

Midget 10x38mm Fuses

KLKD Series

600 V ac/dc • Fast Acting • 1/10–30 A



Description

The KLKD series fast-acting 600 V ac/dc fuses are used in solar combiner boxes and in circuits with dc fault currents up to 50,000 A. These fuses are designed to meet both the UL and IEC photovoltaic fuse specifications and are available in standard and board-mount configurations. The KLKD midget fuses also have high-interrupting and current-limiting capability. They are intended to supplement the primary branch-circuit fuse or breaker to provide backup overcurrent protection. The KLKD fuses are non-indicating and may be used with an indicating fuse block or cover. These fuses are offered in a wide range of ampere ratings to match specific requirements in a variety of applications. Note that 1–5 A meets UL 1741 GFDI requirements.

Features & Benefits

| FEATURES | BENEFITS |
|------------------------------------|---|
| 10x38 mm size | Common dimensions used in a variety of applications |
| Fast-acting | Provides fast, reliable short-circuit response within the interrupting rating |
| Mounting options | Available in ferrule or PCB mount |
| POWR-GARD® technology | Ensures quality backup overcurrent protection |
| UL & IEC certifications | Certifications to serve the global market |

Applications

- Solar combiner boxes
- Inverters
- Power supplies
- Desktop meters

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Specifications

| | |
|------------------------------|--|
| Voltage Rating | 600 V ac / V dc |
| Ampere Range | $\frac{1}{10}$ –30 A |
| Interrupting Ratings | Ac: 100 kA 200 kA Littelfuse self-certified Dc: $\frac{1}{10}$ –30: 10 kA (UL 248-19) $\frac{1}{10}$ –30: 50 kA (UL 248-14) |
| Applicable Standards | UL 248-14, UL 248-19, UL 1741 GFDI, CSA, IEC 60269-6 |
| Environmental | RoHS Compliant |
| Material | Body: Melamine Caps: Copper Alloy |
| Operating Temperature | See Derating Curve |
| Country of Origin | Mexico |

Certification & Compliance

| | |
|-------------|--|
| UL | UL Listed (File E339112 and E10480) |
| CSA | CSA Certified (File: LR29862) |
| CE | Declaration of Conformity: EU_DOC-KLKD_201105_3_IEC |
| RoHS | RoHS 2 Directive 2011/65/EU; Directive (EU) 2015/863 |
| VDE* | Certificate No 40033094 |

*Refer to Ordering Information Table

Accessories

Littelfuse LPSM dead-front series fuse holder (ferrule fuse)
Littelfuse L60030M open-face series fuse holder (ferrule fuse)

Ordering Information (Ferrule Version)

| AMPERAGE RATING | CATALOG NUMBER | PRODUCT MARKING | PACKING QUANTITY | ORDERING NUMBER | UPC CODE | AGENCY APPROVALS | | |
|-----------------|----------------|-----------------------|------------------|-----------------|-------------|------------------|-----|-----|
| | | | | | | UL | VDE | CSA |
| $\frac{1}{10}$ | KLKD.100 | KLKD $\frac{1}{10}$ A | 10 | KLKD.100T | 07945810189 | • | | • |
| | | | 100 | KLKD.100H | 07945896442 | • | | • |
| $\frac{1}{8}$ | KLKD.125 | KLKD $\frac{1}{8}$ A | 10 | KLKD.200T | 07945810190 | • | | • |
| | | | 100 | KLKD.200H | 07945896443 | • | | • |
| $\frac{3}{10}$ | KLKD.200 | KLKD $\frac{3}{10}$ A | 10 | KLKD.100T | 07945810191 | • | | • |
| | | | 100 | KLKD.100H | 07945896444 | • | | • |
| $\frac{1}{4}$ | KLKD.250 | KLKD $\frac{1}{4}$ A | 10 | KLKD.250T | 07945810192 | • | | • |
| | | | 100 | KLKD.250H | 07945896445 | • | | • |
| $\frac{3}{10}$ | KLKD.300 | KLKD $\frac{3}{10}$ A | 10 | KLKD.300T | 07945810193 | • | | • |
| | | | 100 | KLKD.300H | 07945896446 | • | | • |
| $\frac{1}{2}$ | KLKD.500 | KLKD $\frac{1}{2}$ A | 10 | KLKD.500T | 07945810194 | • | | • |
| | | | 100 | KLKD.500H | 07945896447 | • | | • |
| $\frac{3}{4}$ | KLKD.750 | KLKD $\frac{3}{4}$ A | 10 | KLKD.750T | 07945810195 | • | | • |
| | | | 100 | KLKD.750H | 07945896448 | • | | • |
| 1 | KLKD001 | KLKD 1A | 10 | KLKD001.T | 07945810196 | • | | • |
| | | | 100 | KLKD001.H | 07945896449 | • | | • |

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|-----------------|----------------|-----------------|------------------|-----------------|-------------|------------------|-----|-----|
| | | | | | | UL | VDE | CSA |
| 1½ | KLKD01.5 | KLKD 1-½A | 10 | KLKD01.5T | 07945810197 | • | | • |
| | | | 100 | KLKD01.5H | 07945896450 | • | | • |
| 2 | KLKD002 | KLKD 2A | 10 | KLKD002.T | 07945810198 | • | • | • |
| | | | 100 | KLKD002.H | 07945896451 | • | • | • |
| 2½ | KLKD02.5 | KLKD 2-½A | 10 | KLKD02.5T | 07945810199 | • | • | • |
| | | | 100 | KLKD02.5H | 07945896452 | • | • | • |
| 3 | KLKD003 | KLKD 3A | 10 | KLKD003.T | 07945810200 | • | • | • |
| | | | 100 | KLKD003.H | 07945896453 | • | • | • |
| 3½ | KLKD03.5 | KLKD 3½A | 10 | KLKD03.5T | 07945810214 | • | • | • |
| | | | 100 | KLKD03.5H | 07945896454 | • | • | • |
| 4 | KLKD004 | KLKD 4A | 10 | KLKD004.T | 07945810201 | • | • | • |
| | | | 100 | KLKD004.H | 07945896455 | • | • | • |
| 5 | KLKD005 | KLKD 5A | 10 | KLKD005.T | 07945810202 | • | • | • |
| | | | 100 | KLKD005.H | 07945896456 | • | • | • |
| 6 | KLKD006 | KLKD 6A | 10 | KLKD006.T | 07945810203 | • | • | • |
| | | | 100 | KLKD006.H | 07945896457 | • | • | • |
| 7 | KLKD007 | KLKD 7A | 10 | KLKD007.T | 07945810204 | • | • | • |
| | | | 100 | KLKD007.H | 07945896458 | • | • | • |
| 8 | KLKD008 | KLKD 8A | 10 | KLKD008.T | 07945810205 | • | • | • |
| | | | 100 | KLKD008.H | 07945896459 | • | • | • |
| 9 | KLKD009 | KLKD 9A | 10 | KLKD009.T | 07945810215 | • | • | • |
| | | | 100 | KLKD009.H | 07945896460 | • | • | • |
| 10 | KLKD010 | KLKD 10A | 10 | KLKD010.T | 07945810206 | • | • | • |
| | | | 100 | KLKD010.H | 07945896461 | • | • | • |
| 12 | KLKD012 | KLKD 12A | 10 | KLKD012.T | 07945810207 | • | • | • |
| | | | 100 | KLKD012.H | 07945896462 | • | • | • |
| 15 | KLKD015 | KLKD 15A | 10 | KLKD015.T | 07945810208 | • | • | • |
| | | | 100 | KLKD015.H | 07945896463 | • | • | • |
| 20 | KLKD020 | KLKD 20A | 10 | KLKD020.T | 07945810209 | • | • | • |
| | | | 100 | KLKD020.H | 07945896464 | • | • | • |
| 25 | KLKD025 | KLKD 25A | 10 | KLKD025.T | 07945810210 | • | | • |
| | | | 100 | KLKD025.H | 07945896465 | • | | • |
| 30 | KLKD030 | KLKD 30A | 10 | KLKD030.T | 07945810211 | • | | • |
| | | | 100 | KLKD030.H | 07945896466 | • | | • |

Ordering Information (PCB 1-Tab Version)

| AMPERAGE RATING | CATALOG NUMBER | PRODUCT MARKING | PACKING QUANTITY | ORDERING NUMBER | UPC CODE | AGENCY APPROVALS | |
|-----------------|----------------|-----------------|------------------|-----------------|-------------|------------------|-----|
| | | | | | | UL | CSA |
| ¼ | KLKD.100R | KLKD ¼A-R | 100 | KLKD.100HXR | 07945814857 | • | • |
| ½ | KLKD.500R | KLKD ½A-R | 100 | KLKD500.HXR | 07945814858 | • | • |
| 1 | KLKD001R | KLKD 1A-R | 100 | KLKD001.HXR | 07945812133 | • | • |
| 2 | KLKD002R | KLKD 2A-R | 100 | KLKD002.HXR | 07945894349 | • | • |
| 3 | KLKD003R | KLKD 3A-R | 100 | KLKD003.HXR | 07945818991 | • | • |
| 4 | KLKD004R | KLKD 4A-R | 100 | KLKD004.HXR | 07945811495 | • | • |

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Ordering Information (PCB 1-Tab Version)

| AMPERAGE RATING | CATALOG NUMBER | PRODUCT MARKING | PACKING QUANTITY | ORDERING NUMBER | UPC CODE | AGENCY APPROVALS | |
|-----------------|----------------|-----------------|------------------|-----------------|-------------|------------------|-----|
| | | | | | | UL | CSA |
| 5 | KLKD005R | KLKD 5A-R | 100 | KLKD005.HXR | 07945814859 | • | • |
| 6 | KLKD006R | KLKD 6A-R | 100 | KLKD006.HXR | 07945894350 | • | • |
| 8 | KLKD008R | KLKD 8A-R | 100 | KLKD008.HXR | 07945894351 | • | • |
| 10 | KLKD010R | KLKD 10A-R | 100 | KLKD010.HXR | 07945814860 | • | • |
| 12 | KLKD012R | KLKD 12A-R | 100 | KLKD012.HXR | 07945894352 | • | • |
| 15 | KLKD015R | KLKD 15A-R | 100 | KLKD015.HXR | 07945894353 | • | • |
| 20 | KLKD020R | KLKD 20A-R | 100 | KLKD020.HXR | 07945894354 | • | • |
| 25 | KLKD025R | KLKD 25A-R | 100 | KLKD025.HXR | 07945894355 | • | • |
| 30 | KLKD030R | KLKD 30A-R | 100 | KLKD030.HXR | 07945894356 | • | • |

Electrical Specifications

| AMPERAGE RATING | CATALOG NUMBER | | VOLTAGE RATING | | INTERRUPTING RATING | | NOM COLD RESISTANCE (OHMS) | WATTS LOSS AT 100 % RATED CURRENT (W) | WATTS LOSS AT 80 % RATED CURRENT (W) | AVERAGE MELTING I ² T (A ² S) | TOTAL CLEARING I ² T (A ² S) 20 KA @ 600 V DC | TOTAL CLEARING I ² T (A ² S) 100 KA @ 600 V DC |
|-----------------|----------------|-----------|----------------|-----|---------------------|----|----------------------------|---------------------------------------|--------------------------------------|---|---|--|
| | FERRULE | PCB | AC | DC | AC | DC | | | | | | |
| 1/10 | KLKD.100 | KLKD.100R | 600 | 600 | 200 | 50 | 85.5 | 0.780 | 0.505 | – | 0.019 | – |
| 1/8 | KLKD.125 | – | 600 | 600 | 200 | 50 | 65 | 0.975 | 0.659 | – | 0.010 | – |
| 3/10 | KLKD.200 | – | 600 | 600 | 200 | 50 | 30.9 | 1.213 | 0.773 | – | 0.032 | – |
| 1/4 | KLKD.250 | – | 600 | 600 | 200 | 50 | 22 | 1.364 | 0.870 | – | – | – |
| 3/10 | KLKD.300 | – | 600 | 600 | 200 | 50 | 16.2 | 1.519 | 0.960 | – | 0.067 | – |
| 1/2 | KLKD.500 | KLKD.500R | 600 | 600 | 200 | 50 | 8.16 | 1.961 | 1.237 | – | 0.197 | – |
| 3/4 | KLKD.750 | – | 600 | 600 | 200 | 50 | 0.402 | 0.361 | 1.990 | 0.234 | 0.754 | – |
| 1 | KLKD001 | KLKD001R | 600 | 600 | 200 | 50 | 0.252 | 0.388 | 0.273 | 0.678 | 1.827 | 0.008 |
| 1 1/2 | KLKD01.5 | – | 600 | 600 | 200 | 50 | 0.134 | 0.409 | 0.229 | 2.890 | – | – |
| 2 | KLKD002 | KLKD002R | 600 | 600 | 200 | 50 | 0.129 | 0.823 | 0.606 | 2.379 | 3.919 | 0.012 |
| 2 1/2 | KLKD02.5 | – | 600 | 600 | 200 | 50 | 0.0989 | 0.912 | 0.618 | 5.142 | 8.877 | – |
| 3 | KLKD003 | KLKD003R | 600 | 600 | 200 | 50 | 0.0773 | 0.957 | 0.654 | 7.821 | 14.835 | – |
| 3 1/2 | KLKD03.5 | – | 600 | 600 | 200 | 50 | 0.0613 | 1.120 | 0.826 | 12.417 | 21.048 | – |
| 4 | KLKD004 | KLKD004R | 600 | 600 | 200 | 50 | 0.0511 | 1.367 | 0.891 | 18.945 | 30.760 | 0.019 |
| 5 | KLKD005 | KLKD005R | 600 | 600 | 200 | 50 | 0.0363 | 1.400 | 0.938 | 34.163 | 56.514 | 0.024 |
| 6 | KLKD006 | KLKD006R | 600 | 600 | 200 | 50 | 0.0261 | 1.516 | 0.998 | 62.951 | 96.824 | 0.035 |
| 7 | KLKD007 | – | 600 | 600 | 200 | 50 | 0.0205 | 1.577 | 1.066 | 105.143 | 168.578 | 0.087 |
| 8 | KLKD008 | KLKD008R | 600 | 600 | 200 | 50 | 0.0194 | 1.824 | 1.205 | 130.266 | 210.595 | 0.656 |
| 9 | KLKD009 | – | 600 | 600 | 200 | 50 | 0.0166 | 2.208 | 1.428 | 164.221 | 266.633 | – |
| 10 | KLKD010 | KLKD010R | 600 | 600 | 200 | 50 | 0.0128 | 1.893 | 1.300 | 278.390 | 454.628 | 211.667 |
| 12 | KLKD012 | KLKD012R | 600 | 600 | 200 | 50 | 0.0103 | 2.296 | 1.584 | 445.010 | 744.775 | 440 |
| 15 | KLKD015 | KLKD015R | 600 | 600 | 200 | 50 | 0.007855 | 2.045 | 1.570 | 137.333 | 351.240 | – |
| 20 | KLKD020 | KLKD020R | 600 | 600 | 200 | 50 | 0.0045 | 2.133 | 15.930 | 462.056 | 1151.185 | 2120 |
| 25 | KLKD025 | KLKD025R | 600 | 600 | 200 | 50 | 0.003532 | 2.550 | 1.933 | 834.529 | 1744.033 | 2085 |
| 30 | KLKD030 | KLKD030R | 600 | 600 | 200 | 50 | 0.002776 | 3.701 | 1.983 | 1409 | 2757 | 3220 |

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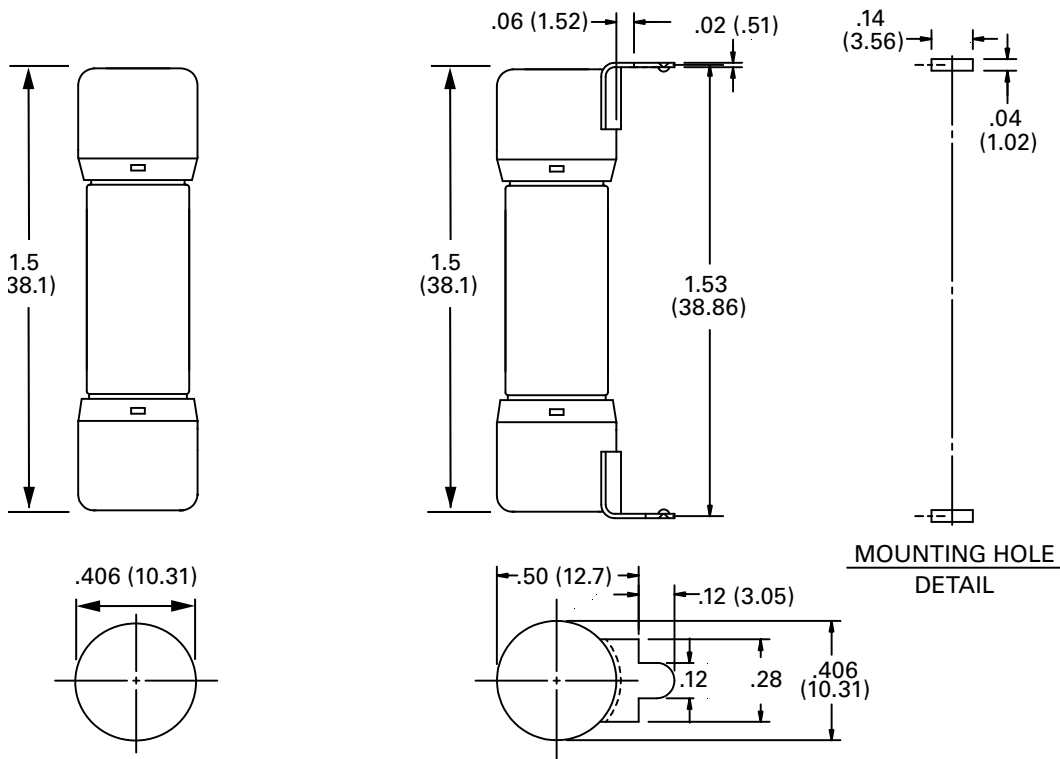
Electrical Specification - Agency Requirements

| AMPERAGE RATING | OPENING TIME (MINUTES) | | | |
|-----------------|-------------------------------|--------------------------------|-------------------------------|-------------------------------|
| | 100 % OF AMPERE RATING PER UL | 105 % OF AMPERE RATING PER IEC | 135 % OF AMPERE RATING PER UL | 200 % OF AMPERE RATING PER UL |
| 1/10-30 | Temperature Stabilization | 60 min | 60 max | 4 max |

Dimensions Inches (mm)

FERRULE VERSION

PCB 1-TAB

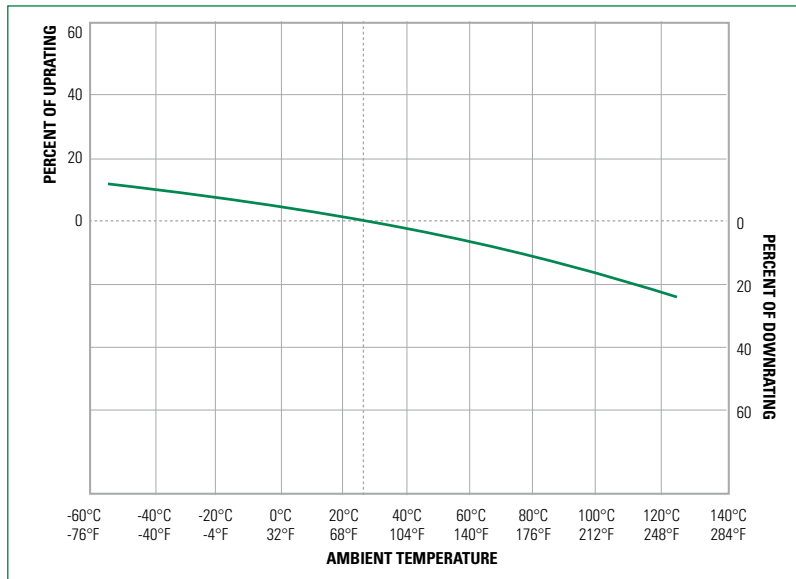


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Temperature Derating Curve

Ambient temperature: temperature of air immediately surrounding fuse



Current-Limiting Effects

| SHORT CIRCUIT CURRENT* | APPARENT RMS SYMMETRICAL CURRENT FOR VARIOUS FUSE RATINGS | | | |
|------------------------|---|------|------|------|
| | 1 1/2 A | 12 A | 25 A | 30 A |
| 5,000 | 240 | 292 | 654 | 722 |
| 10,000 | 303 | 367 | 823 | 910 |
| 15,000 | 347 | 420 | 943 | 1042 |
| 20,000 | 381 | 463 | 1037 | 1147 |
| 25,000 | 411 | 498 | 1117 | 1235 |
| 30,000 | 437 | 530 | 1188 | 1313 |
| 35,000 | 460 | 558 | 1250 | 1382 |
| 40,000 | 481 | 583 | 1307 | 1445 |
| 50,000 | 518 | 628 | 1408 | 1556 |
| 60,000 | 550 | 667 | 1496 | 1654 |
| 80,000 | 605 | 735 | 1647 | 1820 |
| 100,000 | 652 | 791 | 1774 | 1961 |

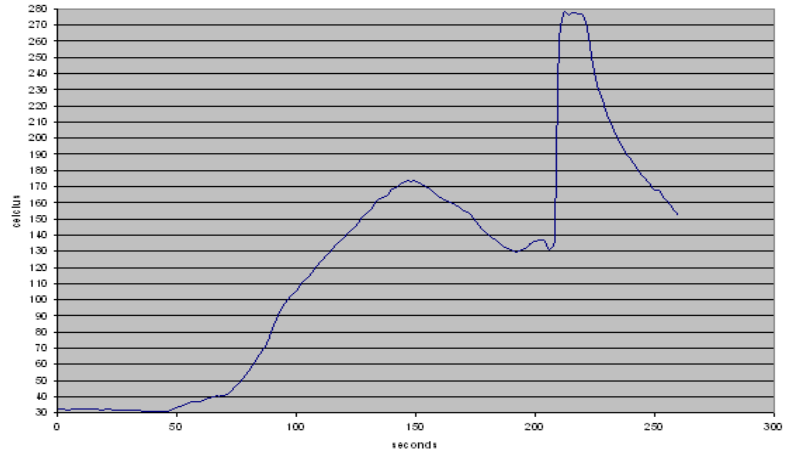
*Prospective RMS Symmetrical Amperes Short-Circuit Current

Midget 10x38mm Fuses

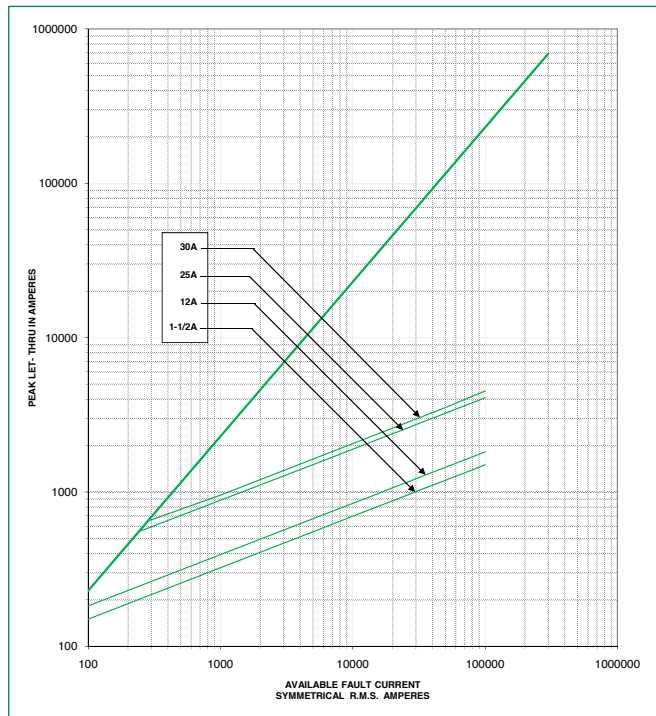
KLKD Series

Recommended Process and Soldering Parameters

| WAVE PARAMETER | LEAD FREE RECOMMENDATION |
|------------------------|-----------------------------------|
| Preheat: | (Typical Industry Recommendation) |
| Temperature Minimum: | 130 °C |
| Temperature Maximum: | — |
| Pre-heat Time | 75 Seconds Maximum |
| Solder Pot Temperature | 280 °C Maximum |
| Solder Dwell Time | 270 °C for 8 Seconds Maximum |
| Complete Cycle Time | 250 Seconds Maximum |



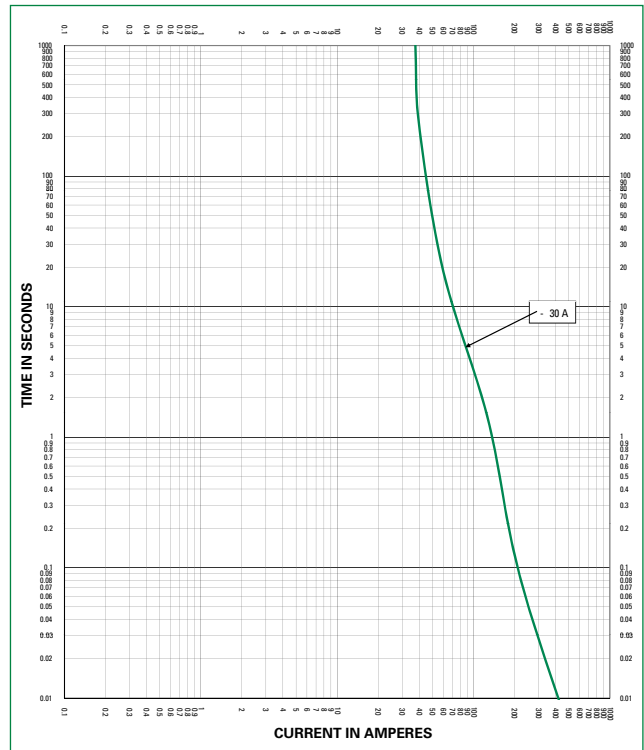
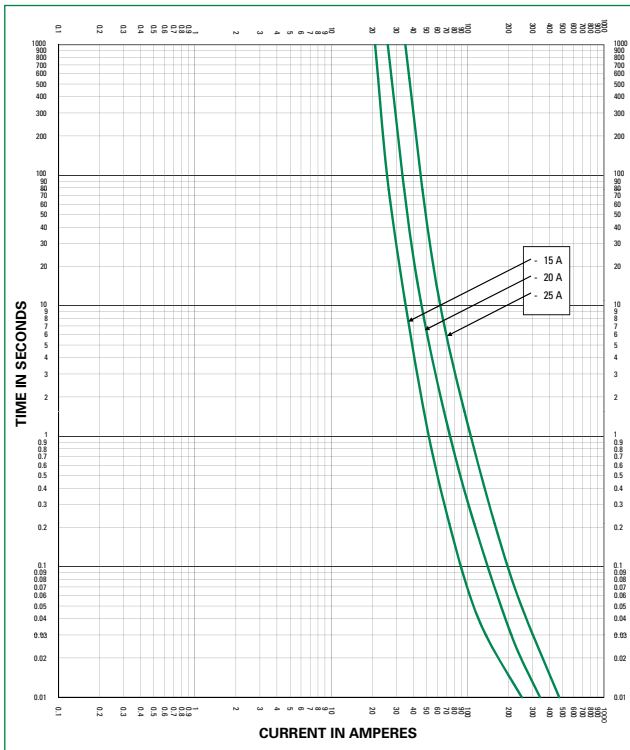
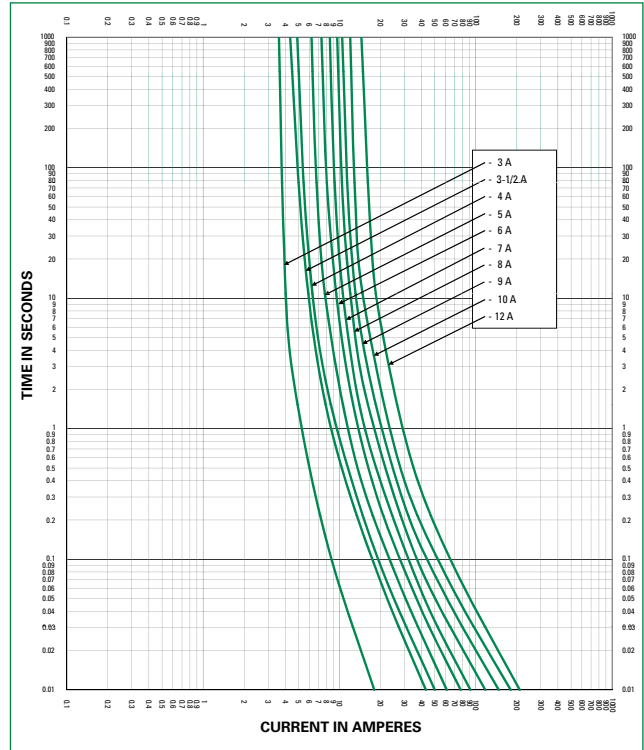
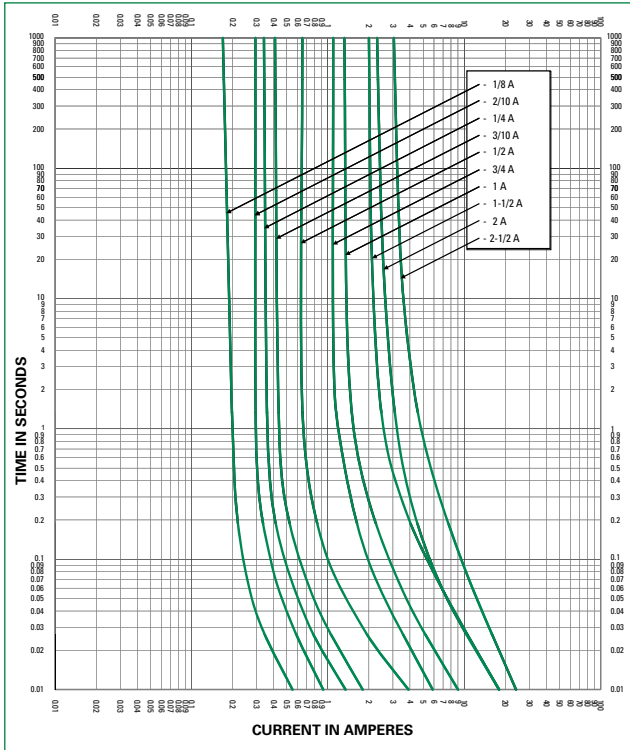
Peak Let-Thru Curve



Midget 10x38mm Fuses

KLKD Series

Time Current Curves



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[KLKD.500T](#) [KLKD015.T](#) [KLKD004.T](#) [KLKD005.T](#) [KLKD.125T](#) [KLKD003.T](#) [KLKD001.T](#) [KLKD025.T](#) [KLKD.300T](#)
[KLKD01.5T](#) [KLKD008.T](#) [KLKD.200T](#) [KLKD.100T](#) [KLKD.250T](#) [KLKD02.5T](#) [KLKD012.T](#) [KLKD020.HXR](#)
[KLKD001.HXR](#) [KLKD010.HXR](#) [KLKD025.HXR](#) [KLKD012.HXR](#) [KLKD002.H](#) [KLKD004.H](#) [KLKD.500HXR](#)
[KLKD002.HXR](#) [KLKD015.HXR](#) [KLKD02.5H](#) [KLKD03.5H](#) [KLKD030.HXR](#) [KLKD030.H](#) [KLKD.500H](#) [KLKD020.H](#)
[KLKD025.H](#) [KLKD005.H](#) [KLKD003.HXR](#) [KLKD004.HXR](#) [KLKD009.H](#) [KLKD.300H](#) [KLKD006.HXR](#) [KLKD001.H](#)
[KLKD006.H](#) [KLKD.100H](#) [KLKD015.H](#) [KLKD.200H](#) [KLKD008.H](#) [KLKD007.H](#) [KLKD.250H](#) [KLKD.100HXR](#)
[KLKD010.H](#) [KLKD003.H](#) [KLKD005.HXR](#) [KLKD.125H](#) [KLKD012.H](#) [KLKD01.5H](#) [KLKD008.HXR](#) [KLKD.100HXRE](#)
[KLKD.500HXRE](#) [KLKD001.HXRE](#) [KLKD002.HXRE](#) [KLKD003.HXRE](#) [KLKD004.HXRE](#) [KLKD025.HXRE](#)
[KLKD030.HXRE](#) [KLKD005.HXRE](#) [KLKD008.HXRE](#) [KLKD010.HXRE](#) [KLKD012.HXRE](#) [KLKD015.HXRE](#)
[KLKD020.HXRE](#)