



Feature and Applications

UL E223037

- ROHS Compliant & Halogen Free
- Excellent for high density applications
- Surface Mount, 0805, 1206, 1210, 1812, 2920
- Faster time to trip than standard SMD devices
- Lower resistance than standard SMD devices
- Operation Current: 0.05A ~ 3.0A
- Maximum Voltage: 6V ~ 60V
- Temperature Range: -40°C to 85°C



| <u>MPTS</u>    |      |      |      |      | <u>0805</u> | <u>L</u> | <u>10</u> |
|----------------|------|------|------|------|-------------|----------|-----------|
| Meritek Series |      |      |      |      |             |          |           |
| Size           |      |      |      |      |             |          |           |
| 0805           | 1206 | 1210 | 1812 | 2920 |             |          |           |
|                |      |      |      |      |             |          |           |
| Current rating |      |      |      |      |             |          |           |

## Electrical Characteristics (23°C)

### MPTS0805

| Part Number   | Hold Current       | Trip Current       | Rated Voltage          | Max Current          | Typical Power | Max Time to Trip |      | Resistance       |                   |
|---------------|--------------------|--------------------|------------------------|----------------------|---------------|------------------|------|------------------|-------------------|
|               |                    |                    |                        |                      |               | Current          | Time | R <sub>MIN</sub> | R1 <sub>MAX</sub> |
|               | I <sub>H</sub> , A | I <sub>T</sub> , A | V <sub>MAX</sub> , Vdc | I <sub>MAX</sub> , A | Pd, W         | Amp              | Sec  | Ω                | Ω                 |
| MPTS0805L010  | 0.10               | 0.30               | 15                     | 100                  | 0.5           | 0.50             | 1.50 | 0.700            | 6.000             |
| MPTS0805L020  | 0.20               | 0.50               | 9                      | 100                  | 0.5           | 8.00             | 0.02 | 0.400            | 3.500             |
| MPTS0805L035  | 0.35               | 0.75               | 6                      | 100                  | 0.5           | 8.00             | 0.10 | 0.250            | 1.200             |
| MPTS0805L050R | 0.50               | 1.00               | 6                      | 100                  | 0.5           | 8.00             | 0.10 | 0.150            | 0.850             |
| MPTS0805L075R | 0.75               | 1.50               | 6                      | 40                   | 0.6           | 8.00             | 0.20 | 0.090            | 0.350             |
| MPTS0805L100R | 1.00               | 1.95               | 6                      | 40                   | 0.6           | 8.00             | 0.30 | 0.060            | 0.210             |

I<sub>H</sub>=Hold current-maximum current at which the device will not trip at 23°C still air.

I<sub>T</sub>=Trip current-minimum current at which the device will always trip at 23°C still air.

V<sub>MAX</sub>=Maximum voltage device can withstand without damage at its 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>).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

R<sub>MIN</sub>=Minimum device resistance at 23°C prior to tripping.

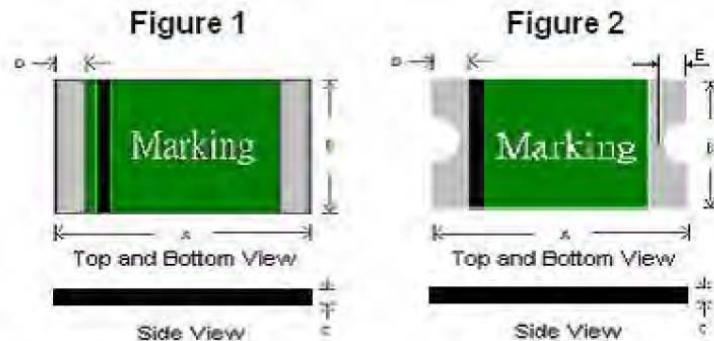
R1<sub>MAX</sub>=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

## Product Dimensions (Millimeters)

### MPTS0805



| Part Number   | A    |      | B    |      | C    |      | D    |      | E    |      |
|---------------|------|------|------|------|------|------|------|------|------|------|
|               | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  |
| MPTS0805L010  | 2.00 | 2.30 | 1.20 | 1.50 | 0.55 | 1.00 | 0.20 | 0.60 | 0.10 | 0.45 |
| MPTS0805L020  | 2.00 | 2.30 | 1.20 | 1.50 | 0.55 | 1.00 | 0.20 | 0.60 | 0.10 | 0.45 |
| MPTS0805L035  | 2.00 | 2.30 | 1.20 | 1.50 | 0.45 | 0.75 | 0.20 | 0.60 | 0.10 | 0.45 |
| MPTS0805L050R | 2.00 | 2.30 | 1.20 | 1.50 | 0.55 | 1.25 | 0.20 | 0.60 | 0.10 | 0.45 |
| MPTS0805L075R | 2.00 | 2.30 | 1.20 | 1.50 | 0.55 | 1.25 | 0.20 | 0.60 | 0.10 | 0.45 |
| MPTS0805L100R | 2.00 | 2.30 | 1.20 | 1.50 | 0.75 | 1.80 | 0.20 | 0.60 | 0.10 | 0.45 |

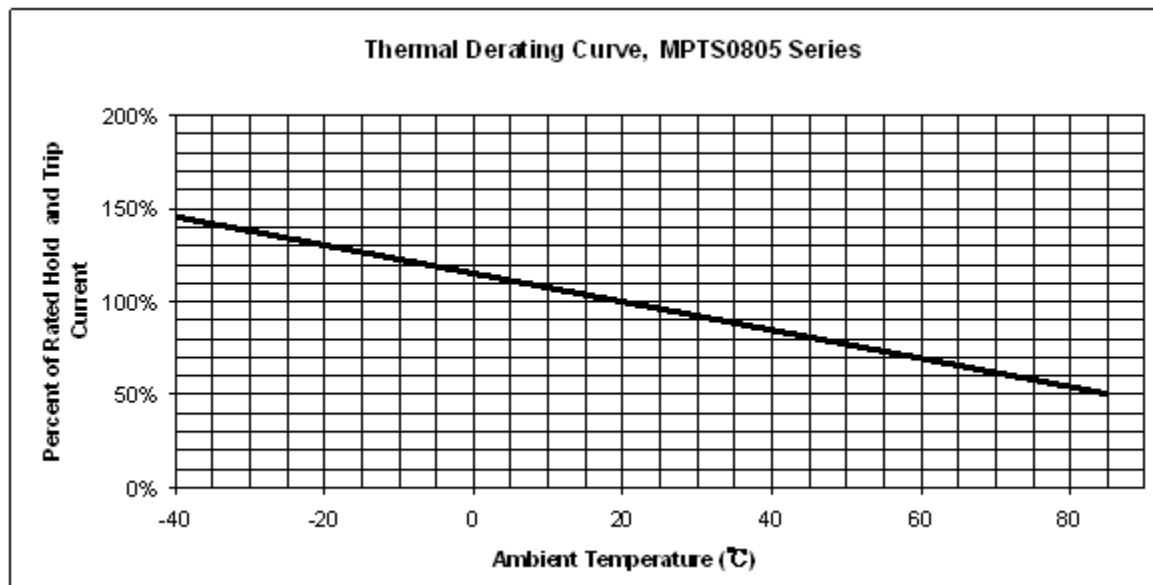
# Polymeric PTC



MPTS Series

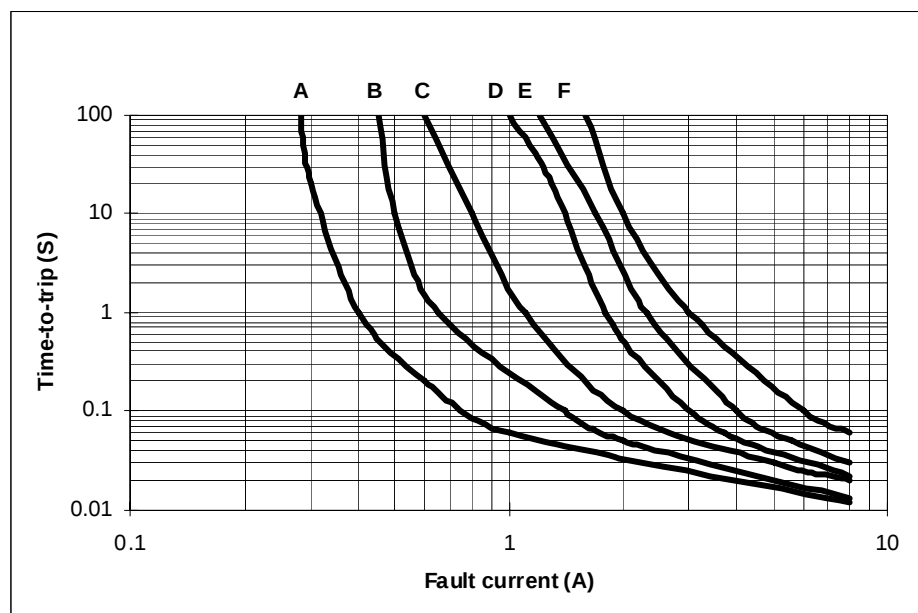
MERITEK

## Thermal Derating Curve

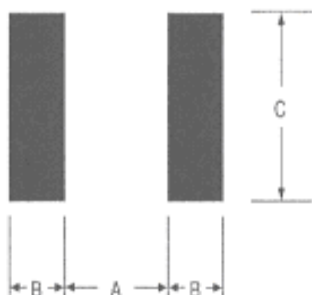


## Typical Time-To-Trip at 23°C

A = MPTS0805L010  
B = MPTS0805L020  
C = MPTS0805L035  
D = MPTS0805L050R  
E = MPTS0805L075R  
F = MPTS0805L100R



The dimension in the table below provides the recommended pad layout for each MPTS0805 device



**Pad dimensions (millimeters)**

| Device          | A<br>Nominal | B<br>Nominal | C<br>Nominal |
|-----------------|--------------|--------------|--------------|
| All 0805 Series | 1.20         | 1.00         | 1.50         |

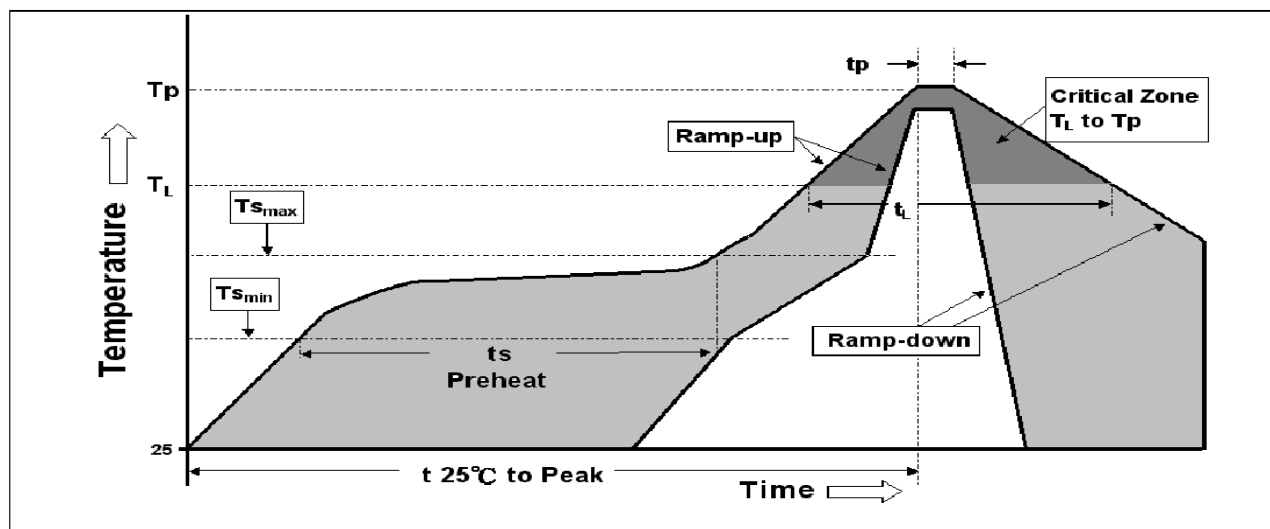
| Profile Feature                                                 | Pb-Free Assembly |
|-----------------------------------------------------------------|------------------|
| <b>Average Ramp-Up Rate (T<sub>smax</sub> to T<sub>p</sub>)</b> | 3 °C/second max. |
| <b>Preheat :</b>                                                |                  |
| Temperature Min (T <sub>smin</sub> )                            | 150 °C           |
| Temperature Max (T <sub>smax</sub> )                            | 200 °C           |
| Time (t <sub>smin</sub> to t <sub>smax</sub> )                  | 60-180 seconds   |
| <b>Time maintained above:</b>                                   |                  |
| Temperature(T <sub>L</sub> )                                    | 217 °C           |
| Time (t <sub>L</sub> )                                          | 60-150 seconds   |
| <b>Peak/Classification Temperature(T<sub>p</sub>) :</b>         | 260 °C           |
| <b>Time within 5°C of actual Peak :</b>                         |                  |
| Temperature (t <sub>p</sub> )                                   | 20-40 seconds    |
| <b>Ramp-Down Rate :</b>                                         | 6 °C/second max. |
| <b>Time 25 °C to Peak Temperature :</b>                         | 8 minutes max.   |

### Solder reflow

- Due to "Lead Free" nature, Temperature and Dwell time for the soldering zone is higher than those for Non-compliant parts. This may cause damage to other components.
- Recommended max solder paste thickness > 0.25mm.
- Devices can be cleaned using standard methods and aqueous solvent.
- Rework should utilize standard industry practices. These changes should apply to all notes for each case size.
- Storage Environment : < 30°C / 60%RH

### Caution:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Devices are not designed to be wave soldered to the bottom side of the board.





## Electrical Characteristics (23°)

## MPTS1206

| Part Number      | Hold Current       | Trip Current       | Rated Voltage          | Max Current          | Typical Power | Max Time to Trip |      | Resistance       |                   |
|------------------|--------------------|--------------------|------------------------|----------------------|---------------|------------------|------|------------------|-------------------|
|                  |                    |                    |                        |                      |               | Current          | Time | R <sub>MIN</sub> | R1 <sub>MAX</sub> |
|                  | I <sub>H</sub> , A | I <sub>T</sub> , A | V <sub>MAX</sub> , Vdc | I <sub>MAX</sub> , A | Pd, W         | Amp              | Sec  | Ω                | Ω                 |
| MPTS1206L005     | 0.05               | 0.15               | 60                     | 10                   | 0.4           | 0.25             | 1.50 | 3.60             | 50.00             |
| MPTS1206L010     | 0.10               | 0.25               | 60                     | 10                   | 0.4           | 0.50             | 1.00 | 1.60             | 15.00             |
| MPTS1206L012     | 0.12               | 0.39               | 48                     | 10                   | 0.6           | 1.00             | 0.20 | 1.40             | 6.50              |
| MPTS1206L016     | 0.16               | 0.45               | 48                     | 10                   | 0.6           | 1.00             | 0.30 | 1.10             | 5.00              |
| MPTS1206L020     | 0.20               | 0.40               | 30                     | 10                   | 0.4           | 8.00             | 0.10 | 0.600            | 2.500             |
| MPTS1206L025     | 0.25               | 0.50               | 16                     | 40                   | 0.6           | 8.00             | 0.08 | 0.550            | 2.300             |
| MPTS1206L035     | 0.35               | 0.75               | 16                     | 40                   | 0.4           | 8.00             | 0.10 | 0.300            | 1.200             |
| MPTS1206L050     | 0.50               | 1.00               | 8                      | 40                   | 0.4           | 8.00             | 0.10 | 0.150            | 0.700             |
| MPTS1206L050-24R | 0.50               | 1.00               | 24                     | 100                  | 0.6           | 8.00             | 0.10 | 0.150            | 0.750             |
| MPTS1206L075R    | 0.75               | 1.50               | 6                      | 100                  | 0.6           | 8.00             | 0.20 | 0.090            | 0.290             |
| MPTS1206L075-16R | 0.75               | 1.50               | 16                     | 100                  | 0.6           | 8.00             | 0.20 | 0.090            | 0.290             |
| MPTS1206L100R    | 1.00               | 1.80               | 6                      | 100                  | 0.6           | 8.00             | 0.30 | 0.055            | 0.210             |
| MPTS1206L110R    | 1.10               | 2.20               | 6                      | 100                  | 0.8           | 8.00             | 0.30 | 0.040            | 0.180             |
| MPTS1206L150R    | 1.50               | 3.00               | 6                      | 100                  | 0.8           | 8.00             | 1.00 | 0.030            | 0.120             |
| MPTS1206L200R    | 2.00               | 3.50               | 6                      | 100                  | 0.8           | 8.00             | 1.50 | 0.018            | 0.080             |

I<sub>H</sub>=Hold current-maximum current at which the device will not trip at 23°C still air.

I<sub>T</sub>=Trip current-minimum current at which the device will always trip at 23°C still air.

V<sub>MAX</sub>=Maximum voltage device can withstand without damage at its 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>).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

R<sub>MIN</sub>=Minimum device resistance at 23°C prior to tripping.

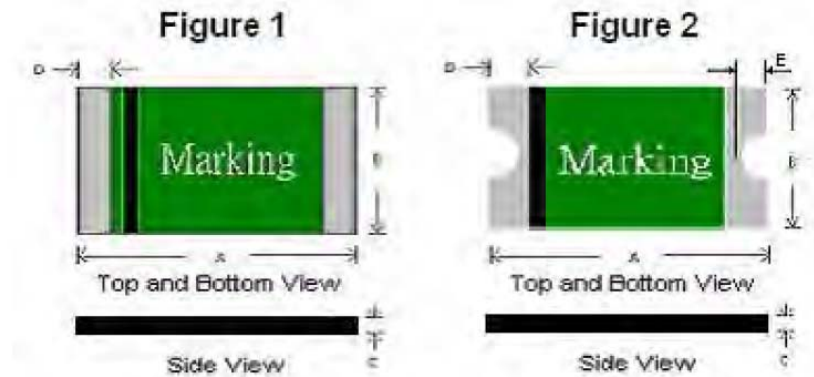
R1<sub>MAX</sub>=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

### Product Dimensions (Millimeters)

#### MPTS1206



| Part Number      | A    |      | B    |      | C    |      | D    |      | E    |      |
|------------------|------|------|------|------|------|------|------|------|------|------|
|                  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  |
| MPTS1206L005     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L010     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L012     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L016     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L020     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L025     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L035     | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L050     | 3.00 | 3.50 | 1.50 | 1.80 | 0.25 | 0.55 | 0.10 | 0.75 | 0.10 | 0.45 |
| MPTS1206L050-24R | 3.00 | 3.50 | 1.50 | 1.80 | 0.90 | 1.30 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1206L075R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.25 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1206L075-16R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.25 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1206L100R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1206L110R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1206L150R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1206L200R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.85 | 1.60 | 0.25 | 0.75 | 0.10 | 0.45 |

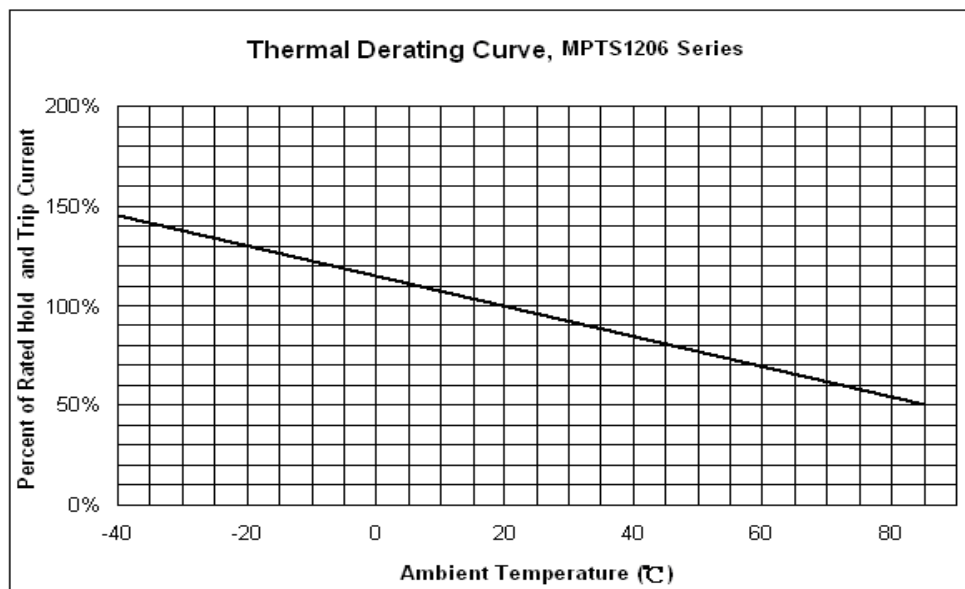
# Polymeric PTC



MPTS Series

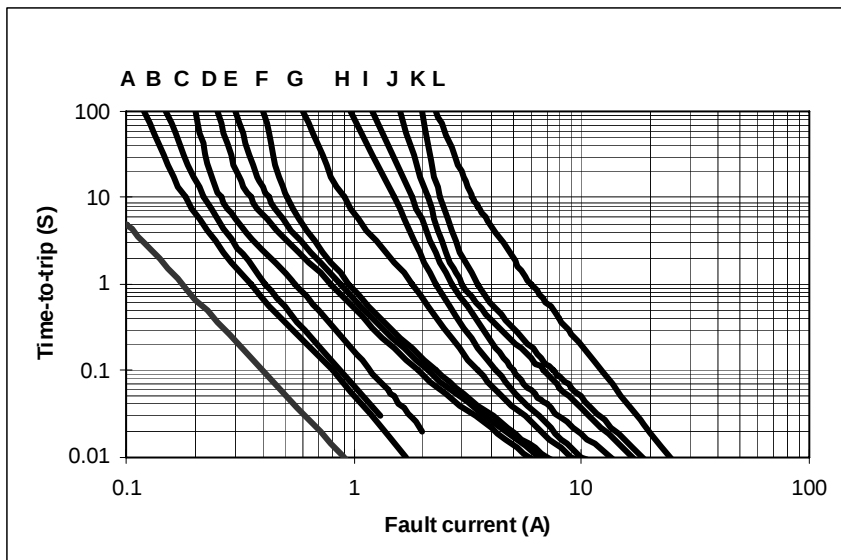
MERITEK

## Thermal Derating Curve



## Typical Time-To-Trip at 23°

Z= MPTS1206L005  
A= MPTS1206L010  
B= MPTS1206L012  
C= MPTS1206L016  
D= MPTS1206L020  
E= MPTS1206L025  
F= MPTS1206L035  
G= MPTS1206L050  
MPTS1206L050-24R  
H= MPTS1206L075R  
MPTS1206L075-16R  
I= MPTS1206L100R  
J= MPTS1206L110R  
K= MPTS1206L150R  
L= MPTS1206L200R



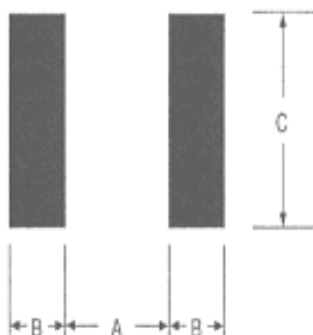
# Polymeric PTC



MPTS Series

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The dimension in the table below provides the recommended pad layout for each MPTS1206 device



Pad dimensions (millimeters)

| Device          | A<br>Nominal | B<br>Nominal | C<br>Nominal |
|-----------------|--------------|--------------|--------------|
| All 1206 Series | 2.00         | 1.00         | 1.90         |

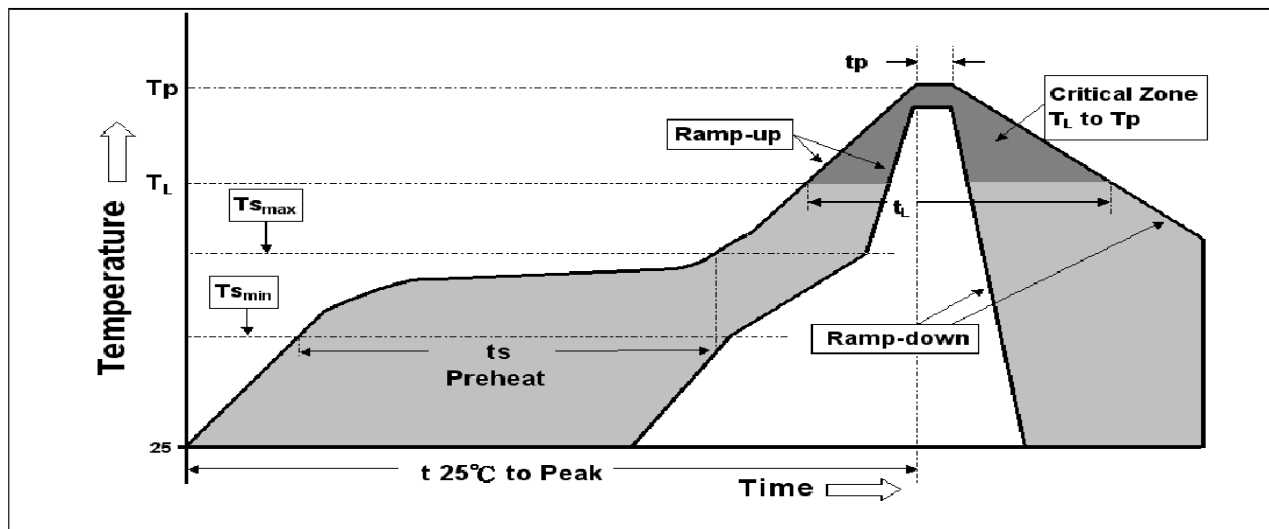
| Profile Feature                                             | Pb-Free Assembly |
|-------------------------------------------------------------|------------------|
| Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> ) | 3 °C/second max. |
| Preheat :                                                   |                  |
| Temperature Min (T <sub>smin</sub> )                        | 150 °C           |
| Temperature Max (T <sub>smax</sub> )                        | 200 °C           |
| Time (t <sub>smin</sub> to t <sub>smax</sub> )              | 60-180 seconds   |
| Time maintained above:                                      |                  |
| Temperature(T <sub>L</sub> )                                | 217 °C           |
| Time (t <sub>L</sub> )                                      | 60-150 seconds   |
| Peak/Classification Temperature(T <sub>p</sub> ) :          | 260 °C           |
| Time within 5°C of actual Peak :                            |                  |
| Temperature (t <sub>p</sub> )                               | 20-40 seconds    |
| Ramp-Down Rate :                                            | 6 °C/second max. |
| Time 25 °C to Peak Temperature :                            | 8 minutes max.   |

## Solder reflow

- Due to "Lead Free" nature, Temperature and Dwell time for the soldering zone is higher than those for Non-compliant parts. This may cause damage to other components.
- Recommended max solder paste thickness > 0.25mm.
- Devices can be cleaned using standard methods and aqueous solvent.
- Rework should utilize standard industry practices. These changes should apply to all notes for each case size.
- Storage Environment : < 30°C / 60%RH

## Caution:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Devices are not designed to be wave soldered to the bottom side of the board.





## Electrical Characteristics (23°)

## MPTS1210

| Part Number   | Hold Current       | Trip Current       | Rated Voltage          | Max Current          | Typical Power | Max Time to Trip |      | Resistance       |                   |
|---------------|--------------------|--------------------|------------------------|----------------------|---------------|------------------|------|------------------|-------------------|
|               |                    |                    |                        |                      |               | Current          | Time | R <sub>MIN</sub> | R <sub>1MAX</sub> |
|               | I <sub>H</sub> , A | I <sub>T</sub> , A | V <sub>MAX</sub> , Vdc | I <sub>MAX</sub> , A | Pd, W         | Amp              | Sec  | Ω                | Ω                 |
| MPTS1210L005  | 0.05               | 0.15               | 60                     | 10                   | 0.60          | 0.25             | 3.00 | 3.600            | 50.000            |
| MPTS1210L010  | 0.10               | 0.25               | 60                     | 10                   | 0.60          | 0.50             | 1.50 | 1.600            | 15.000            |
| MPTS1210L020  | 0.20               | 0.40               | 30                     | 10                   | 0.60          | 8.00             | 0.02 | 0.800            | 5.000             |
| MPTS1210L035  | 0.35               | 0.70               | 16                     | 40                   | 0.60          | 8.00             | 0.20 | 0.320            | 1.300             |
| MPTS1210L050  | 0.50               | 1.00               | 16                     | 40                   | 0.60          | 8.00             | 0.10 | 0.250            | 0.900             |
| MPTS1210L075  | 0.75               | 1.50               | 8                      | 40                   | 0.60          | 8.00             | 0.10 | 0.130            | 0.400             |
| MPTS1210L110R | 1.10               | 2.20               | 6                      | 100                  | 0.80          | 8.00             | 0.30 | 0.060            | 0.210             |
| MPTS1210L150R | 1.50               | 3.00               | 6                      | 100                  | 0.80          | 8.00             | 0.50 | 0.040            | 0.110             |
| MPTS1210L175R | 1.75               | 4.00               | 6                      | 100                  | 0.80          | 8.00             | 0.60 | 0.020            | 0.080             |
| MPTS1210L200R | 2.00               | 4.00               | 6                      | 100                  | 0.80          | 8.00             | 1.00 | 0.015            | 0.070             |

I<sub>H</sub>=Hold current-maximum current at which the device will not trip at 23°C still air.

I<sub>T</sub>=Trip current-minimum current at which the device will always trip at 23°C still air.

V<sub>MAX</sub>=Maximum voltage device can withstand without damage at its 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>).

Pd=Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

R<sub>MIN</sub>=Minimum device resistance at 23°C prior to tripping.

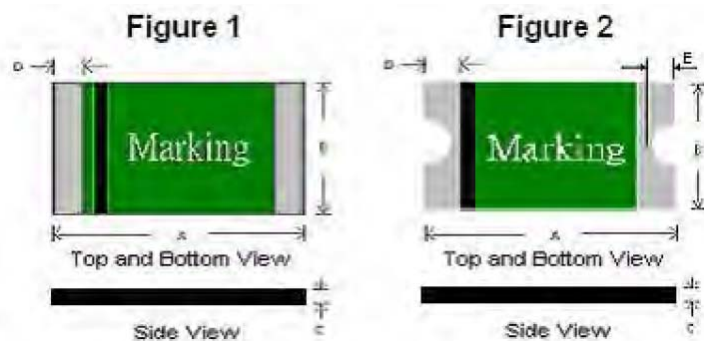
R<sub>1MAX</sub>=Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

### Product Dimensions (Millimeters)

#### MPTS1210



| Part Number   | A    |      | B    |      | C    |      | D    |      | E    |      |
|---------------|------|------|------|------|------|------|------|------|------|------|
|               | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  |
| MPTS1210L005  | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.15 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L010  | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.15 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L020  | 3.00 | 3.43 | 2.35 | 2.80 | 0.40 | 0.85 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L035  | 3.00 | 3.43 | 2.35 | 2.80 | 0.40 | 0.80 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L050  | 3.00 | 3.43 | 2.35 | 2.80 | 0.30 | 0.75 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L075  | 3.00 | 3.43 | 2.35 | 2.80 | 0.30 | 0.70 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L110R | 3.00 | 3.43 | 2.35 | 2.80 | 0.60 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L150R | 3.00 | 3.43 | 2.35 | 2.80 | 0.50 | 0.90 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L175R | 3.00 | 3.43 | 2.35 | 2.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |
| MPTS1210L200R | 3.00 | 3.43 | 2.35 | 2.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |

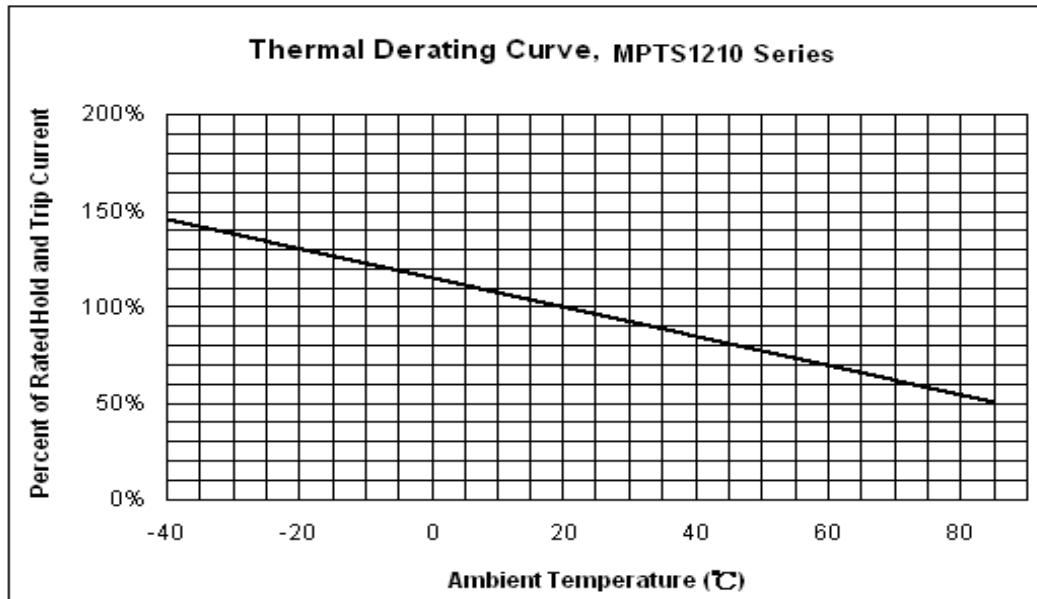
# Polymeric PTC



MPTS Series

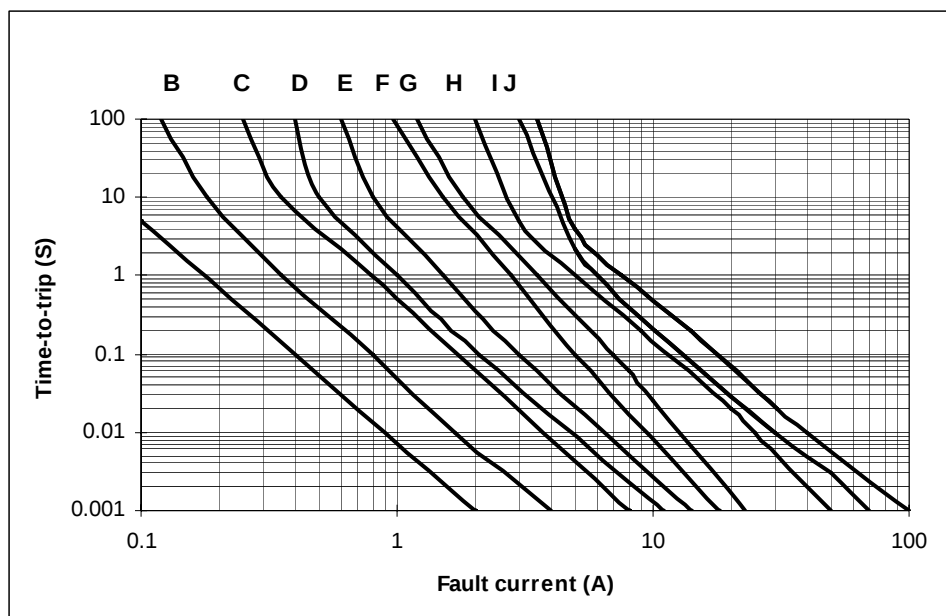
MERITEK

## Thermal Derating Curve

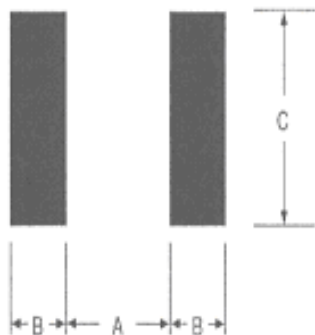


## Typical Time-To-Trip at 23°C

A =MPTS1210L005  
B =MPTS1210L010  
C =MPTS1210L020  
D =MPTS1210L035  
E =MPTS1210L050  
F =MPTS1210L075  
G =MPTS1210L110R  
H =MPTS1210L150R  
I= MPTS1210L175R  
J =MPTS1210L200R



The dimension in the table below provides the recommended pad layout for each MPTS1210 device



**Pad dimensions (millimeters)**

| Device          | A<br>Nominal | B<br>Nominal | C<br>Nominal |
|-----------------|--------------|--------------|--------------|
| All 1210 Series | 2.00         | 1.00         | 2.80         |

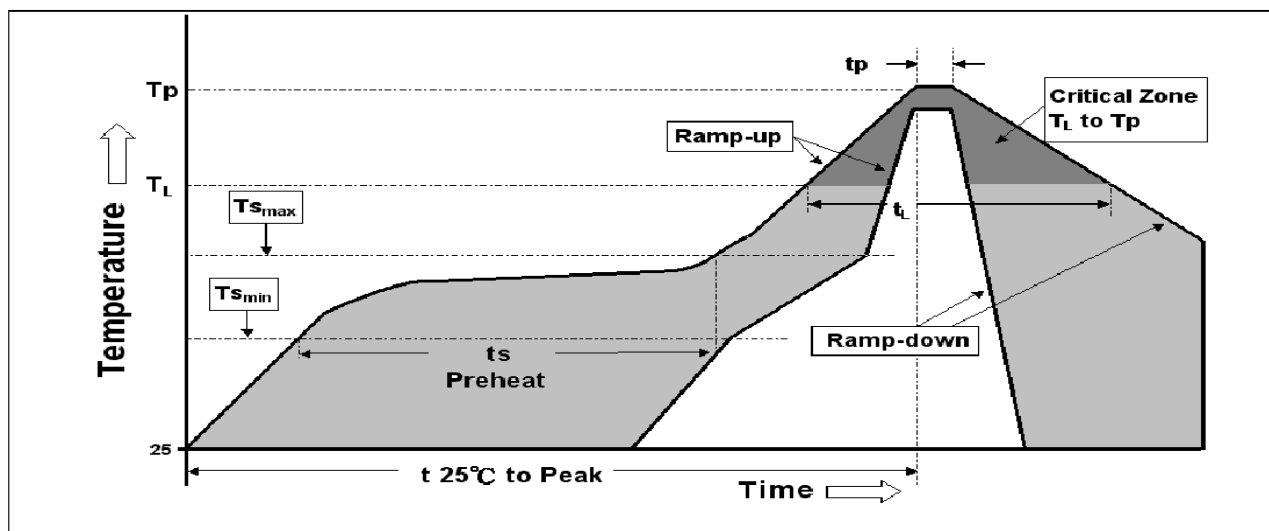
| Profile Feature                                             | Pb-Free Assembly |
|-------------------------------------------------------------|------------------|
| Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> ) | 3 °C/second max. |
| <b>Preheat :</b>                                            |                  |
| Temperature Min (T <sub>smin</sub> )                        | 150 °C           |
| Temperature Max (T <sub>smax</sub> )                        | 200 °C           |
| Time (t <sub>smin</sub> to t <sub>smax</sub> )              | 60-180 seconds   |
| <b>Time maintained above:</b>                               |                  |
| Temperature(T <sub>L</sub> )                                | 217 °C           |
| Time (t <sub>L</sub> )                                      | 60-150 seconds   |
| <b>Peak/Classification Temperature(T<sub>p</sub>) :</b>     | 260 °C           |
| <b>Time within 5°C of actual Peak :</b>                     |                  |
| Temperature (t <sub>p</sub> )                               | 20-40 seconds    |
| <b>Ramp-Down Rate :</b>                                     | 6 °C/second max. |
| <b>Time 25 °C to Peak Temperature :</b>                     | 8 minutes max.   |

### Solder reflow

- Due to "Lead Free" nature, Temperature and Dwell time for the soldering zone is higher than those for Non-compliant parts. This may cause damage to other components.
- Recommended max solder paste thickness > 0.25mm.
- Devices can be cleaned using standard methods and aqueous solvent.
- Rework should utilize standard industry practices. These changes should apply to all notes for each case size.
- Storage Environment : < 30°C / 60%RH

### Caution:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Devices are not designed to be wave soldered to the bottom side of the board.



# Polymeric PTC



MPTS Series

MERITEK

## Electrical Characteristics (23°)

### MPTS1812

| Part Number      | Hold Current | Trip Current | Rated Voltage  | Max Current  | Typical Power | Max Time to Trip |       | Resistance |            |
|------------------|--------------|--------------|----------------|--------------|---------------|------------------|-------|------------|------------|
|                  | $I_H$        | $I_T$        | $V_{MAX}$      | $I_{MAX}$    | $P_d$         | Current          | Time  | $R_{MIN}$  | $R1_{MAX}$ |
|                  | $I_H, A$     | $I_T, A$     | $V_{MAX}, Vdc$ | $I_{MAX}, A$ | $P_d, W$      | Amp              | Sec   | $\Omega$   | $\Omega$   |
| MPTS1812L010     | 0.10         | 0.30         | 60             | 10           | 0.8           | 8.0              | 0.020 | 1.600      | 15.00      |
| MPTS1812L014     | 0.14         | 0.30         | 60             | 10           | 0.8           | 8.0              | 0.008 | 1.200      | 6.500      |
| MPTS1812L020     | 0.20         | 0.40         | 30             | 10           | 0.8           | 8.0              | 0.020 | 0.800      | 5.000      |
| MPTS1812L035     | 0.35         | 0.70         | 16             | 40           | 0.8           | 8.0              | 0.100 | 0.320      | 1.500      |
| MPTS1812L050     | 0.50         | 1.00         | 16             | 40           | 0.8           | 8.0              | 0.150 | 0.150      | 1.000      |
| MPTS1812L075     | 0.75         | 1.50         | 16             | 40           | 0.8           | 8.0              | 0.200 | 0.110      | 0.450      |
| MPTS1812L075-24R | 0.75         | 1.50         | 24             | 40           | 1.0           | 8.0              | 0.200 | 0.110      | 0.290      |
| MPTS1812L075-33R | 0.75         | 1.50         | 33             | 40           | 1.0           | 8.0              | 0.200 | 0.110      | 0.400      |
| MPTS1812L110     | 1.10         | 2.20         | 8              | 100          | 0.8           | 8.0              | 0.300 | 0.040      | 0.210      |
| MPTS1812L110-16  | 1.10         | 2.20         | 16             | 100          | 0.8           | 8.0              | 0.500 | 0.040      | 0.180      |
| MPTS1812L110-24R | 1.10         | 2.20         | 24             | 100          | 1.0           | 8.0              | 0.500 | 0.060      | 0.200      |
| MPTS1812L125     | 1.25         | 2.50         | 6              | 40           | 0.8           | 8.0              | 0.400 | 0.050      | 0.140      |
| MPTS1812L150     | 1.50         | 3.00         | 8              | 100          | 0.8           | 8.0              | 0.500 | 0.040      | 0.110      |
| MPTS1812L150-12R | 1.50         | 3.00         | 12             | 100          | 1.0           | 8.0              | 0.500 | 0.040      | 0.110      |
| MPTS1812L150-24R | 1.50         | 3.00         | 24             | 100          | 1.0           | 8.0              | 1.500 | 0.040      | 0.120      |
| MPTS1812L160     | 1.60         | 3.20         | 8              | 100          | 0.8           | 8.0              | 0.500 | 0.030      | 0.100      |
| MPTS1812L160-12R | 1.60         | 3.20         | 12             | 100          | 1.0           | 8.0              | 1.000 | 0.030      | 0.100      |
| MPTS1812L160-16R | 1.60         | 3.20         | 16             | 100          | 1.0           | 8.0              | 1.000 | 0.030      | 0.100      |
| MPTS1812L200R    | 2.00         | 3.50         | 8              | 100          | 1.0           | 8.0              | 2.000 | 0.020      | 0.070      |
| MPTS1812L260R    | 2.60         | 5.00         | 6              | 100          | 1.0           | 8.0              | 2.500 | 0.015      | 0.047      |
| MPTS1812L260-13R | 2.60         | 5.00         | 13.2           | 100          | 1.3           | 8.0              | 5.000 | 0.015      | 0.050      |
| MPTS1812L260-16R | 2.60         | 5.00         | 16             | 100          | 1.3           | 8.0              | 5.000 | 0.015      | 0.050      |
| MPTS1812L300R    | 3.00         | 5.00         | 6              | 100          | 1.0           | 8.0              | 4.000 | 0.012      | 0.040      |

$I_H$ =Hold current-maximum current at which the device will not trip at 23°C still air.

$I_T$ =Trip current-minimum current at which the device will always trip at 23°C still air.

$V_{MAX}$ =Maximum voltage device can withstand without damage at its rated current ( $I_{MAX}$ ).

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

$P_d$ =Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

$R_{MIN}$ =Minimum device resistance at 23°C prior to tripping.

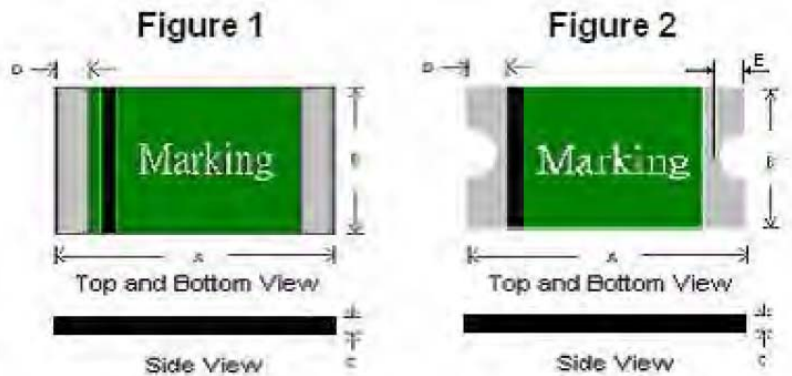
$R1_{MAX}$ =Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

Termination pad characteristics

Termination pad materials: Pure Tin

## Product Dimensions (Millimeters)

### MPTS1812



| Part Number      | A    |      | B    |      | C    |      | D    |      | E    |      |
|------------------|------|------|------|------|------|------|------|------|------|------|
|                  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  |
| MPTS1812L010     | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 0.90 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L014     | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 0.90 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L020     | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 0.90 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L035     | 4.37 | 4.73 | 3.07 | 3.41 | 0.40 | 0.70 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L050     | 4.37 | 4.73 | 3.07 | 3.41 | 0.35 | 0.65 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L075     | 4.37 | 4.73 | 3.07 | 3.41 | 0.35 | 0.65 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L075-24R | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.55 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L075-33R | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.55 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L110     | 4.37 | 4.73 | 3.07 | 3.41 | 0.25 | 0.55 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L110-16  | 4.37 | 4.73 | 3.07 | 3.41 | 0.25 | 0.90 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L110-24R | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.30 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L125     | 4.37 | 4.73 | 3.07 | 3.41 | 0.25 | 0.55 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L150     | 4.37 | 4.73 | 3.07 | 3.41 | 0.25 | 0.55 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L150-12R | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.10 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L150-24R | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.55 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L160     | 4.37 | 4.73 | 3.07 | 3.41 | 0.25 | 0.90 | 0.30 | 0.95 | 0.25 | 0.65 |
| MPTS1812L160-12R | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.35 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L160-16R | 4.37 | 4.73 | 3.07 | 3.41 | 0.60 | 1.35 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L200R    | 4.37 | 4.73 | 3.07 | 3.41 | 0.55 | 1.20 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L260R    | 4.37 | 4.73 | 3.07 | 3.41 | 0.55 | 1.20 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L260-13R | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.55 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L260-16R | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.55 | 0.25 | 0.95 | 0.25 | 0.65 |
| MPTS1812L300R    | 4.37 | 4.73 | 3.07 | 3.41 | 0.80 | 1.55 | 0.25 | 0.95 | 0.25 | 0.65 |

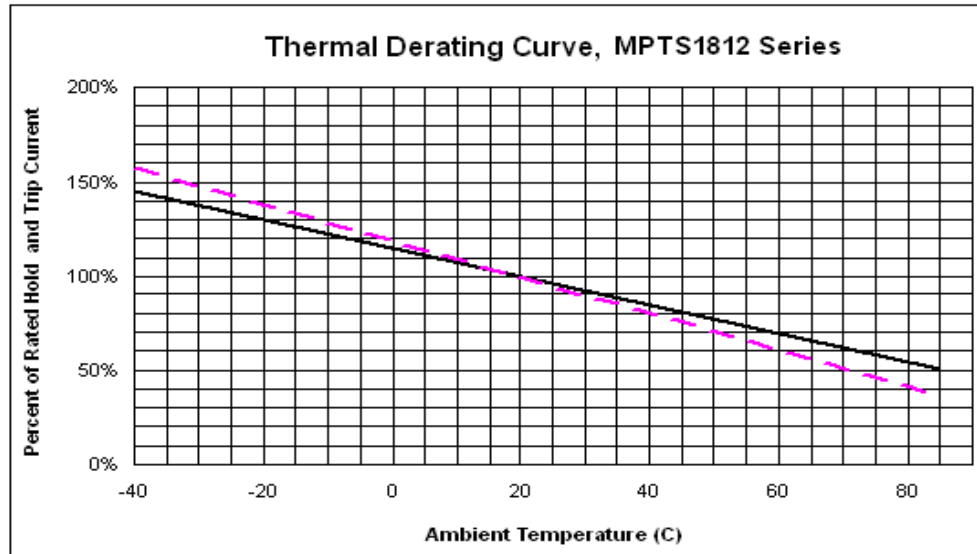
# Polymeric PTC



MPTS Series

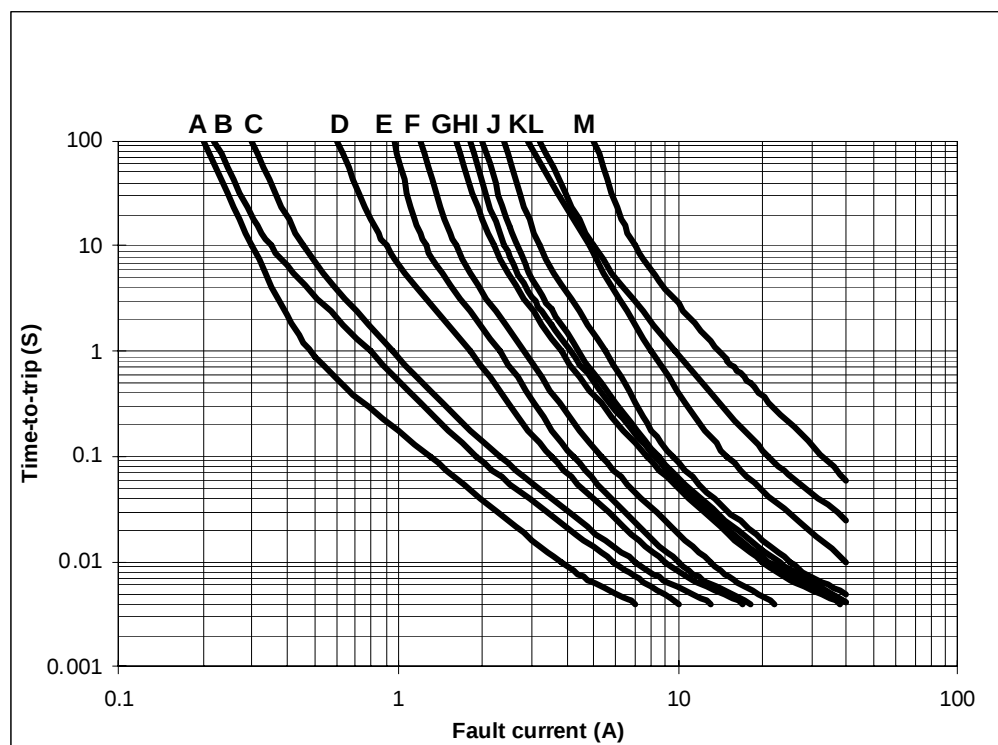
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## Thermal Derating Curve



## Typical Time-To-Trip at 23°C

- A = MPTS1812L010
- B = MPTS1812L014
- C = MPTS1812L020
- D = MPTS1812L035
- E = MPTS1812L050
- F = MPTS1812L075
- MPTS1812L075-24R
- MPTS1812L075-33R
- G = MPTS1812L110
- MPTS1812L110-16
- MPTS1812L110-24R
- H = MPTS1812L125
- I = MPTS1812L150
- MPTS1812L150-12R
- MPTS1812L150-24R
- J = MPTS1812L160
- MPTS1812L160-12R
- MPTS1812L160-16R
- K = MPTS1812L200R
- L = MPTS1812L260R
- MPTS1812L260-13R
- MPTS1812L260-16R
- M = MPTS1812L300R



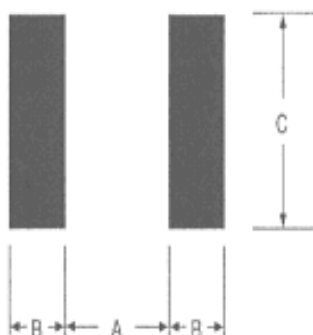
# Polymeric PTC



MPTS Series

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The dimension in the table below provides the recommended pad layout for each MPTS1812 device



**Pad dimensions (millimeters)**

| Device          | A<br>Nominal | B<br>Nominal | C<br>Nominal |
|-----------------|--------------|--------------|--------------|
| All 1812 Series | 3.45         | 1.78         | 3.50         |

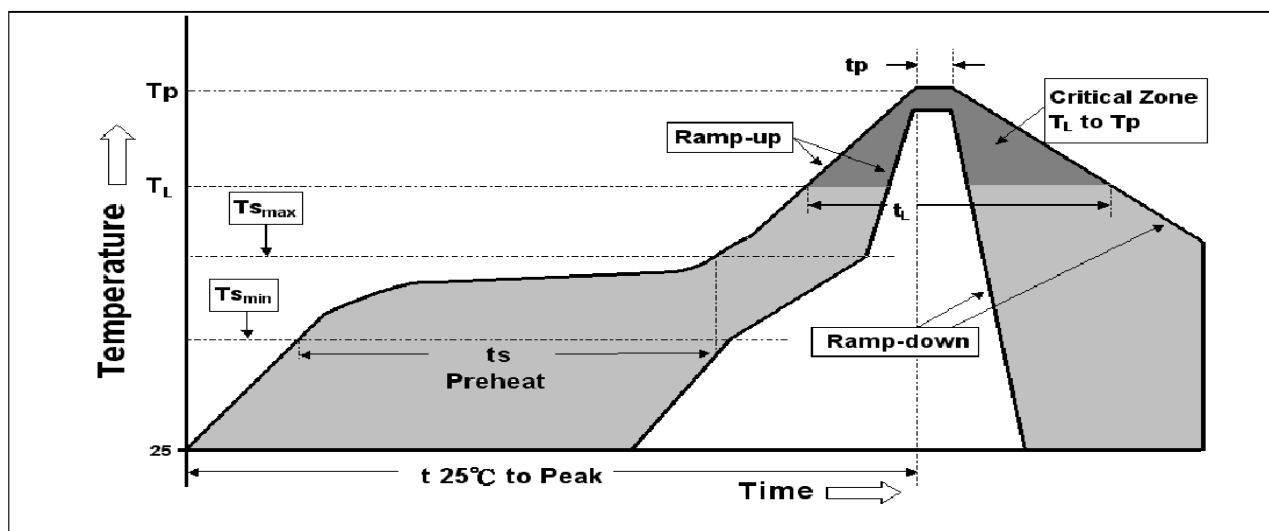
| Profile Feature                                                 | Pb-Free Assembly |
|-----------------------------------------------------------------|------------------|
| <b>Average Ramp-Up Rate (T<sub>smax</sub> to T<sub>p</sub>)</b> | 3 °C/second max. |
| <b>Preheat :</b>                                                |                  |
| Temperature Min (T <sub>smin</sub> )                            | 150 °C           |
| Temperature Max (T <sub>smax</sub> )                            | 200 °C           |
| Time (t <sub>smin</sub> to t <sub>smax</sub> )                  | 60-180 seconds   |
| <b>Time maintained above:</b>                                   |                  |
| Temperature(T <sub>L</sub> )                                    | 217 °C           |
| Time (t <sub>L</sub> )                                          | 60-150 seconds   |
| <b>Peak/Classification Temperature(T<sub>p</sub>) :</b>         | 260 °C           |
| <b>Time within 5°C of actual Peak :</b>                         |                  |
| Temperature (t <sub>p</sub> )                                   | 20-40 seconds    |
| <b>Ramp-Down Rate :</b>                                         | 6 °C/second max. |
| <b>Time 25 °C to Peak Temperature :</b>                         | 8 minutes max.   |

## Solder reflow

- Due to "Lead Free" nature, Temperature and Dwell time for the soldering zone is higher than those for Non-compliant parts. This may cause damage to other components.
- Recommended max solder paste thickness > 0.25mm.
- Devices can be cleaned using standard methods and aqueous solvent.
- Rework should utilize standard industry practices. These changes should apply to all notes for each case size.
- Storage Environment : < 30°C / 60%RH

## Caution:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Devices are not designed to be wave soldered to the bottom side of the board.



# Polymeric PTC



## MPTS Series

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### Electrical Characteristics (23°C)

#### MPTS2920

| Part Number  | Hold Current | Trip Current | Rated Voltage   | Max Current   | Typical Power | Max Time to Trip |      | Resistance |            |
|--------------|--------------|--------------|-----------------|---------------|---------------|------------------|------|------------|------------|
|              | $I_H$ , A    | $I_T$ , A    | $V_{MAX}$ , Vdc | $I_{MAX}$ , A | $P_d$ , W     | Current          | Time | $R_{MIN}$  | $R1_{MAX}$ |
|              |              |              |                 |               |               | A                | Sec  | $\Omega$   | $\Omega$   |
| MPTS2920L030 | 0.30         | 0.60         | 60              | 10            | 1.5           | 1.5              | 3.0  | 1.000      | 4.800      |
| MPTS2920L050 | 0.50         | 1.00         | 60              | 10            | 1.5           | 2.5              | 4.0  | 0.300      | 1.400      |
| MPTS2920L075 | 0.75         | 1.50         | 33              | 40            | 1.5           | 8.0              | 0.3  | 0.180      | 1.000      |
| MPTS2920L100 | 1.10         | 2.20         | 33              | 40            | 1.5           | 8.0              | 0.5  | 0.090      | 0.410      |
| MPTS2920L125 | 1.25         | 2.50         | 33              | 40            | 1.5           | 8.0              | 2.0  | 0.050      | 0.250      |
| MPTS2920L150 | 1.50         | 3.00         | 33              | 40            | 1.5           | 8.0              | 2.0  | 0.050      | 0.230      |
| MPTS2920L185 | 1.85         | 3.70         | 33              | 40            | 1.5           | 8.0              | 2.5  | 0.040      | 0.150      |
| MPTS2920L200 | 2.00         | 4.00         | 16              | 40            | 1.5           | 8.0              | 4.5  | 0.035      | 0.120      |
| MPTS2920L250 | 2.50         | 5.00         | 16              | 40            | 1.5           | 8.0              | 16.0 | 0.025      | 0.085      |
| MPTS2920L260 | 2.60         | 5.20         | 6               | 40            | 1.5           | 8.0              | 20.0 | 0.020      | 0.075      |
| MPTS2920L300 | 3.00         | 5.20         | 6               | 40            | 1.5           | 8.0              | 25.0 | 0.010      | 0.048      |

$I_H$ =Hold current-maximum current at which the device will not trip at 23°C still air.

$I_T$ =Trip current-minimum current at which the device will always trip at 23°C still air.

$V_{MAX}$ =Maximum voltage device can withstand without damage at its rated current ( $I_{MAX}$ )

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

$P_d$ =Typical power dissipated-type amount of power dissipated by the device when in the tripped state in 23°C still air environment.

$R_{MIN}$ =Minimum device resistance at 23°C prior to tripping.

$R1_{MAX}$ =Maximum device resistance at 23°C measured 1 hour after tripping or reflow soldering of 260°C for 20 seconds.

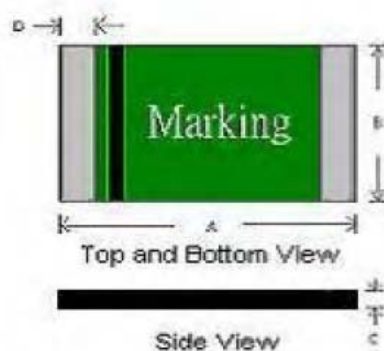
Termination pad characteristics

Termination pad materials: Pure Tin



### Product Dimensions (Millimeters)

#### MPTS2920



| Part Number  | A    |      | B    |      | C    |      | D    |      | E    |      |
|--------------|------|------|------|------|------|------|------|------|------|------|
|              | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  | Min  | Max  |
| MPTS2920L030 | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.15 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L050 | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.15 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L075 | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 1.15 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L100 | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 1.00 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L125 | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L150 | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L185 | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L200 | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L250 | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L260 | 6.73 | 7.98 | 4.80 | 5.44 | 0.30 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |
| MPTS2920L300 | 6.73 | 7.98 | 4.80 | 5.44 | 0.40 | 0.90 | 0.50 | 1.20 | 0.50 | 0.90 |

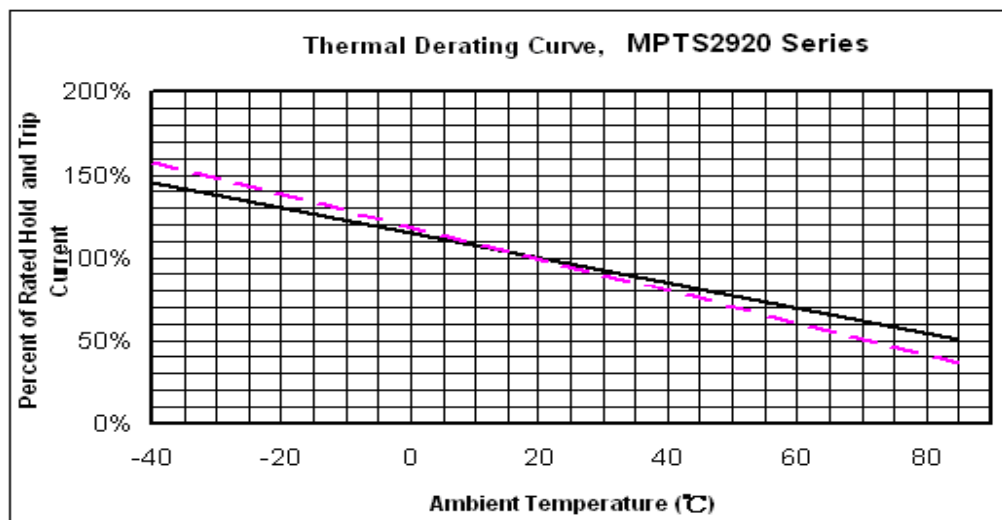
# Polymeric PTC



MPTS Series

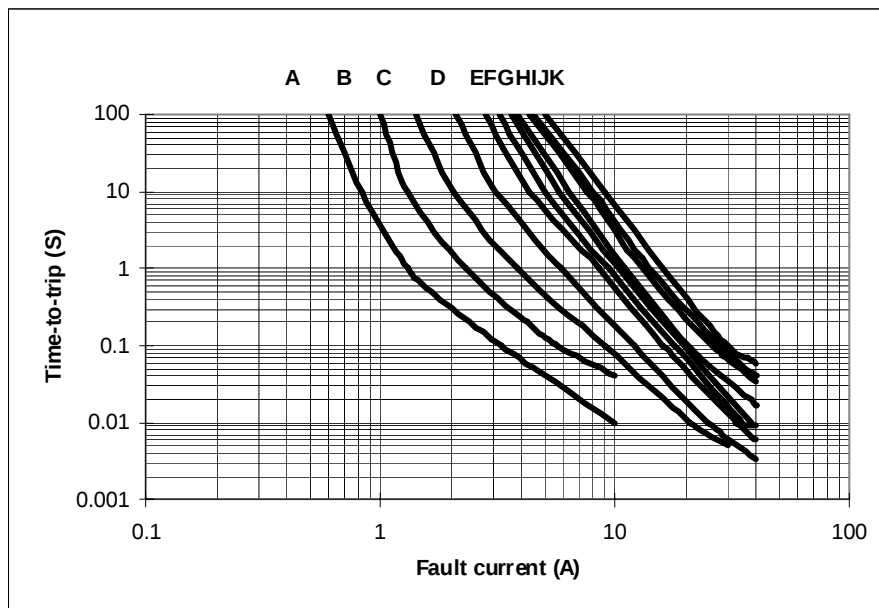
MERITEK

## Thermal Derating Curve



## Typical Time-To-Trip at 23°C

- A = MPTS2920L030
- B = MPTS2920L050
- C = MPTS2920L075
- D = MPTS2920L100
- E = MPTS2920L125
- F = MPTS2920L150
- G = MPTS2920L185
- H = MPTS2920L200
- I = MPTS2920L250
- J = MPTS2920L260
- K = MPTS2920L300



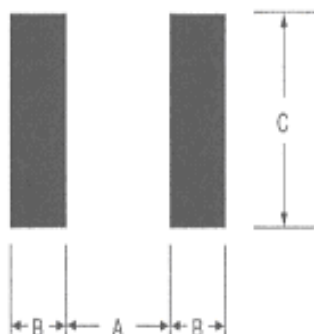
# Polymeric PTC



MPTS Series

MERITEK

The dimension in the table below provides the recommended pad layout for each MPTS2920 device



**Pad dimensions (millimeters)**

| Device          | A<br>Nominal | B<br>Nominal | C<br>Nominal |
|-----------------|--------------|--------------|--------------|
| All 2920 Series | 5.10         | 2.30         | 5.60         |

| Profile Feature                                             | Pb-Free Assembly |
|-------------------------------------------------------------|------------------|
| Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> ) | 3 °C/second max. |
| <b>Preheat :</b>                                            |                  |
| Temperature Min (T <sub>smin</sub> )                        | 150 °C           |
| Temperature Max (T <sub>smax</sub> )                        | 200 °C           |
| Time (t <sub>smin</sub> to t <sub>smax</sub> )              | 60-180 seconds   |
| <b>Time maintained above:</b>                               |                  |
| Temperature(T <sub>L</sub> )                                | 217 °C           |
| Time (t <sub>L</sub> )                                      | 60-150 seconds   |
| <b>Peak/Classification Temperature(T<sub>p</sub>) :</b>     | 260 °C           |
| <b>Time within 5°C of actual Peak :</b>                     |                  |
| Temperature (t <sub>p</sub> )                               | 20-40 seconds    |
| <b>Ramp-Down Rate :</b>                                     | 6 °C/second max. |
| <b>Time 25 °C to Peak Temperature :</b>                     | 8 minutes max.   |

## Solder reflow

- Due to "Lead Free" nature, Temperature and Dwell time for the soldering zone is higher than those for Non-compliant parts. This may cause damage to other components.
- Recommended max solder paste thickness > 0.25mm.
- Devices can be cleaned using standard methods and aqueous solvent.
- Rework should utilize standard industry practices. These changes should apply to all notes for each case size.
- Storage Environment : < 30°C / 60%RH

## Caution:

- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Devices are not designed to be wave soldered to the bottom side of the board.

