

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


### 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.

### 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 |
|        | File:<br>1027156<br>8117 45<br>1117973<br>1020822<br>1027014  |   |
|        | 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

### 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<br>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          |

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               | CCC | RU | SF | S | CE | VDE | VDE | PS E |   |   |
| .050     | 0.05           | 250                | 1500A@<br>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@<br>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 Rerating 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   |

## Dimensions



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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