

## Micro Chip Fuse

Type: **ERBRD**  
**ERBRE**  
**ERBRG**



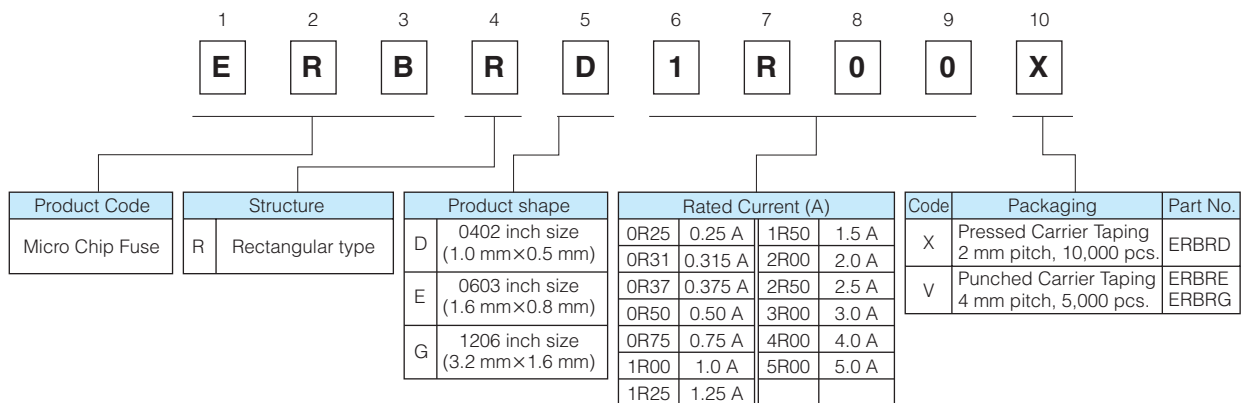
### Features

- Small size
- Fast-acting and withstanding in-rush current characteristics
- RoHS compliant

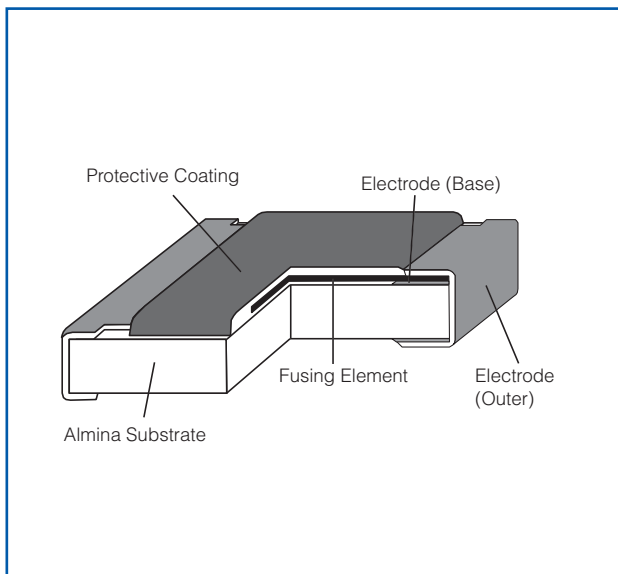
### Approved Safety Standards

UL248-14 : File No.E194052  
 c-UL C22.2 No.248-14 : File No.E194052

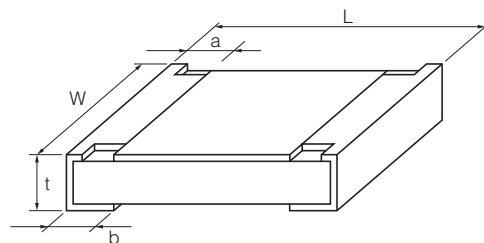
### Explanation of Part Numbers



### Construction



### Dimensions in mm (not to scale)



| Part No.<br>(inch size) | Dimensions (mm)       |  |                       |                       |                       | Mass<br>(Weight)<br>(g/1000 pcs.) |
|-------------------------|-----------------------|--|-----------------------|-----------------------|-----------------------|-----------------------------------|
|                         | L                     | W                                      | a                     | b                     | t                     |                                   |
| ERBRD<br>(0402)         | 1.00 <sup>±0.10</sup> | 0.50 <sup>+0.10</sup> <sub>-0.05</sub> | 0.15 <sup>±0.10</sup> | 0.25 <sup>±0.10</sup> | 0.39 <sup>±0.10</sup> | 0.7                               |
| ERBRE<br>(0603)         | 1.60 <sup>±0.15</sup> | 0.80 <sup>+0.15</sup> <sub>-0.05</sub> | 0.24 <sup>±0.15</sup> | 0.30 <sup>±0.15</sup> | 0.54 <sup>±0.10</sup> | 2.2                               |
| ERBRG<br>(1206)         | 3.20 <sup>±0.20</sup> | 1.60 <sup>±0.15</sup>                  | 0.30 <sup>±0.20</sup> | 0.55 <sup>±0.20</sup> | 0.65 <sup>±0.10</sup> | 10                                |

## Ratings

- 0402 inch /1005 mm size : Type ERBRD

| Part No.                               | ERBRD□R□□X                               |       |       |      |      |      |      |      |      |      |      |
|--|--|-------|-------|------|------|------|------|------|------|------|------|
|  | 0R25                                     | 0R31  | 0R37  | 0R50 | 0R75 | 1R00 | 1R25 | 1R50 | 2R00 | 2R50 | 3R00 |
| Rated Current (A)                      | 0.25                                     | 0.315 | 0.375 | 0.5  | 0.75 | 1.0  | 1.25 | 1.5  | 2.0  | 2.5  | 3.0  |
| Marking Code                           | V  | X     | Y     | F    | G    | H    | J    | K    | N    | O    | P    |
| Internal R (mΩ) at 25 °C max.          | 700                                      | 520   | 440   | 310  | 190  | 125  | 82   | 70   | 53   | 42   | 37   |
| Fusing Current/Fusing Time (at 25 °C)  | Rated Current × 100 % / 4 hours min.     |       |       |      |      |      |      |      |      |      |      |
|  | Rated Current × 200 % / 5 seconds max.   |       |       |      |      |      |      |      |      |      |      |
|  | Rated Current × 300 % / 0.2 seconds max. |       |       |      |      |      |      |      |      |      |      |
| Rated Voltage (Open Circuit Voltage)   | 32 VDC                                   |       |       |      |      |      |      |      |      |      |      |
| Interrupting Rating (at Rated Voltage) | 35 A                                     |       |       |      |      |      |      |      |      |      |      |
| Category Temp. Range                   | -40 °C to +125 °C                        |       |       |      |      |      |      |      |      |      |      |

- 0603 inch / 1608 mm size : Type ERBRE

| Part No.                               | ERBRE□R□□V                               |      |      |      |      |      |      |      |      |      |
|--|--|------|------|------|------|------|------|------|------|------|
|  | 0R50                                     | 0R75 | 1R00 | 1R25 | 1R50 | 2R00 | 2R50 | 3R00 | 4R00 | 5R00 |
| Rated Current (A)                      | 0.5                                      | 0.75 | 1.0  | 1.25 | 1.5  | 2.0  | 2.5  | 3.0  | 4.0  | 5.0  |
| Marking Code                           | F  | G    | H    | J    | K    | N    | O    | P    | S    | T    |
| Internal R (mΩ) at 25 °C max.          | 330                                      | 190  | 125  | 94   | 72   | 51   | 40   | 33   | 22   | 19   |
| Fusing Current/Fusing Time (at 25 °C)  | Rated Current × 100 % / 4 hours min.     |      |      |      |      |      |      |      |      |      |
|  | Rated Current × 200 % / 5 seconds max.   |      |      |      |      |      |      |      |      |      |
|  | Rated Current × 300 % / 0.2 seconds max. |      |      |      |      |      |      |      |      |      |
| Rated Voltage (Open Circuit Voltage)   | 32 VDC                                   |      |      |      |      |      |      |      |      |      |
| Interrupting Rating (at Rated Voltage) | 50 A                                     |      |      |      |      |      |      |      |      |      |
| Category Temp. Range                   | -40 °C to +125 °C                        |      |      |      |      |      |      |      |      |      |

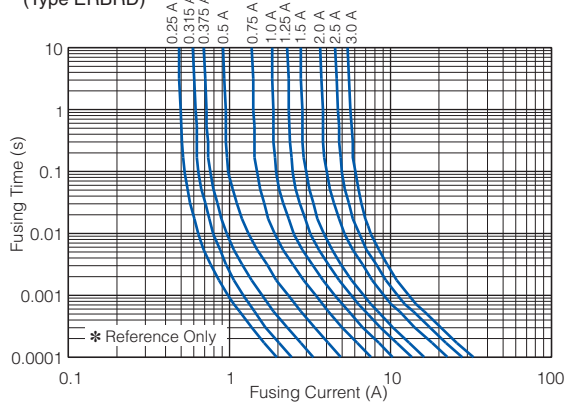
- 1206 inch / 3216 mm size : Type ERBRG

| Part No.                               | ERBRG□R□□V                               |      |      |      |      |        |      |      |      |  |
|--|--|------|------|------|------|--------|------|------|------|--|
|  | 0R50                                     | 0R75 | 1R00 | 1R25 | 1R50 | 2R00   | 2R50 | 3R00 | 4R00 |  |
| Rated Current (A)                      | 0.5                                      | 0.75 | 1.0  | 1.25 | 1.5  | 2.0    | 2.5  | 3.0  | 4.0  |  |
| Marking Code                           | F  | G    | H    | J    | K    | N      | O    | P    | S    |  |
| Internal R (mΩ) at 25 °C max.          | 560                                      | 340  | 210  | 175  | 115  | 85     | 65   | 45   | 35   |  |
| Fusing Current/Fusing Time (at 25 °C)  | Rated Current × 100 % / 4 hours min.     |      |      |      |      |        |      |      |      |  |
|  | Rated Current × 200 % / 5 seconds max.   |      |      |      |      |        |      |      |      |  |
|  | Rated Current × 300 % / 0.2 seconds max. |      |      |      |      |        |      |      |      |  |
| Rated Voltage (Open Circuit Voltage)   | 63 VDC                                   |      |      |      |      | 32 VDC |      |      |      |  |
| Interrupting Rating (at Rated Voltage) | 50 A                                     |      |      |      |      |        |      |      |      |  |
| Category Temp. Range                   | -40 °C to +125 °C                        |      |      |      |      |        |      |      |      |  |

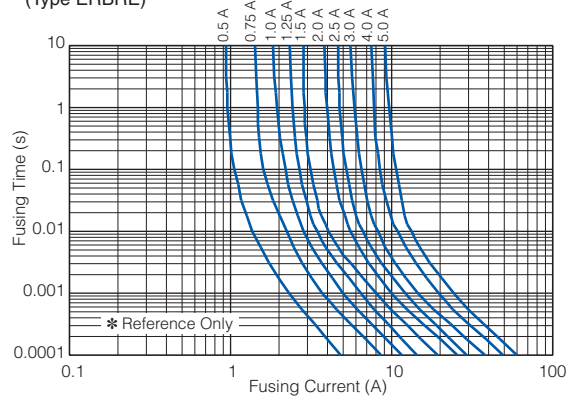
- \* The thin type is available about 1005 (0402 inch) size. Please contact us for details.
- \* Please contact us when another rated current is needed.

## Fusing Characteristics (25 °C typical)

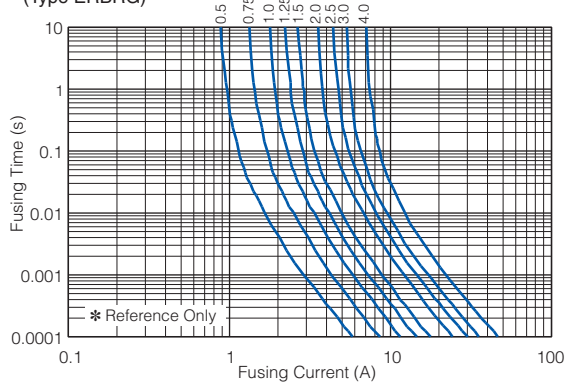
● 0402 inch / 1005 mm size  
(Type ERBRD)



● 0603 inch / 1608 mm size  
(Type ERBRE)



● 1206 inch / 3216 mm size  
(Type ERBRG)



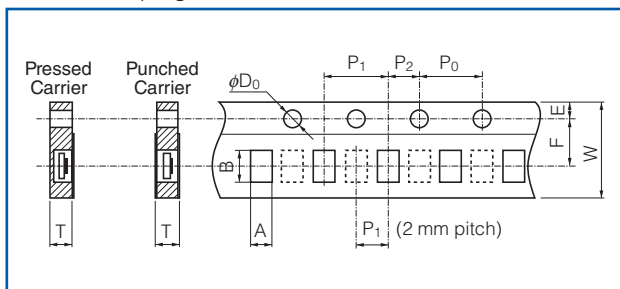
## Packaging Methods

### ● Standard Quantity

| Part No. | inch size | Kind of Taping         | Pitch (P <sub>1</sub> ) | Quantity          |
|----------|-----------|------------------------|-------------------------|-------------------|
| ERBRD    | 0402      | Pressed Carrier Taping | 2 mm                    | 10,000 pcs./ reel |
| ERBRE    | 0603      | Punched Carrier Taping | 4 mm                    | 5,000 pcs./ reel  |
| ERBRG    | 1206      |                        |                         |                   |

### ● Carrier Taping

(Unit : mm)

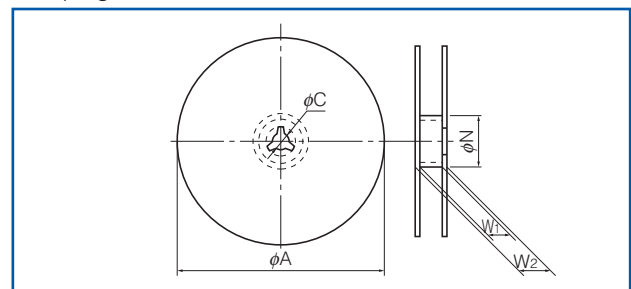


| Part No. | A                     | B                     | W                     | F                     | E                     |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| ERBRD    | 0.68 <sup>±0.10</sup> | 1.20 <sup>±0.10</sup> | 8.00 <sup>±0.20</sup> | 3.50 <sup>±0.05</sup> | 1.75 <sup>±0.10</sup> |
| ERBRE    | 1.10 <sup>±0.10</sup> | 1.90 <sup>±0.10</sup> |                       |                       |                       |
| ERBRG    | 2.00 <sup>±0.15</sup> | 3.60 <sup>±0.20</sup> |                       |                       |                       |

| Part No. | P <sub>1</sub>        | P <sub>2</sub>        | P <sub>0</sub>        | φD <sub>0</sub>                    | T                     |
|----------|-----------------------|-----------------------|-----------------------|------------------------------------|-----------------------|
| ERBRD    | 2.00 <sup>±0.10</sup> | 2.00 <sup>±0.05</sup> | 4.00 <sup>±0.10</sup> | 1.50 <sup>+0.10</sup> <sub>0</sub> | 0.67 <sup>±0.07</sup> |
| ERBRE    | 4.00 <sup>±0.10</sup> |                       |                       |                                    | 0.78 <sup>±0.07</sup> |
| ERBRG    |                       |                       |                       |                                    | 0.84 <sup>±0.07</sup> |

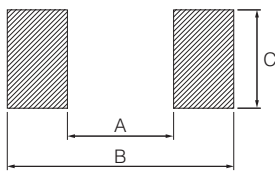
### ● Taping Reel

(Unit : mm)



| Part No.                | φA                                 | φN                              | φC                   | W <sub>1</sub>                   | W <sub>2</sub>       |
|-------------------------|------------------------------------|---------------------------------|----------------------|----------------------------------|----------------------|
| ERBRD<br>ERBRE<br>ERBRG | 180.0 <sup>0</sup> <sub>-1.5</sub> | 60 <sup>+1.0</sup> <sub>0</sub> | 13.0 <sup>±0.2</sup> | 9.0 <sup>+1.0</sup> <sub>0</sub> | 11.4 <sup>±1.0</sup> |

## Recommended Soldering Conditions

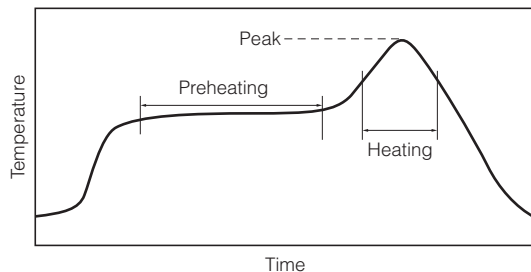


| Part No.<br>(inch size) | Dimensions (mm) |            |            |
|-------------------------|-----------------|------------|------------|
|                         | A               | B          | C          |
| ERBRD(0402)             | 0.5 to 0.6      | 1.4 to 1.6 | 0.4 to 0.6 |
| ERBRE(0603)             | 0.7 to 0.9      | 2.0 to 2.2 | 0.8 to 1.0 |
| ERBRG(1206)             | 2.0 to 2.4      | 4.4 to 5.0 | 1.2 to 1.8 |

## Recommended Soldering Conditions

Recommendations and precautions are described below.

- Recommended soldering conditions for reflow
  - Reflow soldering shall be performed a maximum of two times.
  - Please contact us for additional information when used in conditions other than those specified.
  - Please measure the temperature of the terminals and study every kind of solder and printed circuit board for solderability before actual use.



For soldering (Example : Sn/Pb)

|              | Temperature      | Time          |
|--------------|------------------|---------------|
| Preheating   | 140 °C to 160 °C | 60 s to 120 s |
| Main heating | Above 200 °C     | 30 s to 40 s  |
| Peak         | 235 ± 5 °C       | max. 10 s     |

For lead-free soldering (Example : Sn/Ag/Cu)

|              | Temperature      | Time          |
|--------------|------------------|---------------|
| Preheating   | 150 °C to 180 °C | 60 s to 120 s |
| Main heating | Above 230 °C     | 30 s to 40 s  |
| Peak         | max. 260 °C      | max. 10 s     |

- Recommended soldering conditions for flow

|            | For soldering    |               | For lead-free soldering |               |
|------------|------------------|---------------|-------------------------|---------------|
|            | Temperature      | Time          | Temperature             | Time          |
| Preheating | 140 °C to 180 °C | 60 s to 120 s | 150 °C to 180 °C        | 60 s to 120 s |
| Soldering  | 245 ± 5 °C       | 20 s to 30 s  | max. 260 °C             | max. 10 s     |

<Repair with hand soldering>

- Preheat with a blast of hot air or similar method. Use a soldering iron with a tip temperature of 350 °C or less. Solder each electrode for 3 seconds or less.
- Never touch this product with the tip of a soldering iron.

## ⚠ Safety Precautions

The following are precautions for individual products. Please also refer to the common precautions for fuses in this catalog.

1. Set the rated current so that the current passing through the Micro Chip Fuses (hereafter called the fuses) under normal conditions is within 70% of the rated current.
2. Do not continuously pass a current exceeding the rated current through the fuses.
3. If a pulse exceeding the rated current is applied, such as a rush current or surge current at power-on, take care not to cause unwanted fusing. Calculate the  $I^2t$  value of the pulse and check the tolerance to the number of pulses according to the  $I^2t$ -t characteristic curve before deciding to use the fuses. Before checking the tolerance, consult our sales staff in advance.
4. The fuses are designed to be blown out by a current that is double or greater than the rated current. Ensure that the abnormal current generated when a circuit abnormality occurs in your product is at least double or greater than the rated current of the fuses. In addition, ensure that the abnormal current of your product does not exceed the maximum interrupting current of the fuses.
5. The fuses are designed to be used on the secondary side of a power supply. Do not use them on the primary side.
6. Ensure that the voltage applied to the fuses are within their rated voltage.
7. The fusing characteristics of the fuses are affected by the ambient temperature. Before use, mount the fuses on your products and carefully check and evaluate their category temperature range.