






220 Series, Lead-Free 2AG Special Fuse



Agency Approvals

| Agency | Agency File Number | Ampere Range |
|---|---|---|
|  | E10480 | 0003,0004,0010,0011,0025,0029,0031,0036 |
|  | E10480 | 0007,0012,0013,0019,0037,0044,0045,0059,0060,0061 |
|  | NBK200405-E10480A/B/C/D NBK110512-E10480A/B NBK210405-E10480E/F | 1A - 3.5A 4A - 5A 6A - 7A |
|  | LR29862 | 0003,0004,0007,0010,0011,0012,0013,0019,0025,0029,0031,0044,0045,0059 |
|  | | 0003-0061 |

Additional Information



Datasheet



Resources



Samples

Description

The 2AG Special Fuses with various voltage ratings, provide special electric performance as required.

Features

- In accordance with underwriter's Laboratories Standard UL 248-14
- Available in cartridge and axial lead format with various forming dimensions
- 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 | Amp code | Opening Time |
|--------------------|--|------------------|
| 100% | 0007,0012,0013,0019,0031,0036,0037,0044,0054,0060,0061 | 4 hours, Minimum |
| 135% | | 1 hour, Maximum |
| 200% | | 1 sec., Maximum |

| % of Ampere Rating | Amp code | Opening Time |
|--------------------|--------------------------|---------------------------------------|
| 100% | 0025,0038,0040,0045,0059 | 4 hours, Minimum |
| 135% | | 1 hour, Maximum |
| 200% | | 3 secs., Minimum 20 secs., Maximum |

| % of Ampere Rating | Amp code | Opening Time |
|--------------------|----------|-------------------|
| 100% | 0010 | 4 hours, Minimum |
| 150% | | 15 mins, Maximum |
| 0.9A | | 90 secs., Maximum |

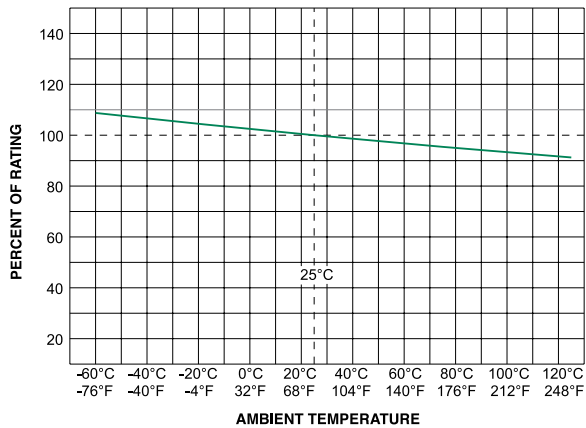
| % of Ampere Rating | Amp code | Opening Time |
|--------------------|----------------|-------------------|
| 0.6A | 0003,0004,0011 | 90 secs., Maximum |

| % of Ampere Rating | Amp code | Opening Time |
|--------------------|----------|-------------------|
| 0.6A | 0029 | 90 secs., Maximum |
| 2A | | 2 secs., Maximum |
| 6A | | 0.5 sec., Maximum |

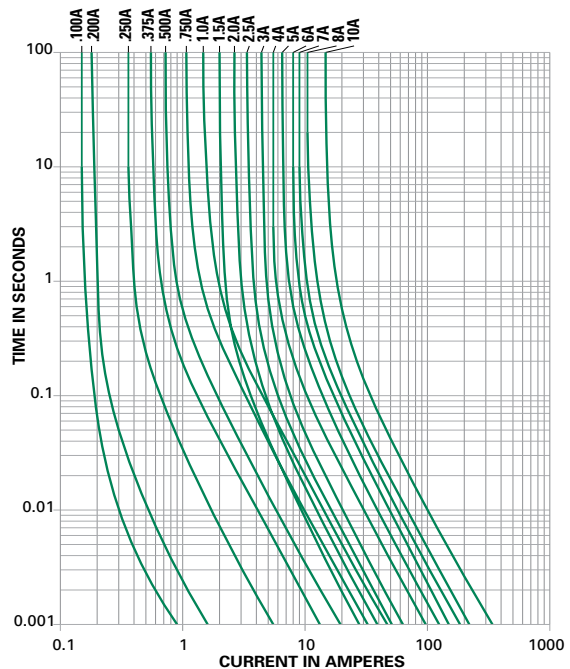
Electrical Characteristics

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I ² t (A ² sec) | Agency Approvals | | | | |
|-------------------|----------|------------------------|--|--------------------------------|---|------------------|----|----|----|----|
| | | | | | | UL | RU | PS | SP | CE |
| 0.35 | 0003 | 250 | 35A@250Vac, 10KA@125Vac | 1.3100 | 0.490 | X | | | X | X |
| 0.35 | 0004 | 250 | | 1.3100 | 0.490 | X | | | X | X |
| 3 | 0007 | 350 | 100A@350Vac, 60A@530Vac | 0.0317 | 4.62 | | X | X | X | X |
| 0.55 | 0010 | 250 | 35A@250Vac, 10KA@125Vac, 10KA@125Vdc | 0.4945 | 1.16 | X | | | X | X |
| 0.35 | 0011 | 250 | 35A@250Vac, 10KA@125Vac | 1.3100 | 0.49 | X | | | X | X |
| 2 | 0012 | 350 | 100A@350Vac | 0.0497 | 1.50 | | X | X | X | X |
| 5 | 0013 | 300 | | 0.0186 | 170 | | X | X | X | X |
| 3 | 0019 | 350 | 100A@350Vac, 100A@125Vdc | 0.0317 | 4.62 | | X | X | X | X |
| 1.25 | 0025 | 250 | 100A@250Vac, 10KA@125Vac, 10KA@125 Vdc | 0.1460 | 9.80 | X | | X | X | X |
| 0.35 | 0029 | 250 | 35A@250Vac, 10KA@125Vac | 1.3100 | 0.490 | X | | | X | X |
| 0.375 | 0030 | 250 | 35A@250Vac, 10KA@125Vac, | 1.1685 | 0.580 | | | | | X |
| 0.3 | 0031 | 250 | 10KA@125Vdc | 0.5900 | 0.0300 | X | | | X | X |
| 0.5 | 0036 | 300 | 35A@300Vac, 10KA@125Vac | 0.2650 | 0.365 | X | | | | X |
| 0.75 | 0037 | 300 | | 0.1520 | 1.05 | | X | | | X |
| 5 | 0038 | 250 | 50A@250Vac | 0.0186 | 267 | | | | | X |
| 0.5 | 0040 | 250 | 35A@250Vac, 10KA@125Vac, 10KA@125Vdc | 0.6935 | 1.16 | | | | | X |
| 1 | 0044 | 350 | 100A@350Vac | 0.1027 | 2.22 | | X | X | X | X |
| 2 | 0045 | 350 | 100A@250Vac, 100A@350Vac, 10KA@125Vac, 10KA@125Vdc | 0.0698 | 30.0 | | X | X | X | X |
| 7 | 0059 | 350 | 100A@350Vac / 160A@140Vdc | 0.0116 | 464 | | X | X | X | X |
| 0.5 | 0060 | 350 | 35A@350Vac | 0.2650 | 0.365 | | X | | | X |
| 0.75 | 0061 | 350 | | 0.1520 | 1.05 | | X | | | X |

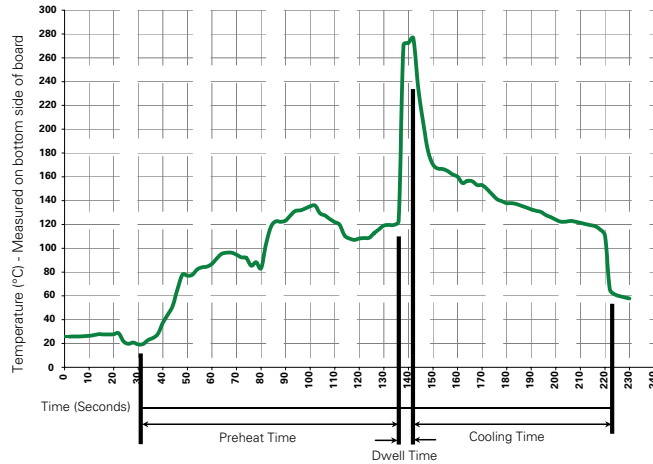
Temperature Derating Curve



Average Time Current Curves



Soldering Parameters - Wave Soldering



Recommended Process Parameters:

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

Recommended Hand-Solder Parameters:

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

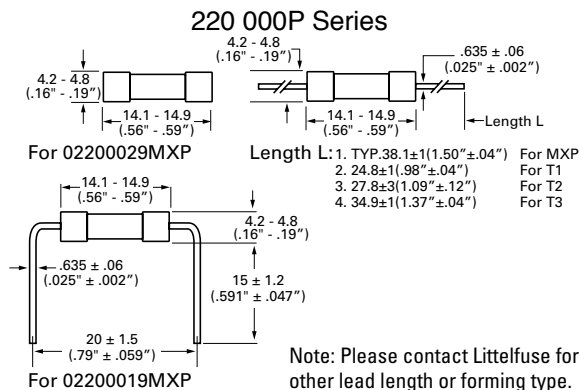
Note: These devices are not recommended for IR or Convection Reflow process.

Product Characteristics

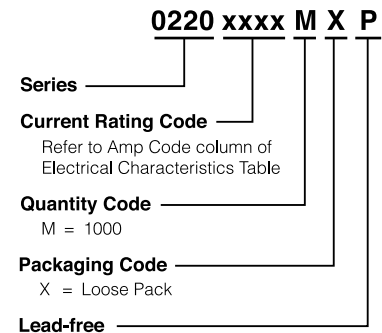
| | |
|--------------------------|---|
| Material | Body: Glass Cap: Nickel-plated brass Leads: Tin-plated Copper |
| Terminal Strength | MIL-STD-202G, Method 211A, Test Condition A |
| Solderability | Reference IEC 60127 Second Edition 2003-01 Annex A |
| Product Marking | Cap1: Brand logo, current and voltage ratings Cap2: Series and agency approval marks |

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

Dimensions



Part Numbering System



Packaging

| Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code | Reel Size |
|------------------|-------------------------|----------|---------------------------|---------------|
| Bulk | N/A | 1000 | MX | N/A |
| Bulk | N/A | 1000 | MXSL | N/A |
| Reel and Tape | EIA 296-E | 1000 | MRT1 | 53mm (2.087") |
| Reel and Tape | EIA 296-E | 1500 | DAT1 | 53mm (2.087") |
| Reel and Tape | EIA 296-E | 1500 | DRT1 | 53mm (2.087") |
| Reel and Tape | EIA 296-E | 1500 | DRT2 | 63mm (2.500") |
| Reel and Tape | EIA 296-E | 1500 | DRT3 | 73mm (2.874") |
| Reel and Tape | EIA 296-E | 2500 | ERT1 | 53mm (2.087") |