

## Performance Specification

| Model             | Mark<br>ing | Maximum          |                  |                   |                   |                |              |       | Resistance         |                   |
|-------------------|-------------|------------------|------------------|-------------------|-------------------|----------------|--------------|-------|--------------------|-------------------|
|                   |             | V <sub>max</sub> | I <sub>max</sub> | I <sub>hold</sub> | I <sub>trip</sub> | P <sub>d</sub> | Time To Trip |       |                    |                   |
|                   |             | (V dc)           | (A)              | @25°C             | @25°C             | Typ.           | Current      | Time  | R <sub>i min</sub> | R <sub>1max</sub> |
|                   |             |                  |                  | (A)               | (A)               | (W)            | (A)          | (Sec) | (Ω)                | (Ω)               |
| JSMD1206-005      | J0          | 30.0             | 100              | 0.05              | 0.15              | 0.4            | 0.25         | 1.50  | 3.600              | 50.000            |
| JSMD1206-005/60   | J0          | 60.0             | 100              | 0.05              | 0.15              | 0.4            | 0.25         | 1.50  | 3.600              | 50.000            |
| JSMD1206-010      | J1          | 30.0             | 100              | 0.10              | 0.25              | 0.4            | 0.50         | 1.00  | 1.600              | 15.000            |
| JSMD1206-010/60   | J1          | 60.0             | 100              | 0.10              | 0.25              | 0.4            | 0.50         | 1.00  | 1.600              | 15.000            |
| JSMD1206-012      | JA          | 30.0             | 100              | 0.12              | 0.29              | 0.4            | 0.50         | 1.00  | 1.600              | 15.000            |
| JSMD1206-012/60   | JA          | 60.0             | 100              | 0.12              | 0.29              | 0.4            | 0.50         | 1.00  | 1.600              | 15.000            |
| JSMD1206-020      | J2          | 24.0             | 100              | 0.20              | 0.46              | 0.6            | 8.00         | 0.08  | 0.350              | 2.700             |
| JSMD1206-020/30   | J2          | 30.0             | 100              | 0.20              | 0.46              | 0.6            | 8.00         | 0.08  | 0.350              | 2.700             |
| JSMD1206-025      | JB          | 16.0             | 100              | 0.25              | 0.50              | 0.6            | 8.00         | 0.08  | 0.350              | 2.500             |
| JSMD1206-025/24   | JB          | 24.0             | 100              | 0.25              | 0.50              | 0.6            | 8.00         | 0.08  | 0.350              | 2.500             |
| JSMD1206-035      | J3          | 16.0             | 100              | 0.35              | 0.75              | 0.6            | 8.00         | 0.10  | 0.250              | 1.300             |
| JSMD1206-035/30   | J3          | 30.0             | 100              | 0.35              | 0.75              | 0.6            | 8.00         | 0.10  | 0.250              | 1.300             |
| JSMD1206-050      | J5          | 6.0              | 100              | 0.50              | 1.00              | 0.6            | 8.00         | 0.10  | 0.150              | 0.700             |
| JSMD1206-050/8    | J5          | 8.0              | 100              | 0.50              | 1.00              | 0.6            | 8.00         | 0.10  | 0.150              | 0.700             |
| JSMD1206-050/16   | J5          | 16.0             | 100              | 0.50              | 1.00              | 0.6            | 8.00         | 0.10  | 0.150              | 0.700             |
| JSMD1206-050/24   | J5          | 24.0             | 100              | 0.50              | 1.00              | 0.6            | 8.00         | 0.10  | 0.150              | 0.700             |
| JSMD1206-075      | J7          | 8.0              | 100              | 0.75              | 1.50              | 0.6            | 8.00         | 0.20  | 0.090              | 0.500             |
| JSMD1206-075/13.2 | J7          | 13.2             | 100              | 0.75              | 1.50              | 0.6            | 8.00         | 0.20  | 0.090              | 0.500             |
| JSMD1206-075/16   | J7          | 16.0             | 100              | 0.75              | 1.50              | 0.6            | 8.00         | 0.20  | 0.090              | 0.500             |
| JSMD1206-100      | J8          | 6.0              | 100              | 1.00              | 1.80              | 0.6            | 8.00         | 0.30  | 0.055              | 0.270             |
| JSMD1206-100/8    | J8          | 8.0              | 100              | 1.00              | 1.80              | 0.6            | 8.00         | 0.30  | 0.055              | 0.270             |
| JSMD1206-100/12   | J8          | 12.0             | 100              | 1.00              | 1.80              | 0.6            | 8.00         | 0.30  | 0.055              | 0.270             |
| JSMD1206-110      | J11         | 6.0              | 100              | 1.10              | 2.20              | 0.6            | 8.00         | 0.30  | 0.050              | 0.250             |
| JSMD1206-110/8    | J11         | 8.0              | 100              | 1.10              | 2.20              | 0.6            | 8.00         | 0.30  | 0.050              | 0.250             |
| JSMD1206-110/12   | J11         | 12.0             | 100              | 1.10              | 2.20              | 0.6            | 8.00         | 0.30  | 0.050              | 0.250             |
| JSMD1206-150      | J15         | 6.0              | 100              | 1.50              | 3.00              | 0.8            | 8.00         | 0.30  | 0.040              | 0.130             |
| JSMD1206-150/8    | J15         | 8.0              | 100              | 1.50              | 3.00              | 0.8            | 8.00         | 0.30  | 0.040              | 0.130             |
| JSMD1206-175      | J1          | 6.0              | 100              | 1.75              | 3.50              | 0.8            | 8.00         | 0.50  | 0.020              | 0.090             |
| JSMD1206-200      | JJ          | 6.0              | 100              | 2.00              | 3.50              | 0.8            | 8.00         | 1.50  | 0.018              | 0.080             |

V<sub>max</sub> = Maximum operating voltage device can withstand without damage at rated current (I<sub>max</sub>).

I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>).

I<sub>hold</sub> = Hold Current. Maximum current device will not trip in 25°C still air.

I<sub>trip</sub> = Trip Current. Minimum current at which the device will always trip in 25°C still air.

P<sub>d</sub> = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R<sub>i min/max</sub> = Minimum/Maximum device resistance prior to tripping at 25°C.

R<sub>1max</sub> = 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

## Agency Approval and Environmental Compliance

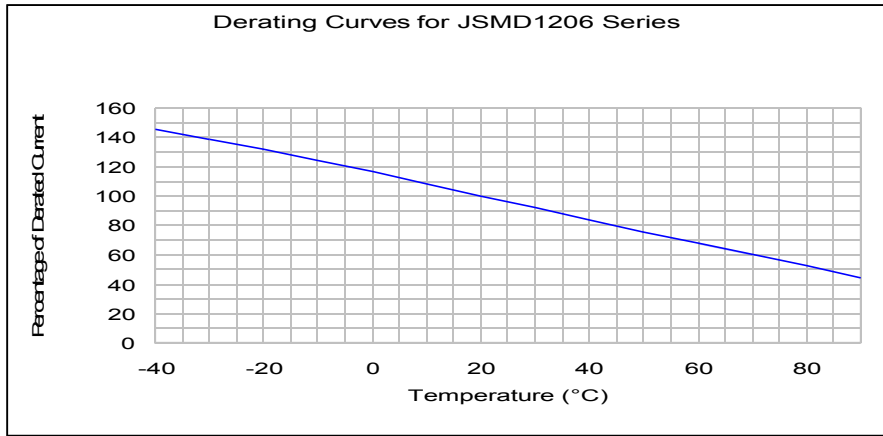
| Agency | File Number | Regulation   | Standard          |
|--------|-------------|--|-------------------|
| UL     | E217453     |  | <b>2002/95/EC</b> |
| TUV    | pending     |  | <b>EN14582</b>    |

## Thermal Derating Chart

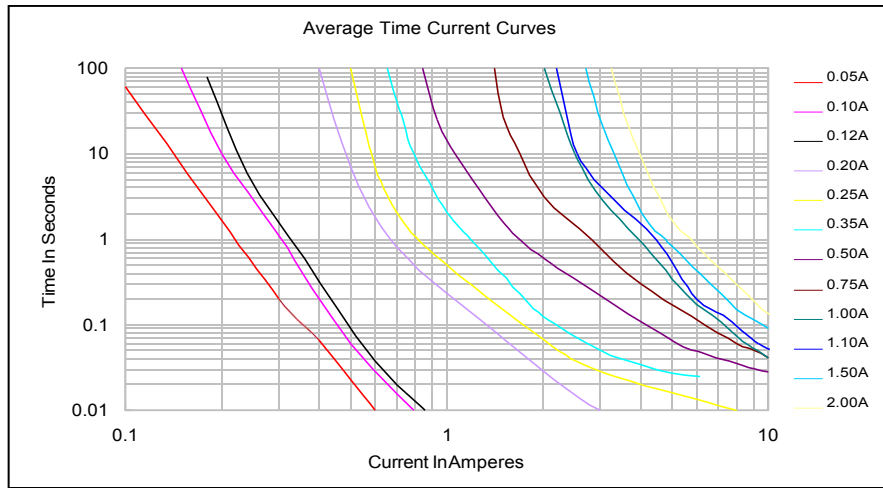
Recommended Hold Current(A) at Ambient Temperature(°C)

| Model         | Ambient Operation Temperature |       |       |      |        |        |       |      |        |
|---------------|-------------------------------|-------|-------|------|--------|--------|-------|------|--------|
|               | -40°C                         | -20°C | 0°C   | 25°C | 40°C   | 50°C   | 60°C  | 70°C | 85°C   |
| JSMD1206-005  | 0.074                         | 0.066 | 0.058 | 0.05 | 0.0425 | 0.0375 | 0.035 | 0.03 | 0.0275 |
| JSMD1206-010  | 0.148                         | 0.132 | 0.116 | 0.10 | 0.085  | 0.075  | 0.07  | 0.06 | 0.055  |
| JSMD1206-012  | 0.18                          | 0.16  | 0.14  | 0.12 | 0.10   | 0.09   | 0.08  | 0.07 | 0.07   |
| JSMD1206-020  | 0.30                          | 0.26  | 0.23  | 0.20 | 0.17   | 0.15   | 0.14  | 0.12 | 0.11   |
| JSMD1206-025  | 0.37                          | 0.33  | 0.29  | 0.25 | 0.22   | 0.20   | 0.17  | 0.15 | 0.12   |
| JSMD1206-035  | 0.50                          | 0.45  | 0.40  | 0.35 | 0.30   | 0.27   | 0.24  | 0.21 | 0.15   |
| JSMD1206-050  | 0.71                          | 0.64  | 0.57  | 0.50 | 0.42   | 0.39   | 0.35  | 0.31 | 0.25   |
| JSMD1206-075  | 1.14                          | 1.01  | 0.88  | 0.75 | 0.65   | 0.59   | 0.54  | 0.49 | 0.41   |
| JJSMD1206-100 | 1.45                          | 1.31  | 1.15  | 1.00 | 0.84   | 0.77   | 0.69  | 0.61 | 0.48   |
| JSMD1206-110  | 1.60                          | 1.45  | 1.30  | 1.10 | 0.95   | 0.80   | 0.72  | 0.66 | 0.55   |
| JSMD1206-150  | 2.18                          | 1.94  | 1.72  | 1.50 | 1.28   | 1.17   | 1.06  | 0.96 | 0.77   |
| JSMD1206-075  | 1.14                          | 1.01  | 0.88  | 0.75 | 0.65   | 0.59   | 0.54  | 0.49 | 0.41   |
| JSMD1206-200  | 2.88                          | 2.63  | 2.34  | 2.00 | 1.74   | 1.58   | 1.42  | 1.17 | 0.93   |

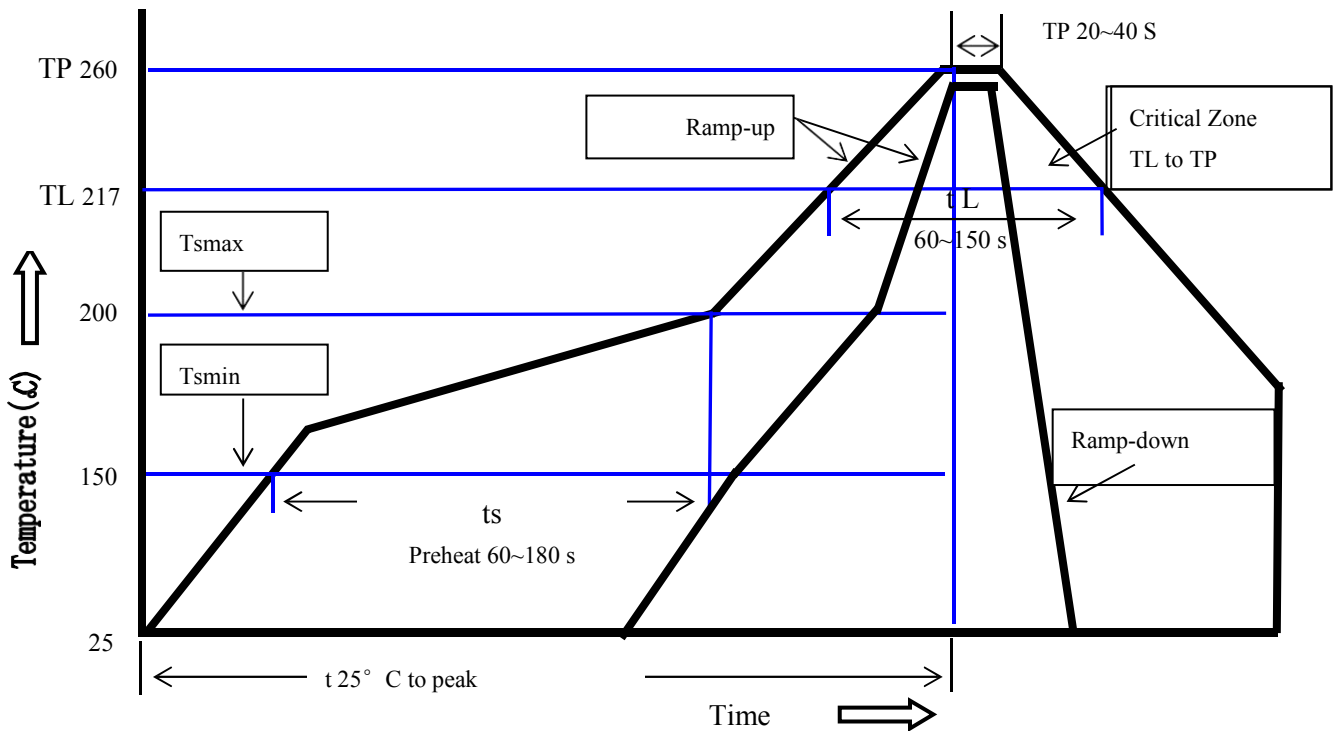
**Thermal Derating Curve**



**Average Time-Current Curve**



**Soldering Parameters**



| Profile Feature                     | Pb-Free Assembly |
|-------------------------------------|------------------|
| Average Ramp-Up Rate(Ts max to T p) | 3°C/second mac.  |
| 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 |

Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free

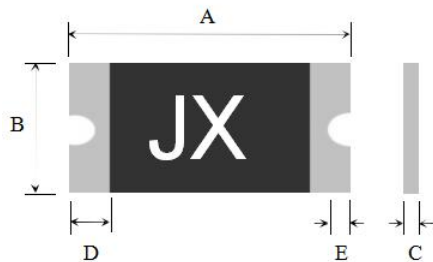
Recommended maximum paste thickness is 0.25mm

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.

## Physical Dimensions(mm.)



| Model           | A    |      | B    |      | C    |      | D    | E    |
|-----------------|------|------|------|------|------|------|------|------|
|                 | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Min. |
| JSMD1206-005    | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| JSMD1206-005/60 | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| JSMD1206-010    | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| JSMD1206-010/60 | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| JSMD1206-012    | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| JSMD1206-012/60 | 3.00 | 3.50 | 1.50 | 1.80 | 0.60 | 1.10 | 0.15 | 0.10 |
| JSMD1206-020    | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| JSMD1206-020/30 | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| JSMD1206-025    | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| JSMD1206-025/24 | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| JSMD1206-035    | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| JSMD1206-035/30 | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.90 | 0.15 | 0.10 |
| JSMD1206-050    | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| JSMD1206-050/8  | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| JSMD1206-050/16 | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |
| JSMD1206-050/24 | 3.00 | 3.50 | 1.50 | 1.80 | 0.35 | 0.85 | 0.15 | 0.10 |

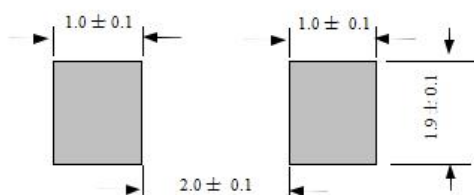
|                   |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|
| JSMD1206-075      | 3.00 | 3.50 | 1.50 | 1.80 | 0.30 | 0.80 | 0.15 | 0.10 |
| JSMD1206-075/13.2 | 3.00 | 3.50 | 1.50 | 1.80 | 0.30 | 0.80 | 0.15 | 0.10 |
| JSMD1206-075/16   | 3.00 | 3.50 | 1.50 | 1.80 | 0.30 | 0.80 | 0.15 | 0.10 |
| JSMD1206-100      | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| JSMD1206-100/8    | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| JSMD1206-100/12   | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| JSMD1206-110      | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| JSMD1206-110/8    | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| JSMD1206-110/12   | 3.00 | 3.50 | 1.50 | 1.80 | 0.40 | 0.80 | 0.15 | 0.10 |
| JSMD1206-150      | 3.00 | 3.50 | 1.50 | 1.80 | 0.50 | 1.20 | 0.15 | 0.10 |
| JSMD1206-150/8    | 3.00 | 3.50 | 1.50 | 1.80 | 0.50 | 1.20 | 0.15 | 0.10 |
| JSMD1206-175      | 3.00 | 3.50 | 1.50 | 1.80 | 0.50 | 1.20 | 0.15 | 0.10 |
| JSMD1206-200      | 3.00 | 3.50 | 1.50 | 1.80 | 0.50 | 1.20 | 0.15 | 0.10 |

### acteristics

Terminal pad materials: Tin-plated Nickel-Copper

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

## Recommended Pad Layout (mm.)



## Packaging Quantity

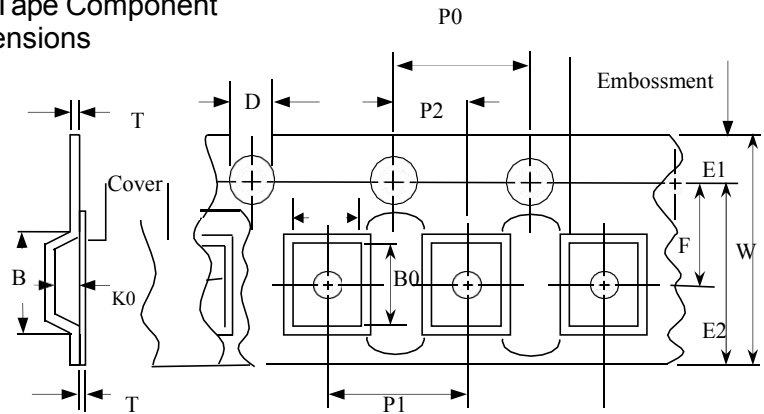
| Part Number  | Quantity       |
|--|----------------|
| JSMD<br>005.005/60.010.010/60.012.012/60.035/30.050/24.075/16.100/12.<br>110/12.150.150/8. 175.200 | 3,500 pcs/reel |
| The others   | 4,000 pcs/reel |

Tape & reel packaging per EIA481-1

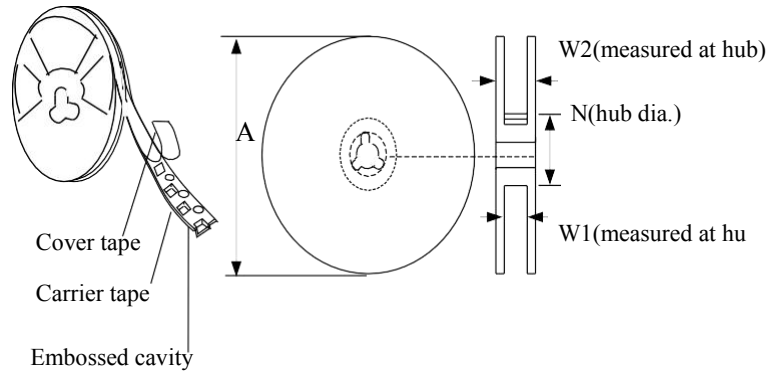
## Tape And Reel Specifications (mm)

| 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     |

EIA Tape Component Dimensions



EIA Reel Dimensions



### Storage And Handling

- Storage conditions: 35°C max, 70% R.H.
- Devices may not meet specified performance if storage conditions are exceeded.

## Part Number System

**J** SMD1206 - □□□ / □□



## Cross Reference

| JKSEMI            | Cross Reference |               |                     |                         |               |
|-------------------|-----------------|---------------|---------------------|-------------------------|---------------|
|                   | TYCO/Raychem    | Littelfuse    | Bourns / Multifuse® | Polytronics / EVERFUSE® | Sea-land      |
| JSMD1206-005      | -               | -             | -                   | SMD1206P005TF           | nSMD005       |
| JSMD1206-005/60   | -               | 1206L005/60   | -                   | -                       | -             |
| JSMD1206-010      | nanoSMDC010F    | -             | -                   | SMD1206P010TF           | nSMD010       |
| JSMD1206-010/60   | -               | 1206L010/60   | -                   | -                       | -             |
| JSMD1206-012      | nanoSMDC012F    | 1206L012      | MF-NSMF012          | SMD1206P012TF           | nSMD012       |
| JSMD1206-012/60   | -               | -             | -                   | -                       | -             |
| JSMD1206-020      | nanoSMDC020F    | 1206L020      | MF-NSMF020          | -                       | nSMD020       |
| JSMD1206-020/30   | -               | -             | MF-NSMF020X         | SMD1206P020TF/30        | nSMD020-30V   |
| JSMD1206-025      | nanoSMDC025F    | 1206L025      | -                   | SMD1206P025TF           | nSMD025       |
| JSMD1206-025/24   | -               | -             | -                   | SMD1206P025TF/24        | nSMD025-24V   |
| JSMD1206-035      | nanoSMDC035F    | 1206L035      | MF-NSMF035          | -                       | nSMD035       |
| JSMD1206-035/30   | -               | 1206L035/30   | -                   | SMD1206P035TF/30        | -             |
| JSMD1206-050      | -               | 1206L050      | MF-NSMF050          | SMD1206P050TF           | nSMD050       |
| JSMD1206-050/8    | -               | -             | -                   | -                       | -             |
| JSMD1206-050/16   | -               | -             | -                   | -                       | nSMD050-16V   |
| JSMD1206-050/24   | -               | 1206L050/24   | -                   | SMD1206P050TF/24        | nSMD050-24V   |
| JSMD1206-075      | nanoSMDC075F    | -             | MF-NSMF075          | SMD1206P075TFT          | nSMD075       |
| JSMD1206-075/13.2 | -               | 1206L075/13.2 | -                   | SMD1206P075TF/13.2      | nSMD075-13.2V |
| JSMD1206-075/16   | -               | 1206L075/16   | -                   | SMD1206P075TF/16        | nSMD075-16V   |
| JSMD1206-100      | -               | -             | -                   | -                       | nSMD100       |
| JSMD1206-100/8    | -               | -             | -                   | -                       | -             |
| JSMD1206-100/12   | -               | -             | -                   | -                       | -             |
| JSMD1206-110      | nanoSMDC110F    | 1206L110      | MF-NSMF110          | SMD1206P110TFT          | nSMD110       |
| JSMD1206-110/8    | -               | -             | -                   | -                       | -             |
| JSMD1206-110/12   | -               | -             | -                   | -                       | -             |
| JSMD1206-150      | nanoSMDC150F    | 1206L150      | MF-NSMF150          | SMD1206P150TFT          | nSMD150       |
| JSMD1206-150/8    | -               | -             | -                   | -                       | -             |
| JSMD1206-175      | -               | 1206L175      | -                   | SMD1206P175TF           | -             |
| JSMD1206-200      | nanoSMDC200F    | 1206L200      | MF-NSMF200          | SMD1206P200TF           | nSMD200       |

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