

RUILON

瑞隆源电子



ESD Protection Device

RL0603E Series

361° Circuit Protection
System

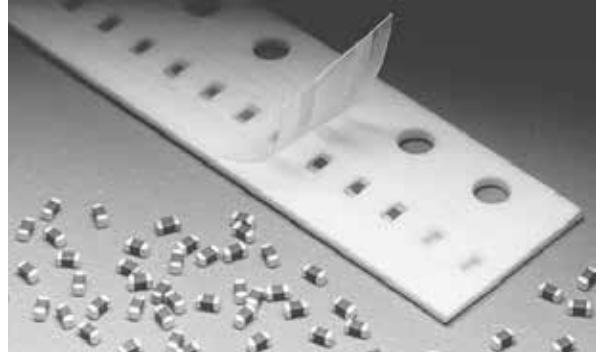
Revision:APR-22

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



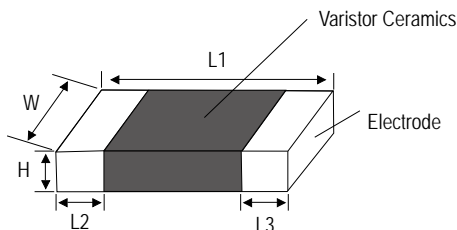
Features

- 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			Type		Max. Operating Voltage V _{DC}			Null		Capacitance		
		0603			E:ESD							0.15PF		
												Capacitance error		
												±20%		

Package Dimensions



EIA	L1	W	H	L2&L3
0603	1.60±0.15	0.80±0.15	1.0(Max)	0.35±0.15

ESD Protection Device - RL0603E Series

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

Type Number	Working Voltage V _{DC}	Max. Leakage Curren	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

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

Type Number	Working Voltage V _{DC}	Max. Leakage Curren	Capacitance @1MHz	Trigger Voltage	Clamping Voltage
	V	uA	pF	V	V
RL0603E005M181K	5	1	18	10-14	18
RL0603E005M301K	5	1	30	10-14	18
RL0603E005M501K	5	1	50	10-14	18
RL0603E005M801K	5	1	80	10-14	18
RL0603E005M102K	5	1	100	10-14	18
RL0603E009M181K	9	1	18	11-16	20
RL0603E009M301K	9	1	30	11-16	20
RL0603E009M501K	9	1	50	11-16	20
RL0603E009M801K	9	1	80	11-16	20
RL0603E009M102K	9	1	100	11-16	20
RL0603E014M181K	14	1	18	16-22	30
RL0603E014M301K	14	1	30	16-22	30
RL0603E014M501K	14	1	50	16-22	30
RL0603E014M801K	14	1	80	16-22	30
RL0603E014M102K	14	1	100	16-22	30
RL0603E018M181K	18	1	18	22-28	40
RL0603E018M301K	18	1	30	22-28	40
RL0603E018M501K	18	1	50	22-28	40
RL0603E018M801K	18	1	80	22-28	40
RL0603E018M102K	18	1	100	22-28	40
RL0603E022M181K	22	1	18	26-34	45
RL0603E022M301K	22	1	30	26-34	45
RL0603E022M501K	22	1	50	26-34	45
RL0603E022M801K	22	1	80	26-34	45
RL0603E022M102K	22	1	100	26-34	45

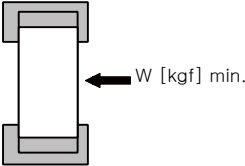
ESD Protection Device - RL0603E Series

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

Type Number	Working Voltage V _{DC}	Max. Leakage Curren	Capacitance @1MHz	Trigger Voltage	Clamping Voltage
	V	uA	pF	V	V
RL0603E005M122K	5	1	120	10-14	18
RL0603E005M142K	5	1	140	10-14	18
RL0603E005M232K	5	1	230	10-14	18
RL0603E005M362K	5	1	360	10-14	18
RL0603E009M122K	9	1	120	11-16	20
RL0603E009M142K	9	1	140	11-16	20
RL0603E009M202K	9	1	200	11-16	20
RL0603E009M232K	9	1	230	11-16	20
RL0603E009M362K	9	1	360	11-16	20
RL0603E014M122K	14	1	120	16-22	30
RL0603E014M142K	14	1	140	16-22	30
RL0603E014M252K	14	1	250	16-22	30
RL0603E014M362K	14	1	360	16-22	30
RL0603E018M122K	18	1	120	22-28	40
RL0603E018M142K	18	1	140	22-28	40
RL0603E018M232K	18	1	230	22-28	40
RL0603E018M362K	18	1	360	22-28	40
RL0603E022M122K	22	1	120	26-34	45
RL0603E022M142K	22	1	140	26-34	45
RL0603E022M162K	22	1	160	26-34	45
RL0603E022M232K	22	1	230	26-34	45
RL0603E026M122K	26	1	120	31-38	58
RL0603E026M162K	26	1	160	31-38	58
RL0603E030M162K	30	1	120	47-46	65
RL0603E030M232K	30	1	140	47-46	65

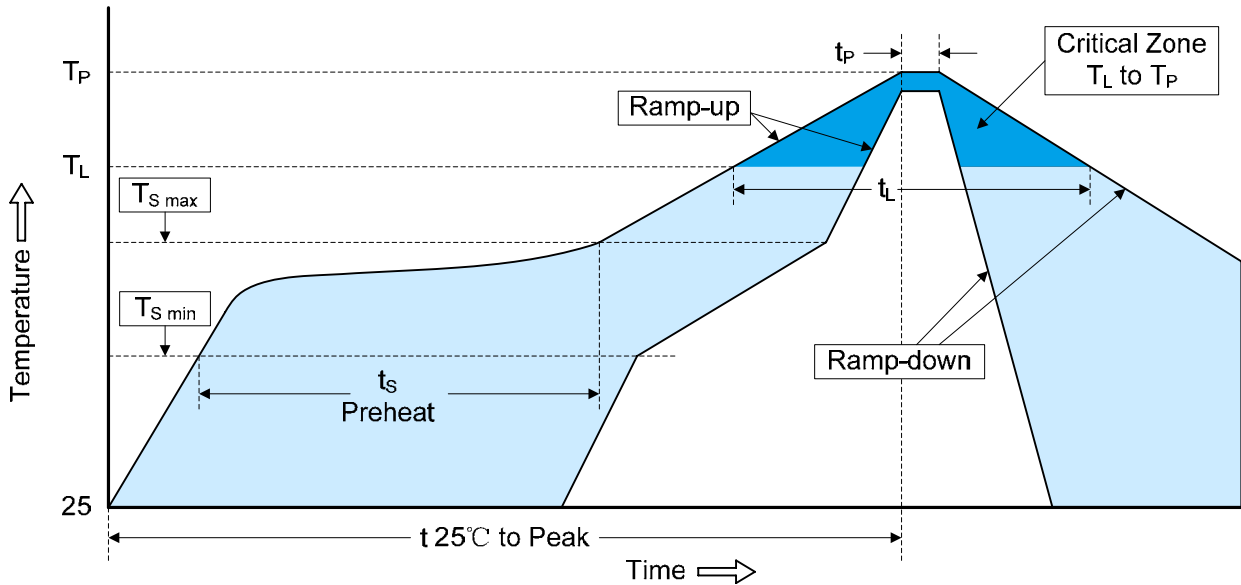
ESD Protection Device - RL0603E Series

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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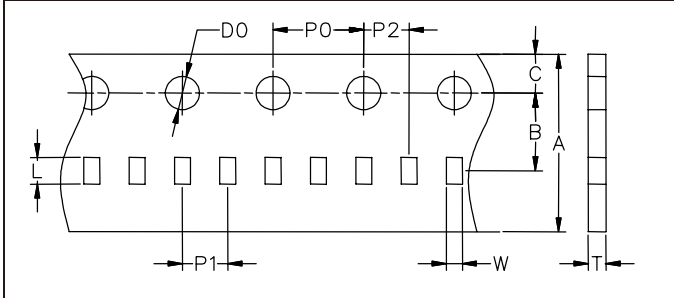
Recommended Soldering Conditions



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.

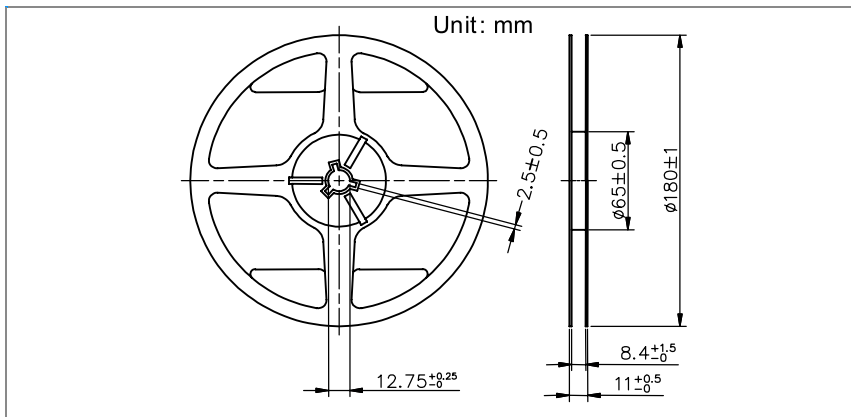
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Packing specifications



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