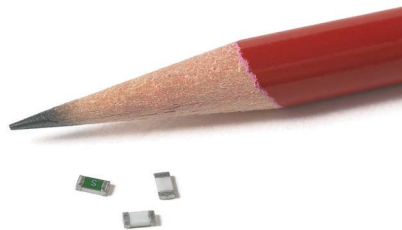


CC12H

High I²t Chip fuses



Product features

- High I²t
- High inrush withstand capability
- AEC-Q200 qualified: (750 mA to 30 A)
- Excellent temperature and cycling characteristics
- 1206 (3216 metric) compact design utilizes less board space
- Compatible with solder reflow and wave solder

Applications

Secondary circuit protection

- Laptop, notebook, netbook
- Tablets, e-readers
- Flat panel displays
- High definition television (HDTV)
- LCD/LED backlighting
- Computers and peripherals
- Gaming console systems
- Handheld/portable equipment
- Mobile device chargers

Automotive

- Central body control module
- Heating ventilation and air conditioning controllers (HVAC)
- Doors, window lift and seat control
- Digital instrument cluster
- In-vehicle infotainment (IVI) and navigation
- Electric pumps, motor control and auxiliaries
- Powertrain control module (PCU)/Engine Control unit (ECU)
- Transmission Control Unit (TCU)

Agency information

- cURus Recognition: File E19180, Guide JDYX2/JDYX8
- AEC-Q200 qualified (750 mA to 30 A)

Ordering

- Use ordering number (see page 6 for details)

Packaging suffixes

- -TR (3000 parts per 7" diameter reel, tape width 8 mm)

Electrical characteristics

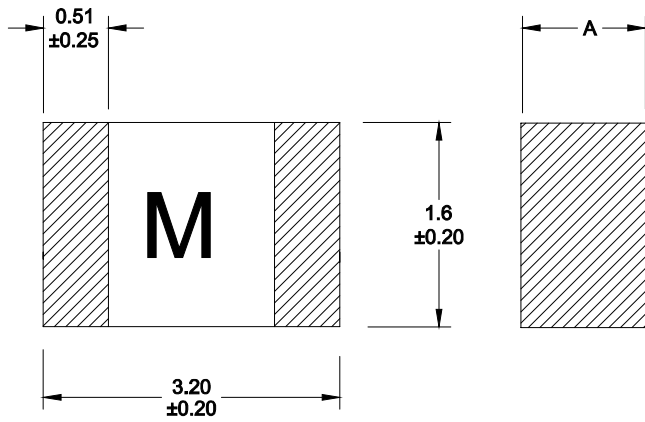
| Amp Rating | % of Amp Rating | Opening Time |
|-----------------|-----------------|------------------|
| 250 mA – 30 A | 100% | 4 hours minimum |
| 1 A – 3 A | 200% | 1.0 s – 60 s |
| 25 A – 30 A | 200% | 120 s max |
| 1 A – 5 A | 250% | 5.0 s max |
| 1 A – 5 A | 300% | 0.1 s – 3.0 s |
| 250 mA – 750 mA | 350% | 5 s max |
| 6 A – 20 A | 350% | 5 s max |
| 250 mA – 500 mA | 1000% | 0.01 ms – 1.0 ms |
| 750 mA – 30 A | 1000% | 0.2 ms – 20 ms |

Product specifications

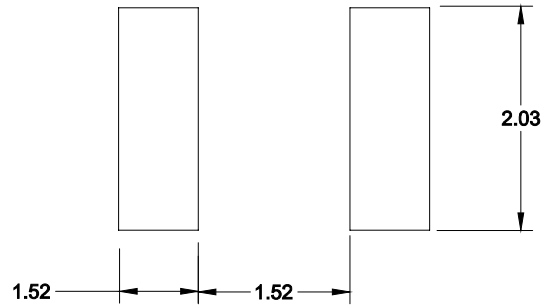
| Part Number | Current rating (A) | Voltage rating (V _{DC}) | Interrupting rating ¹ (A) | Typical DC cold resistance ² (mΩ) | Typical pre-arcing ³ I ² t (A ² s) | Typical voltage drop (mV) | Part marking |
|-------------|--------------------|-----------------------------------|--------------------------------------|--|---|---------------------------|--------------|
| CC12H250mA | 0.25 | 63 | 50 | 3500 | 0.00038 | 1400 | .25 |
| CC12H375mA | 0.375 | 63 | 50 | 1750 | 0.00077 | 730 | A |
| CC12H500mA | 0.5 | 63 | 50 | 980 | 0.0019 | 700 | .5 |
| CC12H750mA | 0.75 | 63 | 50 | 800 | 0.15 | 700 | E |
| CC12H1A | 1 | 63 | 50 | 470 | 0.18 | 490 | H |
| CC12H1.5A | 1.5 | 63 | 50 | 218 | 0.4 | 355 | K |
| CC12H2A | 2 | 63 | 50 | 133 | 1.1 | 305 | N |
| CC12H2.5A | 2.5 | 63 | 50 | 79 | 1.7 | 240 | O |
| CC12H3A | 3 | 63 | 50 | 49 | 2.2 | 185 | P |
| CC12H3.5A | 3.5 | 63 | 50 | 37 | 2.7 | 180 | R |
| CC12H4A | 4 | 63 | 50 | 33 | 3.2 | 169 | S |
| CC12H4.5A | 4.5 | 32 | 100 | 28 | 4.2 | 160 | X |
| CC12H5A | 5 | 32 | 100 | 23 | 6 | 140 | T |
| CC12H6A | 6 | 32 | 100 | 15.5 | 12 | 150 | F |
| CC12H7A | 7 | 32 | 100 | 11.5 | 18 | 130 | J |
| CC12H8A | 8 | 32 | 100 | 7.3 | 18 | 110 | V |
| CC12H10A | 10 | 32 | 100 | 6.5 | 30 | 90 | U |
| CC12H12A | 12 | 32 | 100 | 4.7 | 45 | 90 | W |
| CC12H15A | 15 | 32 | 100 | 3 | 33 | 90 | Y |
| CC12H20A | 20 | 32 | 100 | 2 | 80 | 90 | Q |
| CC12H25A | 25 | 32 | 200 | 3 | 60 | 90 | L |
| CC12H30A | 30 | 32 | 200 | 2.1 | 100 | 90 | Z |

1. DC interrupting rating measured at rated voltage, time constant of less than 50 microseconds, battery source.
2. Typical DC cold resistance measured at <10% of rated current.
3. Typical pre-arcing I²t value is measured at 10I_n rated current.

Dimensions—mm



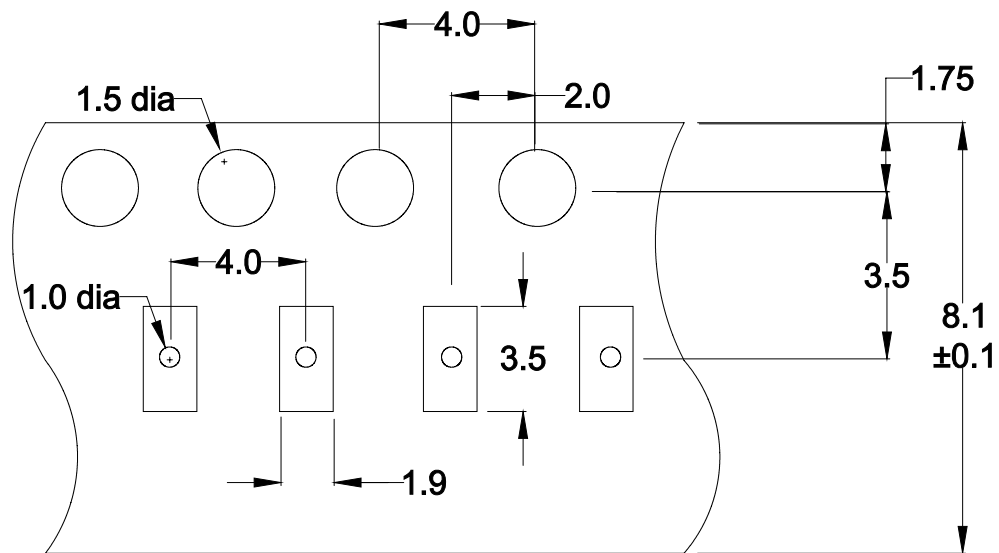
Recommended Pad Layout



| Dimension A | |
|------------------|------------------|
| 250 mA to 500 mA | 750 mA to 30 A |
| 0.89 +0.20/-0.15 | 0.65 +0.20/-0.15 |

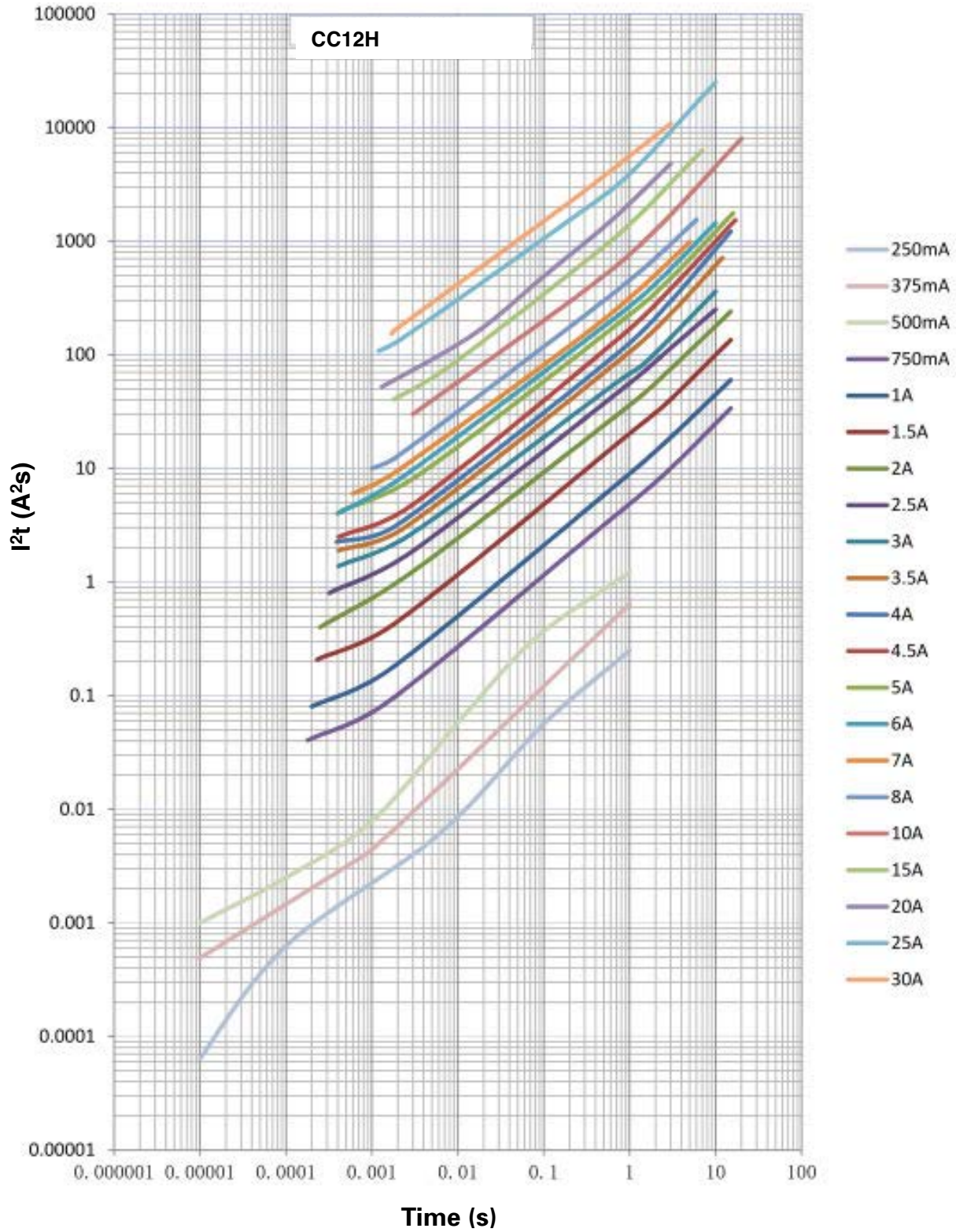
Packaging information- mm

Supplied in tape and reel packaging, 3000 parts per 7" diameter reel.

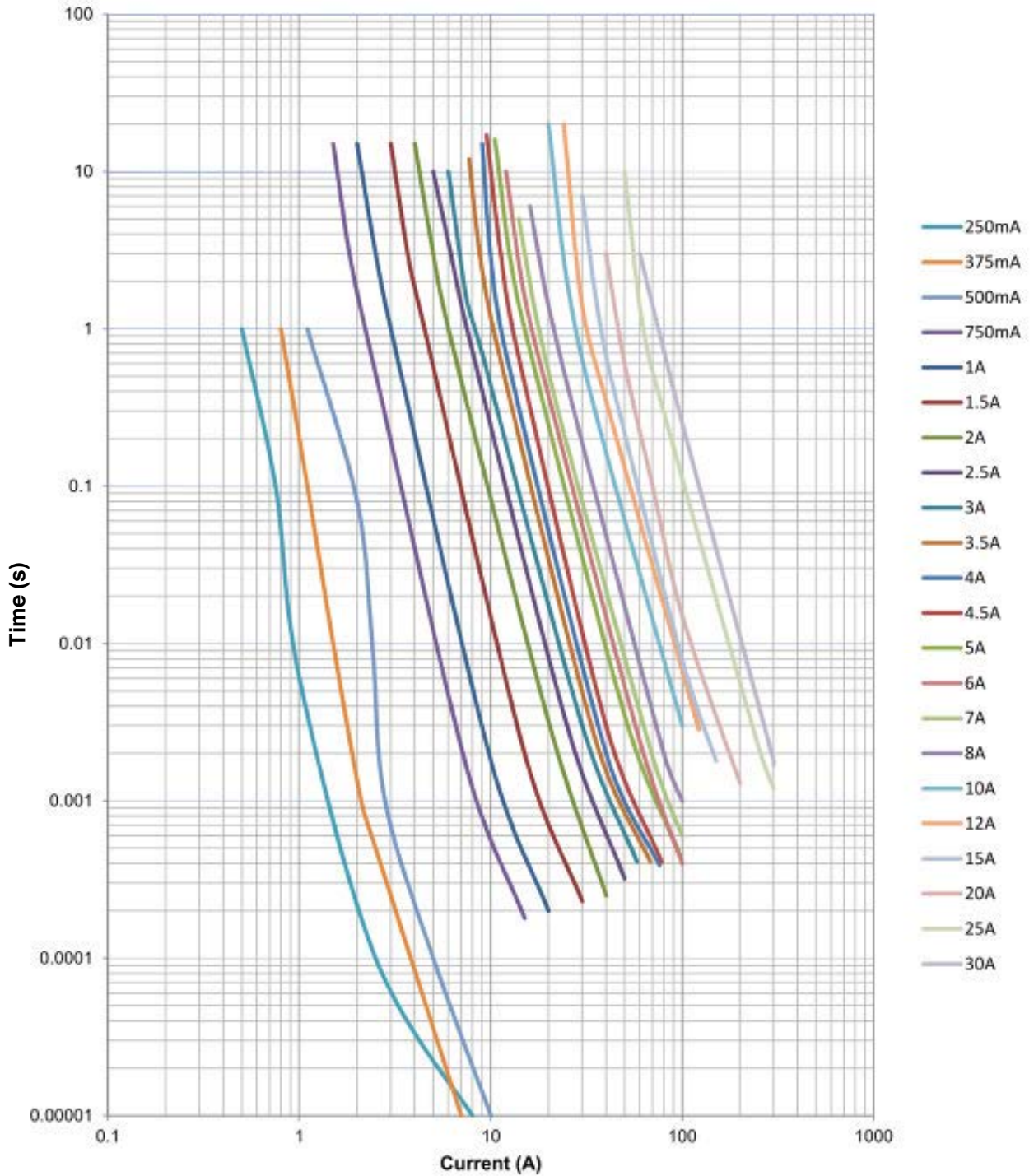


User Direction of Feed →

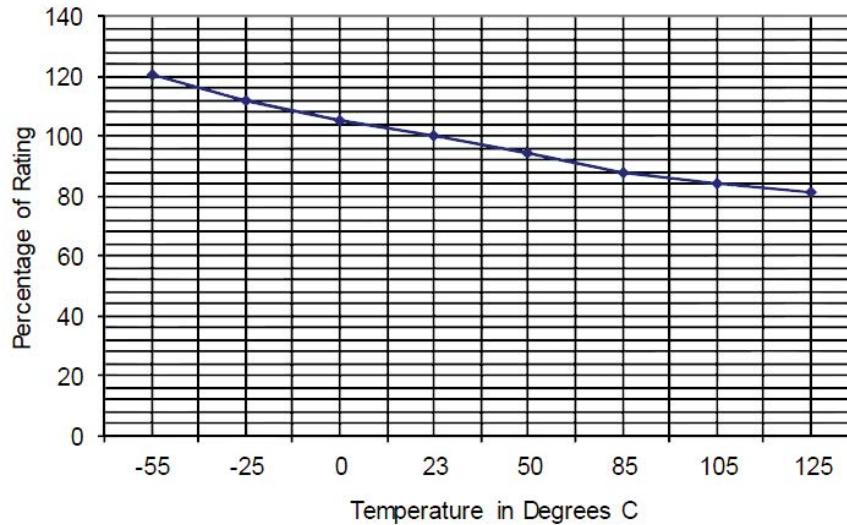
I²t vs. time curve



Time vs. current curve



Temperature derating curve



Environmental data

Operating temperature: -55 °C to +125 °C (with derating); (20 A- 30 A) -40 °C to +85 °C (with derating)

Thermal shock: MIL- STD- 202G, Method 107, (300 cycles -55 °C to +125 °C)

Vibration: MIL-STD- 202G, Method 204, (20 g's for 20 minutes, 12 cycles in each of 3 orientations, 10- 2000 Hz)

Humidity: MIL- STD- 202G, Method 103, (+85 °C, 85% relative humidity, 1000 hours 10% of operating power)

Mechanical shock: MIL-STD- 202G, Method 213, Condition C

Ordering codes

The ordering code is the part number replacing the “.” with a “-” plus adding the packaging suffix.

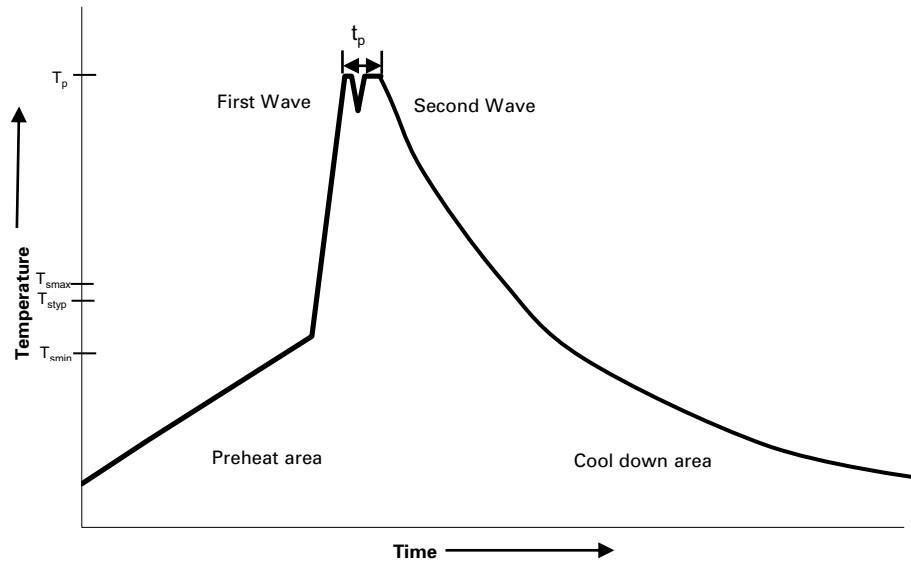
Packaging suffix

- -TR (3000 parts on a 7” reel, tape width 8 mm).

| Part Number | Ordering code |
|-------------|---------------|
| | -TR option |
| CC12H250mA | CC12H250mA-TR |
| CC12H375mA | CC12H375mA-TR |
| CC12H500mA | CC12H500mA-TR |
| CC12H750mA | CC12H750mA-TR |
| CC12H1A | CC12H1A-TR |
| CC12H1.5A | CC12H1-5A-TR |
| CC12H2A | CC12H2A-TR |
| CC12H2.5A | CC12H2-5A-TR |
| CC12H3A | CC12H3A-TR |
| CC12H3.5A | CC12H3-5A-TR |

| Part Number | Ordering code |
|-------------|---------------|
| | -TR option |
| CC12H4A | CC12H4A-TR |
| CC12H4.5A | CC12H4-5A-TR |
| CC12H5A | CC12H5A-TR |
| CC12H6A | CC12H6A-TR |
| CC12H7A | CC12H7A-TR |
| CC12H8A | CC12H8A-TR |
| CC12H10A | CC12H10A-TR |
| CC12H12A | CC12H12A-TR |
| CC12H15A | CC12H15A-TR |
| CC12H20A | CC12H20A-TR |
| CC12H25A | CC12H25A-TR |
| CC12H30A | CC12H30A-TR |

Wave solder profile



Reference EN 61760-1:2006

| Profile Feature | Standard SnPb Solder | Lead (Pb) Free Solder |
|-------------------------------------|---|---|
| Preheat | • Temperature min. (T_{smin}) | 100°C |
| | • Temperature typ. (T_{styp}) | 120°C |
| | • Temperature max. (T_{smax}) | 130°C |
| | • Time (T_{smin} to T_{smax}) (t_s) | 70 seconds |
| Δ preheat to max Temperature | 150°C max. | 150°C max. |
| Peak temperature (T_p)* | 235°C – 260°C | 250°C – 260°C |
| Time at peak temperature (t_p) | 10 seconds max 5 seconds max each wave | 10 seconds max 5 seconds max each wave |
| Ramp-down rate | ~ 2 K/s min ~3.5 K/s typ ~5 K/s max | ~ 2 K/s min ~3.5 K/s typ ~5 K/s max |
| Time 25°C to 25°C | 4 minutes | 4 minutes |

Manual solder

350°C, 4-5 seconds. (by soldering iron), generally manual, hand soldering is not recommended.

Solder reflow profile

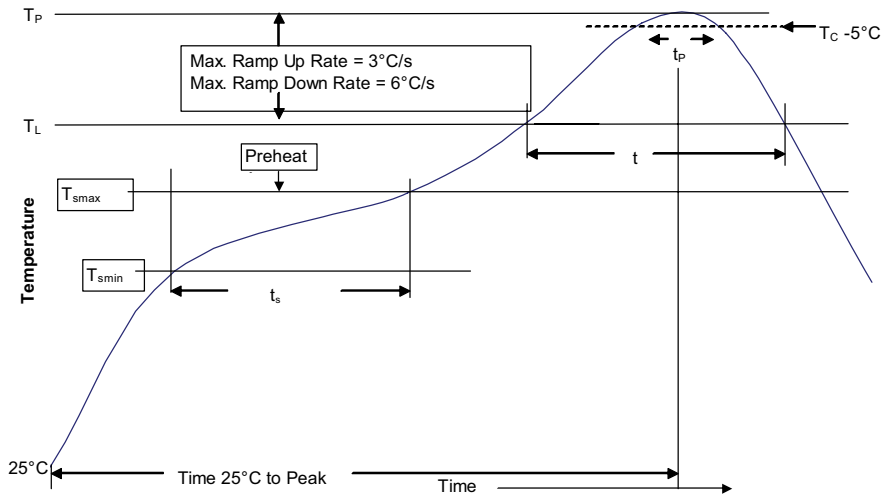


Table 1 - Standard SnPb Solder (T_C)

| Package Thickness | Volume mm ³ <350 | Volume mm ³ ≥350 |
|-------------------|-----------------------------|-----------------------------|
| <2.5mm) | 235°C | 220°C |
| ≥2.5mm | 220°C | 220°C |

Table 2 - Lead (Pb) Free Solder (T_C)

| Package Thickness | Volume mm ³ <350 | Volume mm ³ 350 - 2000 | Volume mm ³ >2000 |
|-------------------|-----------------------------|-----------------------------------|------------------------------|
| <1.6mm | 260°C | 260°C | 260°C |
| 1.6 – 2.5mm | 260°C | 250°C | 245°C |
| >2.5mm | 250°C | 245°C | 245°C |

Reference JDEC J-STD-020

| Profile Feature | Standard SnPb Solder | Lead (Pb) Free Solder |
|--|---|--|
| Preheat and Soak | <ul style="list-style-type: none"> Temperature min. (T_{smin}) Temperature max. (T_{smax}) Time (T_{smin} to T_{smax}) (t_s) | <ul style="list-style-type: none"> 100°C 150°C 60-120 Seconds |
| Average ramp up rate T _{smax} to T _p | 3°C/ Second Max. | 3°C/ Second Max. |
| Liquidous temperature (T _L) Time at liquidous (t _L) | 183°C 60-150 Seconds | 217°C 60-150 Seconds |
| Peak package body temperature (T _p)* | Table 1 | Table 2 |
| Time (t _p)** within 5 °C of the specified classification temperature (T _C) | 20 Seconds** | 30 Seconds** |
| Average ramp-down rate (T _p to T _{smax}) | 6°C/ Second Max. | 6°C/ Second Max. |
| Time 25°C to Peak Temperature | 6 Minutes Max. | 8 Minutes Max. |

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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Printed in USA
Publication No. 4309 BU-MC16040
November 2017

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