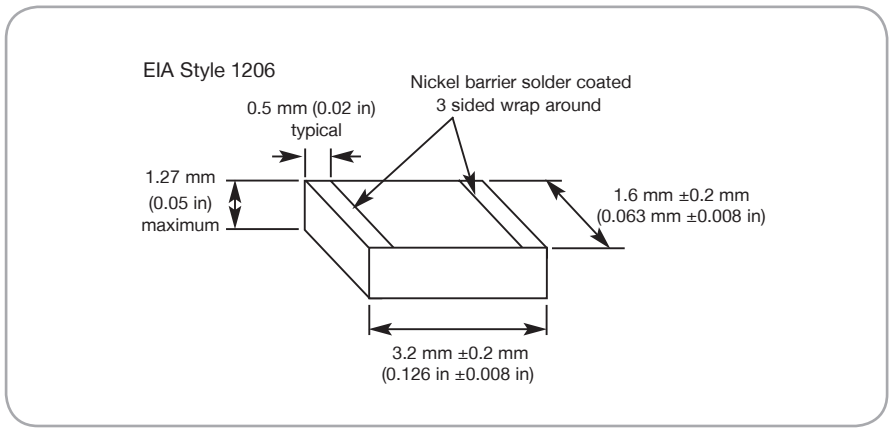
THERMOMETRICS
A COMMITMENT TO EXCELLENCE

# NTC Type SMD

## Thermometrics Surface Mount Devices




### Features

- Nickel barrier  tin plated terminations for soldering
- High sensitivity to changes in temperature
- Wide operating temperature range -40°F to 257°F (-40°C to 125°C)
- Rugged construction
- Available in other material systems
- Intended for temperature measurement, control and compensation
- Suitable for standard soldering techniques
- Excellent solderability without “tombstoning”
- Ceramic between electrodes glass coated for improved stability
- Supplied in tape-and-reel packaging

**Amphenol**
**Advanced Sensors**

# Type NHQ Specification

Surface mount chip 1206 size

## Description

A range of 1206 size surface mount NTC chip thermistors.The terminations are nickel barrier with tin plating.

## General

### Soldering Recommendations

- Maximum storage time in closed package: One year
- Maximum storage time exposed to ambient conditions of 59°F to 86°F (15°C to 30°C), 15% to 70% RH: 30 days
- Drying prior to soldering: Not to exceed 48h at 176°F (80°C) or 16h at 212°F (100°C) or 8h at 257°F (125°C)
- Flux type: R or RMA

### Flow Soldering Conditions

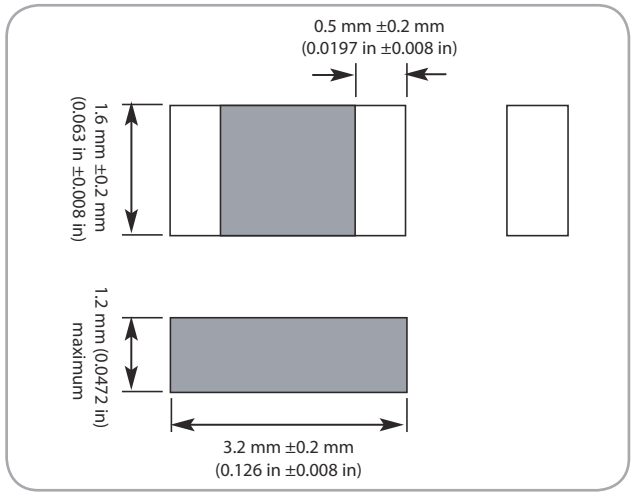
- Preheat temperature: 176°F to 302°F (80°C to 150°C)
- Maximum rate of temperature change: 4.5°F/s or 2.5°C/s
- Maximum solder temperature: 509°F (265°C)
- Maximum dwell time: 10 seconds
- Cooling in ambient or air flow of 5m/s

### Reflow Soldering Conditions

- Method infrared, hot gas, vapor
- Maximum rate of preheat temperature change: 4.5°F/s or 2.5°C/s
- Maximum temperature: 437°F (225°C)
- Maximum time above: 392°F (200°C) 30 seconds
- Maximum radiant flux: (0.1 to 100 W µ) 5 W/ cm2
- Maximum hot air temperature: 527°F (275°C) at 4 m/s
- Maximum vapor temperature: 419°F (215°C)
- Maximum rate of cooling: 4.5°F/s or 2.5°C/s

### Cleaning

Ultrasonic cleaning in methanol or isopropanol not exceeding 40 kHz for 5 minutes, or aqueous cleaning not exceeding 158°F (70°C) for 7 minutes (recommended).




NTC Type NHQ Outline Drawing

| Code | R25 Ω | B (25/85) |
|---|---|---|
| NHQ202B410T5 | 2000 | 4100 |
| NHQ222B410T5 | 2200 | 4100 |
| NHQ252B410T5 | 2500 | 4100 |
| NHQ302B410T5 | 3000 | 4100 |
| NHQ472B355T5 | 4700 | 3550 |
| NHQ502B355T5 | 5000 | 3550 |
| NHQ103B375T5 | 10000 | 3750 |
| NHQ153B400T5 | 15000 | 4000 |
| NHQ203B400T5 | 20000 | 4000 |
| NHQ223B400T5 | 22000 | 4000 |
| NHQ303B400T5 | 30000 | 4000 |
| NHQ333B400T5 | 33000 | 4000 |
| NHQ473B400T5 | 47000 | 4000 |
| NHQ503B400T5 | 50000 | 4000 |
| NHQ104B425T5 | 100000 | 4250 |
| NHQ154B425T5 | 150000 | 4250 |
| NHQ304B435T5 | 300000 | 4350 |
| NHQ474B435T5 | 470000 | 4350 |
| NHQ504B435T5 | 500000 | 4350 |

## Data

- Resistance tolerance at 77°F (25°C) ±5%; for ±10% replace T5 by T10 in code.
- Tolerance on B value ±200 K
- Minimum temperature: -40°F (-40°C)
- Maximum temperature: 257°F (125°C)
- Dissipation factor: 3 mW/K
- Time constant: 8 seconds maximum

# Type NHQM Specification

Surface mount chip 0805 size

## Description

A range of 0805 size surface mount NTC chip thermistors.The terminations are nickel barrier with tin plating.

## General

### Soldering Recommendations

- Maximum storage time in closed package: One year
- Maximum storage time exposed to ambient conditions of 59°F to 86°F (15°C to 30°C), 15% to 70% RH: 30 days
- Drying prior to soldering: Not to exceed 48h at 176°F (80°C) or 16h at 212°F (100°C) or 8h at 257°F (125°C)
- Flux type: R or RMA

### Flow Soldering Conditions

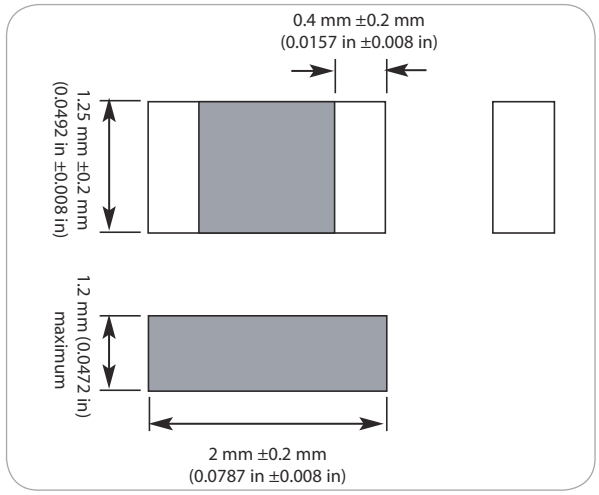
- Preheat temperature: 176°F to 302°F (80°C to 150°C)
- Maximum rate of temperature change: 4.5°F/s or 2.5°C/s
- Maximum solder temperature: 509°F (265°C)
- Maximum dwell time: 10 seconds
- Cooling in ambient or air flow of 5m/s

### Reflow Soldering Conditions

- Method infrared, hot gas, vapor
- Maximum rate of preheat temperature change: 4.5°F/s or 2.5°C/s
- Maximum temperature: 437°F (225°C)
- Maximum time above: 392°F (200°C) 30 seconds
- Maximum radiant flux: (0.1 to 100 Wμ) 5 W μ/cm2
- Maximum hot air temperature: 527°F (275°C) at 4 m/s
- Maximum vapor temperature: 419°F (215°C)
- Maximum rate of cooling: 4.5°F/s or 2.5°Cs

### Cleaning

Ultrasonic cleaning in methanol or isopropanol not exceeding 40 kHz for 5 minutes, or aqueous cleaning not exceeding 158°F (70°C) for 7 minutes (recommended).




NTC Type NHQM Outline Drawing

| Code | R25 Ω | B (25/85°C) |
|---|---|---|
| NHQM202B410T5 | 2000 | 4100 |
| NHQM252B410T5 | 2500 | 4100 |
| NHQM272B410T5 | 2700 | 4100 |
| NHQM302B410T5 | 3000 | 4100 |
| NHQM472B355T5 | 4700 | 3550 |
| NHQM502B355T5 | 5000 | 3550 |
| NHQM682B375T5 | 6800 | 3750 |
| NHQM103B375T5 | 10000 | 3750 |
| NHQM153B400T5 | 15000 | 4000 |
| NHQM203B400T5 | 20000 | 4000 |
| NHQM223B400T5 | 22000 | 4000 |
| NHQM273B400T5 | 27000 | 4000 |
| NHQM303B400T5 | 30000 | 4000 |
| NHQM333B400T5 | 33000 | 4000 |
| NHQM473B415T5 | 47000 | 4150 |
| NHQM503B415T5 | 50000 | 4150 |
| NHQM104B425T5 | 100000 | 4250 |
| NHQM154B425T5 | 150000 | 4250 |
| NHQM304B425T5 | 300000 | 4250 |
| NHQM474B435T5 | 470000 | 4350 |
| NHQM504B435T5 | 500000 | 4350 |

## Data

- Resistance tolerance at 77°F (25°C) ±5%; for ±10% replace T5 by T10 in code.
- Tolerance on B value ±200 K
- Minimum temperature: -40°F (-40°C)
- Maximum temperature: 257°F (125°C)
- Dissipation factor: 1.5 mW/K
- Time constant: 5 seconds maximum

# Type NHQMM Specification

Surface mount chip 0603 size

## Description

A range of 0603 size surface mount NTC chip thermistors.The terminations are nickel barrier with tin plating.

## General

### Soldering Recommendations

- Maximum storage time in closed package: One year
- Maximum storage time exposed to ambient conditions of 59°F to 86°F (15°C to 30°C), 15% to 70% RH: 30 days
- Drying prior to soldering: Not to exceed 48h at 176°F (80°C) or 16h at 212°F (100°C) or 8h at 257°F (125°C)
- Flux type: R or RMA

### Flow Soldering Conditions

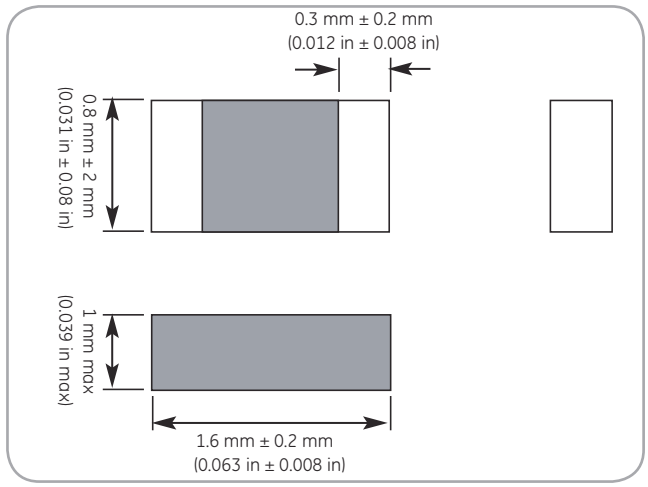
- Preheat temperature: 176°F to 302°F (80°C to 150°C)
- Maximum rate of temperature change: 4.5°F/s or 2.5°C/s
- Maximum solder temperature: 509°F (265°C)
- Maximum dwell time: 10 seconds
- Cooling in ambient or air flow of 5m/s

### Reflow Soldering Conditions

- Method infrared, hot gas, vapor
- Maximum rate of preheat temperature change: 4.5°F/s or 2.5°C/s
- Maximum temperature: 437°F (225°C)
- Maximum time above: 392°F (200°C) 30 seconds
- Maximum radiant flux: (0.1 to 100 Wμ) 5 Wμ/cm$^2$
- Maximum hot air temperature: 527°F (275°C) at 4 m/s
- Maximum vapor temperature: 419°F (215°C)
- Maximum rate of cooling: 4.5°F/s or 2.5°C/s

### Cleaning

Ultrasonic cleaning in methanol or isopropanol not exceeding 40 kHz for 5 minutes, or aqueous cleaning not exceeding 158°F (70°C) for 7 minutes (recommended).




NTC Type NHQMM Outline Drawing

| Code | R25 Ω | B (25/85) |
|---|---|---|
| NHQMM202B410T5 | 2000 | 4100 |
| NHQMM222B410T5 | 2200 | 4100 |
| NHQMM302B410T5 | 3000 | 4100 |
| NHQMM332B410T5 | 3300 | 4100 |
| NHQMM472B355T5 | 4700 | 3550 |
| NHQMM502B355T5 | 5000 | 3550 |
| NHQMM682B355T5 | 6800 | 3550 |
| NHQMM103B375T5 | 10000 | 3750 |
| NHQMM153B380T5 | 15000 | 3800 |
| NHQMM203B380T5 | 20000 | 3800 |
| NHQMM223B380T5 | 22000 | 3800 |
| NHQMM303B400T5 | 30000 | 4000 |
| NHQMM333B400T5 | 33000 | 4000 |
| NHQMM473B400T5 | 47000 | 4000 |
| NHQMM503B400T5 | 50000 | 4000 |
| NHQMM683B400T5 | 68000 | 4000 |
| NHQMM104B415T5 | 100000 | 4150 |
| NHQMM154B425T5 | 150000 | 4250 |
| NHQMM204B425T5 | 200000 | 4250 |

## Data

- Resistance tolerance at 77°F (25°C) ±5%; for ±10% replace T5 by T10 in code
- Tolerance on B value ±200 K
- Minimum temperature: -40°F (-40°C)
- Maximum temperature: 257°F (125°C)
- Dissipation factor: 1.2 mW/K
- Time constant: 4 seconds maximum

# Type NHQT Specification

Surface mount chip 0402 size

## Description

A range of 0402 size surface mount NTC chip thermistors.The terminations are nickel barrier with tin plating.

## General

### Soldering Recommendations

- Maximum storage time in closed package: One year
- Maximum storage time exposed to ambient conditions of 59°F to 86°F (15°C to 30°C), 15% to 70% RH: 30 days
- Drying prior to soldering: Not to exceed 48h at 176°F (80°C) or 16h at 212°F (100°C) or 8h at 257°F (125°C)
- Flux type: R or RMA

### Flow Soldering Conditions

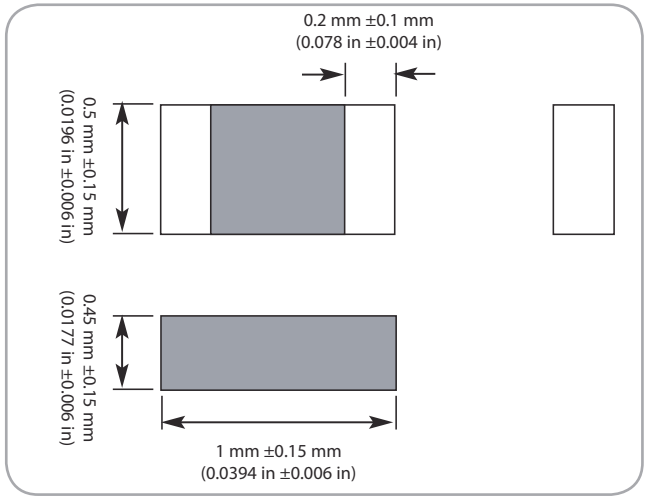
- Preheat temperature: 176°F to 302°F (80°C to 150°C)
- Maximum rate of temperature change: 4.5°F/s or 2.5°C/s
- Maximum solder temperature: 509°F (265°C)
- Maximum dwell time: 10 seconds
- Cooling in ambient or air flow of 5m/s

### Reflow Soldering Conditions

- Method infrared, hot gas, vapor
- Maximum rate of preheat temperature change: 4.5°F/s or 2.5°C/s
- Maximum temperature: 437°F (225°C)
- Maximum time above: 392°F (200°C) 30 seconds
- Maximum radiant flux: (0.1 to 100 Wμ) 5 Wμ/cm2
- Maximum hot air temperature: 527°F (275°C) at 4 m/s
- Maximum vapor temperature: 419°F (215°C)
- Maximum rate of cooling: 4.5°F/s or 2.5°C/s

### Cleaning

Ultrasonic cleaning in methanol or isopropanol notexceeding 40 kHz for 5 minutes, or aqueous cleaning not exceeding 158°F (70°C) for 7 minutes (recommended).




NTC Type NHQT Outline Drawing

| Code | R25 Ω | B (25/85) |
|---|---|---|
| NHQT500B285T5 | 50 | 2850 |
| NHQT202B410T5 | 2000 | 4100 |
| NHQT252B410T5 | 2500 | 4100 |
| NHQT332B410T5 | 3300 | 4100 |
| NHQT352B410T5 | 3500 | 4100 |
| NHQT402B410T5 | 4000 | 4100 |
| NHQT652B410T5 | 6500 | 4100 |
| NHQT153B380T5 | 15000 | 3800 |
| NHQT203B380T5 | 20000 | 3800 |
| NHQT223B380T5 | 22000 | 3800 |
| NHQT303B400T5 | 30000 | 4000 |
| NHQT473B400T5 | 47000 | 4000 |
| NHQT683B400T5 | 68000 | 4000 |
| NHQT154B425T5 | 150000 | 4250 |

## Data

- Resistance tolerance at 77°F (25°C) ±5%; for ±10% replace T5 by T10 in code
- Tolerance on B value ±200 K
- Minimum temperature: -40°F (-40°C)
- Maximum temperature: 257°F (125°C)
- Dissipation factor: 1.5 mW/K
- Time constant: 4 seconds maximum

Amphenol

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AAS-920-324F - 03/2017

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NHQ223R10 NHQ103B375T10 NHQ504R10 NHQ104B425T10 NHQ102B325T10 NHQ103B375T5 NHQ154B425T5 NHQ304B435T10 NHQ223B400T5 NHQ503B400T5 NHQ252B410T10 NHQ272B410T10 NHQ152B345T5 NHQ504B435T10 NHQ801B325T5 NHQ333B400T10 NHQ472B355T5 NHQ473B400T10 NHQ102B325T5 NHQ303B400T5 NHQ153B400T10 NHQ203B400T10 NHQ104B425T5 NHQ503B400T10 NHQ203B400T5 NHQ501B325T5 NHQ302B410T10 NHQ303B400T10 NHQ302B410T5 NHQ504B435T5 NHQ153B400T5 NHQ333B400T5 NHQ222B410T5 NHQ101B280T5 NHQ272B410T5 NHQ472B355T10 NHQ474B435T5 NHQ502B355T10 NHQ101B280T10 NHQ502B355T5 NHQ152B345T10 NHQ223B400T10 NHQ801B325T10 NHQ304B435T5 NHQ501B325T10 NHQ202B410T10 NHQ252B410T5 NHQ202B410T5 NHQ222B410T10 NHQ474B435T10 NHQ154B425T10 NHQ473B400T5

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