

RUILON

瑞隆源电子



ESD Protection Device

RL0603E Series

361° Circuit Protection
System

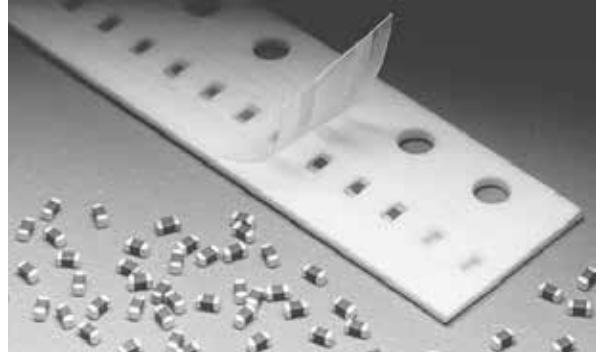
Revision:APR-17

Please refer to <http://www.ruilon.com.cn> for current information.

ESD Protection Device - RL0603E Series

Features

- Excellent ESD clamping & Small Insertion Loss
- High transient current capability, Fastest response time
- Capacitance is designed to ultra-low value, which can be efficiently suitable to high speed data line.
- EU-RoHS Compliance



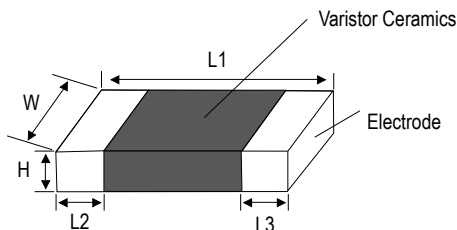
Features

- Transient voltage protection for IC and transistor
- ESD and I/O protection
- EFT and burst protection
- Portable equipment protection, such as mobile phone, PDA

Product Name

| | | | | | | | | | | | | | | |
|------------|---|-------------|---|---------------|---|---------------------------------|---|---|------|---|-----------------------|---|---------------------------------|---|
| R | L | 0 | 6 | 0 | 3 | E | 0 | 0 | 5 | M | 0 | 1 | 5 | K |
| Brand Name | | EIA 0603 | | Type E:ESD | | Max. Operating Voltage V_{DC} | | | Null | | Capacitance 0.15PF | | Capacitance error $\pm 20\%$ | |

Package Dimensions



| EIA | L1 | W | H | L2&L3 |
|------|-----------------|-----------------|----------|-----------------|
| 0603 | 1.60 \pm 0.15 | 0.80 \pm 0.15 | 1.0(Max) | 0.35 \pm 0.15 |

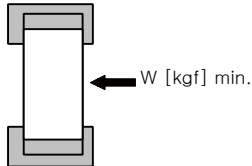
ESD Protection Device - RL0603E Series

Electrical Characteristics Per Lin (@ 25°C Unless Otherwise Specified)

| Type Number | Working Voltage V _{DC} | Max. Leakage Current | Capacitance @1MHz | Trigger Voltage | Clamping Voltage |
|-----------------|---------------------------------|----------------------|-------------------|-----------------|------------------|
| | V | uA | pF | V | V |
| RL0603E005M005K | 5 | 1 | 0.05 | 450 | 50 |
| RL0603E005M015K | 5 | 1 | 0.15 | 450 | 50 |
| RL0603E005M100K | 5 | 1 | 1 | 250 | 50 |
| RL0603E005M200K | 5 | 1 | 2 | 50 | 25 |
| RL0603E005M250K | 5 | 1 | 2.5 | 50 | 25 |
| RL0603E005M300K | 5 | 1 | 3 | 50 | 25 |
| RL0603E005M500K | 5 | 1 | 5 | 15 | 25 |
| RL0603E008M015K | 8 | 1 | 0.15 | 250 | 50 |
| RL0603E008M100K | 8 | 1 | 1 | 200 | 50 |
| RL0603E008M200K | 8 | 1 | 2 | 50 | 25 |
| RL0603E008M250K | 8 | 1 | 2.5 | 50 | 25 |
| RL0603E008M300K | 8 | 1 | 3 | 50 | 25 |
| RL0603E008M500K | 8 | 1 | 5 | 50 | 25 |
| RL0603E012M015K | 12 | 1 | 0.15 | 200 | 50 |
| RL0603E012M100K | 12 | 1 | 1 | 200 | 50 |
| RL0603E012M200K | 12 | 1 | 2 | 200 | 50 |
| RL0603E012M250K | 12 | 1 | 2.5 | 200 | 50 |
| RL0603E012M300K | 12 | 1 | 3 | 200 | 50 |
| RL0603E012M500K | 12 | 1 | 5 | 200 | 50 |
| RL0603E018M015K | 18 | 1 | 0.15 | 250 | 50 |
| RL0603E018M100K | 18 | 1 | 1 | 200 | 50 |
| RL0603E018M200K | 18 | 1 | 2 | 125 | 50 |
| RL0603E018M250K | 18 | 1 | 2.5 | 125 | 50 |
| RL0603E018M300K | 18 | 10 | 3 | 500 | 50 |
| RL0603E018M500K | 18 | 10 | 5 | 500 | 50 |
| RL0603E024M015K | 24 | 1 | 0.15 | 500 | 50 |
| RL0603E024M100K | 24 | 10 | 1 | 500 | 50 |
| RL0603E024M200K | 24 | 10 | 2 | 500 | 50 |
| RL0603E024M250K | 24 | 10 | 2.5 | 500 | 50 |
| RL0603E024M300K | 24 | 10 | 3 | 500 | 50 |
| RL0603E024M500K | 24 | 10 | 5 | 500 | 50 |

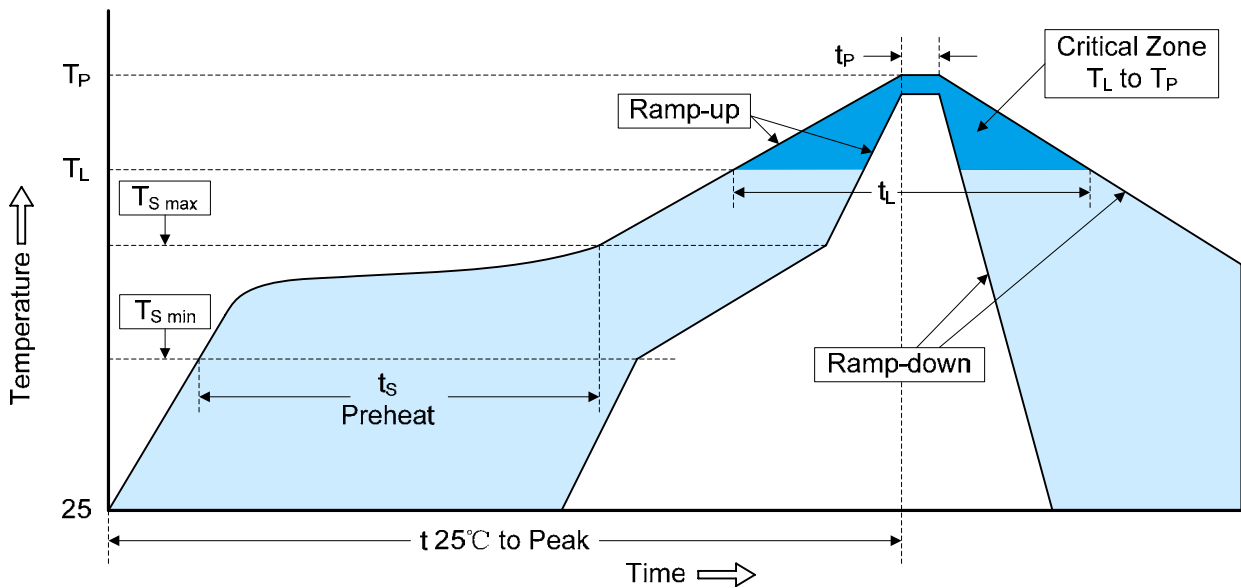
ESD Protection Device - RL0603E Series

Electrical Rating

| No | Item | Test Condition / Description | Requirement |
|----|--------------------|---|---|
| 1 | Operation Range | 1. -55°C ~ 85°C | - |
| 2 | Leakage current | Satisfaction to the specification, under 1uA | Applied voltage : specified working voltage |
| 3 | Capacitance | Satisfaction to the specification, under 1pF | Frquency & OSC level : 1MHz, 1.0Vrms |
| 4 | Solderability | More than 90% of the terminal electrode shall be covered with new solder. | 1. Type of solder : H63A 2. Soldering Temp & Time : 230+/-5°C, 5+/-1 sec |
| 5 | Reflow soldering | 1. No Serious mechanical damage 2. More than 50% of the terminal electrode shall be covered with new solder 3. Leakage Current : ≤ 10uA | 1. Type of solder : H63A 2. Temp & Time : max 260+/-5°C, min 10sec |
| 6 | Humidity Load Test | 1. No Serious mechanical damage 2. Leakage Current : ≤ 10uA | Test Temp. & Relative Humidity & Time : 85+/- 5°C, 85 +/- 5% RH |
| 7 | Thermal Shock | 1. No Serious mechanical damage 2. Leakage Current : ≤ 10uA | 1. Step 1 : -40 +/- 5°C, Step 2 : 85 +/- 5°C 2. Cycle : 30min ± 3min, each 5 cycles |
| 8 | High Temp. Test | 1. No Serious mechanical damage 2. Leakage Current : ≤ 10uA | Temp. & time : 85+/-5°C , 1000 +/- 24hrs |
| 9 | Adhesive strength | 1. No Serious mechanical damage under condition of 1005 : min 0.5kgf, 1608 : min 1.0kgf |  |
| 10 | ESD | 1. No mechanical damage after test 2. Leakage Current : ≤ 10uA * ESD gun (IEC61000-4-2 standard) * C=150pF R=330Ω | 1. Contact discharge * Voltage : +/-8kV(Level 4) * Number : 10 times in 10sec 2. Air discharge * Voltage : +/-15kV(Level 4) * Number : 10 times in 10sec |

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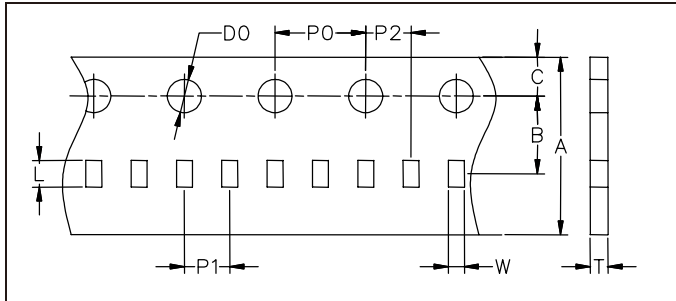
Recommended Soldering Conditions



| Profile Feature | Pb-Free Assembly |
|--|------------------|
| Average ramp-up rate (T_L to T_P) | 3°C/second max. |
| Preheat | |
| -Temperature Min ($T_{S\ min}$) | 150°C |
| -Temperature Max ($T_{S\ max}$) | 200°C |
| -Time (min to max) (t_s) | 60-180 seconds |
| $T_{S\ max}$ to T_L | |
| -Ramp-up Rate | 3°C/second max. |
| Time maintained above: | |
| -Temperature (T_L) | 217°C |
| -Time (t_L) | 60-150 seconds |
| Peak Temperature (T_P) | 260°C |
| Time within 5°C of actual Peak Temperature (t_p) | 20-40 seconds |
| Ramp-down Rate | 6°C/second max. |
| Time 25°C to Peak Temperature | 8 minutes max. |

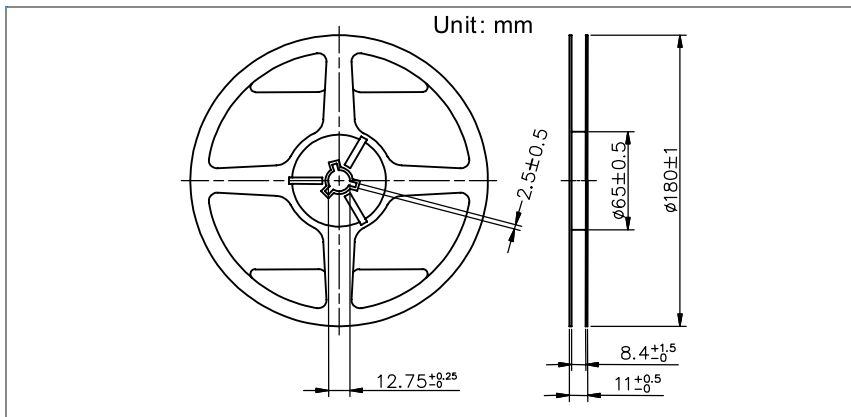
ESD Protection Device - RL0603E Series

Packing specifications



| Size EIA (EIAJ) | 0603 | |
|-----------------|-------------|-------------|
| Symbol | Inches | Millimeters |
| A | 0.315±0.012 | 8.00±0.30 |
| B | 0.138±0.002 | 3.50±0.05 |
| C | 0.069±0.002 | 1.75±0.10 |
| D0 | 0.061±0.002 | 1.55±0.05 |
| P0 | 0.157±0.004 | 4.00±0.10 |
| P1 | 0.079±0.002 | 4.00±0.10 |
| P2 | 0.079±0.002 | 2.00±0.05 |
| W | 0.041±0.006 | 1.05±0.15 |
| L | 0.075±0.006 | 1.90±0.15 |
| T | 0.037±0.002 | 0.95±0.05 |

Taping Reel Dimensions



Taping Specifications

There Shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the heat of taping.

Quantity of products in the taping package

| SIZE EIA (EIAJ) | 0603 |
|--|-------|
| Standard Packing Quantity (PCS / reel) | 4,000 |

The contents of a box :

0603 Series: 6 reels / inner box

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