

SolidMatrix[®] Surface Mount Fuses

QF1206H Series (Automotive Grade, 1206 Size)



Features:

- Automotive grade with AEC-Q200 Rev.E qualification
- Multilayer monolithic structure with glass ceramic body and silver fusing element
- Silver termination with nickel and pure-tin solder plating, providing excellent solderability
- Compatible with both wave and reflow soldering processes

Clearing Time Characteristics:

| % of current rating | Clearing time at 25°C | |
|---------------------|-----------------------|------------|
| | Min. | Max. |
| 100% | 4 hours | - |
| 200%(1-6) | 1 second | 60 seconds |
| 350%(0.5-0.75A) | - | 5 seconds |

Shape and Dimensions:

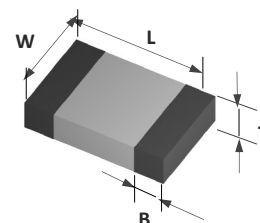
| Unit | Inch | mm |
|----------|---------------|-------------|
| L | 0.126 ± 0.008 | 3.20 ± 0.20 |
| W | 0.063 ± 0.008 | 1.60 ± 0.20 |
| T | 0.038 ± 0.008 | 0.97 ± 0.20 |
| B | 0.020 ± 0.010 | 0.51 ± 0.25 |

Applications:

- Communications & Networks
- Infotainment systems
- Battery management systems
- Under-the-hood applications

Agency Approval:

- Recognized Under the Components Program of Underwriters Laboratories.
- Certification #: UL-E232989.



Ordering Information:

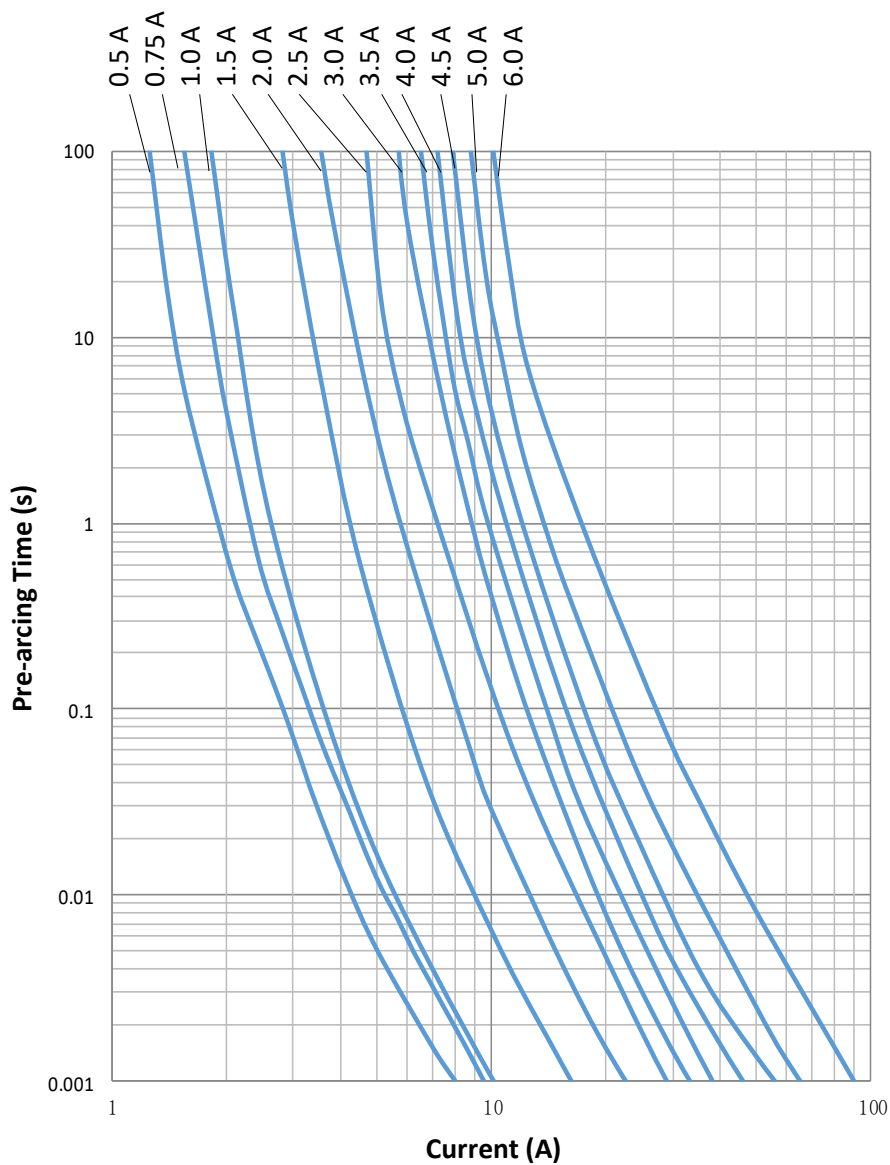
| Part Number | Current Rating (A) | Voltage Rating (V DC) | Interrupting Ratings | Nominal DCR (Ω) ¹ | Nominal I ² t (A ² s) ² | Marking ³ |
|--------------|--------------------|-----------------------|----------------------|------------------------------|--|----------------------|
| QF1206HA500T | 0.5 | 65 | 50A @65V DC | 0.980 | 0.035 | C |
| QF1206HA750T | 0.75 | | | 0.420 | 0.100 | D |
| QF1206H1A00T | 1.0 | 63 | 50A @63V DC | 0.370 | 0.112 | E |
| QF1206H1A50T | 1.5 | | | 0.165 | 0.336 | G |
| QF1206H2A00T | 2.0 | | | 0.089 | 0.820 | I |
| QF1206H2A50T | 2.5 | 32 | 50A @32V DC | 0.067 | 1.210 | J |
| QF1206H3A00T | 3.0 | | | 0.039 | 1.360 | K |
| QF1206H3A50T | 3.5 | | | 0.030 | 1.890 | L |
| QF1206H4A00T | 4.0 | | | 0.025 | 2.780 | M |
| QF1206H4A50T | 4.5 | | | 0.023 | 3.250 | T |
| QF1206H5A00T | 5.0 | | | 0.020 | 7.500 | N |
| QF1206H6A00T | 6.0 | 24 | 80A @24V DC | 0.013 | 12.80 | O |

1. Measured at ≤ 10% rated current and 25°C ambient. 2. Melting I²t at 0.001 second pre-arcing time. 3. Green Marking Character Code.

SolidMatrix[®] Surface Mount Fuses

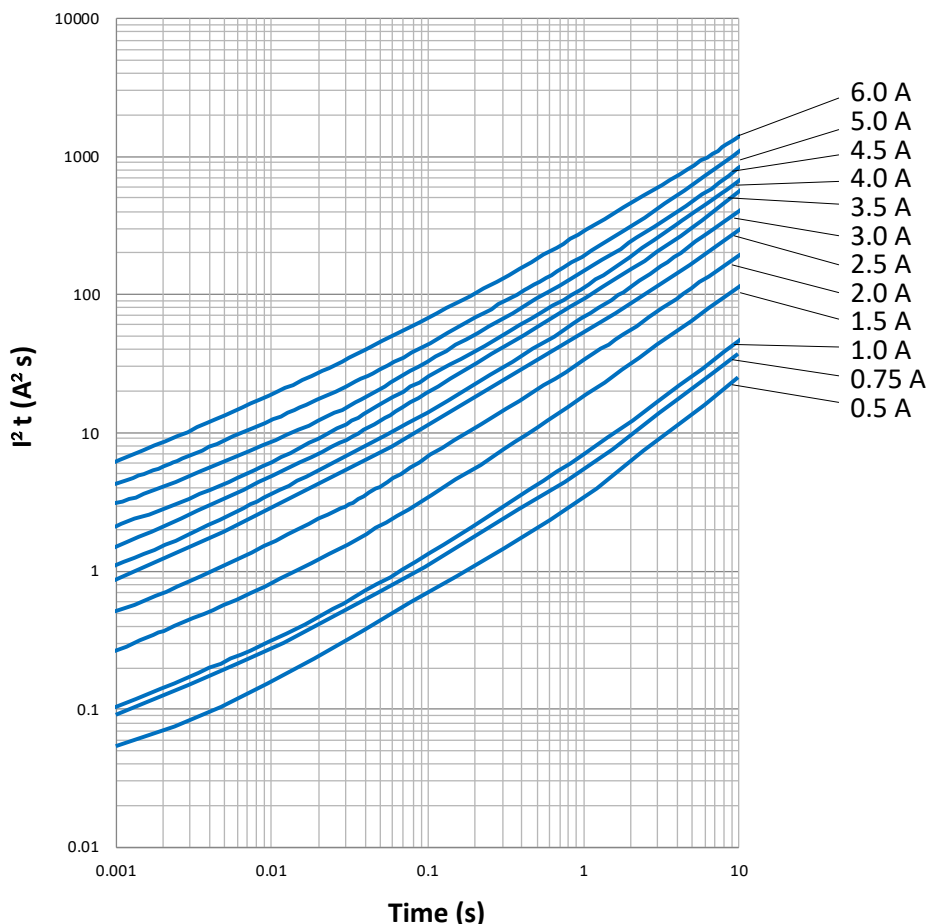
QF1206H Series (Automotive Grade, 1206 Size)

Average Pre-arcing Time Curves:



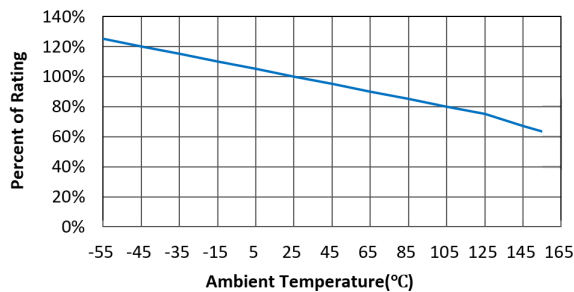
SolidMatrix[®] Surface Mount Fuses
QF1206H Series (Automotive Grade, 1206 Size)

Average I²t vs. t Curves:



Temperature De-rating:

The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25°C, the fuse shall be “de-rated” according to the de-rating curve.



Product Identification:

QF 1206 H 1A00 T

(1) (2) (3) (4) (5)

- (1) **Series Code:** QF - Automotive Grade SolidMatrix Chip Fuse
- (2) **Size Code:** L x W (inch), the first two digits - L (length), the last two digits - W (width)
- (3) **Characteristic Code:** H - Slow blow
- (4) **Current Rating Code:** 1A00 - 1.0A
- (5) **Package Code:** T - Tape & Reel, B - Bulk

Operating Temperature Range:

-55°C ~+125°C (with de-rating)

SolidMatrix[®] Surface Mount Fuses

QF1206H Series (Automotive Grade, 1206 Size)

Reliability Tests:

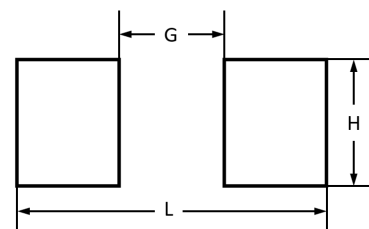
| No. | Item | Test Condition | Criteria |
|-----|---------------------------------|--|---|
| 1 | High temperature storage | Subject fuses to +150°C for 1000 hours | DCR change within ±10%, no damage |
| 2 | Low temperature storage | Subject fuses to -65°C for 1000 hours | DCR change within ±10%, no damage, Post Electrical Test not required |
| 3 | Temperature Cycling | 1000 cycles (-65°C to 150°C), and 30 min. maximum dwell time at each temperature extreme | DCR change within ±10%, no damage |
| 4 | Biased Humidity | Subject fuses to +85°C/85%RH with 10% rated current for 1000 hours | DCR change within ±10%, no excessive corrosion |
| 5 | High Temperature Operating Life | +150°C for 1000 hours. Load setting : 75%(current de-rating) * 65%(temp. de-rating per series) * Rated current | DCR change within ±10%, no damage |
| 6 | Mechanical Vibration | 0.4" D.A. or 30G between 5 and 3000 Hz, along 3 mutually perpendicular axes for a total of 12 hours | DCR change within ±10%, no mechanical damage |
| 7 | Mechanical Shock | 1500G, 0.5 ms, half sine shocks in 6 major directions along 3 mutually perpendicular axes | DCR change within ±10%, no mechanical damage |
| 8 | Resistance to Soldering Heat | One dip at 260°C, 60 seconds. | DCR change within ±20% of > 1A or ±10% of ≤ 1A, no damage, new solder coverage ≥ 75% |
| 9 | Salt spray | 5% salt solution, 48 hours exposure | DCR change within ±10%, no excessive corrosion, Post Electrical Test not required |
| 10 | Solderability | One dip at 245°C for 5 seconds | New solder coverage ≥ 95%, Post Electrical Test not required |
| 11 | Terminal Strength | Apply 17.7N (1.8kg) force gradually to the side of the fuse, this force shall be applied for 60 seconds | DCR change within ±10%, no mechanical damage |
| 12 | Board Flex | Apply a force that will bend the board distance of x = 2 mm, and the duration of the applied forces shall be 60 seconds | DCR change within ±20% of > 5A or ±10% of ≤ 5A, no mechanical damage |
| 13 | Resistance to Solvents | Completely immersed in solvent solutions for 3 minutes, brushed the marking surface for ten strokes; repeated total 3 times | Marking shall remain legible and no discoloration, DCR change within ±10% |
| 14 | Electrical Characterization | Conducted Electrical Characterization test at minimum , ambient and maximum operating temperatures; Current Carrying Capacity test with temperature de-rating; Overload at minimum and maximum operating temperatures test 350% current rating, ambient overload test 200% current rating on 1~6A products and 350% current rating on 0.5~0.75A products | Current Carrying Capacity: 4 hours Min; Overload at ambient: 200%(1~6A): 1 ~ 60 seconds ; 350%(0.5~0.75A): 5seconds Max. Overload at minimum /maximum operating temperatures: 350%: 5seconds Max; Interrupting Test: meet Interrupting Ratings capability |
| 15 | Post -stress Electrical Test | Current Carrying Capacity: Half of samples, test at room Ambient. Overload Test : Half of samples, test at room Ambient at 200% current rating for 1~6A products and 350% for 0.5A to 0.75A products) | Current Carrying Capacity: 4 hours Min; Overload: 200%(1~6A): 1 ~ 60 seconds ; 350% (0.5~0.75A): 5seconds Max. |

SolidMatrix[®] Surface Mount Fuses

QF1206H Series (Automotive Grade, 1206 Size)

Recommended Land Pattern:

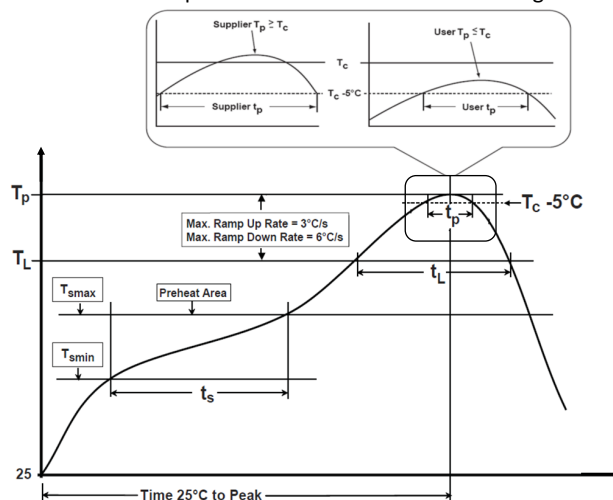
| Chip Size | 1206 (3216) | Unit |
|-----------|-----------------|--------------|
| L | 0.173 (4.40) | Inch (mm) |
| G | 0.059 (1.50) | Inch (mm) |
| H | 0.071 (1.80) | Inch (mm) |



Recommended Temperature Profile:

| Profile Feature | Pb-Free Assembly |
|--|------------------|
| Preheat/Soak | |
| Temperature Min (T_{smin}) | 150°C |
| Temperature Max (T_{smax}) | 200°C |
| Time (t_s) from (T_{smin} to T_{smax}) | 60~120 seconds |
| Ramp-up rate (T_L to T_p) | 3°C/second max. |
| Liquidous temperature (T_L) | 217°C |
| Time (t_L) maintained above T_L | 60~150 seconds |
| Peak package body temperature (T_p) | 260°C |
| Time (t_p)* within 5°C of the specified classification temperature (T_c) | 30 seconds * |
| Ramp-down rate (T_p to T_L) | 6°C/second max. |
| Time 25°C to peak temperature | 8 minutes max. |
| * Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum | |

* Recommended Temperature Profile for Reflow Soldering



Recommended conditions for hand soldering:

- Appropriate temperature (max.) of soldering iron tip/soldering time (max.): 280°C / 10 s or 350°C / 3 s
- Using hot air rework station with tip that can melt the solder on both terminations at the same time is strongly recommended. Do not directly contact the chip termination with the tip of soldering iron.

Storage:

- The maximum ambient temperature shall not exceed 35°C . Storage temperatures higher than 35°C could result in the deformation of packaging materials.
- The maximum relative humidity recommended for storage is 75%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components.
- The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.
- MSL=1

Packaging:

| Chip Size | Parts on 7 inch (178 mm) Reel |
|-------------|----------------------------------|
| 1206 (3216) | 3,000 |

Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.



AEM Components (Suzhou) Co., Ltd

**461 Zhongnan Street,
China-Singapore Suzhou Industrial Park
Jiangsu, P. R. China, 215026**

Tel: 86-512-6258-0028

Fax: 86-512-6258-0018

Email: marketing@aemchina.com

AEM Components (USA), Inc.

6670 Cobra Way, San Diego, CA 92121, USA

Tel: 1-858-750-6100

Fax: 1-858-481-1123

Email: sales@aemcomponents.com