

RoHS  **216 Series, 5 x 20 mm, Fast-Acting Fuse**



### Agency Approvals

| Agency                                                                              | Agency File Number                                                                                                                      | Ampere Range                                                  |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
|    | Cartridge Certificates:<br>1-5A NBK 080205-E10480A<br>6.3A-10A NBK 250702-E10480E<br>12.5A NBK 240108-JP1021C<br>16A NBK 240108-JP1021E | 1A – 16A                                                      |
|                                                                                     | Leaded Certificates:<br>1-5A NBK 080205-E10480B<br>6.3A-10A NBK 250702-E10480F<br>12.5A NBK 240108-JP1021D<br>16A NBK 240108-JP1021F    |                                                               |
|  | Certificates:<br>2003010207079960                                                                                                       | 50mA – 6.3A                                                   |
|  | Certificates:<br>SU05001-2013                                                                                                           | 1A – 10A                                                      |
|  | Recognised File:<br>E10480<br>Guide:<br>JDYX2                                                                                           | 50mA – 10A<br>12.5A, 16A                                      |
|  | File:<br>029862<br>Acc. Class:<br>LR1422-30                                                                                             |                                                               |
|  | File:<br>1027156<br>8117 45<br>1117973<br>1020822<br>1027014                                                                            | 50mA – 125mA<br>160mA – 800mA<br>1A – 6.3A<br>8A – 10A<br>16A |
|  | License:<br>40013834                                                                                                                    | 50mA – 6.3A<br>*8A, *10A                                      |
|  | License:<br>40016442                                                                                                                    | *12.5A                                                        |
|  | License:<br>KM41462                                                                                                                     | 1A – 6.3A                                                     |
|  |                                                                                                                                         | 50mA – 16A                                                    |

\*Approval for Cartridge versions only

### Description

5x20mm fast-acting ceramic body cartridge fuse designed to IEC specification.

### Features

- Designed to International (IEC ) Standards for use globally
- Meets the IEC 60127-2, sheet 1 specification
- for fast-acting fuses
- Available in cartridge and axial lead form
- RoHS compliant and lead-free

### Applications

Used as supplementary protection in appliance or utilization equipment to provide individual protection for components or internal circuits.

### Electrical Characteristics for Series

| % of Ampere Rating | Ampere Rating | Opening Time                   |
|--------------------|---------------|--------------------------------|
| 150%               | 50mA – 4A     | 60 minutes, Minimum            |
|                    | 5A – 6.3A     | 60 minutes, Minimum            |
|                    | 8A – 16A      | 30 minutes, Minimum            |
| 210%               | 50mA – 4A     | 30 minutes, Maximum            |
|                    | 5A – 6.3A     | 30 minutes, Maximum            |
|                    | 8A – 16A      | 30 minutes, Maximum            |
| 275%               | 50mA – 4A     | 0.01 sec., Min.; 2 sec. Max.   |
|                    | 5A – 6.3A     | 0.01 sec., Min.; 3 sec. Max.   |
|                    | 8A – 16A      | 0.04 sec., Min.; 20 sec. Max.  |
| 400%               | 50mA – 4A     | .003 sec., Min.; 0.3 sec. Max. |
|                    | 5A – 6.3A     | .003 sec., Min.; 0.3 sec. Max. |
|                    | 8A – 16A      | .01 sec., Min.; 1.0 sec. Max.  |
| 1000%              | 50mA – 4A     | .02 seconds, Maximum           |
|                    | 5A – 6.3A     | .02 seconds, Maximum           |
|                    | 8A – 16A      | .03 sec.onds, Maximum          |

# Axial Lead & Cartridge Fuses

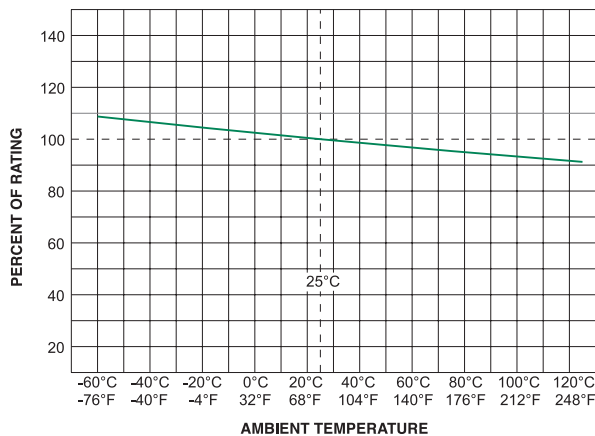
## 5×20 mm > Fast-Acting > 216 Series

### Electrical Characteristics Specifications by Item

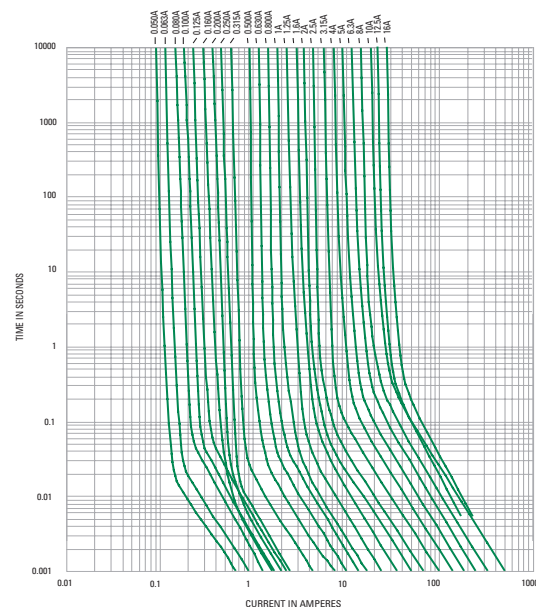
| Amp Code | Amp Rating (A) | Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Maximum Voltage Drop at Rated Current (mV) | Maximum Power Dissipation at 1.5I <sub>n</sub> (W) | Agency Approvals |     |     |    |    |   |    |     |     |      |
|----------|----------------|--------------------|---------------------|--------------------------------|-------------------------------------------------------|--------------------------------------------|----------------------------------------------------|------------------|-----|-----|----|----|---|----|-----|-----|------|
|          |                |                    |                     |                                |                                                       |                                            |                                                    | UL               | IEC | CCC | RU | SF | S | CE | VDE | VDE | PS E |
| .050     | 0.05           | 250                | 1500A@ 250Vac       | 15.9000                        | 0.00019                                               | 10000                                      | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .063     | 0.063          | 250                |                     | 10.4500                        | 0.00054                                               | 8800                                       | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .080     | 0.08           | 250                |                     | 7.8850                         | 0.00084                                               | 7600                                       | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .100     | 0.1            | 250                |                     | 5.7925                         | 0.00450                                               | 7000                                       | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .125     | 0.125          | 250                |                     | 3.6750                         | 0.00546                                               | 5000                                       | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .160     | 0.16           | 250                |                     | 5.3490                         | 0.00576                                               | 4300                                       | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .200     | 0.2            | 250                |                     | 3.3500                         | 0.00439                                               | 3500                                       | 1.6                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .250     | 0.25           | 250                |                     | 2.3500                         | 0.00891                                               | 2800                                       | 2.5                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .315     | 0.315          | 250                |                     | 1.8500                         | 0.01000                                               | 2500                                       | 2.5                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .500     | 0.5            | 250                |                     | 0.8660                         | 0.16500                                               | 1800                                       | 2.5                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .630     | 0.63           | 250                |                     | 0.4650                         | 0.17500                                               | 1500                                       | 2.5                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| .800     | 0.8            | 250                |                     | 0.2950                         | 0.28500                                               | 1200                                       | 2.5                                                |                  |     | x   | x  | x  | x | x  | x   |     |      |
| 001.     | 1              | 250                |                     | 0.2370                         | 0.18000                                               | 1000                                       | 2.5                                                | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 1.25     | 1.25           | 250                |                     | 0.1530                         | 0.48000                                               | 800                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 01.6     | 1.6            | 250                |                     | 0.1112                         | 1.00500                                               | 600                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 002.     | 2              | 250                |                     | 0.0764                         | 1.87000                                               | 500                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 02.5     | 2.5            | 250                |                     | 0.0584                         | 2.69500                                               | 400                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 3.15     | 3.15           | 250                |                     | 0.0368                         | 6.70000                                               | 350                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 004.     | 4              | 250                |                     | 0.0247                         | 14.99500                                              | 300                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 005.     | 5              | 250                |                     | 0.0183                         | 27.46000                                              | 250                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 06.3     | 6.3            | 250                |                     | 0.0137                         | 56.43000                                              | 200                                        | 4                                                  | x                | x   | x   | x  | x  | x | x  | x   |     | x    |
| 008.     | 8              | 250                |                     | 0.0123                         | 64.31500                                              | 200                                        | 4                                                  |                  | x   |     | x  | x  | x | x  | x*  |     | x    |
| 010.     | 10             | 250                |                     | 0.0079                         | 154.34000                                             | 200                                        | 4                                                  |                  | x   |     | x  | x  | x | x  | x*  |     | x    |
| 12.5     | 12.5           | 250                |                     | 0.0057                         | 235.00000                                             | 200                                        | 4                                                  |                  |     |     | x  | x  |   | x  |     | x*  | x    |
| 016.     | 16             | 250                | 750A@ 250Vac        | 0.0040                         | 462.50000                                             | 200                                        | 4.5                                                |                  |     |     | x  | x  | x | x  |     |     | x    |

\* Approval for cartridge versions only.  
I<sup>2</sup>t test at 10x rated current

### Temperature Derating Curve



### Average Time Current Curves



### Soldering Parameters - Wave Soldering



### Recommended Process Parameters:

| Wave Parameter                                                                                | Lead-Free Recommendation |
|-----------------------------------------------------------------------------------------------|--------------------------|
| <b>Preheat:</b><br>(Depends on Flux Activation Temperature) (Typical Industry Recommendation) |                          |
| Temperature Minimum:                                                                          | 100° C                   |
| Temperature Maximum:                                                                          | 150° C                   |
| Preheat Time:                                                                                 | 60-180 seconds           |
| <b>Solder Pot Temperature:</b>                                                                | 260° C Maximum           |
| <b>Solder Dwell Time:</b>                                                                     | 2-5 seconds              |

### Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5°C  
 Heating Time: 5 seconds max.

**Note:** These devices are not recommended for IR or Convection Reflow process.

### Product Characteristics

|                          |                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------|
| <b>Material</b>          | Body: Ceramic<br>Cap: Nickel-plated brass<br>Leads: Tin-plated Copper<br>Filler (160mA-16A): Sand |
| <b>Terminal Strength</b> | MIL-STD-202G, Method 211A, Test Condition A                                                       |
| <b>Solderability</b>     | Reference IEC 60127 Second Edition 2003-01 Annex A                                                |
| <b>Product Marking</b>   | Cap 1: Brand logo, current and voltage rating<br>Cap 2: Agency approval markings                  |
| <b>Packaging</b>         | Available in Bulk (M=1000 pcs/pkg) or on Tape/Reel (MRET1=1000 pcs/reel)                          |

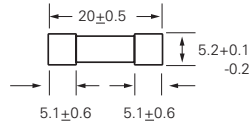
|                              |                                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Operating Temperature</b> | -55°C to +125°C                                                                                           |
| <b>Thermal Shock</b>         | MIL-STD-202G, Method 107G, Test Condition B: (5 cycles -65°C to +125°C)                                   |
| <b>Vibration</b>             | MIL-STD-202G, Method 201A                                                                                 |
| <b>Humidity</b>              | MIL-STD-202G, Method 103B, Test Condition A. high RH (95%) and elevated temperature (40°C) for 240 hours. |
| <b>Salt Spray</b>            | MIL-STD-202G, Method 101D, Test Condition B                                                               |

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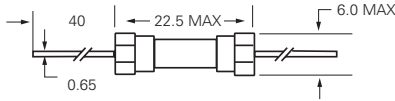
## 5×20 mm > Fast-Acting > 216 Series

### Dimensions

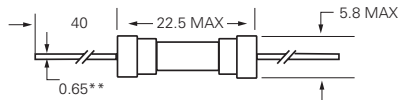
0216 000XP



0216.050XEP  
to  
0216.800XEP



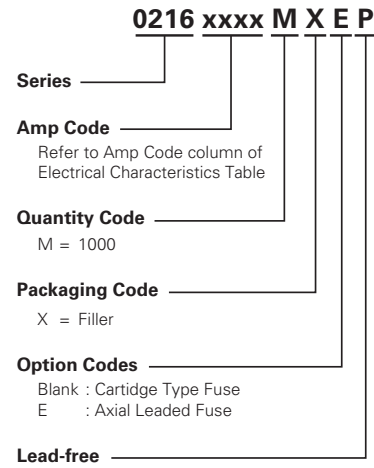
0216001.XEP  
to  
0216016.XEP



All dimensions in mm

\*\* Ratings above 6.3A have 0.8 mm diameter lead

### Part Numbering System



### Packaging

| Packaging Option  | Packaging Specification | Quantity | Quantity & Packaging Code | Taping Width     |
|-------------------|-------------------------|----------|---------------------------|------------------|
| <b>216 Series</b> |                         |          |                           |                  |
| Bulk              | N/A                     | 1000     | MX                        | N/A              |
| Bulk              | N/A                     | 1000     | MXE                       | N/A              |
| Reel and Tape     | EIA 296-E               | 1000     | MRET1                     | T1=53mm (2.087") |
| Bulk              | N/A                     | 1000     | MXG                       | N/A              |
| Bulk              | N/A                     | 1000     | MXB                       | N/A              |
| Bulk              | N/A                     | 100      | HX                        | N/A              |



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