# MDA

## 1/4" x 1-1/4" time delay ceramic fuse



Photo is representative

### Product features

- Ceramic tube time delay fuse
- 250 Vac/125 Vdc, 0.25 A to 30 A
- Compact 3AB footprint:
  ¼" x 1 ¼" (6.3 x 32 mm)
- Cartridge and axial lead versions available
- Fuse accessories (cartridge version):

| | | | |
|---|---|---|---|
| 1Axxxx | HBH-I/ HBV-I | HTB | HK |
| HKP | HMR | HGA | HTJ |
| HRK | HHB | HFA | HHK |
| HHN | HFB | HHJ | S-4000 |

### Agency information

- UL Listed Card: MDA 1/4 A - 20 A (Guide JDYX, File E19180)
- UL Recognized Card: MDA 25 A - 30 A (Guide JDYX2, File E19180)
- CSA Certification Card: MDA 1/4 A - 20 A (Class No. 1422-01)
- CSA Component Acceptance: MDA 25 A - 30 A (Class No. 1422-30)

### Applications

Primary circuit protection:

- LED and general lighting
- LED/LCD televisions
- Appliances and white goods
- Printers and peripherals
- Test equipment
- Uninterruptible power supplies (UPS)

### Environmental compliance

### Ordering part number

**BK-MDA-BV-30-R**

- Packaging prefix
- Family name
- Option code
- Ampere rating
- RoHS compliance

### Packaging prefix

**Blank-**
MDA-XXX-R: 5 pieces in tin tray.
MDA-V-XXX-R, MDA-BV-XXX-R : 4 pieces in tin tray.

**BK-**
MDA-XXX-R, MDA-V-XXX-R, MDA-BV-XXX-R: 100 pieces in a box.

**TR-**
MDA-V-XXX-R: 500 pieces on reel.

### Option code

**-B**
Board washable

**-V**
Axial leads

Powering Business Worldwide

## Electrical characteristics

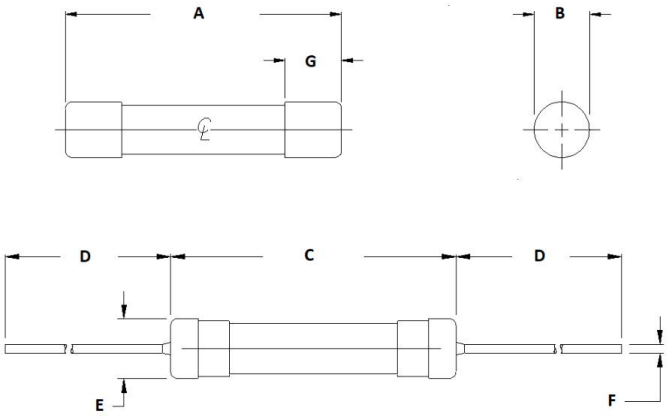
| Rating | % Amp rating | Opening time |
|---|---|---|
| 250 mA to 30 A | 100% | 4 hours |
| 250 mA to 30 A | 135% | 60 minutes maximum |
| 250 mA to 30 A | 200% | 120 seconds maximum |

## Product specifications

| Part number | Current rating (A) | Voltage rating (Vac) | (Vdc) | Interrupting rating @ rated voltage[1] | Typical resistance[2] (mΩ) | Typical voltage drop[3] (mV) | Typical melting[4] $I^2t$ ($A^2sec$) |
|---|---|---|---|---|---|---|---|
| MDA-1/4-R | 0.25 | 250 | - | 200 A @ 250 Vac, 10000 A @ 125 Vac | 9100 | 2900 | 0.28 |
| MDA-1/2-R | 0.50 | 250 | - | 200 A @ 250 Vac, 10000 A @ 125 Vac | 2600 | 1650 | 1.2 |
| MDA-3/4-R | 0.75 | 250 | - | 200 A @ 250 Vac, 10000 A @ 125 Vac | 520 | 495 | 0.42 |
| MDA-1-R | 1.0 | 250 | - | 200 A @ 250 Vac, 10000 A @ 125 Vac | 380 | 470 | 0.90 |
| MDA-1-1/2-R | 1.5 | 250 | - | 200 A @ 250 Vac, 10000 A @ 125 Vac | 190 | 370 | 3.4 |
| MDA-2-R | 2.0 | 250 | - | 200 A @ 250 Vac, 10000 A @ 125 Vac | 120 | 295 | 8.8 |
| MDA-2-1/2-R | 2.5 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 66 | 246 | 7.2 |
| MDA-3-R | 3.0 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 48 | 215 | 15.9 |
| MDA-4-R | 4.0 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 31 | 176 | 37.2 |
| MDA-5-R | 5.0 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 23 | 173 | 65 |
| MDA-6-R | 6.0 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 18 | 166 | 98.1 |
| MDA-7-R | 7.0 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 15 | 158 | 135 |
| MDA-8-R | 8.0 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 13 | 162 | 188 |
| MDA-10-R | 10 | 250 | 125 | 200 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 9.5 | 142 | 332 |
| MDA-12-R | 12 | 250 | 125 | 750 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 7.6 | 128 | 125.2 |
| MDA-15-R | 15 | 250 | 125 | 750 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 5.7 | 107 | 336.8 |
| MDA-20-R | 20 | 250 | 125 | 1500 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 4.1 | 95 | 483.5 |
| MDA-25-R | 25 | 250 | 125 | 1500 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 3.1 | 105 | 734.7 |
| MDA-30-R | 30 | 250 | 125 | 1500 A @ 250 Vac, 10000 A @ 125 Vac 10000 A @ 125 Vdc | 2.5 | 110 | 1096.7 |

1. Interrupting ratings measured at 70% ~ 80% power factor on AC, (20 A and 30 A, 90% - 100% ower factor on AC).
2. Typical resistance measured at <10% of rated current at +25 °C
3. Typical voltage drop measured at +25 °C and rated current
4. Typical melting: (< 10 A, $I^2t$ measured at 10 x rated current), (> 12 A, $I^2t$ measured at interrupting rating and rated voltage)

**Dimensions- mm**
Drawing not to scale




**Cartridge**

| Dimensions | Size |
|---|---|
| A | 31.75 ± 0.79 |
| B | 6.35 ± 0.1 |
| G | 4.8 ref for 10 A and below<br>6.48 ref for above 10 A |

**Axial lead**

| Dimensions | Size |
|---|---|
| C | 32.82 ± 0.79 |
| D | 38.1mm ref |
| E | 6.76 ref |
| F | 0.81 ± 0.05 for 15 A and below<br>1.02 ± 0.05 for 20 A and above |

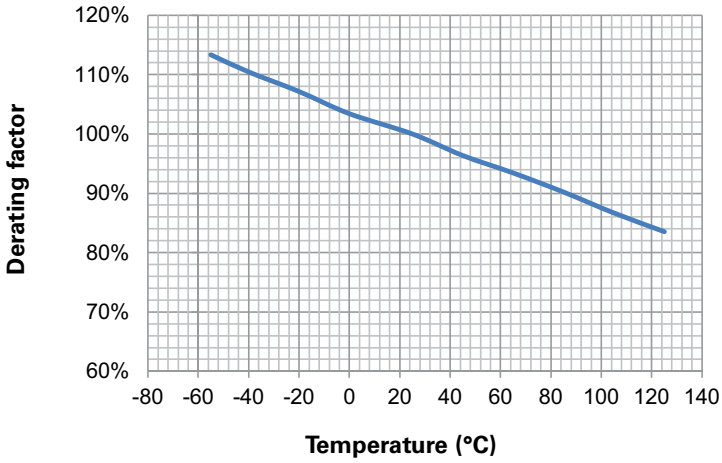
## General specifications

| |
|---|
| Operating temperature: -55 °C to +125 °C with proper derating factor applied. |
| Mechanical shock test 1/4 A to 10 A: MIL-STD 202 method 213. Condition C<br>Mechanical shock test 12 A to 30 A: MIL-STD 202G method 213. Condition J |
| Vibration test 1/4 A to 30 A: MIL-STD-202 method 204, test condition C |

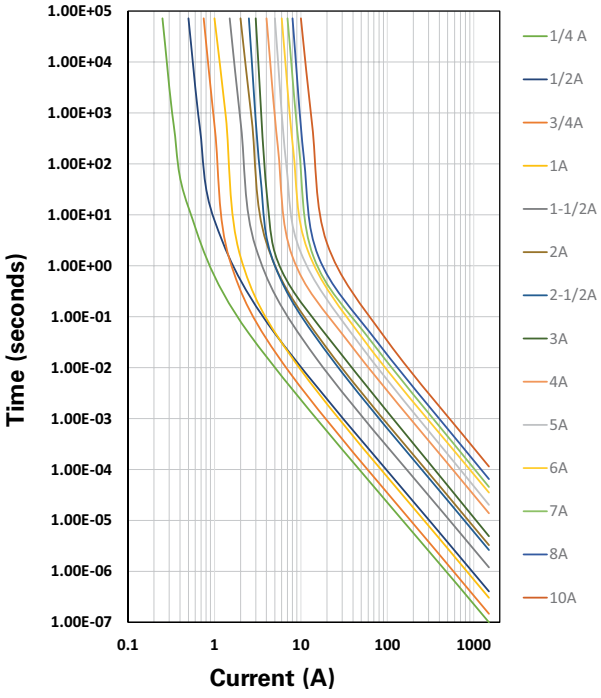
## Packaging information

| Packaging prefix | Description |
|---|---|
| Blank | MDA-XXX-R: 5 pieces in tin tray. |
| | MDA-V-XXX-R, MDA-BV-XXX-R: 4 pieces in tin tray. |
| BK- | MDA-XXX-R, MDA-V-XXX-R, MDP-BV-XXX-R: 100 pieces in a box. |
| TR- | MDA-V-XXX-R: 500 pieces on reel. |

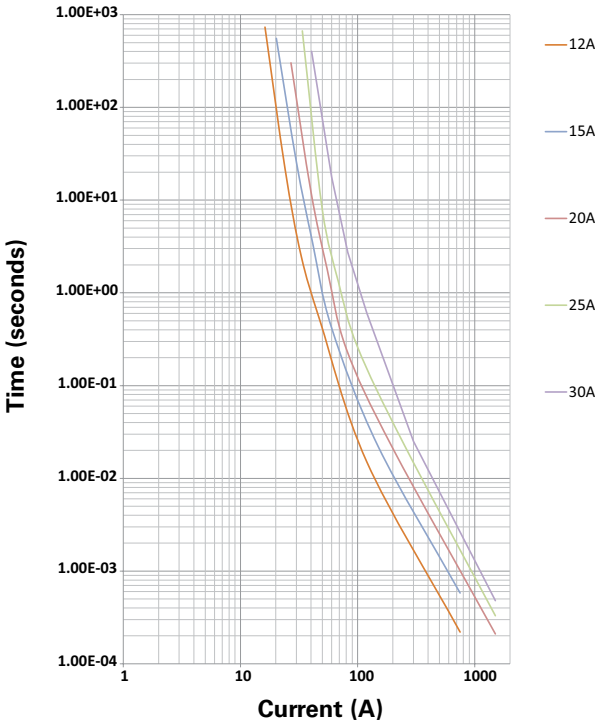
### Temperature derating curve



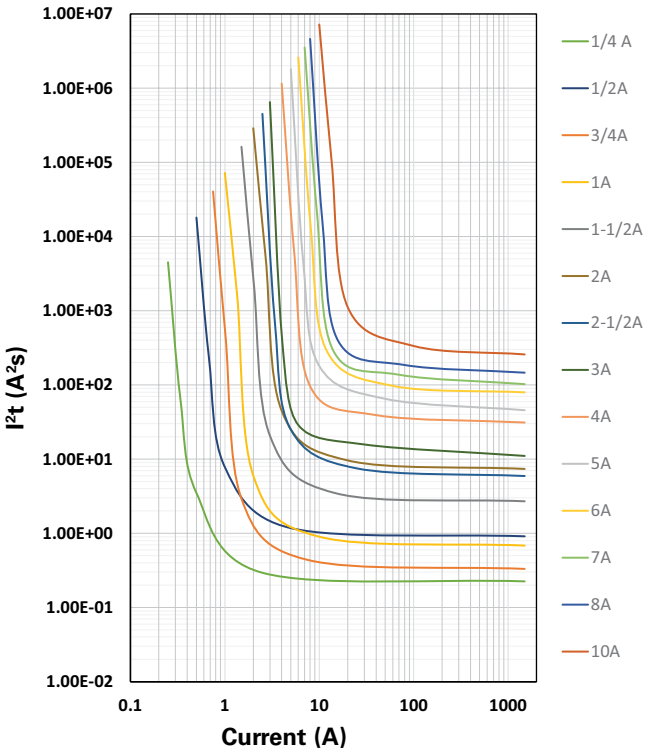

### Current vs. time curve



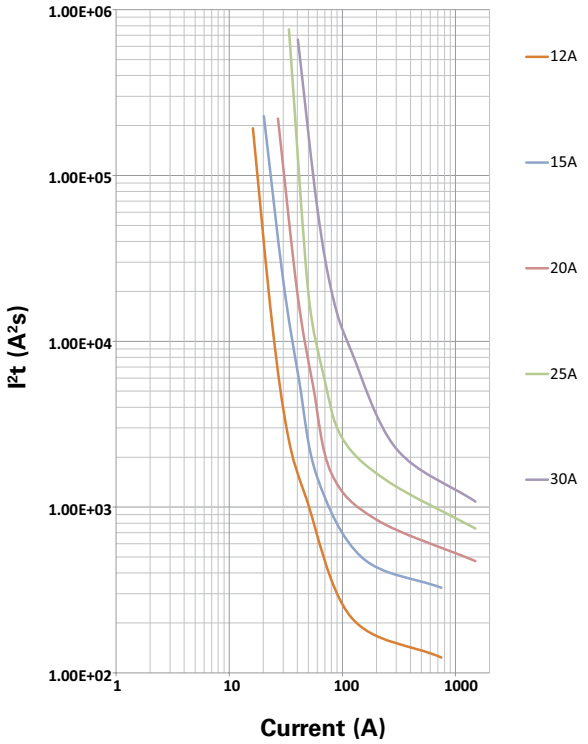

### Current vs. time curve



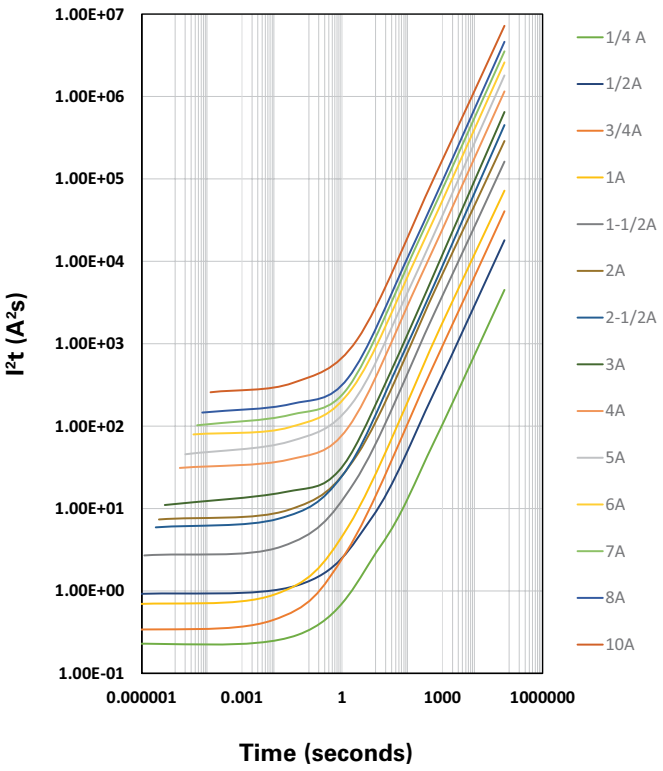
### I2t vs. current curve



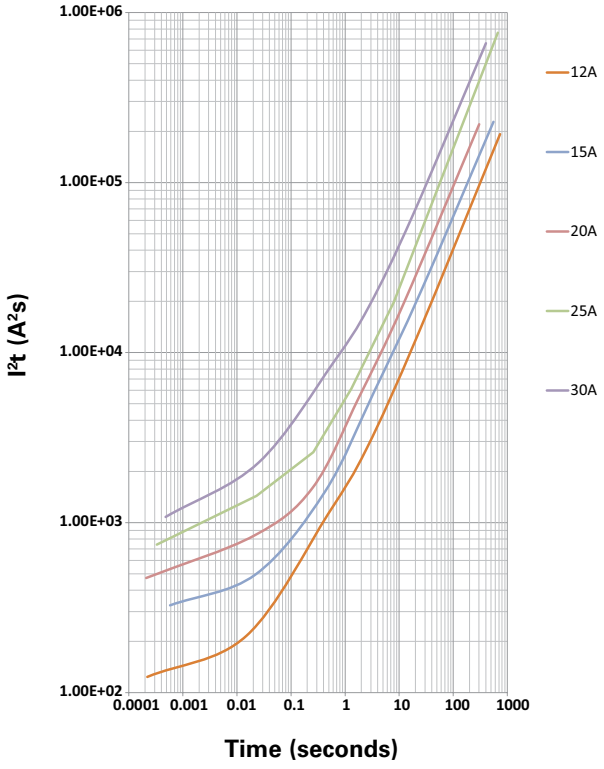

### I2t vs current curve



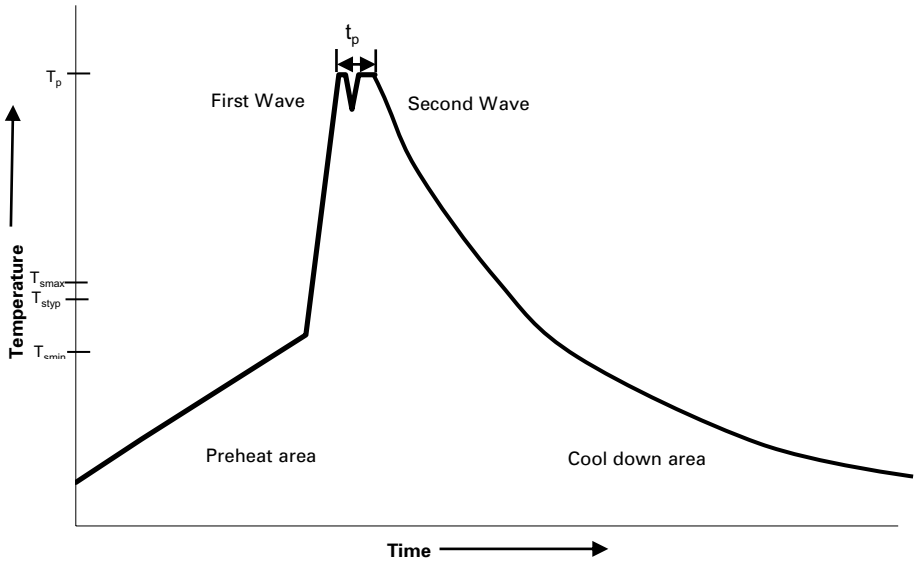

### I2t vs. time curve




### I2t vs time curve



### Wave solder profile--(axial lead version only)




### Reference EN 61760-1:2006

| Profile feature | | Standard SnPb solder | Lead (Pb) free solder |
|---|---|---|---|
| Preheat | • Temperature min. ($T_{smin}$) | 100 °C | 100 °C |
| | • Temperature typ. ($T_{styp}$) | 120 °C | 120 °C |
| | • Temperature max. ($T_{smax}$) | 130 °C | 130 °C |
| | • Time ($T_{smin}$ to $T_{smax}$) ($t_s$) | 70 seconds | 70 seconds |
| $\Delta$ preheat to max Temperature | | 150 °C max. | 150 °C max. |
| Peak temperature (Tp)* | | 235 °C – 260 °C | 250 °C – 260 °C |
| Time at peak temperature ($t_p$) | | 10 seconds max<br>5 seconds max each wave | 10 seconds max<br>5 seconds max each wave |
| Ramp-down rate | | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max |
| Time 25 °C to 25 °C | | 4 minutes | 4 minutes |

### Manual solder

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended

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