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PRODUCT DATASHEET

PTC Devices

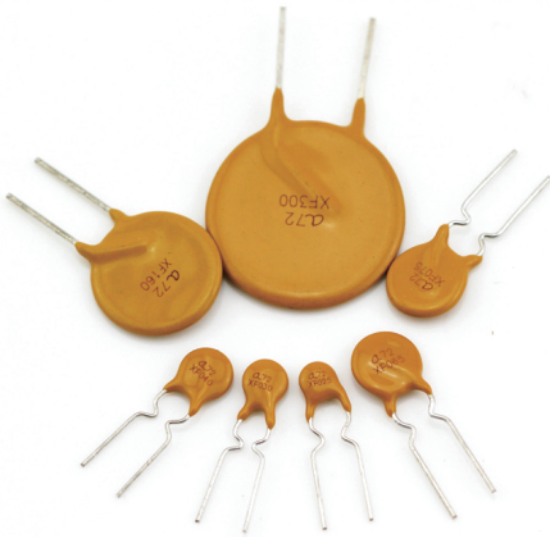
A72 Series PTC Devices

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 _{max} (V _{dc}) | I _{max} (A) | I _{hold} @25°C (A) | I _{trip} @25°C (A) | P _d Typ. (W) | Maximum Time To Trip | | Resistance | |
|---------|--|-------------------------|-----------------------------------|-----------------------------------|-------------------------------|----------------------|---------------|---------------------------|--------------------------|
| | | | | | | Current (A) | Time (Sec) | R _{i min} (Ω) | R _{1max} (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_{hold} = Hold Current. Maximum current device will not trip in 25°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 25°C still air.

V_{max} = Maximum operating voltage device can withstand without damage at rated current (I_{max}).

I_{max} = Maximum fault current device can withstand without damage at rated voltage (V_{max}).

P_d = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R_{i min/max} = Minimum/Maximum device resistance prior to tripping at 25°C.

R_{1max} = 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

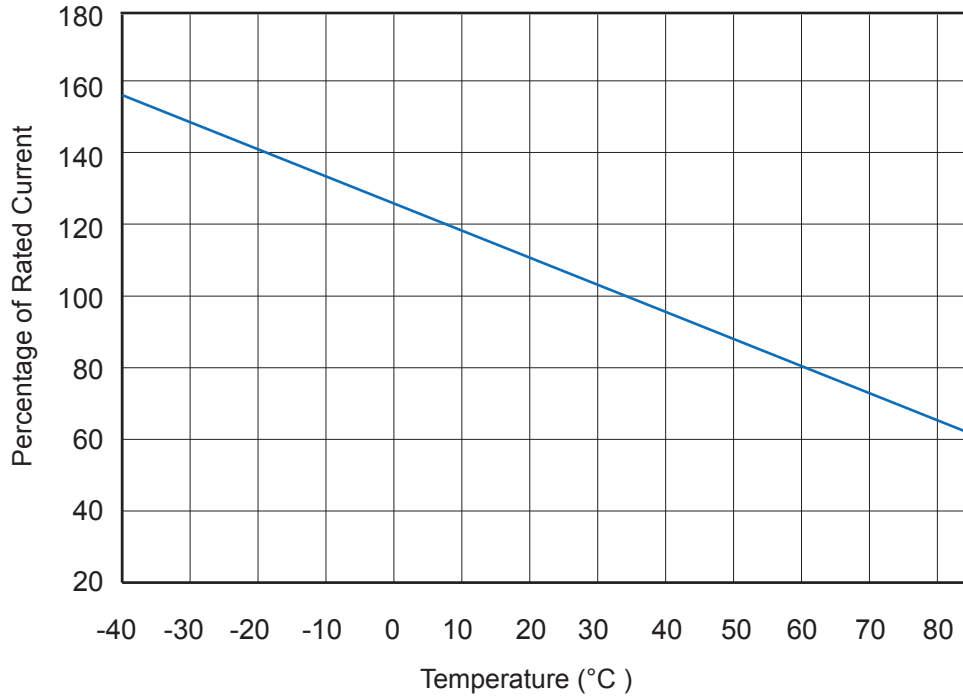
| Test | Conditions | Resistance change |
|-----------------------|-----------------------------|-------------------|
| Passive aging | +85°C, 1000 hrs. | ±5% typical |
| Humidity aging | +85°C, 85% R.H. , 168 hours | ±5% typical |
| Thermal shock | +85°C to -40°C, 20 times | ±33% typical |
| Resistance 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

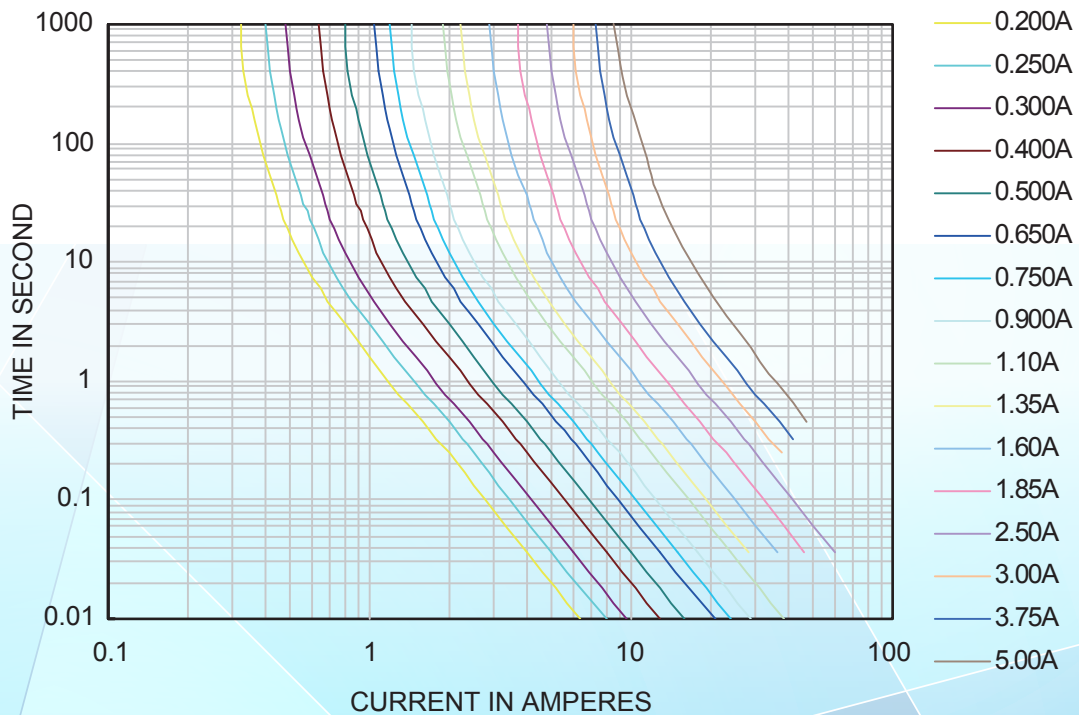
Maximum surface temperature of the device in the tripped state is 125 °C

Thermal Derating Curve

Derating Curves for A72 Series



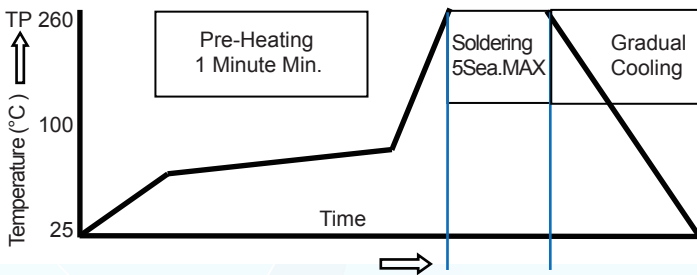
Average Time-Current Curve



I_{hold} Versus Temperature

| Model | Maximum ambient operating temperature (T _{mao}) vs. hold current (I _{hold}) | | | | | | | | |
|---------|---|--------|------|------|------|------|------|------|------|
| | - 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



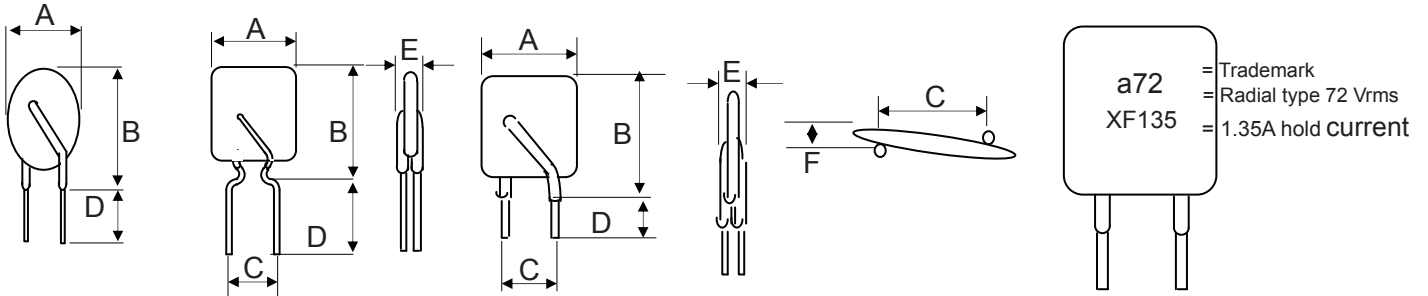
Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free
 Recommended maximum paste thickness is 0.25mm
 Devices can be cleaned using standard industry methods and solvents.

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 (Ts max to T p) | 3°C/second max. |
| 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(Tp) | 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 Max. | B Max. | C Typ. | D Min. | E Max. | F Max. | Lead 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, 0.205mm² (24JWG), Φ0.51mm(0.020 in).
A72-050 ~ 090: Tin-plated copper, 0.205mm² (24JWG), Φ0.51mm(0.020 in).
A72-110 ~ 500: Tin-plated copper, 0.52mm² (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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