                 |           |           | 1         | 6.3±0.25  | 3.2±0.25  | 0.38±0.15 | 2.2±0.25 | 2.2±0.25 |
|       |                       |           |           | 2         |           | 3.1±0.25  | 0.38±0.15 | 1.1±0.25 | 1.1±0.25 |
| 3     |                       | 0.45±0.15 | 2.2±0.25  | 2.2±0.25  |           |           |           |          |          |
| 4     |                       | 0.35±0.15 | 2.2±0.25  | 2.2±0.25  |           |           |           |          |          |
| 5     |                       | 0.34±0.15 | 1.95±0.25 | 1.95±0.25 |           |           |           |          |          |
| 6     |                       | 0.34±0.15 | 1.75±0.25 | 1.75±0.25 |           |           |           |          |          |
| 7     |                       | 0.35±0.15 | 1.4±0.25  | 1.4±0.25  |           |           |           |          |          |
| 8     |                       | 0.35±0.15 | 1.1±0.25  | 1.1±0.25  |           |           |           |          |          |
| 9     |                       | 0.35±0.15 | 0.8±0.25  | 0.8±0.25  |           |           |           |          |          |
| 10    |                       | 0.23±0.15 | 1.75±0.25 | 1.75±0.25 |           |           |           |          |          |
| 12    |                       | 0.23±0.15 | 1.4±0.25  | 1.4±0.25  |           |           |           |          |          |
| 15    |                       | 0.23±0.15 | 0.95±0.25 | 0.95±0.25 |           |           |           |          |          |

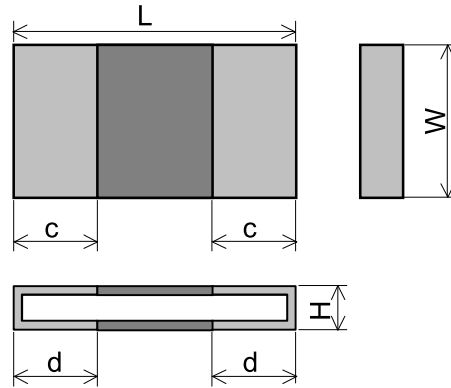


Table-3(2)

Unit: mm

| Style | Rated resistance (mΩ) | L        | W        | H         | c        | d        |
|-------|-----------------------|----------|----------|-----------|----------|----------|
| MLP63 | 0.5                   | 6.3±0.25 | 3.1±0.25 | 0.58±0.15 | 2.2±0.25 | 2.2±0.25 |
|       | 1.5                   |          |          | 0.38±0.15 | 1.5±0.25 | 1.5±0.25 |
|       | 2                     |          |          | 0.58±0.15 | 2.2±0.25 | 2.2±0.25 |
|       | 2.5                   |          |          | 0.45±0.15 | 2.4±0.25 | 2.4±0.25 |
|       | 3                     |          |          | 0.45±0.15 | 2.2±0.25 | 2.2±0.25 |
|       | 4                     |          |          | 0.34±0.15 | 2.2±0.25 | 2.2±0.25 |
|       | 5                     |          |          | 0.51±0.15 | 1.1±0.25 | 1.1±0.25 |
|       | 6                     |          |          | 0.5±0.15  | 1.1±0.25 | 1.1±0.25 |
|       | 7                     |          |          | 0.5±0.15  | 0.6±0.25 | 0.6±0.25 |
|       | 8                     |          |          | 0.35±0.15 | 1.1±0.25 | 1.1±0.25 |
| 9     | 0.35±0.15             | 0.8±0.25 | 0.8±0.25 |           |          |          |
| 10    | 0.35±0.15             | 0.5±0.25 | 0.5±0.25 |           |          |          |

5.2 Net weight (Reference)

| Style | Rated resistance (mΩ) | Net weight (mg) |
|-------|-----------------------|-----------------|
| RLP16 | 5                     | 2               |
|       | 10                    |                 |
| RLP20 | 4 to 10               | 3               |
| MLP20 | 10                    | 3               |
| RLP32 | 1                     | 12              |
|       | 2                     | 11              |
|       | 3                     | 11              |
|       | 4                     | 12              |
|       | 5                     | 11              |
|       | 6                     | 11              |
|       | 7                     | 11              |
|       | 8                     | 10              |
|       | 9                     | 9               |
|       | 10                    | 9               |
|       | 12                    | 8               |
|       | 13                    | 7               |
| 15    | 6                     |                 |

5.2 Net weight (Reference)

| Style | Rated resistance (mΩ) | Net weight (mg) |
|-------|-----------------------|-----------------|
| RLP63 | 1                     | 50              |
|       | 2                     | 42              |
|       | 3                     | 57              |
|       | 4                     | 43              |
|       | 5                     | 43              |
|       | 6                     | 41              |
|       | 7                     | 42              |
|       | 8                     | 41              |
|       | 9                     | 40              |
|       | 10                    | 30              |
|       | 12                    | 26              |
| MLP63 | 15                    | 26              |
|       | 0.5                   | 90              |
|       | 1.5                   | 47              |
|       | 2                     | 77              |
|       | 2.5                   | 63              |
|       | 3                     | 63              |
|       | 4                     | 48              |
|       | 5                     | 64              |
|       | 6                     | 55              |
|       | 7                     | 55              |
|       | 8                     | 43              |
| 9     | 40                    |                 |
| 10    | 41                    |                 |

6. Marking

The Rated resistance of RLP16 should not be marked standard.

6.1 RLP63, MLP63

The rated resistance shall be marked in 4 characters consisting of 3 figures and a letter and marked on over coat side.

(Example) "R010" → 0.01 [Ω] → 10 [mΩ]

"1L50" → 0.0015 [Ω] → 1.5 [mΩ]

6.2 RLP20, 32, MLP20

The rated resistance shall be marked in combination of two figures and underlines and marked on over coat side.

(Example) "05" → 0.005 [Ω] → 5 [mΩ]

"10" → 0.01 [Ω] → 10 [mΩ]

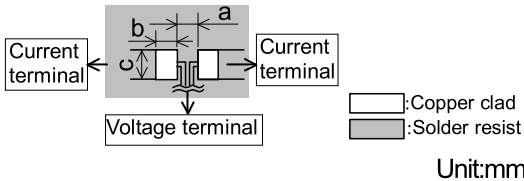


7. Performance

7.1 The standard condition for tests shall be in accordance with Sub-clause 4.2, JIS C 5201-1: 1998.

7.2 The performance shall be satisfied in Table-4.

Table- 4(1)

| No.   | Test items              | Condition of test (JIS C 5201-1)  | Performance requirements   |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|-------|-------------------------|---|--|----------------------|---|---|---|-------|---|-----|-----|-----|----|-----|-----|-------|---------|-----|------|------|-------|----|-----|------|------|-------|---|-----|------|-----|---|-----|-----|---|-----|------|---|-----|------|---------|-----|------|-------|---|-----|-----|-----|---|-----|-----|------|-----|-----|---|-----|-----|---------|-----|-----|-------|------------|-----|-----|-----|--------------|-----|-----|---|
| 1     | Visual examination      | Sub-clause 4.4.1<br>Checked by visual examination.  | As in 4.4.1<br>The marking shall be legible, as checked by visual examination. |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| 2     | Dimension<br>Resistance | Sub-clause 4.4.2<br>Resistance value shall be measured by mounting the substrate of the following condition.<br> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Style</th> <th>Resistance value(mΩ)</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td rowspan="2">RLP16</td> <td>5</td> <td>0.6</td> <td>0.8</td> <td rowspan="2">0.8</td> </tr> <tr> <td>10</td> <td>1.0</td> <td>0.6</td> </tr> <tr> <td>RLP20</td> <td>4 to 10</td> <td>0.8</td> <td>0.95</td> <td>1.35</td> </tr> <tr> <td>MLP20</td> <td>10</td> <td>0.8</td> <td>0.95</td> <td>1.35</td> </tr> <tr> <td rowspan="5">RLP32</td> <td>1</td> <td>1.0</td> <td>1.45</td> <td rowspan="5">1.7</td> </tr> <tr> <td>2</td> <td>2.1</td> <td>0.9</td> </tr> <tr> <td>3</td> <td>0.8</td> <td>1.55</td> </tr> <tr> <td>4</td> <td>1.0</td> <td>1.45</td> </tr> <tr> <td>5 and 6</td> <td>1.4</td> <td>1.25</td> </tr> <tr> <td rowspan="5">RLP63</td> <td>1</td> <td>1.5</td> <td>3.0</td> <td rowspan="5">3.5</td> </tr> <tr> <td>2</td> <td>4.0</td> <td>1.8</td> </tr> <tr> <td>3, 4</td> <td>1.8</td> <td>2.9</td> </tr> <tr> <td>5</td> <td>2.4</td> <td>2.6</td> </tr> <tr> <td>6 to 15</td> <td>4.0</td> <td>1.8</td> </tr> <tr> <td rowspan="2">MLP63</td> <td>0.5,2 to 4</td> <td>1.8</td> <td>2.9</td> <td rowspan="2">3.5</td> </tr> <tr> <td>1.5, 5 to 10</td> <td>4.0</td> <td>1.8</td> </tr> </tbody> </table> | Style  | Resistance value(mΩ) | a | b | c | RLP16 | 5 | 0.6 | 0.8 | 0.8 | 10 | 1.0 | 0.6 | RLP20 | 4 to 10 | 0.8 | 0.95 | 1.35 | MLP20 | 10 | 0.8 | 0.95 | 1.35 | RLP32 | 1 | 1.0 | 1.45 | 1.7 | 2 | 2.1 | 0.9 | 3 | 0.8 | 1.55 | 4 | 1.0 | 1.45 | 5 and 6 | 1.4 | 1.25 | RLP63 | 1 | 1.5 | 3.0 | 3.5 | 2 | 4.0 | 1.8 | 3, 4 | 1.8 | 2.9 | 5 | 2.4 | 2.6 | 6 to 15 | 4.0 | 1.8 | MLP63 | 0.5,2 to 4 | 1.8 | 2.9 | 3.5 | 1.5, 5 to 10 | 4.0 | 1.8 | As specified in Table-3 of this specification.<br>As in 4.5.2<br>The resistance value shall correspond with the rated resistance taking into account the specified tolerance. |
| Style | Resistance value(mΩ)    | a   | b  | c                    |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| RLP16 | 5                       | 0.6   | 0.8  | 0.8                  |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 10                      | 1.0   | 0.6  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| RLP20 | 4 to 10                 | 0.8   | 0.95   | 1.35                 |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| MLP20 | 10                      | 0.8   | 0.95   | 1.35                 |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| RLP32 | 1                       | 1.0   | 1.45   | 1.7                  |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 2                       | 2.1   | 0.9  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 3                       | 0.8   | 1.55   |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 4                       | 1.0   | 1.45   |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 5 and 6                 | 1.4   | 1.25   |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| RLP63 | 1                       | 1.5   | 3.0  | 3.5                  |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 2                       | 4.0   | 1.8  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 3, 4                    | 1.8   | 2.9  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 5                       | 2.4   | 2.6  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 6 to 15                 | 4.0   | 1.8  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| MLP63 | 0.5,2 to 4              | 1.8   | 2.9  | 3.5                  |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
|       | 1.5, 5 to 10            | 4.0   | 1.8  |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |
| 3     | Voltage proof           | Sub-clause 4.7<br>Method: 4.6.1.4(See Figure-5)<br>Test voltage: Alternating voltage with a peak value of 1.42 times the insulation voltage.<br>Duration: 60 s±5 s<br>Insulation resistance<br>Test voltage: Insulation voltage<br>Duration: 1 min.   | No breakdown or flash over<br><br>$R \geq 1 \text{ G}\Omega$                   |                      |   |   |   |       |   |     |     |     |    |     |     |       |         |     |      |      |       |    |     |      |      |       |   |     |      |     |   |     |     |   |     |      |   |     |      |         |     |      |       |   |     |     |     |   |     |     |      |     |     |   |     |     |         |     |     |       |            |     |     |     |              |     |     |   |

Title: METAL-PLATE CHIP RESISTOR; LOW OHM  
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Table-4(2)

| No | Test items  | Condition of test (JIS C 5201-1)   | Performance requirements   |
|----|---|--|--|
| 4  | Solderability   | Sub-clause 4.17<br>Without aging<br>Flux: The resistors shall be immersed in a non-activated soldering flux for 2 s.<br>Bath temperature: 235 °C±5 °C<br>Immersion time: 2 s±0.5 s   | As in 4.17.4.5<br>The terminations shall be covered with a smooth and bright solder coating. |
| 5  | Mounting<br><br>Overload<br>(in the mounted state)<br><br>Solvent resistance of the marking | Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: RLP16: Figure-3-1<br>RLP20, MLP20 Figure-3-2<br>RLP32 Figure-3-3<br>RLP63, MLP63 Figure-3-4<br><br>Sub-clause 4.13<br>The applied voltage shall be 2.5 times the rated voltage or the current corresponding to.<br>Duration: 2 s<br>Visual examination<br>Resistance<br>Sub-clause 4.30<br>Solvent: 2-propanol<br>Solvent temperature: 23 °C±5 °C<br>Method 1<br>Rubbing material: cotton wool<br>Without recovery | No visible damage<br>$\Delta R \leq \pm 1\%$<br>Legible marking                              |
| 6  | Mounting<br><br>Bound strength of the end face plating<br><br>Final measurements            | Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure-4<br>Sub-clause 4.33<br>Bent value: 3mm(RLP16, 20, 32, MLP20)<br>1 mm(RLP63, MLP63)<br><br>Resistance<br>Sub-clause 4.33.6<br>Visual examination  | $\Delta R \leq \pm 1\%$<br><br>No visible damage   |

Table-4(3)

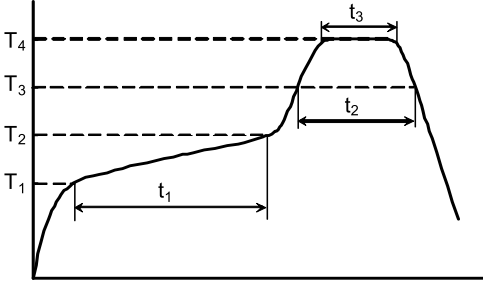
| No | Test items   | Condition of test (JIS C 5201-1)  | Performance requirements   |
|----|--|---|--|
| 7  | Resistance to soldering heat<br><br><br><br><br><br><br><br><br><br><br>Component resistance solvent | Sub-clause 4.18 (JEITA RC-2144 2.3.2)<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure-3-1<br>T <sub>1</sub> :Pre-heat minimum temp.:150±5 °C<br>T <sub>2</sub> :Pre-heat maximum temp.:180±5 °C<br>T <sub>3</sub> :Soldering temp.:220 °C<br>T <sub>4</sub> :Peak temp.:250 °C<br>t <sub>1</sub> :Pre-heat duration:120±5 s<br>t <sub>2</sub> :Soldering duration:60 to 90 s<br>t <sub>3</sub> :Peak duration(T <sub>4</sub> -5°C):20 to 40 s<br>Pre-reflow soldering: 1 time<br>(Initial measurements)<br>Reflow soldering: 3 times<br><br><br><br>Visual examination<br>Resistance<br>Sub-clause 4.29<br>Solvent: 2-propanol<br>Solvent temperature: 23 °C±5 °C<br>Method 2<br>Recovery: 48 h<br>Visual examination<br>Resistance | No visible damage<br>$\Delta R \leq \pm 1\%$<br><br><br><br><br><br><br><br><br><br><br>No visible damage<br>$\Delta R \leq \pm 1\%$ |
| 8  | Mounting<br><br>Adhesion<br><br><br>Rapid change temperature   | Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure-3-1<br>Sub-clause 4.32<br>Force: 5 N<br>Duration: 10 s±1 s<br>Visual examination<br>Sub-clause 4.19<br>Lower category temperature:-55 °C<br>Upper category temperature:+155 °C<br>Duration of exposure at each temperature: 30 min.<br>Number of cycles: 5 cycles.<br>Visual examination<br>Resistance   | No visible damage<br><br><br><br><br><br><br><br><br><br><br>No visible damage<br>$\Delta R \leq \pm 1\%$                            |

Table-4(4)

| No | Test items  | Condition of test (JIS C 5201-1)   | Performance requirements                      |
|----|---|--|---|
| 9  | Climatic sequence<br>-Dry heat<br><br>-Damp heat, cycle<br>(12+12hour cycle)<br>First cycle<br><br>-Cold<br><br>-Damp heat, cycle<br>(12+12hour cycle)<br>Remaining cycle<br><br>-D.C. load | Sub-clause 4.23<br>Sub-clause 4.23.2<br>Test temperature: +155 °C<br>Duration: 16 h<br><br>Sub-clause 4.23.3<br>Test method: 2<br>Test temperature: 55 °C<br>[Severity(2)]<br>Sub-clause 4.23.4<br>Test temperature -55 °C<br>Duration: 2h<br><br>Sub-clause 4.23.6<br>Test method: 2<br>Test temperature: 55 °C<br>[Severity (2)]<br>Number of cycles: 5 cycles<br>Sub-clause 4.23.7<br>The applied current shall be the rated current.<br>Duration: 1 min.<br>Visual examination<br>Resistance | No visible damage<br>$\Delta R \leq \pm 5 \%$ |
| 10 | Mounting<br><br><br>Endurance at 70 °C  | Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: RLP16: Figure-3-1<br>RLP20, MLP20 Figure-3-2<br>RLP32 Figure-3-3<br>RLP63, MLP63 Figure-3-4<br><br>Sub-clause 4.25.1<br>Ambient temperature: 70 °C±2 °C<br>Duration: 1000 h<br>The current shall be applied in cycles of 1.5 h on<br>and 0.5 h.<br>The applied current shall be the rated current<br>Examination at 48 h, 500 h and<br>1000 h:<br>Visual examination<br>Resistance                                 | No visible damage<br>$\Delta R \leq \pm 5 \%$ |
| 11 | Mounting<br><br>Variation of resistance with<br>temperature   | Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure-3-1<br>Sub-clause 4.8<br>+20 °C / +155 °C   | As in Table-1                                 |

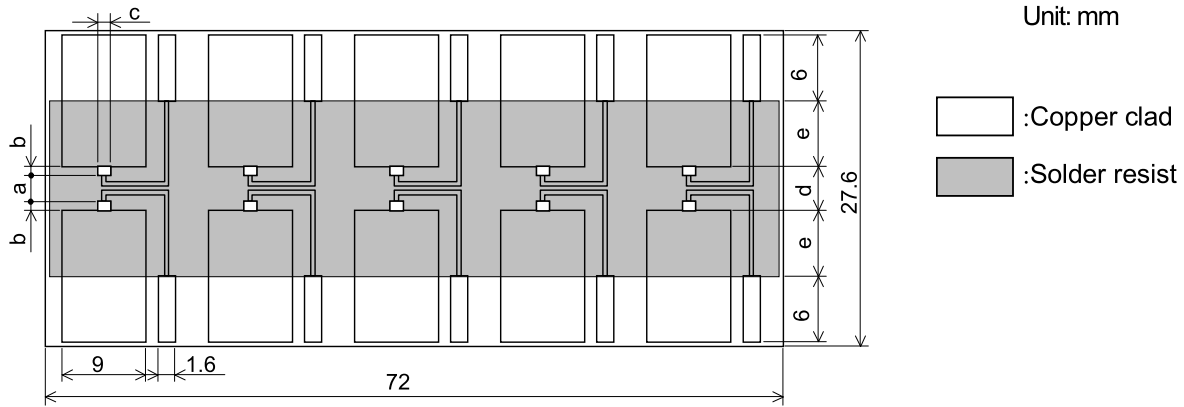
Title: METAL-PLATE CHIP RESISTOR; LOW OHM  
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Table-4(5)

| No | Test items   | Condition of test (JIS C 5201-1)  | Performance requirements  |
|----|--|---|---|
| 12 | Mounting<br><br>Damp heat, steady state  | Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure-3-1<br>Sub-clause 4.24<br>Ambient temperature: 40 °C±2 °C<br>Relative humidity: 93 <sup>+2</sup> <sub>-3</sub> %<br>Without current applied.<br>Visual examination<br><br>Resistance   | No visible damage<br>Legible marking<br>$\Delta R \leq \pm 5\%$                                   |
| 13 | Dimensions (detail)<br><br>Mounting<br><br>Endurance at upper category temperature | Sub-clause 4.4.3<br><br>Sub-clause 4.31<br>Substrate material: Epoxide woven glass<br>Test substrate: Figure-3-1<br>Sub-clause 4.25.3<br>Ambient temperature: 155 °C±2 °C<br>Duration: 1000 h<br>Examination at 48 h, 500 h and 1000 h:<br>Visual examination<br>Resistance | As in Table-4<br><br><br><br><br><br><br><br><br><br>No visible damage<br>$\Delta R \leq \pm 5\%$ |

8. Test substrate

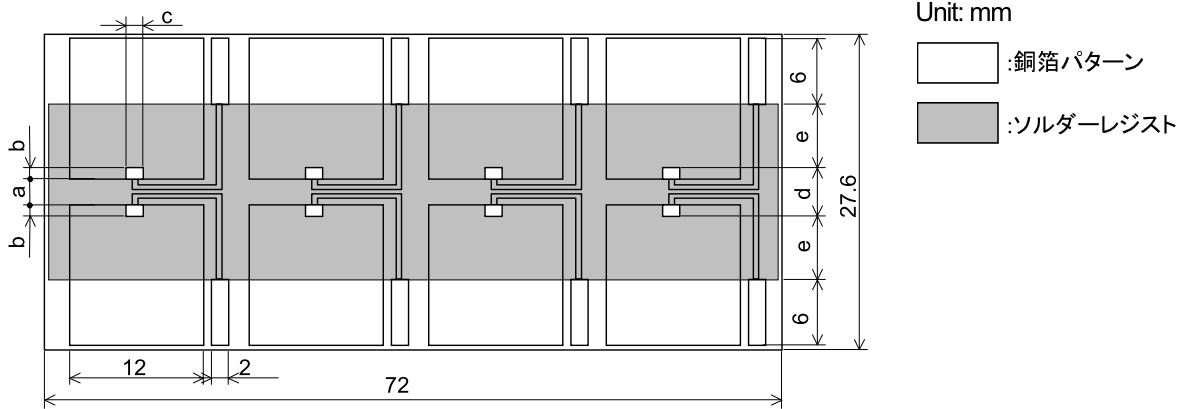


| Style | Rated resistance (mΩ) | a   | b    | c    | d   | e    |
|-------|-----------------------|-----|------|------|-----|------|
| RLP16 | 5                     | 0.6 | 0.8  | 0.8  | 2.2 | 6.2  |
|       | 10                    | 1.0 | 0.6  |      |     |      |
| RLP20 | 4 to 10               | 0.8 | 0.95 | 1.35 | 2.7 | 5.95 |
| MLP20 | 10                    |     |      |      |     |      |
| RLP32 | 1                     | 1.0 | 1.45 | 1.7  | 3.9 | 5.35 |
|       | 2                     | 2.1 | 0.9  |      |     |      |
|       | 3                     | 0.8 | 1.55 |      |     |      |
|       | 4                     | 1.0 | 1.45 |      |     |      |
|       | 5 and 6               | 1.4 | 1.25 |      |     |      |
| RLP63 | 7 to 15               | 2.1 | 0.9  | 3.5  | 7.6 | 3.5  |
|       | 1                     | 1.5 | 3.05 |      |     |      |
|       | 2                     | 4.0 | 1.8  |      |     |      |
|       | 3, 4                  | 1.8 | 2.9  |      |     |      |
| MLP63 | 5                     | 2.4 | 2.6  | 3.5  | 7.6 | 3.5  |
|       | 6 to 15               | 4.0 | 1.8  |      |     |      |
|       | 0.5, 2 to 4           | 1.8 | 2.9  |      |     |      |
|       | 1.5, 5 to 10          | 4.0 | 1.8  |      |     |      |

Figure-3-1 RLP16, 20, 32, 63, MLP20, 63TEST SUBSTRATE

Remark: Material: Epoxy resin based as glass fabric(Specified in JIS C 6484).

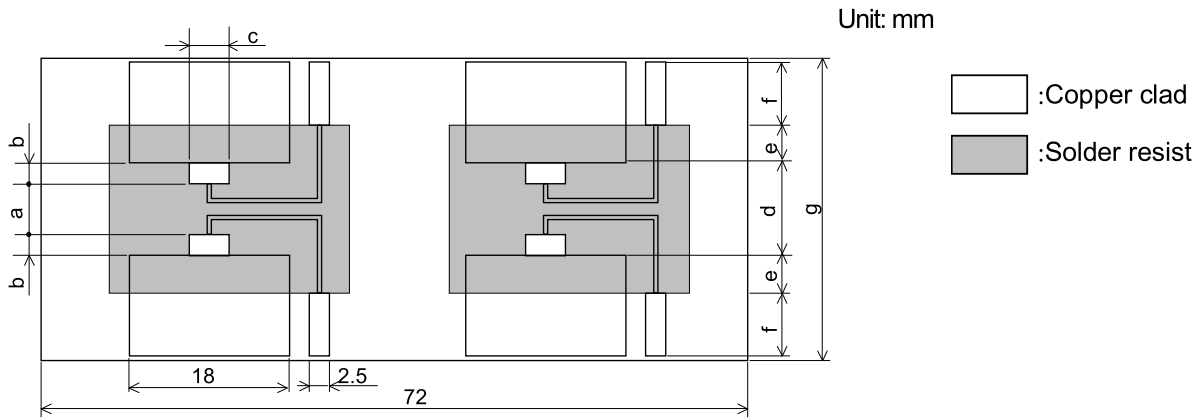
Thickness: 1.6mm      Thickness of copper clad: 0.035mm



| Style | Rated resistance (mΩ) | a   | b    | c    | d   | e    |
|-------|-----------------------|-----|------|------|-----|------|
| RLP20 | 4 to 10               | 0.8 | 0.95 | 1.35 | 2.7 | 5.95 |
| MLP20 | 10                    |     |      |      |     |      |

Figure-3-2 RLP20, MLP20 TEST SUBSTRATE

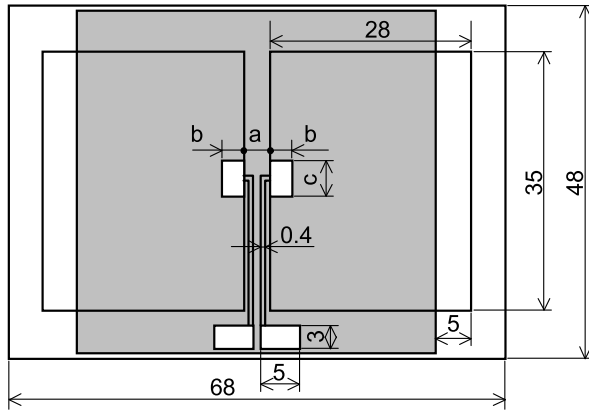
Remark: Material: Epoxy resin based as glass fabric(Specified in JIS C 6484).  
 Thickness: 1.6mm      Thickness of copper clad: 0.035mm



| Style | Rated resistance (mΩ) | a   | b    | c   | d   | e    | f     | g    |
|-------|-----------------------|-----|------|-----|-----|------|-------|------|
| RLP32 | 1                     | 1.0 | 1.45 | 1.7 | 3.9 | 5.35 | 11.68 | 39   |
|       | 2                     | 2.1 | 0.9  |     |     |      | 6.0   | 27.6 |
|       | 3                     | 0.8 | 1.55 |     |     |      | 11.68 | 39   |
|       | 4                     | 1.0 | 1.45 |     |     |      | 6.0   | 27.6 |
|       | 5 and 6               | 1.4 | 1.25 |     |     |      |       |      |
|       | 7 to 15               | 2.1 | 0.9  |     |     |      |       |      |

Figure-3-3 RLP32 TEST SUBSTRATE

Remark: Material: Epoxy resin based as glass fabric(Specified in JIS C 6484).  
 Thickness: 1.6mm      Thickness of copper clad: 0.07mm



Unit: mm

□ :Copper clad  
 ■ :Solder resist

| Style | Rated resistance (mΩ) | a   | b   | c   |
|-------|-----------------------|-----|-----|-----|
| RLP63 | 1                     | 2.0 | 3.0 | 3.5 |
|       | 2                     | 4.0 | 1.8 |     |
|       | 3, 4                  | 1.8 | 2.9 |     |
|       | 5                     | 2.4 | 2.6 |     |
|       | 6 to 15               | 4.0 | 1.8 |     |
| MLP63 | 0.5, 2 to 4           | 1.8 | 2.9 | 3.5 |
|       | 1.5, 5 to 10          | 4.0 | 1.8 |     |

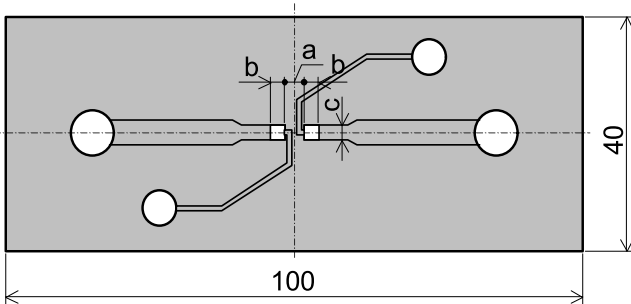
Figure-3-4 RLP63, MLP63 TEST SUBSTRATE

Remark: Material: Epoxy resin based as glass fabric(Specified in JIS C 6484).

Thickness: 1.6mm Thickness of copper clad: 0.07mm

Remark: In the case of connection by connector, the connecting terminals are gold plated.

However, the plating is not necessary when the connection is made by soldering.



Unit: mm

□ :Copper clad  
 ■ :Solder resist

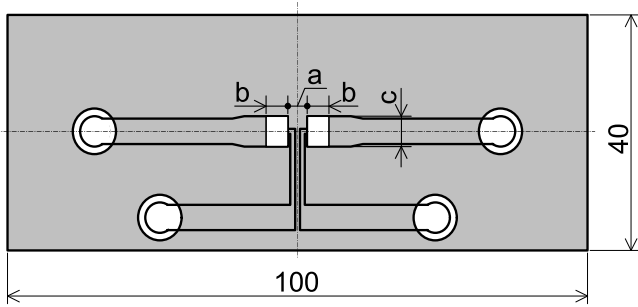
| Style | Rated resistance (mΩ) | a   | b    | c    |
|-------|-----------------------|-----|------|------|
| RLP16 | 5                     | 0.6 | 0.8  | 0.9  |
|       | 10                    | 1.0 | 0.6  |      |
| RLP20 | 4 to 10               | 0.8 | 0.95 | 1.35 |
| MLP20 | 10                    |     |      |      |
| RLP32 | 1                     | 1.0 | 1.45 | 1.7  |
|       | 2                     | 2.1 | 0.9  |      |
|       | 3                     | 0.8 | 1.55 |      |
|       | 4                     | 1.0 | 1.45 |      |
|       | 5 and 6               | 1.4 | 1.25 |      |
|       | 7 to 15               | 2.1 | 0.9  |      |

RLP16, 20, 32, MLP20 BOUND STRENGTH OF THE END FACE PLATING TEST SUBSTRATE



Unit: mm

□ :Copper clad  
 ■ :Solder resist



| Style | Rated resistance (mΩ) | a   | b    | c   |
|-------|-----------------------|-----|------|-----|
| RLP63 | 1                     | 1.5 | 3.05 | 4.0 |
|       | 2                     | 4.0 | 1.8  | 3.5 |
|       | 3, 4                  | 1.8 | 2.9  |     |
|       | 5                     | 2.4 | 2.6  |     |
|       | 6 to 15               | 4.0 | 1.8  |     |
| MLP63 | 0.5, 2 to 4           | 1.8 | 2.9  | 3.5 |
|       | 1.5, 5 to 10          | 4.0 | 1.8  |     |

RLP 63, MLP63 BOUND STRENGTH OF THE END FACE PLATING TEST SUBSTRATE

Figure-4

Remark. Material: Epoxy resin based as glass fabric(Specified in JIS C 6484).

Thickness: 1.6mm Thickness of copper clad: 0.035mm

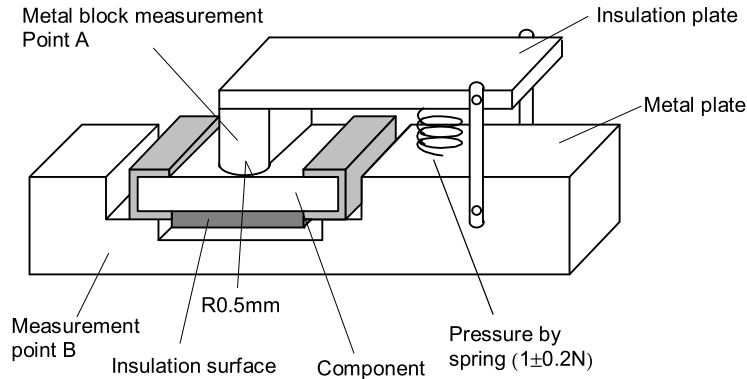


Figure-5

9. Taping

9.1 Applicable documents JIS C 0806-3: 1999, EIAJ ET-7200B: 2003

9.2 Taping dimensions

9.2.1 Paper taping (8mm width, 4mm pitches)

Taping dimensions shall be in accordance with Figure-6 and Table-5.

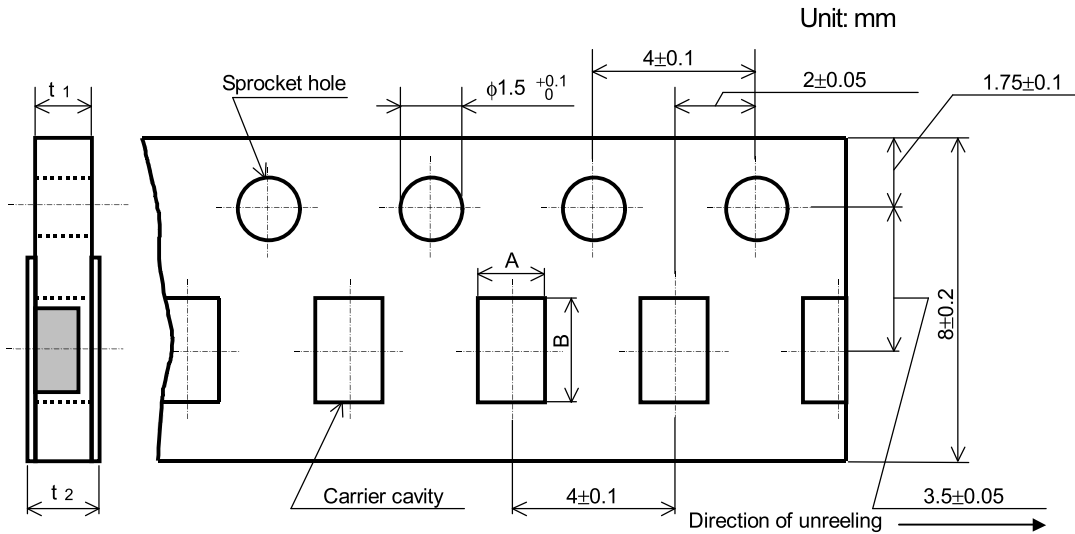


Figure-6

Table-5

Unit: mm

| Style | A               | B             | $t_1$         | $t_2$   |
|-------|-----------------|---------------|---------------|---------|
| RLP16 | $1.15 \pm 0.15$ | $1.9 \pm 0.2$ | $0.6 \pm 0.1$ | 0.8max. |
| RLP20 | $1.65 \pm 0.15$ | $2.5 \pm 0.2$ | $0.6 \pm 0.1$ | 0.8max. |
| MLP20 |                 |               |               |         |
| RLP32 | $2.00 \pm 0.15$ | $3.6 \pm 0.2$ | $0.6 \pm 0.1$ | 0.8max. |

9.2.2 Embossed taping (12mm width, 4mm pitches)

Taping dimensions shall be in accordance with Figure-7 and Table-6.

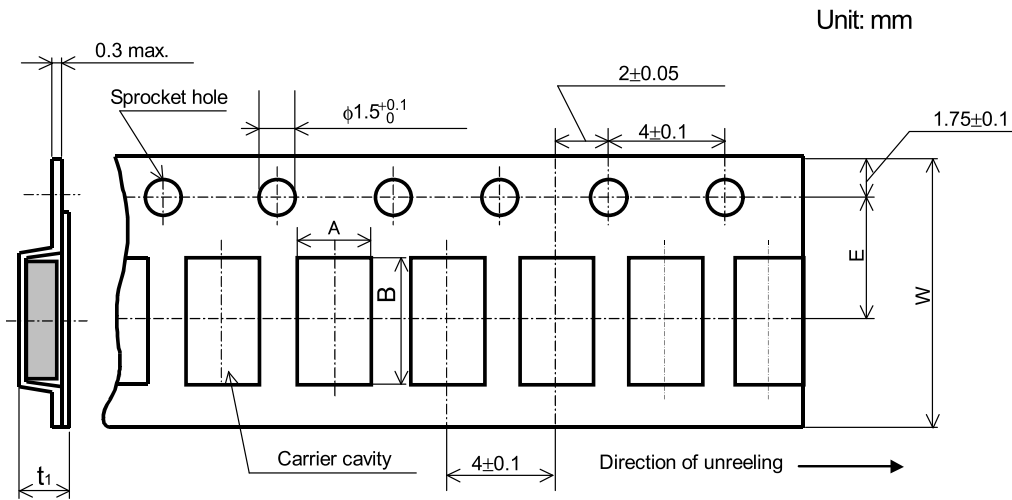


Figure-7

Table-6

Unit: mm

| Style | A             | B             | W              | E              | $t_1$          |
|-------|---------------|---------------|----------------|----------------|----------------|
| RLP63 | $3.6 \pm 0.2$ | $6.9 \pm 0.2$ | $12.0 \pm 0.3$ | $5.5 \pm 0.05$ | $1.1 \pm 0.15$ |
| MLP63 |               |               |                |                |                |

- 1). The cover tapes shall not cover the sprocket holes.
- 2). Tapes in adjacent layers shall not stick together in the packing.
- 3). Components shall not stick to the carrier tape or to the cover tape.
- 4). Pitch tolerance over any 10 pitches  $\pm 0.2\text{mm}$ .
- 5). The peel strength of the top cover tape shall be with in 0.1N to 0.5N on the test method as shown in the following RLP16, 20, 32, MLP20: Figure-8, RLP63, MLP63: Figure-9.
- 6). When the tape is bent with the minimum radius for (RLP16, 20, 32, MLP20: 25mm, RLC63, MLP63: 30mm) the tape shall not be damaged and the components shall maintain their position and orientation in the tape.
- 7). In no case shall there be two or more consecutive components missing.  
 The maximum number of missing components shall be one or 0.1%, whichever is greater.

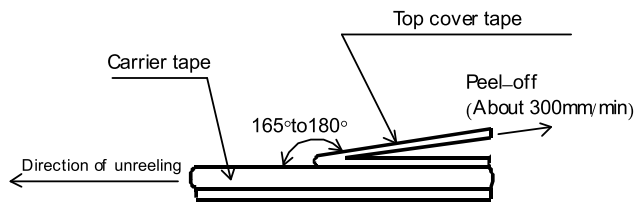


Figure-8

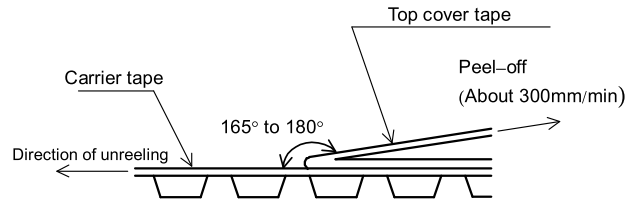


Figure-9

9.3 Reel dimension

Reel dimensions shall be in accordance with the following Figure-10 and Table-7.  
 Plastic reel (Based on EIAJ ET-7200B)

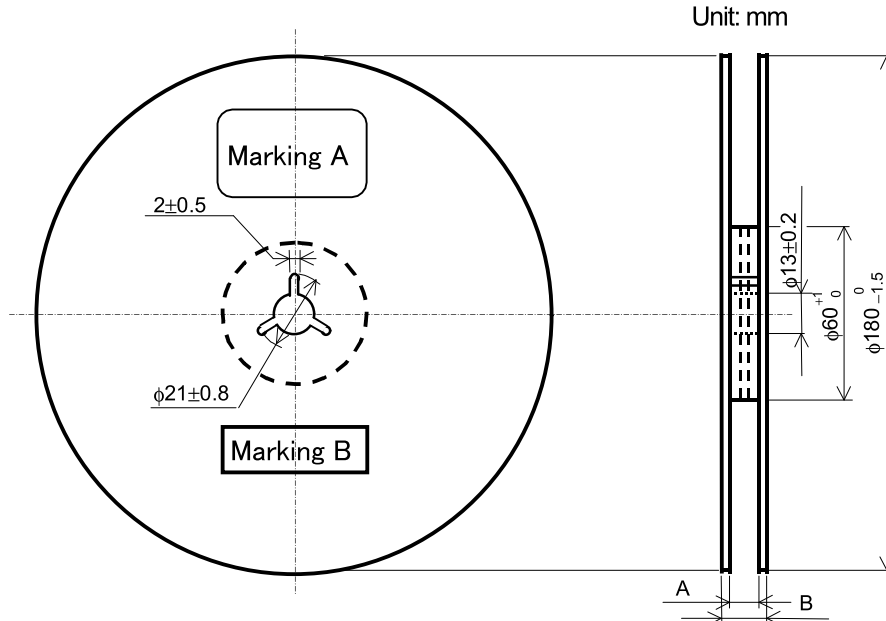


Figure-10  
 Table-7

| Style                | A                               | B        | Note              |
|----------------------|---------------------------------|----------|-------------------|
| RLP16, 20, 32, MLP20 | 9 <sup>+1.0</sup> <sub>0</sub>  | 11.4±1.0 | Injection molding |
|                      |                                 | 13±1.0   | Vacuum forming    |
| RLP63, MLP63         | 13 <sup>+1.0</sup> <sub>0</sub> | 17±1.0   | Vacuum forming    |

Note : Marking label shall be marked on a place of Marking A or two place of Marking A and B.

9.4 Leader and trailer tape.

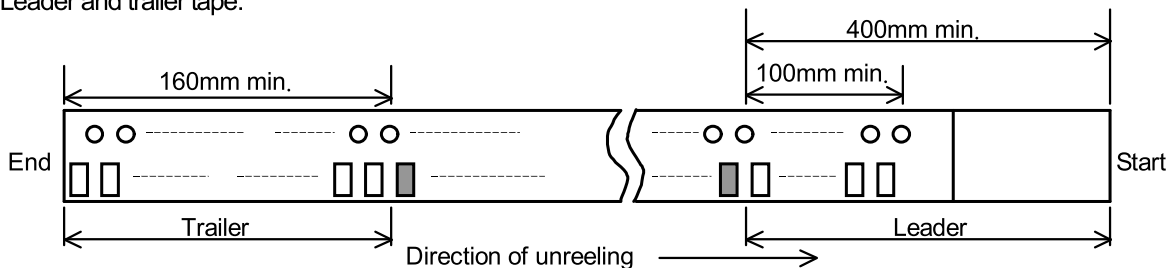


Figure-11

10. Marking on package

The label of a minimum package shall be legibly marked with follows.

10.1 Marking A

(1) Classification

(Style, Temperature coefficient of resistance, Rated resistance, Tolerance on rated resistance, Packaging form)

(2) Lot number (3) Quantity (4) Manufacturer's name or trade mark (5) Others

10.2 Marking B (KAMAYA Control label)

# Mouser Electronics

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[RLP32KR005FTP](#) [RLP32KR010JTP](#) [RLP63KR002FTE](#) [RLP32KR004FTP](#) [RLP32KR010FTP](#) [RLP32KR008FTP](#)  
[RLP63KR005FTE](#) [RLP16KR010FTP](#) [RLP32KR007FTP](#) [RLP32KR015JTP](#)

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