



炬鹿科技有限公司  
RIDEE TECH COMPANY LIMITED

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# APPROVAL SHEET

Product Name : Thick Film AEC-Q200 Long Terminal Chip Resistor

Part No. : TWQ Series

Description : Size 0612 / 1225

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For more contact information, please refer to our website: [www.rideetech.com](http://www.rideetech.com)

### Thick Film AEC-Q200 Long Terminal Chip Resistor - TWQ Series

#### ■ Applications

- Automotive electronics
- Power supply
- Industry controller
- LED Lighting.



#### ■ Features

- AEC-Q200 compliant
- Small size 0612 ( 1.6x3.2cm) with 1W
- Wide resistance range and tight tolerance

#### ■ Part Number Explanation

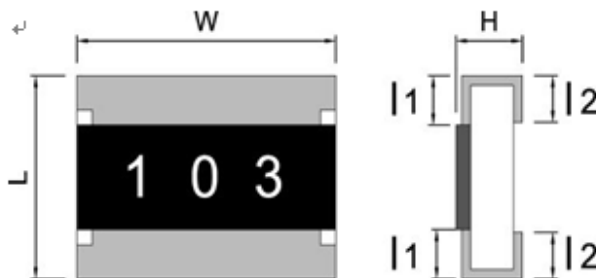
| TWQ  | 0612         | F                  | 10R0   | T             | S                   |
|--|--------------|--------------------|--|---------------|---------------------|
| Product  | Size (Inch)  | Tolerance          | Resistance   | Packaging     | Functional          |
| Thick Film<br>AEC-Q200<br>Long Terminal<br>Chip Resistor | 0612<br>1225 | F = ±1%<br>J = ±5% | 1R00=1Ω<br>10R0=10Ω<br>100R :100Ω<br>1K00 :1KΩ<br>1M00=1MΩ | T=Tape & Reel | S=<br>Standard Type |

### Standard Electrical Specifications

| Item<br>Type | Rated Power<br>at 70°C | Max Working<br>Voltage | Max Overload<br>Voltage | T.C.R.<br>(PPM/°C) | Resistance Range                 |                                  |
|--------------|------------------------|------------------------|-------------------------|--------------------|----------------------------------|----------------------------------|
|              |                        |                        |                         |                    | F(± 1%)                          | J(± 5%)                          |
| TWQ 0612     | 1 W                    | 200V                   | 400V                    | ±200               | $1\Omega \leq R \leq 4.64\Omega$ | $1\Omega \leq R \leq 4.3\Omega$  |
|              |                        |                        |                         | ±100               | $4.7\Omega \leq R \leq 1M\Omega$ | $4.7\Omega \leq R \leq 1M\Omega$ |
| TWQ 1225     | 2 W                    |                        |                         | ±200               | $1\Omega \leq R \leq 4.64\Omega$ | $1\Omega \leq R \leq 4.3\Omega$  |
|              |                        |                        |                         | ±100               | $4.7\Omega \leq R \leq 1M\Omega$ | $4.7\Omega \leq R \leq 1M\Omega$ |

- Beyond the above specification also can meet the special requirements. For detailed questions, please contact us freely.

### Dimension



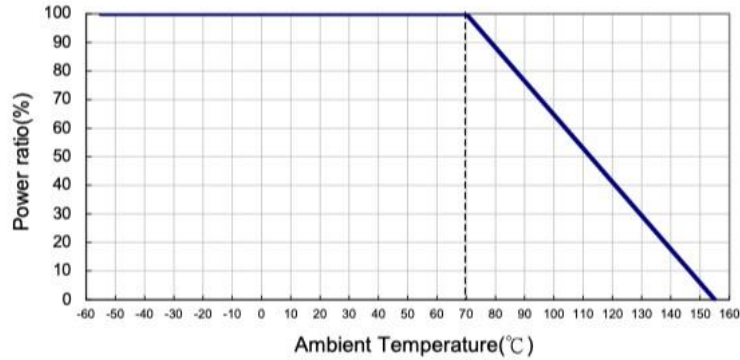
Unit: mm

| Size | L          | W          | H           | l <sub>1</sub> | l <sub>2</sub> |
|------|------------|------------|-------------|----------------|----------------|
| 0612 | 1.60 ±0.20 | 3.20 ±0.20 | 0.60 ±0.15  | 0.25 ± 0.20    | 0.40 ± 0.20    |
| 1225 | 3.10 ±0.20 | 6.30 ±0.20 | 0.60 ± 0.15 | 0.45 ± 0.20    | 0.75 ± 0.20    |

### ■ Performance Characteristics

#### ■ Power Derating Curve

Operating Temperature Range: -55 to +155°C



#### ■ Voltage Rating or Current Rating

Resistance Range:  $\geq 1\Omega$

Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

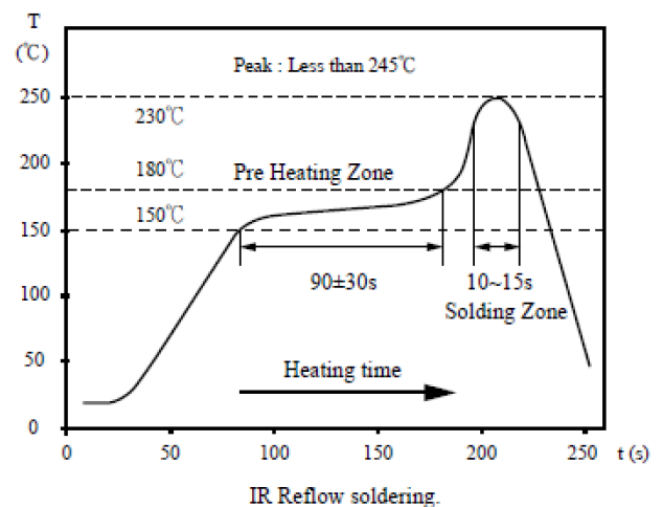
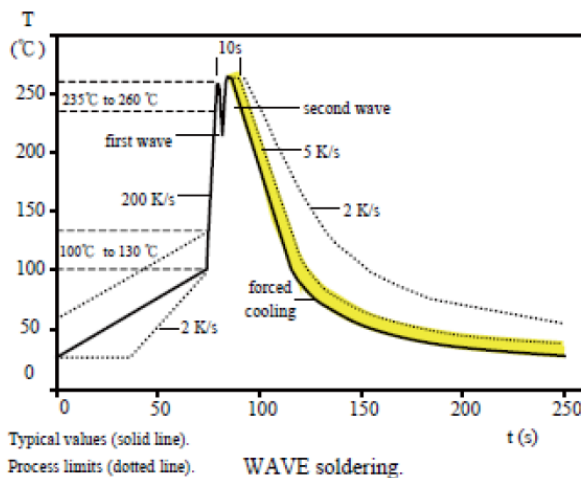
$$E(RCWV) = \sqrt{P \times R}$$

E=Rated voltage(V)

P=Power rating(W)

R=Nominal resistance( $\Omega$ )

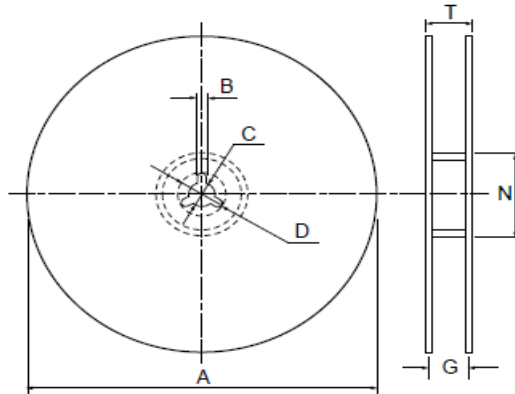
### ■ Soldering Conditions



### ■ Reliability Test and Requirement

| Test Item                           | Test Method                  | Procedure  | Requirements  |
|-------------------------------------|------------------------------|--|---|
| Temperature Cycling                 | AEC-Q200 TABLE 7.4           | 1000 Cycles (-55°C to +125°C) Measurement at 24± 4 hours after test conclusion.                        | J: $\Delta R \leq \pm(1\%+0.05\Omega)$<br>F: $\Delta R \leq \pm(0.5\%+0.05\Omega)$<br>No mechanical damage. |
| Resistance to Solder Heat           | AEC-Q200 TABLE 7.15          | Solder dipping @ 260°C±5°C for 10sec.±1sec.  | J: $\Delta R \leq \pm(1\%+0.05\Omega)$<br>F: $\Delta R \leq \pm(0.5\%+0.05\Omega)$<br>No mechanical damage. |
| Biased Humidity                     | AEC-Q200 TABLE 7.7           | 1000 hours 85°C/85%RH. 10% of operation power. Measure at 24 ±2 hours after test end.                  | J: $\Delta R \leq \pm(3\%+0.1\Omega)$<br>F: $\Delta R \leq \pm(1\%+0.1\Omega)$                              |
| High Temperature Exposure (Storage) | AEC-Q200 TABLE 7.3           | 1000 hrs. T=155°C Unpowered. Measure at 24 ±2 hours after test end.                                    | J: $\Delta R \leq \pm(3\%+0.1\Omega)$<br>F: $\Delta R \leq \pm(1\%+0.1\Omega)$                              |
| Operation Life                      | AEC-Q200 TABLE 7.8           | Test 1000hr @ TA=125°C at specified rated power. Measurement at 24±2 hours after test end.             | J: $\Delta R \leq \pm(3\%+0.1\Omega)$<br>F: $\Delta R \leq \pm(1\%+0.1\Omega)$                              |
| External Visual                     | AEC-Q200 TABLE 7.9           | Inspect appearance, marking and workmanship.   | No visual damage and refer Ridee marking code.  |
| Mechanical Shock                    | AEC-Q200 TABLE 7.13          | Test Peak value: 100g's, Wave: Half-sine, Duration: 6ms, Velocity: 12.3ft/sec.                         | Within product specification tolerance and no visible damage.   |
| Vibration                           | AEC-Q200 TABLE 7.14          | 5 g's for 20 min., 12 cycles each of 3 orientations. Test from 10-2000 Hz.                             | No mechanical damage.   |
| ESD                                 | AEC-Q200-002                 | 330Ω/150pF, Test contact min. 2KV.   | $\Delta R \leq \pm 5\%$<br>No mechanical damage.  |
| Solderability                       | AEC-Q200 TABLE 7.18          | a) Baking 155°C 4H, dipping 235°C 5s<br>b) Steam 1H, dipping 215°C 5s<br>c) Steam 1H, dipping 260°C 7s | Over 95% of termination must be covered with solder.  |
| Terminal Strength                   | AEC-Q200 TABLE 7.22          | Force 1.8 Kg for 60 seconds  | No mechanical damage  |
| Board Flex                          | AEC-Q200 TABLE 7.21          | Bending 2mm.   | J: $\Delta R \leq \pm(1\%+0.05\Omega)$<br>F: $\Delta R \leq \pm(0.5\%+0.05\Omega)$<br>No mechanical damage. |
| Short Time Overload                 | IEC 60115<br>1, Clause 4. 13 | 5 x Rated power for 5 seconds  | J: $\Delta R \leq \pm(2\% + 0.5m\Omega)$<br>F: $\Delta R \leq \pm(1\% + 0.5m\Omega)$                        |

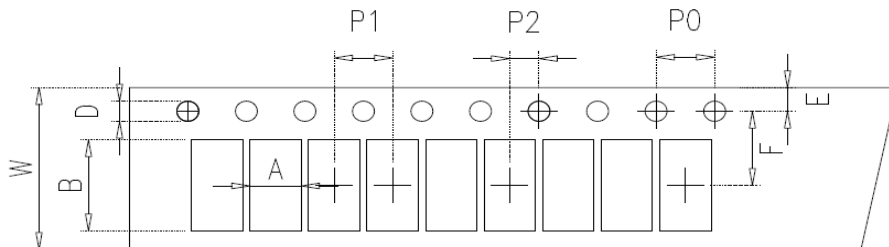
### ■ Packaging Information



Unit:mm

| Size | Packaging Q'ty | A         | N        | C        | D        | B       | G        | T         |
|------|----------------|-----------|----------|----------|----------|---------|----------|-----------|
| 0612 | 5K/Reel        | 178±2.0   | 60.0±0.5 | 13.0±0.5 | 20(Min.) | 2.0±0.5 | 10.0±1.5 | 14.9max   |
| 1225 | 4K/Reel        | 178.0±2.0 | 60.0±0.5 | 13.0±0.5 | 20(Min.) | 2.0±0.5 | 13.8±1.5 | 16.7max.. |

### ■ Tapping Specification



Unit:mm

| Packaging     | Size | A        | B        | W       | E        | F        | P0      | P1        | P2       | D            |
|---------------|------|----------|----------|---------|----------|----------|---------|-----------|----------|--------------|
| Paper Type    | 0612 | 2.00±0.2 | 3.60±0.2 | 8.0±0.3 | 1.75±0.1 | 3.5±0.05 | 4.0±0.1 | 4.0±0.1   | 2.0±0.05 | 1.50+0.10/-0 |
| Embossed Type | 1225 | 3.50±0.2 | 6.70±0.2 | 12±0.3  | 1.75±0.1 | 5.5±0.05 | 4.0±0.1 | 4.00±0.10 | 2.0±0.05 | 1.50+0.10/-0 |

### ■ Marking

■ 4 digits marking to identify the resistance value

|               |      |      |
|---------------|------|------|
| Resistance    | 100Ω | 4.7Ω |
| 4 digits code | 1000 | 4R70 |