

# SolidMatrix<sup>®</sup> Automotive Surface Mount Fuses

## QF0603G Series

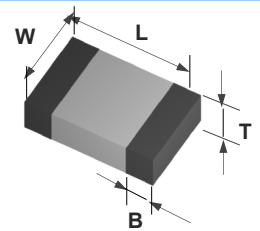


### Agency Approval:

| Agency | File NO. |
|--------|----------|
| UL     | E232989  |

### Shape and Dimensions:

| Unit | Inch          | mm          |
|------|---------------|-------------|
| L    | 0.063 ± 0.006 | 1.60 ± 0.15 |
| W    | 0.031 ± 0.006 | 0.80 ± 0.15 |
| T    | 0.031 ± 0.006 | 0.80 ± 0.15 |
| B    | 0.014 ± 0.006 | 0.36 ± 0.15 |



### Clearing Time Characteristics:

| % of current rating | Clearing time at 25°C |           |
|---------------------|-----------------------|-----------|
|                     | Min.                  | Max.      |
| 100%                | 4 hours               |           |
| 250%                |                       | 5 seconds |

### Ordering Information:

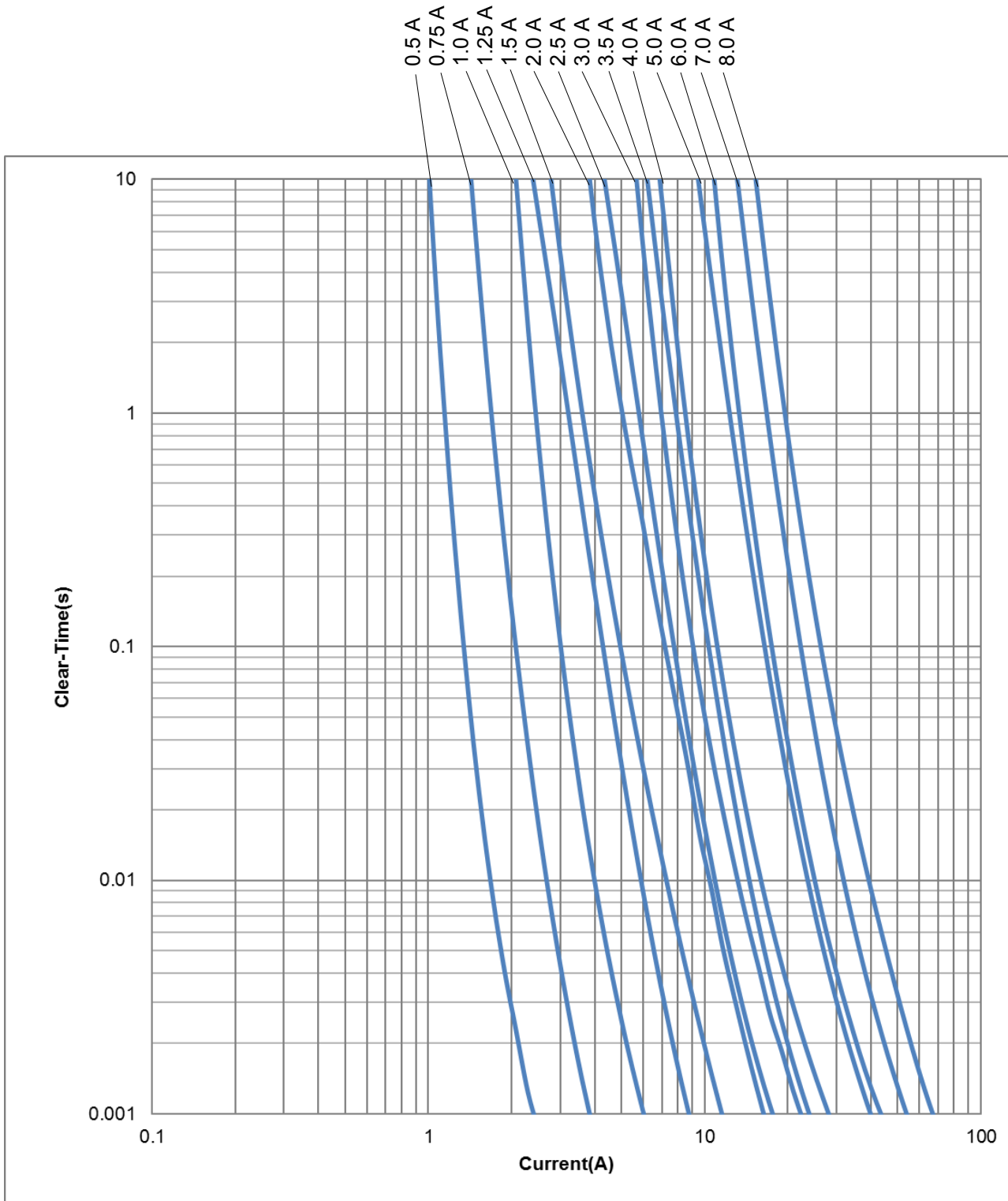
| Part Number  | Current Rating (A) | Voltage Rating (VDC) | Interrupting Ratings | Nominal Cold DCR ( $\Omega$ ) <sup>1</sup> | Nominal I <sup>2</sup> t (A <sup>2</sup> s) <sup>2</sup> | Marking Code <sup>3</sup> |
|--------------|--------------------|----------------------|----------------------|--|--|---------------------------|
| QF0603GA500T | 0.5                | 65                   | 50A @ 65VDC          | 0.827                                      | 0.004  | C                         |
| QF0603GA750T | 0.75               |                      |                      | 0.373                                      | 0.012  | D                         |
| QF0603G1A00T | 1.0                |                      |                      | 0.237                                      | 0.030  | E                         |
| QF0603G1A25T | 1.25               |                      |                      | 0.153                                      | 0.065  | F                         |
| QF0603G1A50T | 1.5                |                      |                      | 0.116                                      | 0.10   | G                         |
| QF0603G2A00T | 2.0                | 35                   | 50A @ 35VDC          | 0.067                                      | 0.18   | I                         |
| QF0603G2A50T | 2.5                |                      |                      | 0.039                                      | 0.22   | J                         |
| QF0603G3A00T | 3.0                |                      |                      | 0.029                                      | 0.34   | K                         |
| QF0603G3A50T | 3.5                |                      |                      | 0.024                                      | 0.39   | L                         |
| QF0603G4A00T | 4.0                |                      |                      | 0.020                                      | 0.53   | M                         |
| QF0603G5A00T | 5.0                |                      |                      | 0.012                                      | 0.88   | N                         |
| QF0603G6A00T | 6.0                | 24                   | 80A @ 24VDC          | 0.011                                      | 1.09   | O                         |
| QF0603G7A00T | 7.0                |                      |                      | 0.008                                      | 1.86   | P                         |
| QF0603G8A00T | 8.0                |                      |                      | 0.007                                      | 2.7  | R                         |

1. Measured at ≤10% of rated current and 25°C ambient.
2. Melting I<sup>2</sup>t at 0.001 second pre-arcing time.
3. Cyan marking character code.

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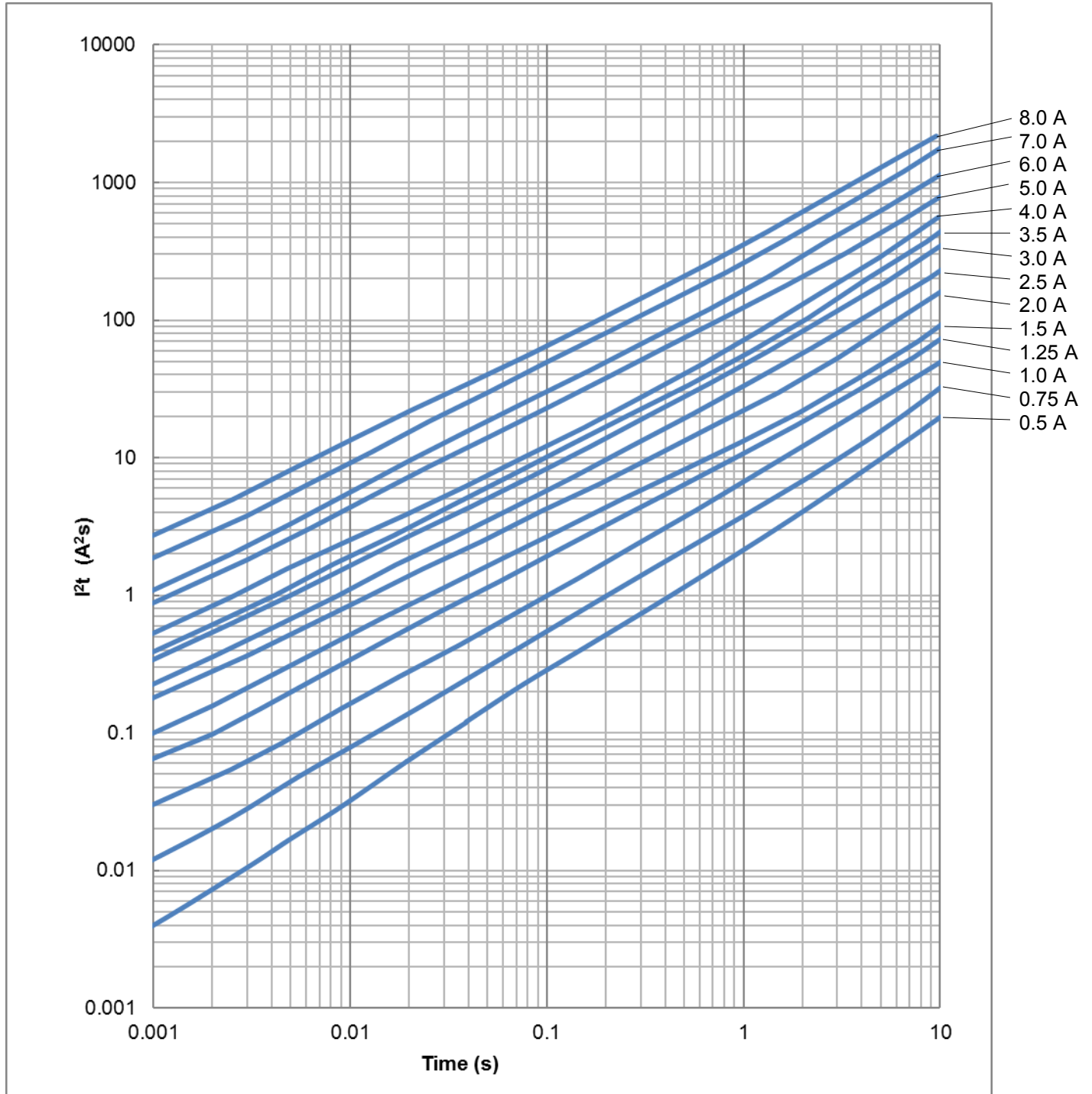
### Average Pre-arcing Time Curves:



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### Average $I^2t$ vs. $t$ Curves:



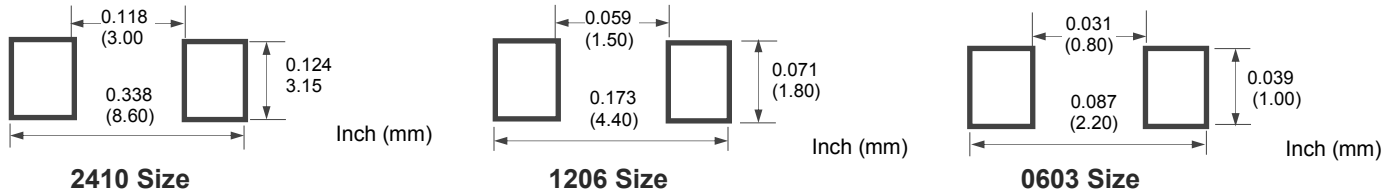
# Automotive Surface Mount Fuses

## Product Identification:

**Q A 1206 F 2A00 T**  
 (1) (2) (3) (4) (5) (6)

- (1) Product type code: Q- Automotive fuse
- (2) Product code: A-AirMatrix Chip Fuse, F-SolidMatrix Chip Fuse
- (3) Dimension code: L x W (inch)
  - The first two digits - L (length)
  - The last two digits - W (width)
- (4) Characteristic code: F-fast acting, H-Slow Blow
- (5) Current rating code: 2A00-2.0A
- (6) Package code:
  - T – Tape and Reel
  - B – Bulk

## Recommended Land Pattern:



## Fuse Selection and Temperature De-rating Guideline:

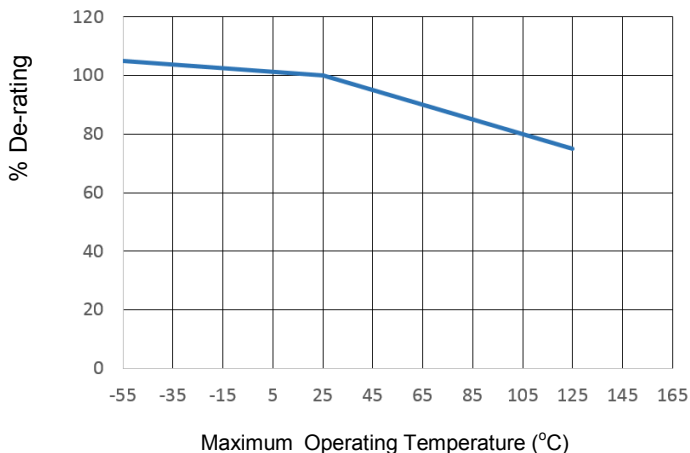
The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25°C, the fuse shall be “de-rated”.

To select a fuse from the catalog, the following rule may be followed:

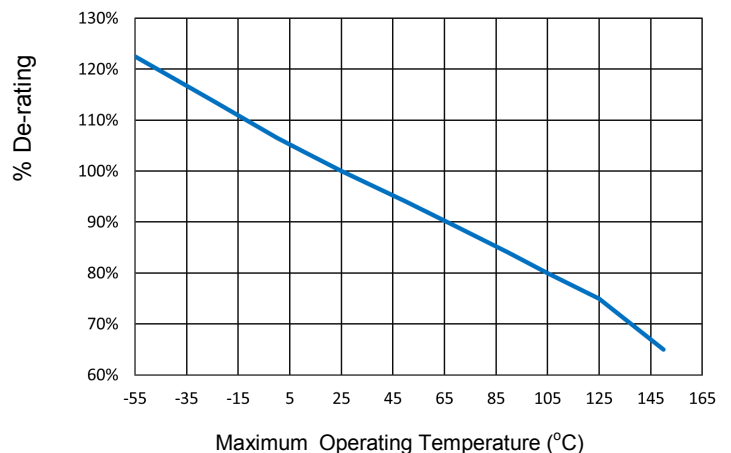
Catalog Fuse Current Rating = Nominal Operating Current / 0.75 / % De-rating at the maximum operating temperature.

Example: At maximum operating temperature of 65°C, % De-rating is 90%. The nominal operating current is 4 A. The current rating for fuse selected from the catalog shall be:  $4 / 0.75 / 90\% = 5.9$  or 6 A. Specifications and descriptions in this literature are as accurate as known at the time of publish, but are subject to change without notice.

Effect of Ambient Temperature on Current Rating of QA2410 and QA1210 Series.



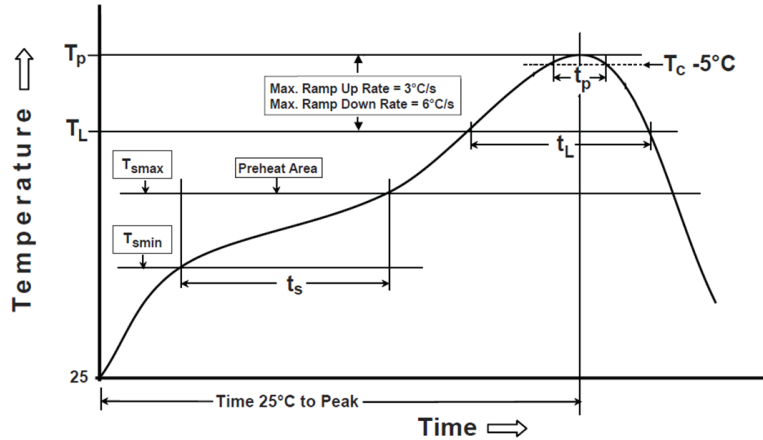
Effect of Ambient Temperature on Current Rating of QF1206 and QF0603 Series.



## Automotive Surface Mount Fuses

### Soldering Temperature Profile:

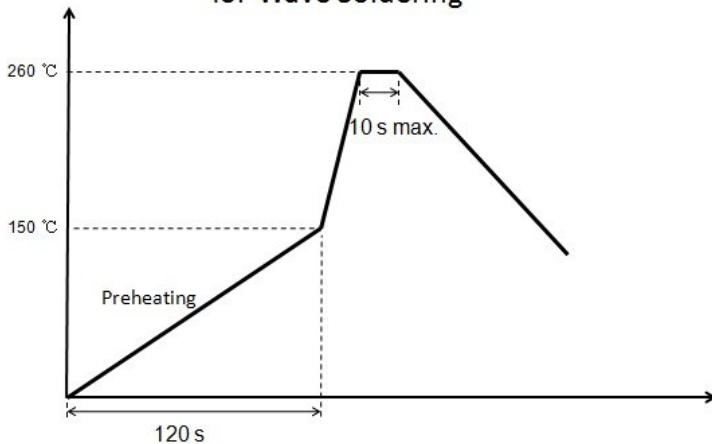
\* Recommended Temperature Profile for Reflow Soldering



| Profile Feature   | Pb-Free Assembly                 |
|---|----------------------------------|
| <b>Preheat/Soak</b><br>Temperature Min ( $T_{smin}$ )<br>Temperature Max ( $T_{smax}$ )<br>Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ ) | 150°C<br>200°C<br>60~120 seconds |
| Ramp-up rate ( $T_L$ to $T_p$ )   | 3°C/second max.                  |
| Liquidous temperature ( $T_L$ )<br>Time ( $t_L$ ) maintained above $T_L$  | 217°C<br>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 Wave Soldering

### Recommended Temperature Profile for Wave Soldering



Notice: Wave Soldering is suitable for 1206 and 0603 size.

### Packaging:

| Chip Size   | Parts on 7 inch (178 mm) Reel |
|-------------|-------------------------------|
| 0603 (1608) | 4,000                         |
| 1206 (3216) | 3,000                         |
| 2410        | 2,000                         |

## 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.*