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220 Series, Lead-Free 2AG Special Fuse

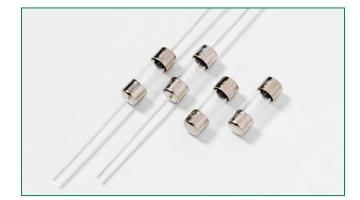












Description

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

Features

- In accordance with Underwriters Laboratories Standard UL 248-14
- Available in cartridge and axial lead format with various forming dimensions
- RoHS compliant and Lead-free

Agency Approvals

Agency	Agency File Number	Ampere Range		
(UL)	E10480	0003,0004,0010,0011, 0025,0029,0030,0031, 0036		
71	E10480	0007,0012,0013,0019, 0044,0045,0059,0060, 0061		
PSE	NBK200405-E10480A/B/C/D NBK110512-E10480A/B NBK210405-E10480E/F	1A - 3.5A 4A - 5A 6A - 7A		
⊕ ®	29862	0003,0004,0007,0010, 0011,0013,0019,0029, 0044		
Œ		0003-0061		

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,	4 hours, Minimum
135%	0031,0036,0037,0044,	1 hour, Maximum
200%	0054,0060,0061	1 sec., Maximum

% of Ampere Rating	Amp code	Opening Time	
100%		4 hours, Minimum	
135%	0025,0030,0038,0040,	1 hour, Maximum	
200%	0045,0059	3 secs., Minimum	
		20 secs., Maximum	

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

Overload Current	Amp code	Opening Time
0.6A	0003,0004,0011	90 secs., Maximum

Overload Current	Amp code	Opening Time
0.6A		90 secs., Maximum
2A	0029	2 secs., Maximum
6Δ		0.5 sec Maximum

Additional Information









Accessories

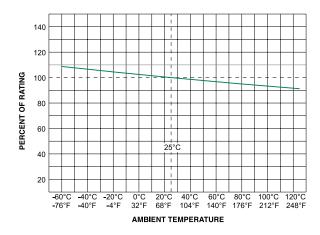
For recommended fuse accessories for this product series, see 'Recommended Accessories' section.

Axial Lead & Cartridge Fuses 2AG > Special Fuse > 220 Series

Electrical Characteristics

Ampere		Max		Nominal Cold	Nominal		Agen	су Аррі	ovals	
Rating (A)	Amp Code	Voltage Rating (V)	Interrupting Rating	Resistance (Ohms)	Melting I ² t (A ² sec)	(H)	71	⟨PS⟩ E	(Œ
0.35	0003	250	35A@250Vac, 10KA@125Vac	1.3100	0.490	X			Χ	X
0.35	0004	250	SSA@250VaC, TORA@125VaC	1.3100	0.490	X			Χ	X
3	0007	350	100A@350Vac, 60A@530Vac	0.0317	4.62		X	X	Χ	X
0.55	0010	250	35A@250Vac, 10KA@125Vac, 10KA@125Vdc	0.4945	2.04	X			X	X
0.35	0011	250	35A@250Vac, 10KA@125Vac	1.3100	0.49	X			Χ	X
2	0012	350	100A@350Vac	0.0497	1.50		X	X		X
5	0013	300	100A@350VaC	0.0186	17.0		X	X	Χ	X
3	0019	350	100A@350Vac, 100A@125Vdc	0.0317	4.62		Х	X	Χ	X
1.25	0025	250	100A@250Vac, 10KA@125Vac, 10KA@125 Vdc	0.1460	15.4	Х		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	0.82	X				X
0.3	0031	250	10KA@125Vdc	0.5900	0.0300	X				X
0.5	0036	300	35A@300Vac, 10KA@125Vac	0.2650	0.365	X				X
0.75	0037	300	39A@300Vac, TOKA@129Vac	0.1520	1.05					X
5	0038	250	50A@250Vac	0.0186	267					X
0.5	0040	250	35A@250Vac, 10KA@125Vac, 10KA@125Vdc	0.6935	1.58					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		Х	Х		X
7	0059	350	100A@350Vac / 160A@140Vdc	0.0116	464		X	X		X
0.5	0060	350	05400501/	0.2650	0.365		X			X
0.75	0061	350	35A@350Vac	0.1520	1.05		X			X

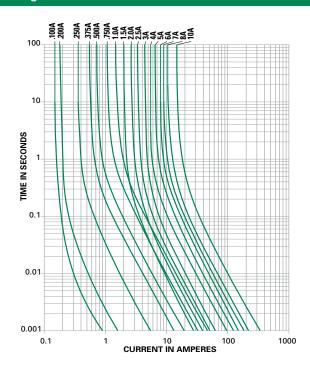
Temperature Re-rating Curve



Note:

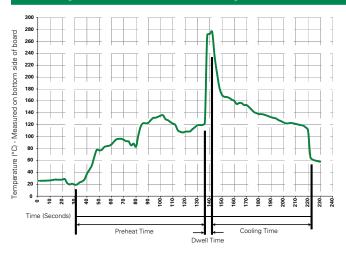
Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

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 DwellTime:	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

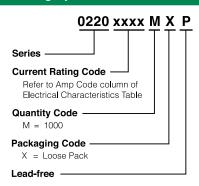
Material	Body: Glass Cap: Nickel-plated brass Leads: Tin-plated Copper
Terminal Strength	MIL-STD-202, Method 211, Test Condition A
Solderability	MIL-STD-202 method 208
Product Marking	Cap1: Brand logo, current and voltage ratings Cap2: Series and agency approval marks

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

Dimensions

220 000P Series 4.2 - 4.8 (.16" - .19") $.635 \pm .06$ (.025" ± .002") 14.1 - 14.9_(.56" - .59") 14.1 - 14.9 (.56" - .59") -Lenath L Length L:1. TYP.38.1±1(1.50"±.04") 2. 24.8±1(.98"±.04") 3. 27.8±3(1.09"±.12") 4. 34.9±1(1.37"±.04") For MXP For T1 For T2 For T3 For 02200029MXP 4.2 - 4.8 (.16" - .19") -.635 ± .06 (.025" ± .002") 15 ± 1.2 (.591" ± .047") 20 ± 1.5 (.79" ± .059") Note: Please contact Littelfuse for For 02200019MXP other lead length or forming type.

Part Numbering System



Packaging

Packaging Option	ng 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")	



Axial Lead & Cartridge Fuses 2AG > Special Fuse > 220 Series

Recommended Accessories

Accessory Type	Series	Description	Max Application Voltage	Max Application Amperage
	<u>245</u>	Panel Mount Shock-Safe Fuseholder	300	10
Holder	<u>150</u>	In-Line Fuseholder	350	10
	<u>286</u>	Panel Mount Flip-Top Shock-Safe Fuseholder	250	10
Block	<u>254</u>	OMNI-BLOK® Fuse Block	400	10
Clip	<u>111</u>	PC Board Mount Fuse Clip	250	10

Notes:

1. Do not use in applications above rating.

2. Please refer to fuseholder data sheet for specific re-rating information.

3. Please contact factory for applications greater than the max voltage and amperage shown.