

»Performance Specification

| Model | I-hold | I-trip | Vmax | Imax | Pd typ | Max. Time to trip | | R0 min | R1max |
|-------------------|--------|--------|-------|--------|--------|-------------------|--------|--------|-------|
| | | | | | | Current | Time | | |
| | (A) | (A) | (Vdc) | (A) | (W) | (A) | (Sec.) | (Ohm) | (Ohm) |
| SMD1210-005/30N | 0.05 | 0.15 | 30.00 | 10.00 | 0.60 | 0.25 | 1.50 | 2.80 | 50.00 |
| SMD1210-005/60N | 0.05 | 0.15 | 60.00 | 10.00 | 0.60 | 0.25 | 1.50 | 2.80 | 50.00 |
| SMD1210-010/30N | 0.10 | 0.30 | 30.00 | 10.00 | 0.60 | 0.50 | 1.50 | 1.50 | 15.00 |
| SMD1210-010/60N | 0.10 | 0.30 | 60.00 | 10.00 | 0.60 | 0.50 | 1.50 | 1.50 | 15.00 |
| SMD1210-020/24N | 0.20 | 0.40 | 24.00 | 10.00 | 0.60 | 8.00 | 0.02 | 0.80 | 5.00 |
| SMD1210-020/30N | 0.20 | 0.40 | 30.00 | 10.00 | 0.60 | 8.00 | 0.02 | 0.80 | 5.00 |
| SMD1210-035/6N | 0.35 | 0.70 | 6.00 | 100.00 | 0.60 | 8.00 | 0.20 | 0.25 | 1.30 |
| SMD1210-035/24N | 0.35 | 0.70 | 24.00 | 40.00 | 0.60 | 8.00 | 0.20 | 0.25 | 1.30 |
| SMD1210-035/30N | 0.35 | 0.70 | 30.00 | 40.00 | 0.60 | 8.00 | 0.20 | 0.20 | 1.50 |
| SMD1210-035/30SN | 0.35 | 0.70 | 30.00 | 40.00 | 0.60 | 8.00 | 0.20 | 0.25 | 1.30 |
| SMD1210-050/13.2N | 0.50 | 1.00 | 13.20 | 100.00 | 0.60 | 8.00 | 0.10 | 0.18 | 0.90 |
| SMD1210-050/16N | 0.50 | 1.00 | 16.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.18 | 0.90 |
| SMD1210-050/24N | 0.50 | 1.00 | 24.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.18 | 0.90 |
| SMD1210-050/30N | 0.50 | 1.00 | 30.00 | 40.00 | 0.60 | 8.00 | 0.15 | 0.18 | 1.00 |
| SMD1210-075/6N | 0.75 | 1.50 | 6.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.10 | 0.45 |
| SMD1210-075/13.2N | 0.75 | 1.50 | 13.20 | 100.00 | 0.60 | 8.00 | 0.10 | 0.10 | 0.45 |
| SMD1210-075/16N | 0.75 | 1.50 | 16.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.10 | 0.45 |
| SMD1210-075/24N | 0.75 | 1.50 | 24.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.10 | 0.45 |
| SMD1210-110/8N | 1.10 | 2.20 | 8.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.05 | 0.21 |
| SMD1210-110/12N | 1.10 | 2.20 | 12.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.05 | 0.21 |
| SMD1210-110/16N | 1.10 | 2.20 | 16.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.05 | 0.21 |
| SMD1210-110/16SN | 1.10 | 2.20 | 16.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.05 | 0.21 |
| SMD1210-110/24N | 1.10 | 2.20 | 24.00 | 100.00 | 0.60 | 8.00 | 0.10 | 0.05 | 0.21 |
| SMD1210-150/6N | 1.50 | 3.00 | 6.00 | 100.00 | 0.80 | 8.00 | 0.30 | 0.03 | 0.11 |
| SMD1210-150/8N | 1.50 | 3.00 | 8.00 | 100.00 | 0.80 | 8.00 | 0.30 | 0.03 | 0.11 |
| SMD1210-150/12N | 1.50 | 3.00 | 12.00 | 100.00 | 0.80 | 8.00 | 0.30 | 0.03 | 0.11 |
| SMD1210-150/16N | 1.50 | 3.00 | 16.00 | 100.00 | 0.80 | 8.00 | 0.30 | 0.03 | 0.11 |
| SMD1210-175/6N | 1.75 | 3.50 | 6.00 | 100.00 | 0.80 | 8.00 | 0.60 | 0.02 | 0.09 |
| SMD1210-175/12N | 1.75 | 3.50 | 12.00 | 100.00 | 0.80 | 8.00 | 0.60 | 0.02 | 0.09 |
| SMD1210-175/16N | 1.75 | 3.50 | 16.00 | 100.00 | 0.80 | 8.00 | 0.60 | 0.02 | 0.09 |
| SMD1210-200/6N | 2.00 | 4.00 | 6.00 | 100.00 | 0.80 | 8.00 | 1.00 | 0.015 | 0.090 |
| SMD1210-200/12N | 2.00 | 4.00 | 12.00 | 100.00 | 0.80 | 8.00 | 1.00 | 0.015 | 0.090 |
| SMD1210-200/16N | 2.00 | 4.00 | 16.00 | 100.00 | 0.80 | 8.00 | 1.00 | 0.015 | 0.090 |

I-hold: Holding Current: maximum current at which the device will not trip in 25°C still air.

I-trip: Tripping Current: minimum current at which the device will trip in 25°C still air.

Vmax: Maximum voltage device can withstand without damage at rated current(Imax).

I max: Maximum fault current device can withstand without damage at rated voltage(Vmax).

Pd typ: Typical power dissipated from device when in the tripped state at 25°C still air.

R0 min: Minimum resistance of device in initial (un-soldered) state.

R1 max: Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

»Environmental Specifications

| | |
|---|--|
| Operating Temperature | -40 °C to +85 °C |
| Maximum Device Surface Temperature in Tripped State | 125°C |
| Passive Aging | +85 °C, 1000 hours ; ±5 % typical resistance change |
| Humidity Aging | +85 °C, 85 % R.H. 1000 hours; ±5 % typical resistance change |
| Thermal Shock | MIL-STD-202, Method 107; +85 °C to -40 °C, 20 times;-30 % typical resistance change |
| Solvent Resistance | MIL-STD-202, Method 215 ; No change |
| Vibration | MIL-STD-883, Method 2007, Condition A; No change |
| Moisture Sensivity Level | Level 1, J-STD-020 |
| Storage Conditions | +40 °C Max. 70% RH Max. Packed in original packaging. |

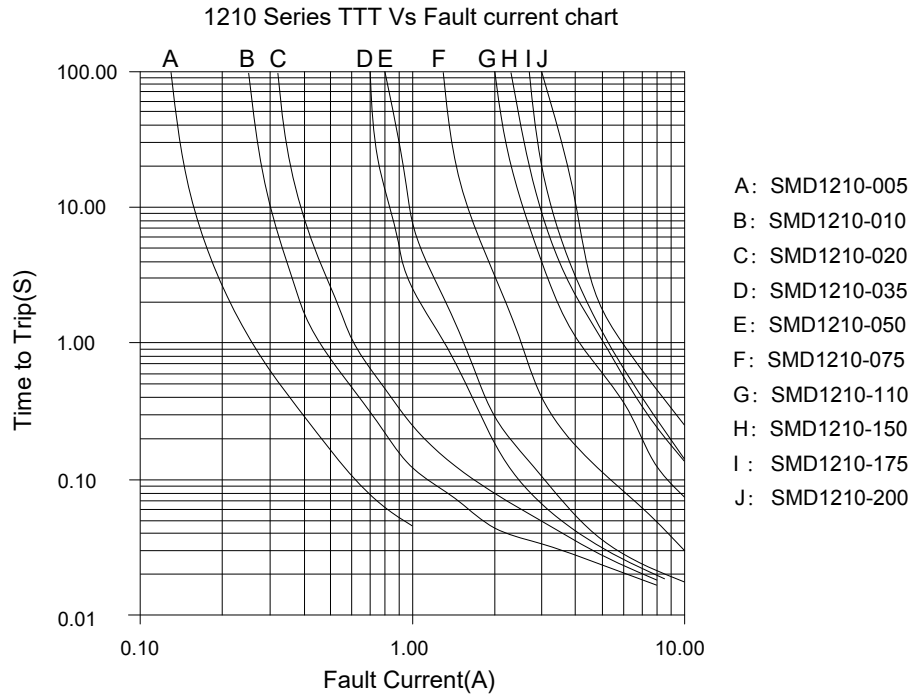
»Test Procedures And Requirements

| No. | Test | Test Conditions | Accept/Reject Criteria |
|-----|-------------------|---|---|
| 1 | R0 min | Resistance measurement at 25°C | $R0min \leq R \leq R1max$ |
| 2 | R1 max | Resistance measurement one hour after post trip | $R0min \leq R \leq R1max$ |
| 3 | I-hold | Hold rated current 1800 second without trip, @ 25°C | No trip |
| 4 | I-trip | Device must trip within 900 second under rated current, @25°C | Trip |
| 5 | Max. time to trip | At specified current, 25°C | $T \leq \text{max. time to trip (seconds)}$ |
| 6 | Trip Cycle Life | V_{max} , I_{max} , 100 cycles | No arcing or burning |
| 7 | Trip Endurance | V_{max} , I_{max} 24 hours | No arcing or burning |
| 8 | Solderability | ANSI/J-STD-002 | 95 % min. coverage |

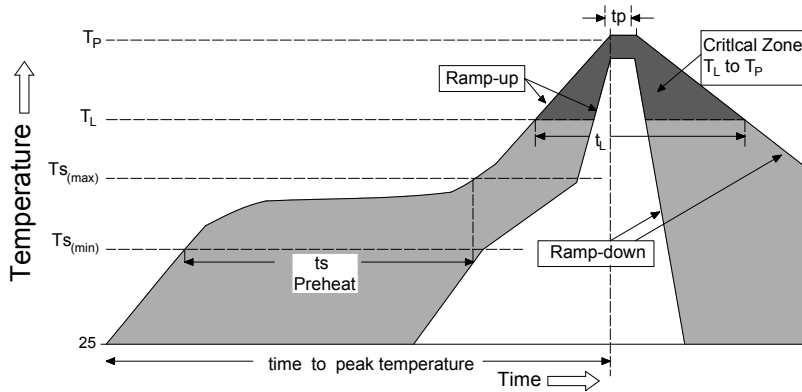
»Thermal Derating Chart Recommended Hold Current(A) at Ambient Temperature(°C)

| Model | Ambient Operating Temperature | | | | | | | | |
|-------------------|-------------------------------|-------|------|------|------|------|------|------|------|
| | -40°C | -20°C | 0°C | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| SMD1210-005/30N | 0.08 | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 |
| SMD1210-005/60N | 0.08 | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 |
| SMD1210-010/30N | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.04 |
| SMD1210-010/60N | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.04 |
| SMD1210-020/24N | 0.29 | 0.26 | 0.22 | 0.20 | 0.16 | 0.14 | 0.13 | 0.11 | 0.08 |
| SMD1210-020/30N | 0.29 | 0.26 | 0.22 | 0.20 | 0.16 | 0.14 | 0.13 | 0.11 | 0.08 |
| SMD1210-035/6N | 0.47 | 0.45 | 0.40 | 0.35 | 0.33 | 0.28 | 0.24 | 0.21 | 0.18 |
| SMD1210-035/24N | 0.47 | 0.45 | 0.40 | 0.35 | 0.33 | 0.28 | 0.24 | 0.21 | 0.18 |
| SMD1210-035/30N | 0.47 | 0.45 | 0.40 | 0.35 | 0.33 | 0.28 | 0.24 | 0.21 | 0.18 |
| SMD1210-035/30SN | 0.47 | 0.45 | 0.40 | 0.35 | 0.33 | 0.28 | 0.24 | 0.21 | 0.18 |
| SMD1210-050/13.2N | 0.76 | 0.67 | 0.58 | 0.50 | 0.43 | 0.40 | 0.36 | 0.32 | 0.28 |
| SMD1210-050/16N | 0.76 | 0.67 | 0.58 | 0.50 | 0.43 | 0.40 | 0.36 | 0.32 | 0.28 |
| SMD1210-050/24N | 0.76 | 0.67 | 0.58 | 0.50 | 0.43 | 0.40 | 0.36 | 0.32 | 0.28 |
| SMD1210-050/30N | 0.76 | 0.67 | 0.58 | 0.50 | 0.43 | 0.40 | 0.36 | 0.32 | 0.28 |
| SMD1210-075/6N | 1.00 | 0.97 | 0.86 | 0.75 | 0.64 | 0.59 | 0.54 | 0.48 | 0.40 |
| SMD1210-075/13.2N | 1.00 | 0.97 | 0.86 | 0.75 | 0.64 | 0.59 | 0.54 | 0.48 | 0.40 |
| SMD1210-075/16N | 1.00 | 0.97 | 0.86 | 0.75 | 0.64 | 0.59 | 0.54 | 0.48 | 0.40 |
| SMD1210-075/24N | 1.00 | 0.97 | 0.86 | 0.75 | 0.64 | 0.59 | 0.54 | 0.48 | 0.40 |
| SMD1210-110/8N | 1.60 | 1.42 | 1.26 | 1.10 | 0.94 | 0.86 | 0.80 | 0.70 | 0.58 |
| SMD1210-110/12N | 1.60 | 1.42 | 1.26 | 1.10 | 0.94 | 0.86 | 0.80 | 0.70 | 0.58 |
| SMD1210-110/16N | 1.60 | 1.42 | 1.26 | 1.10 | 0.94 | 0.86 | 0.80 | 0.70 | 0.58 |
| SMD1210-110/16SN | 1.60 | 1.42 | 1.26 | 1.10 | 0.94 | 0.86 | 0.80 | 0.70 | 0.58 |
| SMD1210-110/24N | 1.60 | 1.42 | 1.26 | 1.10 | 0.94 | 0.86 | 0.80 | 0.70 | 0.58 |
| SMD1210-150/6N | 2.30 | 2.02 | 1.76 | 1.50 | 1.24 | 1.11 | 1.00 | 0.85 | 0.65 |
| SMD1210-150/8N | 2.30 | 2.02 | 1.76 | 1.50 | 1.24 | 1.11 | 1.00 | 0.85 | 0.65 |
| SMD1210-150/12N | 2.30 | 2.02 | 1.76 | 1.50 | 1.24 | 1.11 | 1.00 | 0.85 | 0.65 |
| SMD1210-150/16N | 2.30 | 2.02 | 1.76 | 1.50 | 1.24 | 1.11 | 1.00 | 0.85 | 0.65 |
| SMD1210-175/6N | 2.45 | 2.22 | 2.01 | 1.75 | 1.45 | 1.26 | 1.10 | 0.98 | 0.80 |
| SMD1210-175/12N | 2.45 | 2.22 | 2.01 | 1.75 | 1.45 | 1.26 | 1.10 | 0.98 | 0.80 |
| SMD1210-175/16N | 2.45 | 2.22 | 2.01 | 1.75 | 1.45 | 1.26 | 1.10 | 0.98 | 0.80 |
| SMD1210-200/6N | 2.60 | 2.44 | 2.35 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.10 |
| SMD1210-200/12N | 2.60 | 2.44 | 2.35 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.10 |
| SMD1210-200/16N | 2.60 | 2.44 | 2.35 | 2.00 | 1.78 | 1.67 | 1.50 | 1.45 | 1.10 |

»Typical time to trip at 25°C



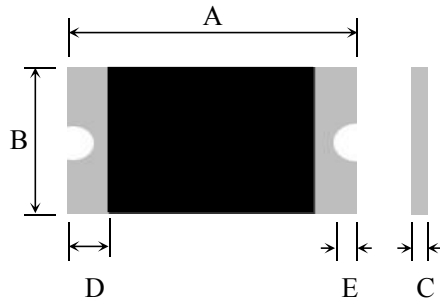
»Soldering Parameters



| Profile Feature | | Pb-Free Assembly |
|--|----------------------------------|-------------------------|
| Average Ramp-Up Rate ($T_{S(max)}$ to T_P) | | 3°C/second max |
| Pre Heat: | Temperature Min ($T_{S(min)}$) | 150°C |
| | Temperature Max ($T_{S(max)}$) | 200°C |
| | Time (Min to Max) (t_s) | 60 – 180 secs |
| Time Maintained Above: | Temperature (T_L) | 217°C |
| | Temperature (t_L) | 60 – 150 seconds |
| Peak / Classification Temperature (T_P) | | 260 ^{+0/-5} °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 (T_P) | | 8 minutes Max. |

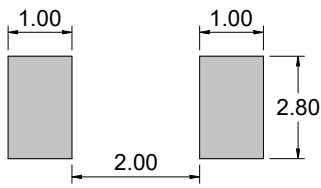
- ◆All temperature refer to topside of the package, measured on the package body surface
- ◆If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements
- ◆Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead
- ◆Recommended maximum paste thickness is 0.25mm (0.010inch)
- ◆Devices can be cleaned using standard industry methods and solvents

»Physical Dimensions(mm)



| Model | A | | B | | C | | D | | E |
|-------------------|------|------|------|------|------|------|------|------|------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min |
| SMD1210-005/30N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-005/60N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-010/30N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-010/60N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-020/24N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-020/30N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-035/6N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-035/24N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-035/30N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-035/30SN | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-050/13.2N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-050/16N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-050/24N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-050/30N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-075/6N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-075/13.2N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-075/16N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-075/24N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-110/8N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-110/12N | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-110/16N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-110/16SN | 3.00 | 3.43 | 2.35 | 2.80 | 0.35 | 0.85 | 0.25 | 0.75 | 0.10 |
| SMD1210-110/24N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-150/6N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-150/8N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-150/12N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-150/16N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-175/6N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-175/12N | 3.00 | 3.43 | 2.35 | 2.80 | 0.85 | 1.25 | 0.25 | 0.75 | 0.10 |
| SMD1210-175/16N | 3.00 | 3.43 | 2.35 | 2.80 | 0.85 | 1.25 | 0.25 | 0.75 | 0.10 |
| SMD1210-200/6N | 3.00 | 3.43 | 2.35 | 2.80 | 0.65 | 1.15 | 0.25 | 0.75 | 0.10 |
| SMD1210-200/12N | 3.00 | 3.43 | 2.35 | 2.80 | 0.85 | 1.25 | 0.25 | 0.75 | 0.10 |
| SMD1210-200/16N | 3.00 | 3.43 | 2.35 | 2.80 | 0.85 | 1.25 | 0.25 | 0.75 | 0.10 |

»Recommended Pad Layout (mm)&Physical Specifications

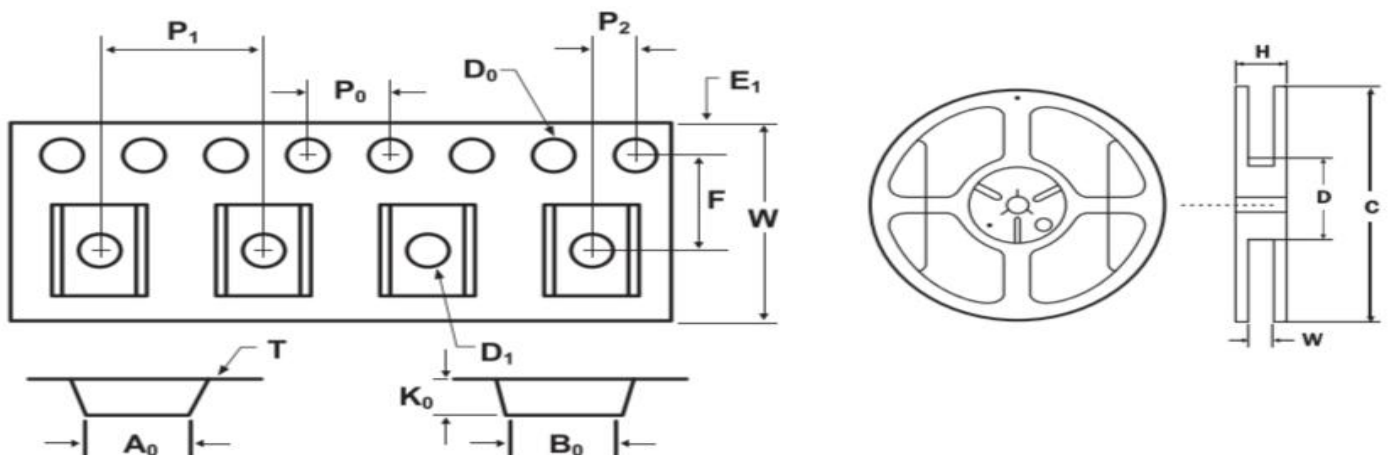


| | |
|--------------------|--|
| Terminal Material | Tin-Plated Nickel-Copper (Solder Material: Matte Tin (Sn)) |
| Lead Solderability | Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3. |

»Tape And Reel Specifications (mm)&Packaging quantity

| TAPE SPECIFICATIONS: EIA-481-1 (mm) | |
|-------------------------------------|--|
| Item | SMD1210-035/6N SMD1210-035/24N SMD1210-005/30N SMD1210-005/60N |
| | SMD1210-035/30SN SMD1210-050/13.2N SMD1210-010/30N SMD1210-010/60N |
| | SMD1210-050/16N SMD1210-050/24N SMD1210-020/24N SMD1210-020/30N |
| | SMD1210-075/6N SMD1210-075/13.2N SMD1210-035/30N SMD1210-050/30N |
| | SMD1210-075/16N SMD1210-110/8N SMD1210-075/24N SMD1210-110/16N |
| | SMD1210-110/12N SMD1210-110/16SN SMD1210-110/24N SMD1210-150/6N |
| | SMD1210-150/8N SMD1210-150/12N |
| | SMD1210-150/16N SMD1210-175/6N |
| | SMD1210-175/12N SMD1210-175/16N |
| | SMD1210-200/6N SMD1210-200/12N |
| | SMD1210-200/16N |
| | W |
| F | 3.50±0.05 |
| E1 | 1.75±0.10 |
| D0 | 1.55±0.05 |
| D1 | 1.00 min |
| P0 | 4.0±0.10 |
| P1 | 4.0±0.10 |
| P2 | 2.0±0.05 |
| A0 | 3.00±0.10 |
| B0 | 3.50±0.10 |
| T | 0.25±0.05 |
| K0 | 0.85±0.10 |
| Leader | 390mm |
| Trailer | 160mm |
| Q'ty | 4,000pcs/Reel |

| REEL DIMENSIONS: EIA-481-1 (mm) | |
|---------------------------------|-----------|
| C | Ø178±1.0 |
| D | Ø60.2±0.5 |
| W | 9.0±1.5 |
| H | 11.0±0.5 |



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