

Environmental Data

MECHANICAL

| Test Number | Test Methods | Requirement |
|--------------------------------|---|--|
| 1 Solderability | After steam aging, immerse in the solder (H63A) of 230 \pm 5° for 3 \pm 0.5 seconds. | Approximately 95% of the terminal should be covered with new solder. |
| 2 Terminal Strength | After soldering the parts to a PCB, perform a pull test with 1Kgf in any direction for 10 seconds. | No evidence of damage. Δ C/C within \pm 1% Δ R/R within \pm 1% |
| 3 Vibration | After soldering the parts to a PCB perform a vibration test with 10Hz to 2KHz at 15 \pm 1.5gs, 4 hours/plane. | No evidence of damage. Δ C/C within \pm 1% Δ R/R within \pm 1% |
| 4 Mechanical Shock | 1500g 0.5m seconds, 5 times to bath direction. | No evidence of damage. |
| 5 Resistance to Soldering Heat | Immerse in the solder (H63A) of 260 \pm 5°C for 10 \pm 1 seconds. | No evidence of damage. Δ C/C within \pm 1% Δ R/R within \pm 1% |
| 6 Resistance to Solvent | Immerse in the IPA (JIS K 8839) of 23°C for 30 \pm 5 seconds. | No outstanding damage and marking can be easily judged. |

ELECTRICAL

Capacitor Ratings

| Test Number | Test Methods | Requirement |
|--|---|--|
| 1 Capacitance | JIS C 5102 7.8 Measuring Frequency 1KHz Measuring Frequency 1VRMS | |
| 2 Capacitance Tolerance | | J: $\pm 5\%$, K: $\pm 10\%$, M: $\pm 20\%$ |
| 3 Capacitance Temperature Characteristic | JIS C 5102 7.12 | 0 ± 250 ppm/ $^{\circ}$ C |
| 4 Voltage Rating | DC Voltage for 10 seconds across the capacitor. | 100V DC |
| 5 Breakdown Voltage | DC Voltage for 1 millisecond across the capacitor. | 500V DC |
| 6 Electrostatic Discharge | MIL-STD-883C method 3015.3 100pF 1.5K Ω | ± 2 KV MIN. |

ELECTRICAL

Resistor Ratings

| Test Number | Test Methods | Requirement |
|---|---|---|
| 1 Resistance | JIS C 5202 5.1 Method A | |
| 2 Resistance Tolerance | Method A | B: ±0.1%, C: ±0.25%, D: ±0.5% F: ±1%, J: ±5%, K: ±10%, M: ±20% |
| 3 Resistance Temperature Characteristic | JIS C 5202 5.2 Method B | H: ±100 ppm, E: ±25 ppm C: ±50 ppm, T: ±10 ppm |
| 4 Insulation Resistance | JIS C 5202 5.6 Measuring Voltage 100V | 1000 MΩ (MIN) |
| 5 Power Rating | Resistor | 100mW |
| 6 Voltage Rating | Resistors shall have a rated DC or AC (R.M.S.) working voltage corresponding to the power rating, as determined from the following equation: In no case shall the rated DC or AC (R.M.S.) working voltage be greater than 100V. $E = \sqrt{P \cdot R}$ | E: Rated Voltage [V] P: Rated Power [W] R: Resistance [Ω] |

Test and Reliability Data

Environmental Applications

| Test Number | Test Methods | Requirement |
|-----------------------------------|---|--|
| 1 Low Temperature Characteristics | Store at $-40 \pm 3^{\circ}\text{C}$ for 1000 hours | No evidence of damage. Δ C/C within $\pm 1\%$ Δ R/R within $\pm 1\%$ |
| 2 Resistance of Heat | Store at $125 \pm 2^{\circ}\text{C}$ for 1000 hours | No evidence of damage. Δ C/C within $\pm 1\%$ Δ R/R within $\pm 1\%$ |
| 3 Moisture Endurance | Temperature: $40 \pm 2^{\circ}\text{C}$ Humidity: 90 ~ 95% 1000 hours | No evidence of damage. Δ C/C within $\pm 1\%$ Δ R/R within $\pm 1\%$ |
| 4 Temperature Cycling | 100 cycles between $-40^{\circ}\text{C}/30$ minutes and $+125^{\circ}\text{C}/30$ minutes | No evidence of damage. Δ C/C within $\pm 1\%$ Δ R/R within $\pm 1\%$ |
| 5 Pressure Cooker | Temperature: 121°C Humidity: 100% Pressure: 2 atm 168 hours | No evidence of damage. Δ C/C within $\pm 1\%$ Δ R/R within $\pm 1\%$ |