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# KLKD SERIES 10x38 FUSES

600 Vac/dc • 1/10-30 A • Fast Acting



## Description

The KLKD fuse series is fast-acting with a high DC voltage rating. This family of Midget style fuses (10 x 38 mm) is used in solar combiner boxes and in circuits with DC fault currents up to 50,000 amperes. KLKD fuses are available in standard and board-mount configurations.

In addition, the KLKD series has been designed to meet both the UL and IEC photovoltaic fuse standards.

Littelfuse offers a wide range of ampere ratings to match specific requirements in a variety of applications.

## Features/Benefits

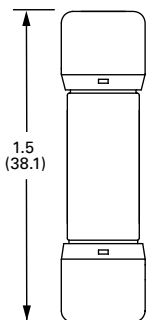
- Designed to UL and IEC photovoltaic specifications
- 1/10 - 30 A ratings available
- 50,000 A Interrupting Rating
- Available in ferrule or PCB mount options
- 1-5 A meets UL1741 GFDI requirements

## Applications

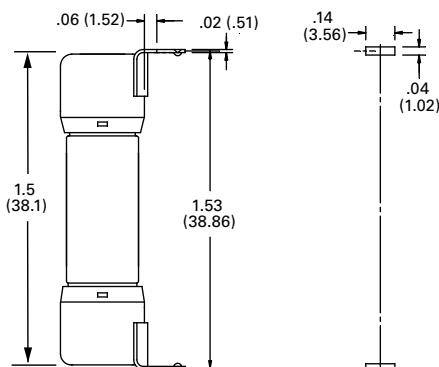
- Combiner boxes and Inverters
- Power supplies
- Desktop meters

## Dimensions Inches (mm)

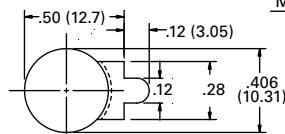
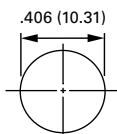
### Ferrule Version



### PCB 1-Tab



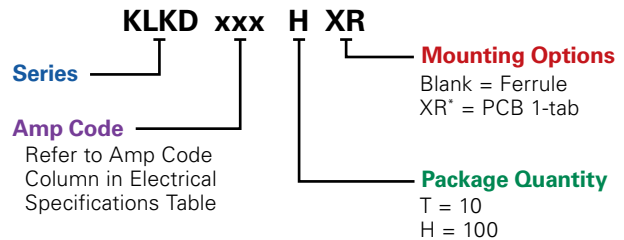
MOUNTING HOLE DETAIL



## Specifications

|                               |                                                                                                                                                                           |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Voltage Rating:</b>        | 600 Vac/Vdc                                                                                                                                                               |
| <b>Amperage Rating:</b>       | 1/10, 1/8, 2/10, 1/4, 3/10, 1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20, 25, 30                                                              |
| <b>Interrupting Ratings:</b>  | AC: 100 kA<br>200 kA Littelfuse self-certified                                                                                                                            |
| <b>Material:</b>              | Body: Melamine / Caps: Copper Alloy                                                                                                                                       |
| <b>Operating Temperature:</b> | See Rating Curve                                                                                                                                                          |
| <b>Approvals:</b>             | UL 248-19 Listed (File: E339112)<br>IEC 60269-6 (2-25 A)<br>VDE Certified (No. 40033094)<br>UL 248-14 Listed (File: E10480)<br>CSA Certified Ferrule only (File: LR29862) |
| <b>Environmental:</b>         | RoHS Compliant                                                                                                                                                            |
| <b>Country of Origin:</b>     | Mexico                                                                                                                                                                    |

## Part Numbering System



| SERIES | AMP | PACKAGE QUANTITY | MOUNTING METHOD | CATALOG NUMBER | ORDERING NUMBER |
|--------|-----|------------------|-----------------|----------------|-----------------|
| KLKD   | 1/8 | 10               | FERRULE         | KLKD 1/8       | KLKD.125T       |
| KLKD   | 5   | 100              | FERRULE         | KLKD 5         | KLKD005.H       |
| KLKD   | 15  | 100              | PCB 1-TAB       | KLKD 15-R      | KLKD015.HXR     |

\*Only available in 100 packs (H) and select ratings.

## Recommended Fuse Holders

Littelfuse LFPSM and LPSM Dead-Front Series  
Littelfuse L60030M Open-Face Series

## Web Resources

Download CAD drawings and other technical information:  
[littelfuse.com/klkd](http://littelfuse.com/klkd)

# KLKD SERIES 10x38 FUSES

## Ordering Information

### Ferrule Version

| AMP RATING | AMP CODE | CATALOG NUMBER | ORDERING NUMBER | VOLTAGE |     | INTERRUPTING RATING (kA) |             | UPC         | WEIGHT LB (G) | AGENCY APPROVALS |     |  |
|------------|----------|----------------|-----------------|---------|-----|--------------------------|-------------|-------------|---------------|------------------|-----|--|
|            |          |                |                 | DC & AC | AC  | DC                       | UL          |             |               | VDE              | CSA |  |
| 1/10       | .100     | KLKD 1/10      | KLKD.100T       | 600     | 100 | 50                       | 07945810189 | .013 (5.90) | •             |                  | •   |  |
| 1/8        | .125     | KLKD 1/8       | KLKD.125T       | 600     | 100 | 50                       | 07945810190 | .013 (5.90) | •             |                  | •   |  |
| 2/10       | .20      | KLKD 2/10      | KLKD.200T       | 600     | 100 | 50                       | 07945810191 | .013 (5.90) | •             |                  | •   |  |
| 1/4        | .250     | KLKD 1/4       | KLKD.250T       | 600     | 100 | 50                       | 07945810192 | .013 (5.90) | •             |                  | •   |  |
| 3/10       | .300     | KLKD 3/10      | KLKD.300T       | 600     | 100 | 50                       | 07945810193 | .013 (5.90) | •             |                  | •   |  |
| 1/2        | .500     | KLKD 1/2       | KLKD.500T       | 600     | 100 | 50                       | 07945810194 | .013 (5.90) | •             |                  | •   |  |
| 3/4        | .750     | KLKD 3/4       | KLKD.750T       | 600     | 100 | 50                       | 07945810195 | .013 (5.90) | •             |                  | •   |  |
| 1          | 001      | KLKD 1         | KLKD001.T       | 600     | 100 | 50                       | 07945810196 | .013 (5.90) | •             |                  | •   |  |
| 1 1/2      | 01.5     | KLKD 1 1/2     | KLKD01.5T       | 600     | 100 | 50                       | 07945810197 | .013 (5.90) | •             |                  | •   |  |
| 2          | 002      | KLKD 2         | KLKD002.T       | 600     | 100 | 50                       | 07945810198 | .017 (7.71) | •             | •                | •   |  |
| 2 1/2      | 02.5     | KLKD 2 1/2     | KLKD02.5T       | 600     | 100 | 50                       | 07945810199 | .017 (7.71) | •             | •                | •   |  |
| 3          | 003      | KLKD 3         | KLKD003.T       | 600     | 100 | 50                       | 07945810200 | .017 (7.71) | •             | •                | •   |  |
| 3 1/2      | 03.5     | KLKD 3 1/2     | KLKD03.5T       | 600     | 100 | 50                       | 07945810214 | .017 (7.71) | •             | •                | •   |  |
| 4          | 004      | KLKD 4         | KLKD004.T       | 600     | 100 | 50                       | 07945810201 | .017 (7.71) | •             | •                | •   |  |
| 5          | 005      | KLKD 5         | KLKD005.T       | 600     | 100 | 50                       | 07945810202 | .017 (7.71) | •             | •                | •   |  |
| 6          | 006      | KLKD 6         | KLKD006.T       | 600     | 100 | 50                       | 07945810203 | .017 (7.71) | •             | •                | •   |  |
| 7          | 007      | KLKD 7         | KLKD007.T       | 600     | 100 | 50                       | 07945810204 | .017 (7.71) | •             | •                | •   |  |
| 8          | 008      | KLKD 8         | KLKD008.T       | 600     | 100 | 50                       | 07945810205 | .017 (7.71) | •             | •                | •   |  |
| 9          | 009      | KLKD 9         | KLKD009.T       | 600     | 100 | 50                       | 07945810215 | .017 (7.71) | •             | •                | •   |  |
| 10         | 010      | KLKD 10        | KLKD010.T       | 600     | 100 | 50                       | 07945810206 | .017 (7.71) | •             | •                | •   |  |
| 12         | 012      | KLKD 12        | KLKD012.T       | 600     | 100 | 50                       | 07945810207 | .017 (7.71) | •             | •                | •   |  |
| 15         | 015      | KLKD 15        | KLKD015.T       | 600     | 100 | 50                       | 07945810208 | .017 (7.71) | •             | •                | •   |  |
| 20         | 020      | KLKD 20        | KLKD020.T       | 600     | 100 | 50                       | 07945810209 | .017 (7.71) | •             | •                | •   |  |
| 25         | 025      | KLKD 25        | KLKD025.T       | 600     | 100 | 50                       | 07945810210 | .017 (7.71) | •             | •                | •   |  |
| 30         | 030      | KLKD 30        | KLKD030.T       | 600     | 100 | 50                       | 07945810211 | .017 (7.71) | •             |                  | •   |  |

### PCB 1-Tab Version

| AMP RATING | AMP CODE | CATALOG NUMBER | ORDERING NUMBER | VOLTAGE RATING |     | INTERRUPTING RATING (kA) |             | UPC | APPROVALS |  |
|------------|----------|----------------|-----------------|----------------|-----|--------------------------|-------------|-----|-----------|--|
|            |          |                |                 | DC & AC        | AC  | DC                       | UL          |     | CE        |  |
| 1/10       | .100     | KLKD 1/10-R    | KLKD.100HXR     | 600            | 100 | 50                       | 07945814857 | •   | •         |  |
| 1/2        | .500     | KLKD 1/2-R     | KLKD.500HXR     | 600            | 100 | 50                       | 07945814858 | •   | •         |  |
| 1          | 001      | KLKD 1-R       | KLKD001.HXR     | 600            | 100 | 50                       | 07945812133 | •   | •         |  |
| 2          | 002      | KLKD 2-R       | KLKD002.HXR     | 600            | 100 | 50                       | 07945894349 | •   | •         |  |
| 3          | 003      | KLKD 3-R       | KLKD003.HXR     | 600            | 100 | 50                       | 07945818991 | •   | •         |  |
| 4          | 004      | KLKD 4-R       | KLKD004.HXR     | 600            | 100 | 50                       | 07945811495 | •   | •         |  |
| 5          | 005      | KLKD 5-R       | KLKD005.HXR     | 600            | 100 | 50                       | 07945814859 | •   | •         |  |
| 6          | 006      | KLKD 6-R       | KLKD006.HXR     | 600            | 100 | 50                       | 07945894350 | •   | •         |  |
| 8          | 008      | KLKD 8-R       | KLKD008.HXR     | 600            | 100 | 50                       | 07945894351 | •   | •         |  |
| 10         | 010      | KLKD 10-R      | KLKD010.HXR     | 600            | 100 | 50                       | 07945814860 | •   | •         |  |
| 12         | 012      | KLKD 12-R      | KLKD012.HXR     | 600            | 100 | 50                       | 07945894352 | •   | •         |  |
| 15         | 015      | KLKD 15-R      | KLKD015.HXR     | 600            | 100 | 50                       | 07945894353 | •   | •         |  |
| 20         | 020      | KLKD 20-R      | KLKD020.HXR     | 600            | 100 | 50                       | 07945894354 | •   | •         |  |
| 25         | 025      | KLKD 25-R      | KLKD025.HXR     | 600            | 100 | 50                       | 07945894355 | •   | •         |  |
| 30         | 030      | KLKD 30-R      | KLKD030.HXR     | 600            | 100 | 50                       | 07945894356 | •   | •         |  |

# KLKD SERIES 10x38 FUSES

## Electrical Specifications

| AMP RATING | CATALOG NUMBER | NOM COLD RESISTANCE (ohms) | AVERAGE MELT TIME | AVERAGE MELTING I <sup>2</sup> t | WATTS LOSS AT 100% RATED CURRENT (W) | WATTS LOSS AT 80% RATED CURRENT (W) | AVERAGE CLEARING TIME | TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 20 kA | TOTAL CLEARING I <sup>2</sup> t (A <sup>2</sup> s) 100 kA |
|------------|----------------|----------------------------|-------------------|----------------------------------|--------------------------------------|-------------------------------------|-----------------------|----------------------------------------------------------|-----------------------------------------------------------|
| 1/10       | KLKD 1/10      | 85.5                       | –                 | –                                | 0.780                                | 0.505                               | 0.000047              | 0.019                                                    | –                                                         |
| 1/8        | KLKD 1/8       | 65                         | –                 | –                                | 0.975                                | 0.659                               | 0.000050              | 0.010                                                    | –                                                         |
| 2/10       | KLKD 2/10      | 30.9                       | –                 | –                                | 1.213                                | 0.773                               | 0.000073              | 0.032                                                    | –                                                         |
| 1/4        | KLKD 1/4       | 22                         | –                 | –                                | 1.364                                | 0.870                               | –                     | –                                                        | –                                                         |
| 3/10       | KLKD 3/10      | 16.2                       | –                 | –                                | 1.519                                | 0.960                               | 0.000101              | 0.067                                                    | –                                                         |
| 1/2        | KLKD 1/2       | 8.16                       | –                 | –                                | 1.961                                | 1.237                               | 0.000141              | 0.197                                                    | –                                                         |
| 3/4        | KLKD 3/4       | 0.402                      | 0.000063          | 0.234                            | 0.361                                | 0.199                               | 0.000170              | 0.753                                                    | –                                                         |
| 1          | KLKD 1         | 0.252                      | 0.000094          | 0.678                            | 0.388                                | 0.273                               | 0.000247              | 1.827                                                    | 0.008                                                     |
| 1 1/2      | KLKD 1 1/2     | 0.134                      | 0.000153          | 2.890                            | 0.409                                | 0.229                               | 0.000828              | 13.956                                                   | 280                                                       |
| 2          | KLKD 2         | 0.129                      | 0.000145          | 2.379                            | 0.823                                | 0.606                               | 0.000291              | 3.919                                                    | 0.012                                                     |
| 2 1/2      | KLKD 2 1/2     | 0.0989                     | 0.000186          | 5.142                            | 0.912                                | 0.618                               | 0.000387              | 8.877                                                    | –                                                         |
| 3          | KLKD 3         | 0.0773                     | 0.000211          | 7.821                            | 0.957                                | 0.654                               | 0.000449              | 14.835                                                   | –                                                         |
| 3 1/2      | KLKD 3 1/2     | 0.0613                     | 0.000249          | 12.417                           | 1.12                                 | 0.826                               | 0.000471              | 21.048                                                   | –                                                         |
| 4          | KLKD 4         | 0.0511                     | 0.000284          | 18.945                           | 1.367                                | 0.891                               | 0.000507              | 30.76                                                    | 0.019                                                     |
| 5          | KLKD 5         | 0.0363                     | 0.000347          | 34.163                           | 1.4                                  | 0.938                               | 0.000607              | 56.514                                                   | 0.024                                                     |
| 6          | KLKD 6         | 0.0261                     | 0.000423          | 62.951                           | 1.516                                | 0.998                               | 0.000735              | 96.824                                                   | 0.035                                                     |
| 7          | KLKD 7         | 0.0205                     | 0.000505          | 105.143                          | 1.577                                | 1.066                               | 0.000898              | 168.578                                                  | 0.087                                                     |
| 8          | KLKD 8         | 0.0194                     | 0.000541          | 130.266                          | 1.824                                | 1.205                               | 0.000945              | 210.595                                                  | 0.656                                                     |
| 9          | KLKD 9         | 0.0166                     | 0.000587          | 164.221                          | 2.208                                | 1.428                               | 0.000992              | 266.633                                                  | –                                                         |
| 10         | KLKD 10        | 0.0128                     | 0.000701          | 278.390                          | 1.893                                | 1.3                                 | 0.001200              | 454.628                                                  | 211.667                                                   |
| 12         | KLKD 12        | 0.0103                     | 0.000822          | 445.010                          | 2.296                                | 1.584                               | 0.001455              | 744.775                                                  | 440                                                       |
| 15         | KLKD 15        | .007855                    | 0.000544          | 137.333                          | 2.045                                | 1.57                                | 0.001721              | 351.24                                                   | –                                                         |
| 20         | KLKD 20        | 0.0045                     | 0.000826          | 462.056                          | 2.133                                | 1.593                               | 0.006144              | 1151.185                                                 | 2120                                                      |
| 25         | KLKD 25        | 0.003532                   | 0.001007          | 834.529                          | 2.55                                 | 1.933                               | 0.002085              | 1744.033                                                 | 2085                                                      |
| 30         | KLKD 30        | 0.002776                   | 0.001207          | 1409                             | 3.701                                | 1.983                               | 0.002266              | 2757                                                     | 3220                                                      |

Note: Test Circuit 600 Vac / 20 kA

# KLKD SERIES 10x38 FUSES

## Current-Limiting Effects

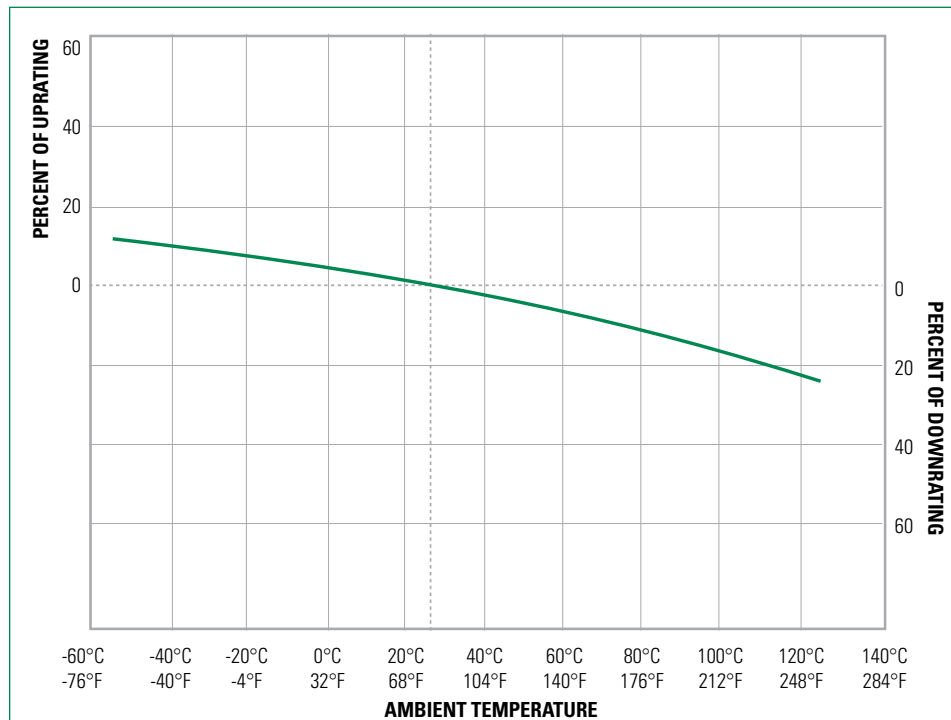
| SHORT CIRCUIT CURRENT* | APPARENT RMS SYMMETRICAL CURRENT FOR VARIOUS FUSE RATINGS |      |      |      |
|------------------------|-----------------------------------------------------------|------|------|------|
|                        | 1 ½ A                                                     | 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

## Electrical Specification – Agency Requirements

| AMPERAGE RATING | OPENING TIME (MINUTES)    |                            |                           |                            |                           |
|-----------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
|                 | 100% of Amp Rating per UL | 113% of Amp Rating per IEC | 135% of Amp Rating per UL | 145% of Amp Rating per IEC | 200% of Amp Rating per UL |
| 1/10-30         | Temperature Stabilization | 60 Min                     | 60 Max                    | 60 Max                     | 4 Max                     |

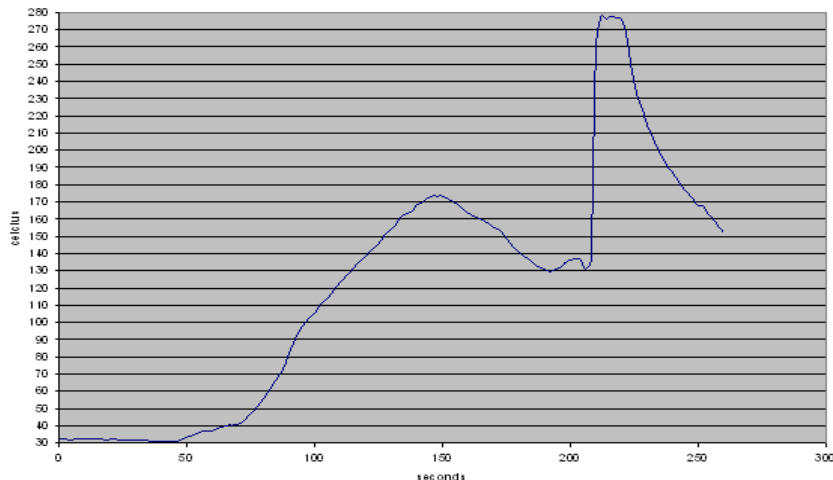
## Temperature Derating Curve (Temperature of Air Immediately Surrounding Fuse)



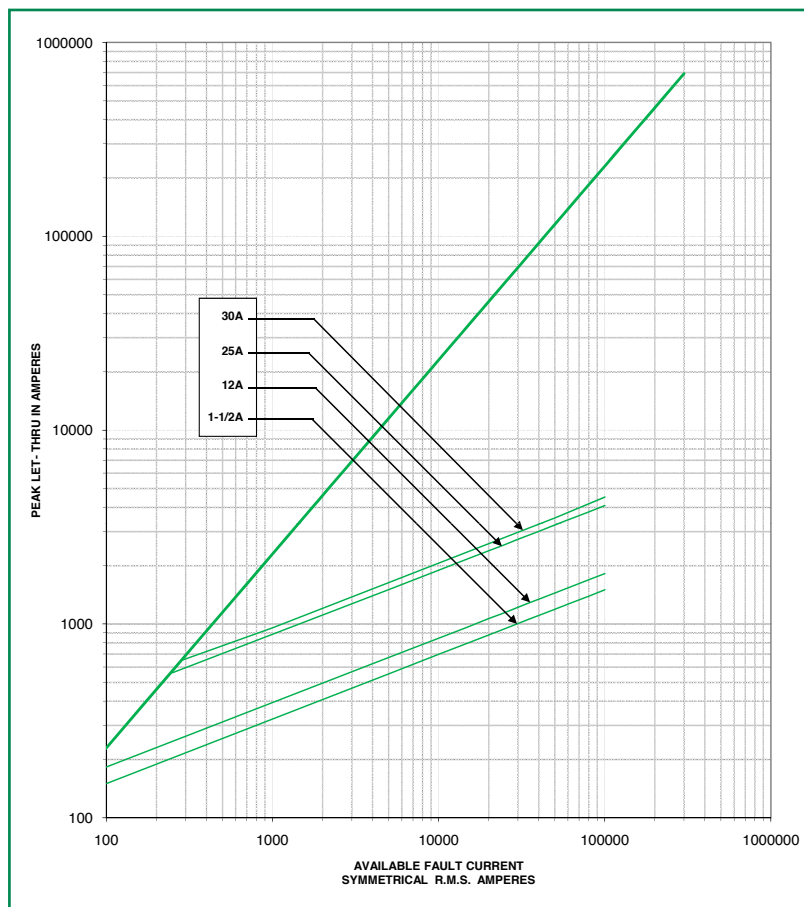
# KLKD SERIES 10x38 FUSES

## 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               |

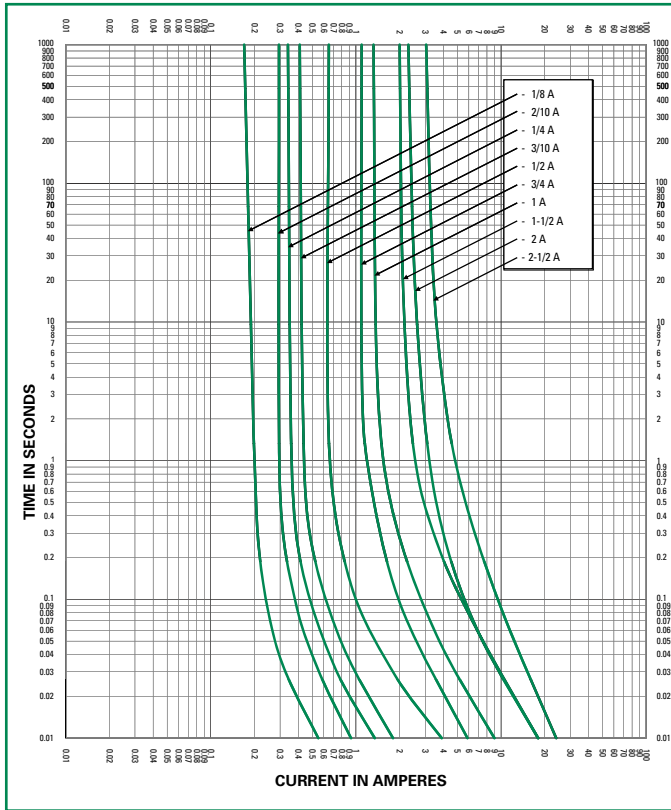


## Peak Let Thru Curve

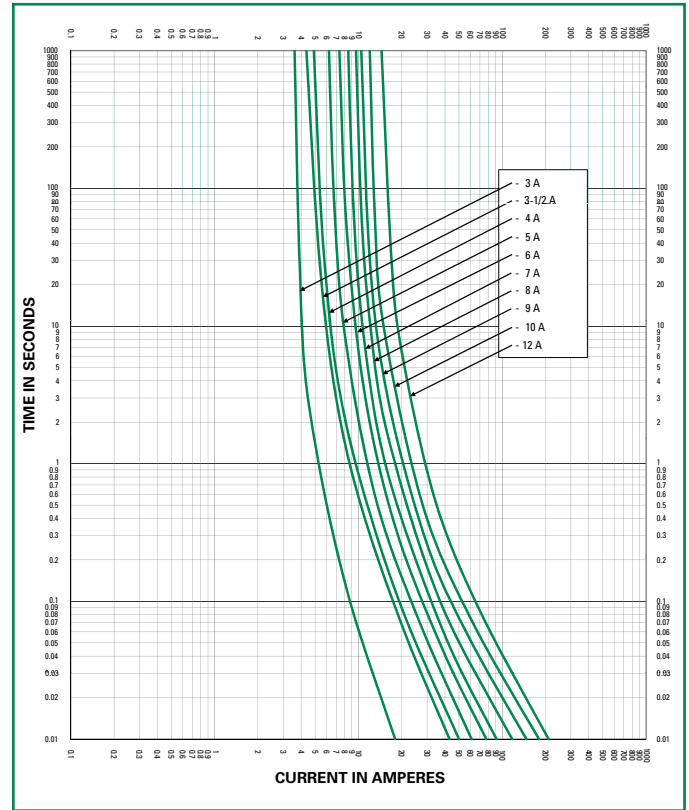


# KLKD SERIES 10x38 FUSES

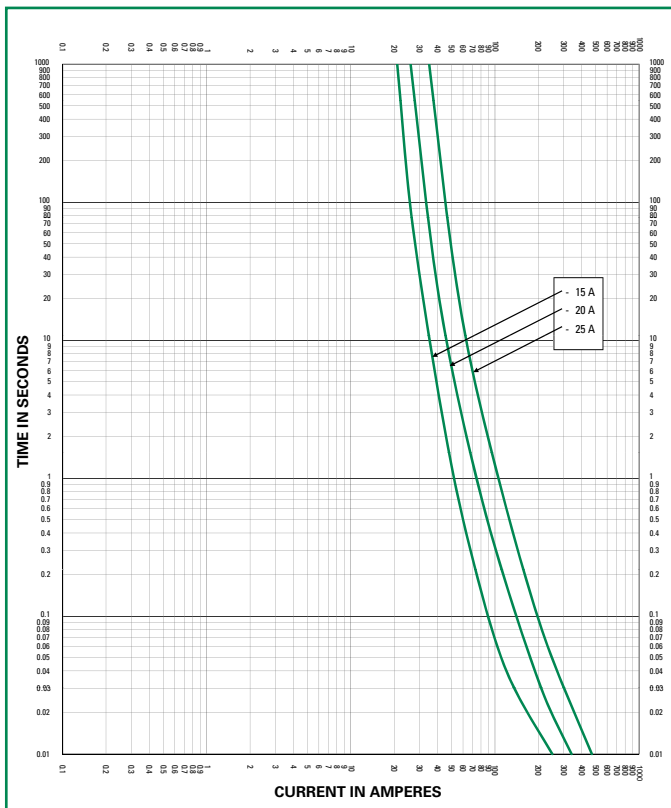
**Time Current Curve (1/8 - 2 1/2 A)**



**Time Current Curve (3 - 12 A)**



**Time Current Curve (15 - 25 A)**



**Time Current Curve (30 A)**

