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PRODUCT DATASHEET

Surface Mount PTC Devices

ASMD1206 Series Surface Mount PTC Devices



Description


The ASMD1206 series provides miniature surface mount overcurrent protection with holding current from 0.05A to 3.5A.

This series is suitable for wide range of applications in modern electronics where space is limited.

Features



- RoHS compliant and lead-free
- Low profile
- Halogen-free
- Fast response to fault current
- Compact design saves board space
- Compatible with high temperature solders

Agency Approvals

| Agency | File Number |
|---|-------------|
|  | E472196 |

Applications

- Battery PCM
- Game console port protection
- USB hubs, ports and peripherals
- Optical disk drives
- Set-top-box and HDMI
- General electronics

| Regulation | Standard |
|---|------------|
|  | 2002/95/EC |
|  | EN14582 |

Performance Specification

| Model | V _{max} (V dc) | I _{max} (A) | I _{hold} @25°C (A) | I _{trip} @25°C (A) | P _d Typ. (W) | Maximum Time To Trip | | Resistance | |
|--------------------|----------------------------|-------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------------|---------------|---------------------------|--------------------------|
| | | | | | | Current (A) | Time (Sec) | R _{i min} (Ω) | R _{1max} (Ω) |
| ASMD1206-005 | 60.0 | 100 | 0.05 | 0.15 | 0.4 | 0.25 | 1.5 | 3.60 | 50 |
| ASMD1206-005-24V | 24.0 | 100 | 0.05 | 0.15 | 0.4 | 0.25 | 1.5 | 3.60 | 50 |
| ASMD1206-010 | 60.0 | 100 | 0.1 | 0.25 | 0.4 | 0.5 | 1.0 | 1.60 | 15 |
| ASMD1206-010-24V | 24.0 | 100 | 0.1 | 0.25 | 0.4 | 0.5 | 1.0 | 1.60 | 15 |
| ASMD1206-012 | 60.0 | 100 | 0.12 | 0.29 | 0.4 | 0.5 | 1.0 | 1.60 | 15 |
| ASMD1206-012-24V | 24.0 | 100 | 0.12 | 0.29 | 0.4 | 0.5 | 1.0 | 1.60 | 15 |
| ASMD1206-016 | 16.0 | 100 | 0.16 | 0.37 | 0.4 | 1.0 | 0.3 | 1.00 | 6.0 |
| ASMD1206-016-24V | 24.0 | 100 | 0.16 | 0.37 | 0.4 | 1.0 | 0.3 | 1.00 | 6.0 |
| ASMD1206-016-33V | 33.0 | 100 | 0.16 | 0.37 | 0.4 | 1.0 | 0.3 | 1.00 | 6.0 |
| ASMD1206-020 | 24.0 | 100 | 0.2 | 0.46 | 0.6 | 8.0 | 0.08 | 0.35 | 3.5 |
| ASMD1206-020-30V | 30.0 | 100 | 0.2 | 0.46 | 0.6 | 8.0 | 0.08 | 0.35 | 3.5 |
| ASMD1206-020-48V | 48.0 | 100 | 0.2 | 0.46 | 0.6 | 8.0 | 0.08 | 0.35 | 3.5 |
| ASMD1206-025 | 16.0 | 100 | 0.25 | 0.5 | 0.6 | 8.0 | 0.08 | 0.35 | 2.7 |
| ASMD1206-025-24V | 24.0 | 100 | 0.25 | 0.5 | 0.6 | 8.0 | 0.08 | 0.35 | 2.7 |
| ASMD1206-025-30V | 30.0 | 100 | 0.25 | 0.5 | 0.6 | 8.0 | 0.08 | 0.35 | 2.7 |
| ASMD1206-025-48V | 48.0 | 100 | 0.25 | 0.5 | 0.6 | 8.0 | 0.08 | 0.35 | 2.7 |
| ASMD1206-035 | 6.0 | 100 | 0.35 | 0.75 | 0.6 | 8.0 | 0.1 | 0.25 | 1.5 |
| ASMD1206-035-16V | 16.0 | 100 | 0.35 | 0.75 | 0.6 | 8.0 | 0.1 | 0.25 | 1.5 |
| ASMD1206-035-30V | 30.0 | 100 | 0.35 | 0.75 | 0.6 | 8.0 | 0.1 | 0.25 | 1.5 |
| ASMD1206-050 | 6.0 | 100 | 0.5 | 1.0 | 0.6 | 8.0 | 0.1 | 0.15 | 0.7 |
| ASMD1206-050-13.2V | 13.2 | 100 | 0.5 | 1.0 | 0.6 | 8.0 | 0.1 | 0.15 | 0.7 |
| ASMD1206-050-16V | 16.0 | 100 | 0.5 | 1.0 | 0.6 | 8.0 | 0.1 | 0.15 | 0.7 |
| ASMD1206-050-30V | 30.0 | 100 | 0.5 | 1.0 | 0.6 | 8.0 | 0.1 | 0.15 | 0.7 |
| ASMD1206-075 | 6.0 | 100 | 0.75 | 1.5 | 0.6 | 8.0 | 0.2 | 0.09 | 0.5 |
| ASMD1206-075-16V | 16.0 | 100 | 0.75 | 1.5 | 0.6 | 8.0 | 0.2 | 0.09 | 0.5 |
| ASMD1206-075-30V | 30.0 | 100 | 0.75 | 1.5 | 0.6 | 8.0 | 0.2 | 0.09 | 0.5 |
| ASMD1206-100 | 6.0 | 100 | 1.0 | 1.8 | 0.6 | 8.0 | 0.3 | 0.05 | 0.27 |
| ASMD1206-100-16V | 16.0 | 100 | 1.0 | 1.8 | 0.6 | 8.0 | 0.3 | 0.05 | 0.27 |
| ASMD1206-100-24V | 24.0 | 100 | 1.0 | 1.8 | 0.6 | 8.0 | 0.3 | 0.05 | 0.27 |
| ASMD1206-110 | 6.0 | 100 | 1.1 | 2.2 | 0.6 | 8.0 | 0.3 | 0.04 | 0.25 |
| ASMD1206-110-16V | 16.0 | 100 | 1.1 | 2.2 | 0.6 | 8.0 | 0.3 | 0.04 | 0.25 |
| ASMD1206-110-24V | 24.0 | 100 | 1.1 | 2.2 | 0.6 | 8.0 | 0.3 | 0.04 | 0.25 |
| ASMD1206-150 | 6.0 | 100 | 1.5 | 3.0 | 0.8 | 8.0 | 0.3 | 0.025 | 0.13 |
| ASMD1206-150-13.2V | 13.2 | 100 | 1.5 | 3.0 | 0.8 | 8.0 | 0.3 | 0.025 | 0.13 |
| ASMD1206-200 | 6.0 | 100 | 2.0 | 3.5 | 0.8 | 8.0 | 1.5 | 0.015 | 0.08 |
| ASMD1206-200-12V | 12.0 | 100 | 2.0 | 3.5 | 0.8 | 8.0 | 1.5 | 0.015 | 0.08 |
| ASMD1206-200-16V | 16.0 | 100 | 2.0 | 3.5 | 0.8 | 8.0 | 1.5 | 0.015 | 0.08 |
| ASMD1206-260 | 6.0 | 100 | 2.6 | 5.2 | 0.8 | 8.0 | 2.0 | 0.01 | 0.06 |
| ASMD1206-300 | 6.0 | 100 | 3.0 | 6.0 | 1.0 | 8.0 | 4.0 | 0.01 | 0.05 |
| ASMD1206-350 | 6.0 | 100 | 3.5 | 7.0 | 1.2 | 10.0 | 5.0 | 0.005 | 0.04 |

I_{hold} = Hold Current. Maximum current device will not trip in 25°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 25°C still air.

V_{max} = Maximum operating voltage device can withstand without damage at rated current (I_{max}).

I_{max} = Maximum fault current device can withstand without damage at rated voltage (V_{max}).

P_d = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

$R_{i\ min/max}$ = Minimum/Maximum device resistance prior to tripping at 25°C.

R_{1max} = Maximum device resistance is measured one hour post reflow.

CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

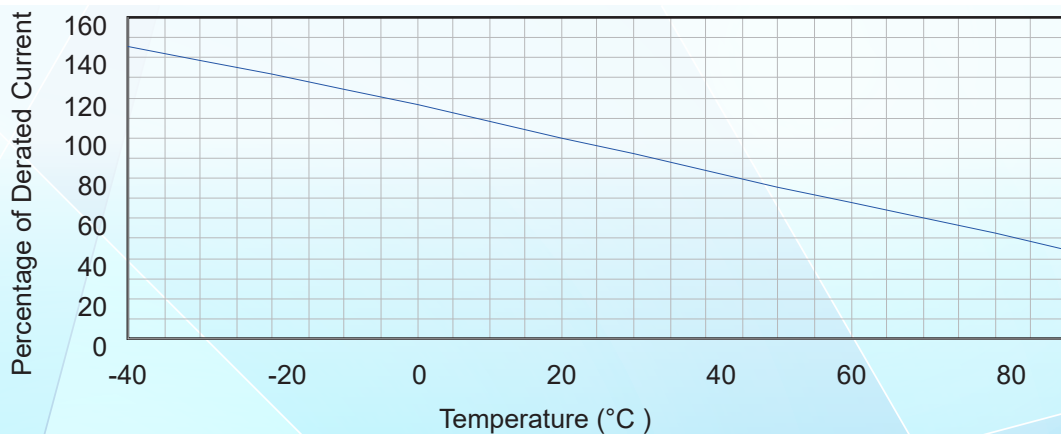
Environmental Specifications

| Test | Conditions | Resistance change |
|--|-----------------------------|-------------------|
| Passive aging | +85°C, 1000 hrs. | ±5% typical |
| Humidity aging | +85°C, 85% R.H. , 168 hours | ±5% typical |
| Thermal shock | +85°C to -40°C, 20 times | ±33% typical |
| Resistance to solvent | MIL-STD-202,Method 215 | No change |
| Vibration | MIL-STD-202,Method 201 | No change |
| Ambient operating conditions : - 40 °C to +85 °C | | |

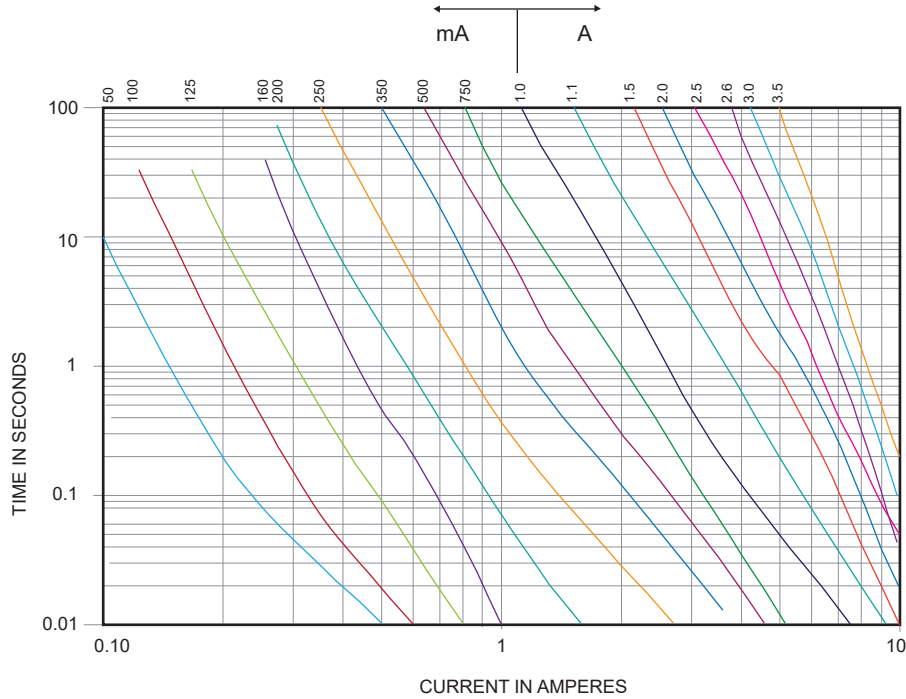
Maximum surface temperature of the device in the tripped state is 125 °C

Thermal Derating Curve

Derating Curves for ASMD1206 Series



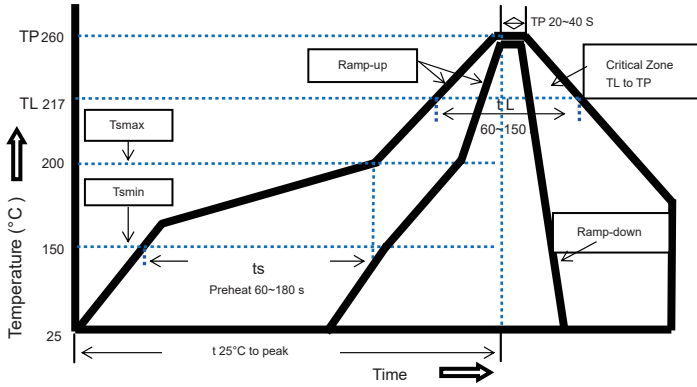
Average Time-Current Curve



Thermal Derating Chart

| Model | Maximum ambient operating temperature (T_{mao}) vs. hold current (I_{hold}) | | | | | | | | |
|--------------|---|--------|-------|------|--------|--------|-------|------|--------|
| | - 40°C | - 20°C | 0°C | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| ASMD1206-005 | 0.074 | 0.066 | 0.058 | 0.05 | 0.0425 | 0.0375 | 0.035 | 0.03 | 0.0275 |
| ASMD1206-010 | 0.148 | 0.132 | 0.116 | 0.10 | 0.085 | 0.075 | 0.07 | 0.06 | 0.055 |
| ASMD1206-012 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.07 | 0.07 |
| ASMD1206-016 | 0.24 | 0.21 | 0.18 | 0.16 | 0.14 | 0.13 | 0.12 | 0.11 | 0.10 |
| ASMD1206-020 | 0.30 | 0.26 | 0.23 | 0.20 | 0.17 | 0.15 | 0.14 | 0.12 | 0.11 |
| ASMD1206-025 | 0.37 | 0.33 | 0.29 | 0.25 | 0.22 | 0.20 | 0.17 | 0.15 | 0.12 |
| ASMD1206-035 | 0.50 | 0.45 | 0.40 | 0.35 | 0.30 | 0.27 | 0.24 | 0.21 | 0.15 |
| ASMD1206-050 | 0.71 | 0.64 | 0.57 | 0.50 | 0.42 | 0.39 | 0.35 | 0.31 | 0.25 |
| ASMD1206-075 | 1.14 | 1.01 | 0.88 | 0.75 | 0.65 | 0.59 | 0.54 | 0.49 | 0.41 |
| ASMD1206-100 | 1.45 | 1.31 | 1.15 | 1.00 | 0.84 | 0.77 | 0.69 | 0.61 | 0.48 |
| ASMD1206-110 | 1.60 | 1.45 | 1.30 | 1.10 | 0.95 | 0.80 | 0.72 | 0.66 | 0.55 |
| ASMD1206-150 | 2.18 | 1.94 | 1.72 | 1.50 | 1.28 | 1.17 | 1.06 | 0.96 | 0.77 |
| ASMD1206-200 | 2.88 | 2.63 | 2.34 | 2.00 | 1.74 | 1.58 | 1.42 | 1.17 | 0.93 |
| ASMD1206-260 | 3.43 | 3.22 | 2.93 | 2.60 | 2.23 | 2.03 | 1.87 | 1.57 | 1.35 |
| ASMD1206-300 | 4.05 | 3.66 | 3.36 | 3.00 | 2.50 | 2.28 | 2.00 | 1.62 | 1.35 |
| ASMD1206-350 | 4.65 | 4.23 | 3.92 | 3.50 | 2.92 | 2.68 | 2.35 | 1.91 | 1.42 |

Soldering Parameters



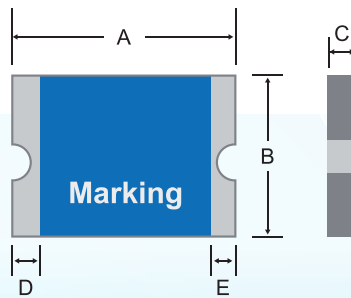
Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free
 Recommended maximum paste thickness is 0.25mm
 Devices can be cleaned using standard industry methods and solvents.

Note 1: All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

| Profile Feature | Pb-Free Assembly |
|---|----------------------|
| Average Ramp-Up Rate (Ts max to T p) | 3 °C/second max. |
| Preheat | |
| -Temperature Min(Ts min) | 150 °C |
| -Temperature Max(Ts max) | 200 °C |
| -Time(Ts min to Ts max) | 60~180 seconds |
| Time maintained above: | |
| -Temperature(TL) | 217 °C |
| -Time(tL) | 60~150 seconds |
| Peak Temperature(Tp) | 260 °C |
| Ramp-Down Rate | 6 °C/second max. |
| Time 25 °C to Peak Temperature | 8 minutes max |
| Storage Condition | 0 °C ~ 35 °C, ≤70%RH |

Physical Dimensions(mm.)

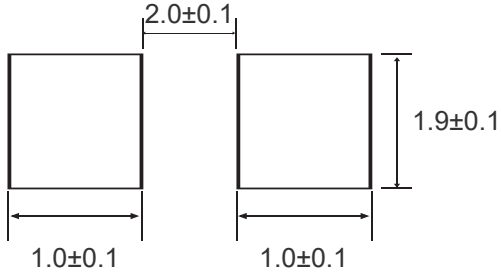


| Model | A | | B | | C | | D | E |
|--------------------|------|------|------|------|------|------|------|------|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Min. |
| ASMD1206-005 | 3.0 | 3.6 | 1.5 | 1.9 | 0.6 | 1.2 | 0.15 | 0.1 |
| ASMD1206-010 | 3.0 | 3.6 | 1.5 | 1.9 | 0.6 | 1.2 | 0.15 | 0.1 |
| ASMD1206-012 | 3.0 | 3.6 | 1.5 | 1.9 | 0.6 | 1.2 | 0.15 | 0.1 |
| ASMD1206-016 | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-020 | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-020-30V | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-020-48V | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-025 | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-025-30V | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-025-48V | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 1.0 | 0.15 | 0.1 |
| ASMD1206-035 | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-035-16V | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-035-30V | 3.0 | 3.6 | 1.5 | 1.9 | 0.4 | 0.9 | 0.15 | 0.1 |
| ASMD1206-050 | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-050-13.2V | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-050-16V | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-050-30V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-075 | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-075-16V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-075-30V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-100 | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-100-16V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-100-24V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-110 | 3.0 | 3.6 | 1.5 | 1.9 | 0.35 | 0.8 | 0.15 | 0.1 |
| ASMD1206-110-16V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-110-24V | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-150 | 3.0 | 3.6 | 1.5 | 1.9 | 0.5 | 1.0 | 0.15 | 0.1 |
| ASMD1206-150-13.2V | 3.0 | 3.6 | 1.5 | 1.9 | 1.0 | 1.6 | 0.15 | 0.1 |
| ASMD1206-200 | 3.0 | 3.6 | 1.5 | 1.9 | 0.7 | 1.6 | 0.15 | 0.1 |
| ASMD1206-200-12V | 3.0 | 3.6 | 1.5 | 1.9 | 0.7 | 1.6 | 0.15 | 0.1 |
| ASMD1206-200-16V | 3.0 | 3.6 | 1.5 | 1.9 | 0.7 | 1.6 | 0.15 | 0.1 |
| ASMD1206-260 | 3.0 | 3.6 | 1.5 | 1.9 | 1.0 | 1.6 | 0.15 | 0.1 |
| ASMD1206-300 | 3.0 | 3.6 | 1.5 | 1.9 | 1.0 | 1.6 | 0.15 | 0.1 |
| ASMD1206-350 | 3.0 | 3.5 | 1.5 | 1.9 | 1.0 | 1.6 | 0.15 | 0.1 |

Termination Pad Characteristics

Terminal pad materials: Tin-plated Nickel-Copper

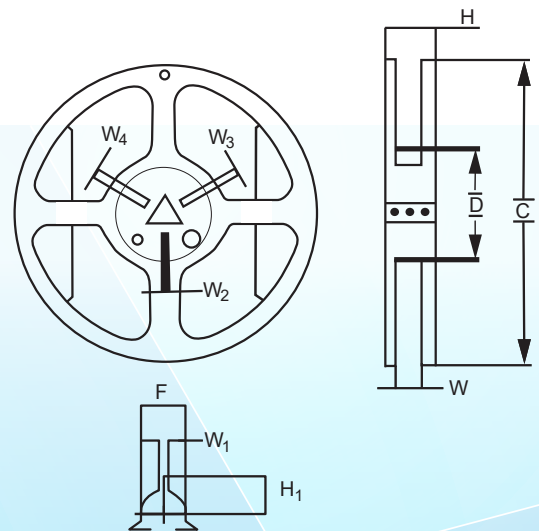
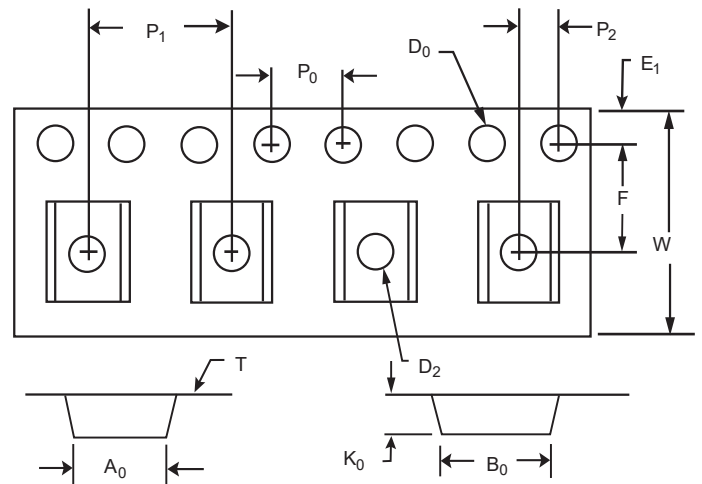
Terminal pad solder ability: Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3

Packaging Quantity and Marking


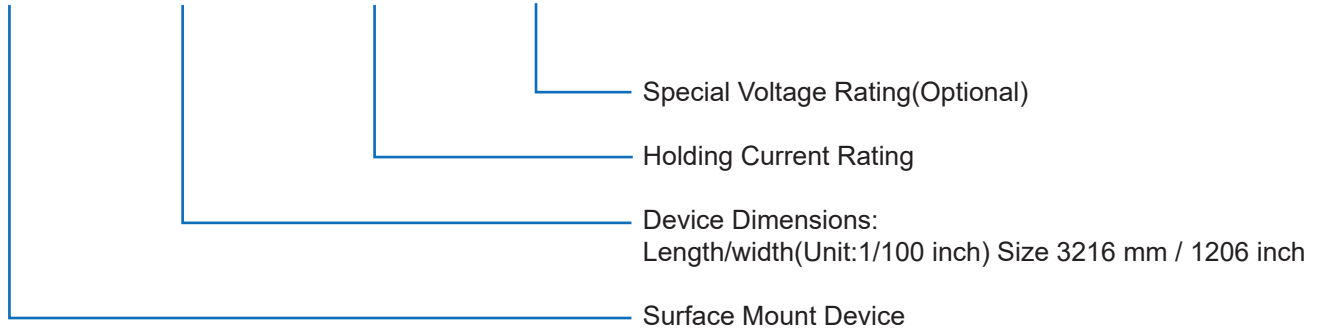
| Part Number | Quantity |
|------------------------------------|---------------|
| ASMD1206 | 3500 pcs/reel |
| Tape & reel packaging per EIA481-1 | |

Tape And Reel Specifications (mm)

| Governing Specifications | EIA 481-1 |
|--------------------------|----------------|
| W | 8.15 ± 0.3 |
| P0 | 4.0 ± 0.10 |
| P1 | 4.0 ± 0.10 |
| P2 | 2.0 ± 0.05 |
| A0 | 1.95 ± 0.10 |
| B0 | 3.40 ± 0.10 |
| B1max. | 4.35 |
| D0 | 1.50 + 0.1, -0 |
| F | 3.5 ± 0.05 |
| E1 | 1.75 ± 0.10 |
| E2min. | 6.25 |
| T | 0.6 |
| T1max. | 0.1 |
| K0 | 1.04 ± 0.1 |
| Leader min. | 390 |
| Trailer min. | 160 |
| Reel Dimensions | |
| A max. | 178 |
| N min. | 60 |
| W1 | 9 ± 0.5 |
| W2 | 12.6 ± 0.5 |


Storage And Handling

- Storage conditions: 40°C max, 70% R.H.
- Devices may not meet specified performance if storage conditions are exceeded. Technology Corp.

Part Number System
ASMD 1206 - □□□ - □□

Cross Reference

| Model | Cross Reference | | |
|--------------------|--------------------|-------------------------|-------------------------|
| | Tyco / PolySwitch® | Littelfuse / POLY-FUSE® | Polytronics / EVERFUSE® |
| ASMD1206-005 | - | - | - |
| ASMD1206-010 | - | - | - |
| ASMD1206-012 | nanoSMDC012F | 1206L012 | SMD1206P012TF |
| ASMD1206-020 | nanoSMDC020F | 1206L020 | SMD1206P020TF/24 |
| ASMD1206-025 | - | 1206L025 | SMD1206P025TF |
| ASMD1206-035 | nanoSMDC035F | 1206L035 | -SMD1206P035TF |
| ASMD1206-050 | nanoSMDC050F | 1206L050 | SMD1206P050TF |
| ASMD1206-050-13.2V | nanoSMDC050F/13.2 | 1206L050/15 | SMD1206P050TF/15 |
| ASMD1206-075 | nanoSMDC075F | 1206L075 | SMD1206P075TF |
| ASMD1206-075-16V | nanoSMDC075F/16 | 1206L075/16 | SMD1206P075TF/16 |
| ASMD1206-100 | - | - | - |
| ASMD1206-110 | nanoSMDC110F | 1206L110 | SMD1206P110TF |
| ASMD1206-150 | nanoSMDC150F | 1206L150 | SMD1206P150TF |
| ASMD1206-200 | nanoSMDC200F | 1206L200 | SMD1206P200TF |

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X-ON Electronics

Largest Supplier of Electrical and Electronic Components

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