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PRODUCT DATASHEET

PTC Devices

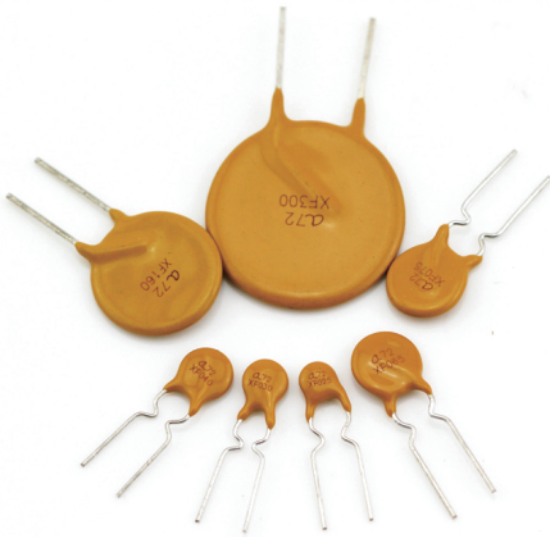
## A72 Series PTC Devices



**Description**

The JDTFUSE A72 Series is designed to provide overcurrent protection to 72Vdc maximum voltage with a maximum 40A short circuit rating.

**Features**



- 72Vdc max voltage w/max 40A short circuit rating
- RoHS compliant, Lead-Free and HalogenFree\*
- Resettable feature
- Ideal for a broad range of general electronics using a low voltage power supply


**Agency Approvals**

| Agency  | File Number |
|---|-------------|
|  | E472196     |
|  | pending     |

**Applications**

- Load protection on wide range of low voltage power supplies
- Computers
- Computers peripherals
- General electronics

| Regulation  | Standard   |
|---|------------|
|  | 2002/95/EC |
|  | EN14582    |

## Performance Specification

| Model   | V <sub>max</sub><br>(V <sub>dc</sub> ) | I <sub>max</sub><br>(A) | I <sub>hold</sub><br>@25°C<br>(A) | I <sub>trip</sub><br>@25°C<br>(A) | P <sub>d</sub><br>Typ.<br>(W) | Maximum Time To Trip |               | Resistance                |                          |
|---------|--|-------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------------|---------------|---------------------------|--------------------------|
|         |  |                         |                                   |                                   |                               | Current<br>(A)       | Time<br>(Sec) | R <sub>i min</sub><br>(Ω) | R <sub>1max</sub><br>(Ω) |
| A72-020 | 72                                     | 40                      | 0.20                              | 0.40                              | 0.41                          | 1.00                 | 2.2           | 1.25                      | 4.40                     |
| A72-025 | 72                                     | 40                      | 0.25                              | 0.50                              | 0.45                          | 1.25                 | 2.5           | 0.65                      | 3.00                     |
| A72-030 | 72                                     | 40                      | 0.30                              | 0.72                              | 0.49                          | 1.50                 | 3.0           | 0.45                      | 2.10                     |
| A72-040 | 72                                     | 40                      | 0.40                              | 0.80                              | 0.56                          | 2.00                 | 3.8           | 0.40                      | 1.29                     |
| A72-050 | 72                                     | 40                      | 0.50                              | 1.00                              | 0.77                          | 2.50                 | 4.0           | 0.35                      | 1.17                     |
| A72-065 | 72                                     | 40                      | 0.65                              | 1.30                              | 0.88                          | 3.25                 | 5.3           | 0.25                      | 0.72                     |
| A72-075 | 72                                     | 40                      | 0.75                              | 1.50                              | 0.92                          | 3.75                 | 6.3           | 0.25                      | 0.62                     |
| A72-090 | 72                                     | 40                      | 0.90                              | 1.80                              | 0.99                          | 4.50                 | 7.2           | 0.20                      | 0.49                     |
| A72-110 | 72                                     | 40                      | 1.10                              | 2.20                              | 1.50                          | 5.50                 | 8.2           | 0.15                      | 0.40                     |
| A72-135 | 72                                     | 40                      | 1.35                              | 2.70                              | 1.70                          | 6.75                 | 9.6           | 0.12                      | 0.32                     |
| A72-160 | 72                                     | 40                      | 1.60                              | 3.20                              | 1.90                          | 8.00                 | 11.4          | 0.09                      | 0.24                     |
| A72-185 | 72                                     | 40                      | 1.85                              | 3.70                              | 2.10                          | 9.25                 | 12.6          | 0.08                      | 0.21                     |
| A72-250 | 72                                     | 40                      | 2.50                              | 5.00                              | 2.50                          | 12.50                | 15.6          | 0.04                      | 0.13                     |
| A72-300 | 72                                     | 40                      | 3.00                              | 6.00                              | 2.80                          | 15.00                | 19.8          | 0.03                      | 0.10                     |
| A72-375 | 72                                     | 40                      | 3.75                              | 7.50                              | 3.20                          | 18.75                | 24.0          | 0.02                      | 0.08                     |
| A72-500 | 72                                     | 40                      | 5.00                              | 10.0                              | 3.20                          | 18.75                | 24.0          | 0.02                      | 0.08                     |

I<sub>hold</sub> = Hold Current. Maximum current device will not trip in 25°C still air.

I<sub>trip</sub> = Trip Current. Minimum current at which the device will always trip in 25°C still air.

V<sub>max</sub> = Maximum operating voltage device can withstand without damage at rated current (I<sub>max</sub>).

I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>).

P<sub>d</sub> = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R<sub>i min/max</sub> = Minimum/Maximum device resistance prior to tripping at 25°C.

R<sub>1max</sub> = Maximum device resistance is measured one hour post reflow.

CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

## Environmental Specifications

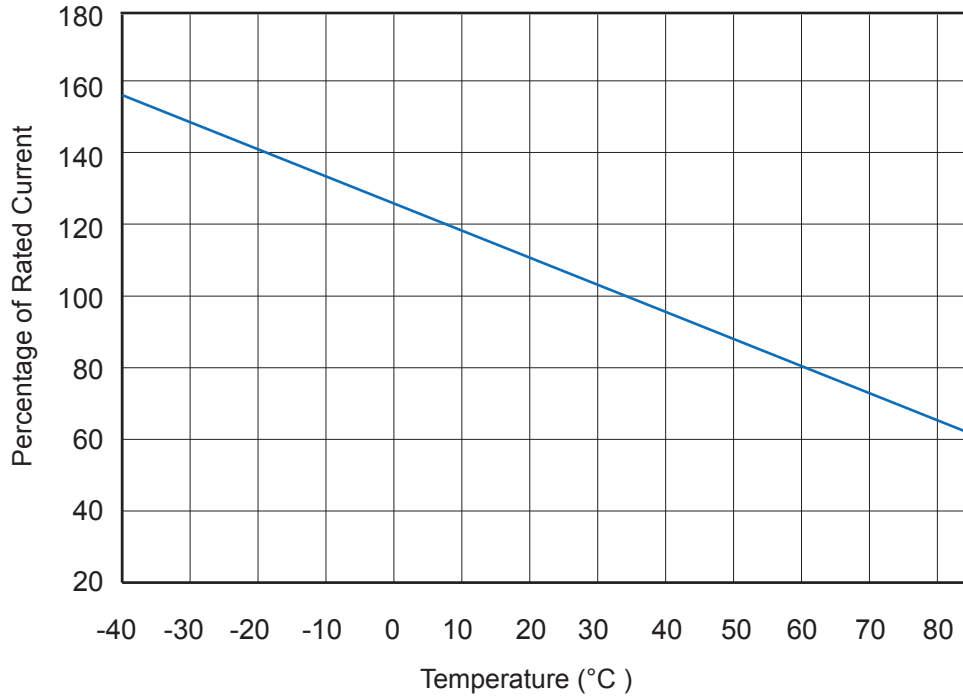
| Test                  | Conditions                  | Resistance change |
|-----------------------|-----------------------------|-------------------|
| Passive aging         | +85°C, 1000 hrs.            | ±5% typical       |
| Humidity aging        | +85°C, 85% R.H. , 168 hours | ±5% typical       |
| Thermal shock         | +85°C to -40°C, 20 times    | ±33% typical      |
| Resistance to solvent | MIL-STD-202,Method 215      | No change         |
| Vibration             | MIL-STD-202,Method 201      | No change         |

Ambient operating conditions : - 40 °C to +85 °C

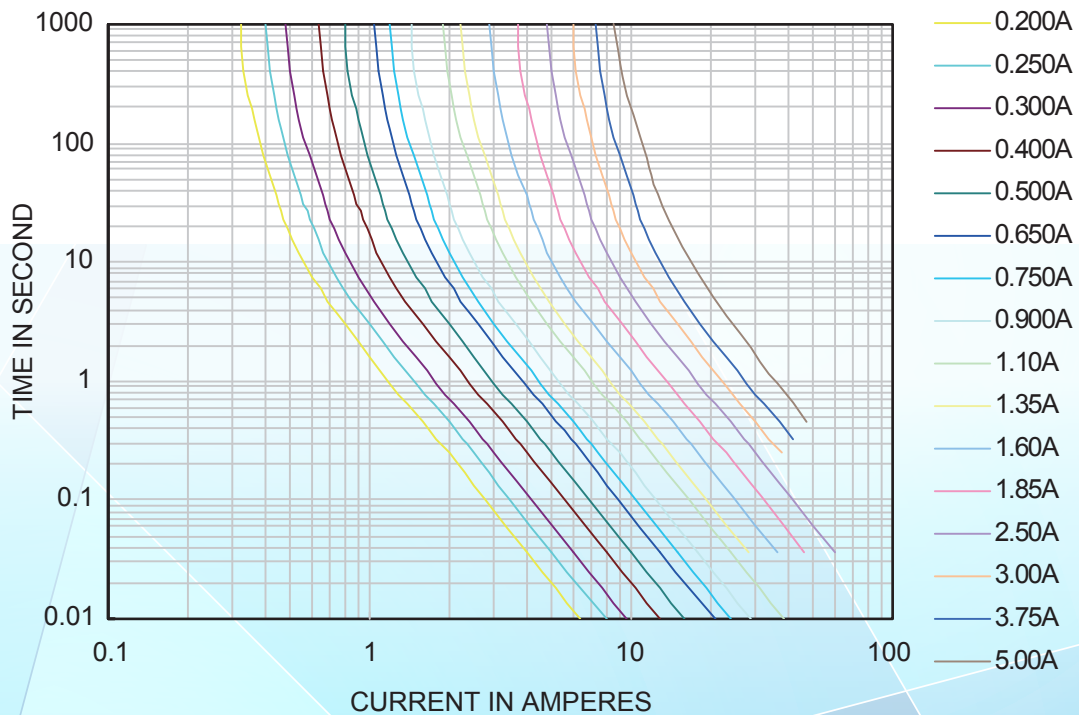
Maximum surface temperature of the device in the tripped state is 125 °C

### Thermal Derating Curve

Derating Curves for A72 Series

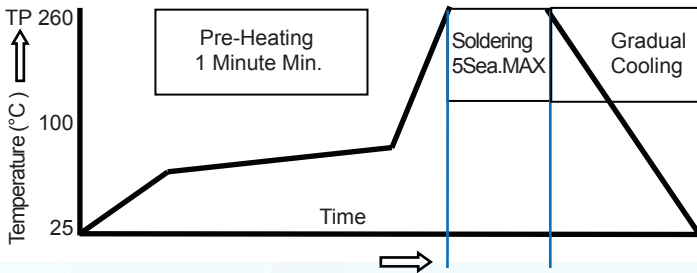


### Average Time-Current Curve



**I<sub>hold</sub> Versus Temperature**

| Model   | Maximum ambient operating temperature (T <sub>mao</sub> ) vs. hold current (I <sub>hold</sub> ) |        |      |      |      |      |      |      |      |
|---------|---|--------|------|------|------|------|------|------|------|
|         | - 40°C  | - 20°C | 0°C  | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| A72-020 | 0.31  | 0.27   | 0.24 | 0.20 | 0.16 | 0.14 | 0.13 | 0.11 | 0.08 |
| A72-025 | 0.39  | 0.34   | 0.30 | 0.25 | 0.20 | 0.18 | 0.16 | 0.14 | 0.10 |
| A72-030 | 0.47  | 0.41   | 0.36 | 0.30 | 0.24 | 0.22 | 0.19 | 0.16 | 0.12 |
| A72-040 | 0.62  | 0.54   | 0.48 | 0.40 | 0.32 | 0.29 | 0.25 | 0.22 | 0.16 |
| A72-050 | 0.78  | 0.68   | 0.60 | 0.50 | 0.41 | 0.36 | 0.32 | 0.27 | 0.20 |
| A72-065 | 1.01  | 0.88   | 0.77 | 0.65 | 0.53 | 0.47 | 0.41 | 0.35 | 0.26 |
| A72-075 | 1.16  | 1.02   | 0.89 | 0.75 | 0.61 | 0.54 | 0.47 | 0.41 | 0.30 |
| A72-090 | 1.40  | 1.22   | 1.07 | 0.90 | 0.73 | 0.65 | 0.57 | 0.49 | 0.36 |
| A72-110 | 1.71  | 1.50   | 1.31 | 1.10 | 0.89 | 0.79 | 0.69 | 0.59 | 0.44 |
| A72-135 | 2.09  | 1.84   | 1.61 | 1.35 | 1.09 | 0.97 | 0.85 | 0.73 | 0.54 |
| A72-160 | 2.48  | 2.18   | 1.90 | 1.60 | 1.30 | 1.15 | 1.01 | 0.86 | 0.64 |
| A72-185 | 2.87  | 2.52   | 2.20 | 1.85 | 1.50 | 1.33 | 1.17 | 1.00 | 0.74 |
| A72-250 | 3.88  | 3.40   | 2.98 | 2.50 | 2.03 | 1.80 | 1.58 | 1.35 | 1.00 |
| A72-300 | 4.65  | 4.08   | 3.57 | 3.00 | 2.43 | 2.16 | 1.89 | 1.62 | 1.20 |
| A72-375 | 5.81  | 5.10   | 4.46 | 3.75 | 3.04 | 2.70 | 2.36 | 2.03 | 1.50 |
| A72-500 | 6.59  | 5.78   | 5.15 | 4.50 | 3.64 | 3.00 | 2.65 | 2.42 | 1.60 |

**Soldering Parameters**


Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free  
 Recommended maximum paste thickness is 0.25mm  
 Devices can be cleaned using standard industry methods and solvents.

Note 1: All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

**Profile Feature**
**Pb-Free Assembly**

Average Ramp-Up Rate 3°C/second max.  
 (Ts max to T<sub>p</sub>)

**Preheat**

-Temperature Min(Ts min) 150°C  
 -Temperature Max(Ts max) 200°C  
 -Time(Ts min to Ts max) 60~180 seconds

**Time maintained above:**

-Temperature(TL) 217°C  
 -Time(TL) 60~150 seconds

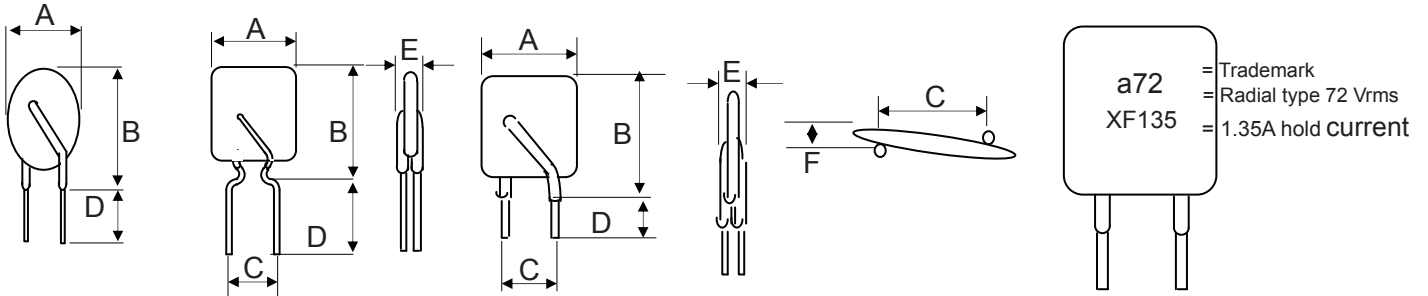
Peak Temperature(T<sub>p</sub>) 260°C

Ramp-Down Rate 6°C/second max.

Time 25°C to Peak Temperature 8 minutes max

Storage Condition 0°C~35°C, ≤70%RH

## Physical Dimensions(mm.)



| Model   | A<br>Max. | B<br>Max. | C<br>Typ. | D<br>Min. | E<br>Max. | F<br>Max. | Lead<br>Style |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|
| A72-020 | 7.4/0.29  | 12.7/0.48 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.0/0.04  | Kink          |
| A72-025 | 7.4/0.29  | 12.7/0.50 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.0/0.04  | Kink          |
| A72-030 | 7.4/0.29  | 13.0/0.51 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.0/0.04  | Kink          |
| A72-040 | 7.6/0.30  | 13.5/0.53 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.2/0.05  | Kink          |
| A72-050 | 6.45/0.31 | 10.8/0.54 | 5.1/0.20  | 8.4/0.3   | 2.4/0.12  | 1.2/0.05  | Kink          |
| A72-065 | 9.7/0.38  | 14.5/0.57 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.5/0.06  | Kink          |
| A72-075 | 10.4/0.41 | 15.2/0.60 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.5/0.06  | Kink          |
| A72-090 | 11.7/0.46 | 15.8/0.62 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.5/0.06  | Kink          |
| A72-110 | 13.0/0.51 | 18.0/0.71 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.2/0.05  | Straight      |
| A72-135 | 14.5/0.57 | 19.6/0.77 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.2/0.05  | Straight      |
| A72-160 | 16.3/0.64 | 21.3/0.84 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.5/0.06  | Straight      |
| A72-185 | 17.8/0.70 | 22.9/0.90 | 5.1/0.20  | 7.6/0.3   | 3.1/0.12  | 1.5/0.06  | Straight      |
| A72-250 | 21.3/0.84 | 26.4/1.04 | 10.2/0.40 | 7.6/0.3   | 3.1/0.12  | 1.7/0.07  | Straight      |
| A72-300 | 24.9/0.98 | 30.0/1.18 | 10.2/0.40 | 7.6/0.3   | 3.1/0.12  | 2.0/0.08  | Straight      |
| A72-375 | 28.5/1.12 | 33.5/1.32 | 10.2/0.40 | 7.6/0.3   | 3.1/0.12  | 2.0/0.08  | Straight      |
| A72-500 | 28.5/1.12 | 33.5/1.32 | 10.2/0.40 | 7.6/0.3   | 3.1/0.12  | 2.0/0.08  | Straight      |

### PHYSICAL SPECIFICATIONS :

Materials : Leads A72-017 ~ 040: Tin-plated copper-clad steel, 0.205mm<sup>2</sup> (24JWG), Φ0.51mm(0.020 in).  
 A72-050 ~ 090: Tin-plated copper, 0.205mm<sup>2</sup> (24JWG), Φ0.51mm(0.020 in).  
 A72-110 ~ 500: Tin-plated copper, 0.52mm<sup>2</sup> (20JWG), Φ0.81mm(0.032 in).  
 Lead Solderability : MIL-STD-202, Method 208E

## Packaging Quantity

### Order information

### Packing

| A72         | 185     | K or S        | R or U    | Model             | Reel QTY | Bag QTY |
|-------------|---------|---------------|-----------|-------------------|----------|---------|
| Radial type | Hold    | K= Kink leads | R= Tape & | A72-020 ~ A72-090 | 3000     | 500     |
|             | Current |               | Reel      |                   |          |         |
| 72 V        | (A)     | S= Straight   | U= Bulk   | A72-110 ~ A72-185 | 1500     | 500     |
|             |         | leads         | packaged  | A72-250 ~ A72-500 | -        | 500     |

Tape & Reel packaging per EIA468-B standard.

## Cross Reference

| Model   | Cross Reference    |                     |                         |
|---------|--------------------|---------------------|-------------------------|
|         | Tyco / PolySwitch® | Bourns / POLY-FUSE® | Polytronics / EVERFUSE® |
| A72-020 | RXEF020            | MF-R020             | RLD72P020XF             |
| A72-025 | RXEF025            | MF-R025             | RLD72P025XF             |
| A72-030 | RXEF030            | MF-R030             | RLD72P030XF             |
| A72-040 | RXEF040            | MF-R040             | RLD72P040XF             |
| A72-050 | RXEF050            | MF-R050             | RLD72P050XF             |
| A72-065 | RXEF065            | MF-R065             | RLD72P065XF             |
| A72-075 | RXEF075            | MF-R075             | RLD72P075XF             |
| A72-090 | RXEF090            | MF-R090             | RLD72P090XF             |
| A72-110 | RXEF110            | MF-RX110            | RLD72P110XF             |
| A72-135 | RXEF135            | MF-RX135            | RLD72P135XF             |
| A72-160 | RXEF160            | MF-RX160            | RLD72P160XF             |
| A72-185 | RXEF185            | MF-RX185            | RLD72P185XF             |
| A72-250 | RXEF250            | MF-RX250            | RLD72P250XF             |
| A72-300 | RXEF300            | MF-RX300            | RLD72P300XF             |
| A72-375 | RXEF375            | MF-RX375            | RLD72P375XF             |
| A72-500 | RXEF500            | MF-RX500            | RLD72P500XF             |

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