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PRODUCT DATASHEET

PTC Devices

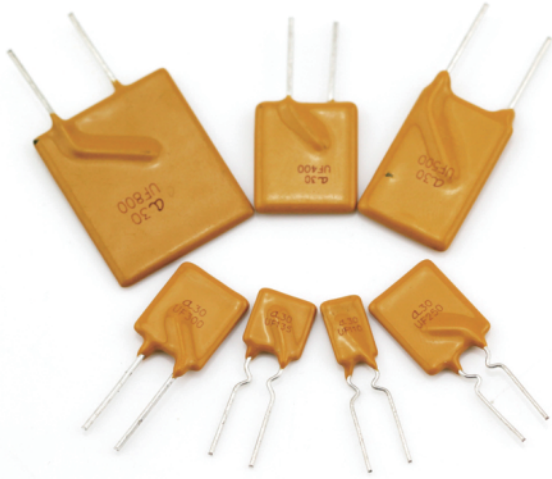
A30 Series PTC Devices

Description



The JDTFUSE A30 Series radial leaded device is designed to provide overcurrent protection for low voltage ($\leq 30V$) applications where space is not a concern and resettable protection is preferred.

Features

- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- Fast time-to-trip
- RoHS compliant, Lead-Free and Halogen-Free*





Agency Approvals

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

Applications

- USB hubs, ports and peripherals
- Computers & peripherals
- Motor protection
- General electronics
- Automotive applications

| 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 _{i max} (Ω) | R _{1max} (Ω) |
| A30-030 | 30 | 40 | 0.30 | 0.60 | 0.44 | 8.00 | 0.3 | 0.370 | 0.720 | 1.080 |
| A30-040 | 30 | 40 | 0.40 | 0.80 | 0.45 | 8.00 | 0.3 | 0.250 | 0.430 | 0.645 |
| A30-050 | 30 | 40 | 0.50 | 1.00 | 0.46 | 8.00 | 0.3 | 0.150 | 0.400 | 0.600 |
| A30-065 | 30 | 40 | 0.65 | 1.30 | 0.47 | 8.00 | 0.4 | 0.120 | 0.300 | 0.450 |
| A30-075 | 30 | 40 | 0.75 | 1.50 | 0.48 | 8.0 | 0.4 | 0.100 | 0.250 | 0.375 |
| A30-090 | 30 | 40 | 0.90 | 1.80 | 0.6 | 4.50 | 5.9 | 0.070 | 0.145 | 0.220 |
| A30-110 | 30 | 40 | 1.10 | 2.20 | 0.7 | 5.50 | 6.6 | 0.050 | 0.120 | 0.170 |
| A30-135 | 30 | 40 | 1.35 | 2.70 | 0.8 | 6.75 | 7.3 | 0.040 | 0.085 | 0.130 |
| A30-160 | 30 | 40 | 1.60 | 3.20 | 0.9 | 8.00 | 8.0 | 0.030 | 0.070 | 0.110 |
| A30-185 | 30 | 40 | 1.85 | 3.70 | 1.0 | 9.25 | 8.7 | 0.030 | 0.060 | 0.090 |
| A30-250 | 30 | 40 | 2.50 | 5.00 | 1.2 | 12.5 | 10.3 | 0.020 | 0.040 | 0.070 |
| A30-300 | 30 | 40 | 3.00 | 6.00 | 2.0 | 15.0 | 10.8 | 0.020 | 0.050 | 0.080 |
| A30-400 | 30 | 40 | 4.00 | 8.00 | 2.5 | 20.0 | 12.7 | 0.010 | 0.030 | 0.050 |
| A30-500 | 30 | 40 | 5.00 | 10.00 | 3.0 | 25.0 | 14.5 | 0.010 | 0.030 | 0.050 |
| A30-600 | 30 | 40 | 6.00 | 12.00 | 3.5 | 30.0 | 16.0 | 0.005 | 0.020 | 0.040 |
| A30-700 | 30 | 40 | 7.00 | 14.00 | 3.8 | 35.0 | 17.5 | 0.005 | 0.020 | 0.030 |
| A30-800 | 30 | 40 | 8.00 | 16.00 | 4.0 | 40.0 | 18.8 | 0.005 | 0.020 | 0.020 |
| A30-900 | 30 | 40 | 9.00 | 18.00 | 4.2 | 40.0 | 20.0 | 0.005 | 0.010 | 0.020 |

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.

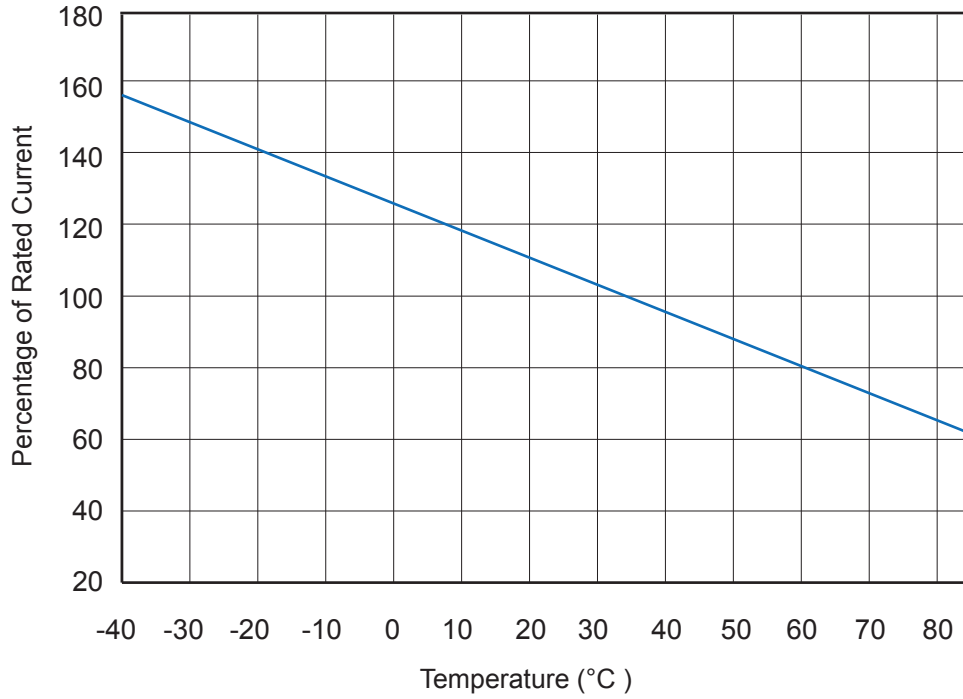
CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

Environmental Specifications

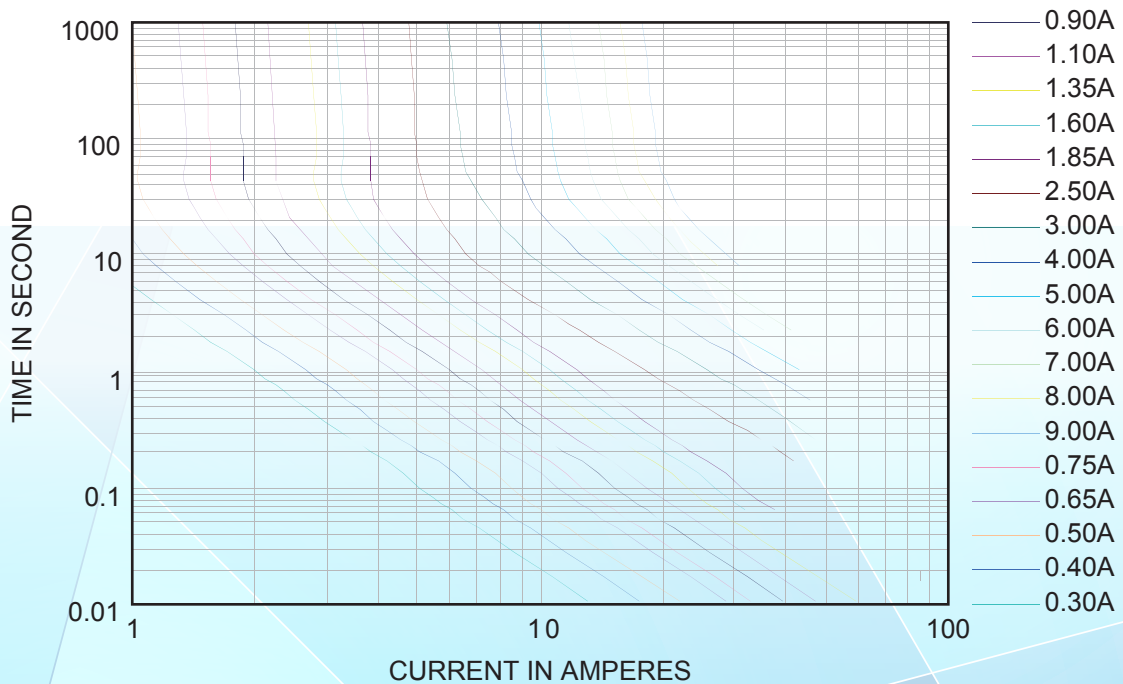
| Test | Conditions | Resistance change |
|--|-----------------------------|-------------------|
| Passive aging | +85°C, 1000 hrs. | ±5% typical |
| Humidity aging | +85°C, 85% R.H. , 168 hours | ±5% typical |
| Thermal shock | +85°C to -40°C, 20 times | ±33% typical |
| Resistance to solvent | MIL-STD-202,Method 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 A30 Series



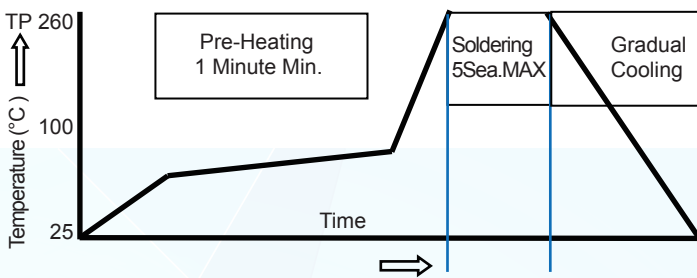
Average Time-Current Curve



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 |
| A30-030 | 0.44 | 0.39 | 0.35 | 0.30 | 0.25 | 0.23 | 0.20 | 0.18 | 0.16 |
| A30-040 | 0.58 | 0.52 | 0.46 | 0.40 | 0.33 | 0.31 | 0.27 | 0.24 | 0.21 |
| A30-050 | 0.73 | 0.65 | 0.58 | 0.50 | 0.42 | 0.38 | 0.34 | 0.31 | 0.26 |
| A30-065 | 0.95 | 0.85 | 0.75 | 0.65 | 0.54 | 0.50 | 0.44 | 0.40 | 0.34 |
| A30-075 | 0.00 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| A30-090 | 1.31 | 1.17 | 1.04 | 0.90 | 0.75 | 0.69 | 0.61 | 0.55 | 0.47 |
| A30-110 | 1.60 | 1.43 | 1.27 | 1.10 | 0.91 | 0.85 | 0.75 | 0.67 | 0.57 |
| A30-135 | 1.96 | 1.76 | 1.55 | 1.35 | 1.12 | 1.04 | 0.92 | 0.82 | 0.70 |
| A30-160 | 2.32 | 2.08 | 1.84 | 1.60 | 1.33 | 1.23 | 1.09 | 0.98 | 0.83 |
| A30-185 | 2.68 | 2.41 | 2.13 | 1.85 | 1.54 | 1.42 | 1.26 | 1.13 | 0.96 |
| A30-250 | 3.63 | 3.25 | 2.88 | 2.50 | 2.08 | 1.93 | 1.70 | 1.53 | 1.30 |
| A30-300 | 4.35 | 3.90 | 3.45 | 3.00 | 2.49 | 2.31 | 2.04 | 1.83 | 1.56 |
| A30-400 | 5.80 | 5.20 | 4.60 | 4.00 | 3.32 | 3.08 | 2.72 | 2.44 | 2.08 |
| A30-500 | 7.25 | 6.50 | 5.75 | 5.00 | 4.15 | 3.85 | 3.40 | 3.05 | 2.60 |
| A30-600 | 8.70 | 7.80 | 6.90 | 6.00 | 4.98 | 4.62 | 4.08 | 3.66 | 3.12 |
| A30-700 | 10.15 | 9.10 | 8.05 | 7.00 | 5.81 | 5.39 | 4.76 | 4.27 | 3.64 |
| A30-800 | 11.60 | 10.40 | 9.20 | 8.00 | 6.64 | 6.16 | 5.44 | 4.88 | 4.16 |
| A30-900 | 13.05 | 11.70 | 10.35 | 9.00 | 7.47 | 6.93 | 6.12 | 5.49 | 4.68 |

Soldering Parameters



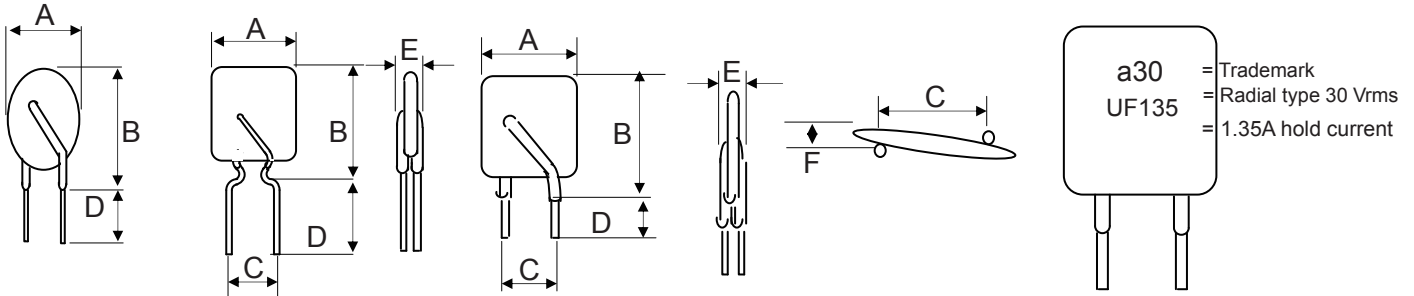
Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free
 Recommended maximum paste thickness is 0.25mm
 Devices can be cleaned using standard industry methods and solvents.

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 Max. | D Max. | E Max. | F Max. | Lead Style |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|
| A30-030 | 7.4/0.29 | 10.2/0.4 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-040 | 7.4/0.29 | 11.4/0.45 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-050 | 7.4/0.29 | 11.4/0.45 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-065 | 7.4/0.29 | 11.4/0.45 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-075 | 7.4/0.29 | 11.4/0.45 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-090 | 7.4/0.29 | 12.2/0.48 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Kink |
| A30-110 | 7.4/0.29 | 14.2/0.56 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Kink |
| A30-135 | 8.9/0.35 | 13.5/0.53 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Kink |
| A30-160 | 8.9/0.35 | 15.2/0.60 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Kink |
| A30-185 | 10.2/0.40 | 15.7/0.62 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Kink |
| A30-250 | 11.4/0.45 | 18.3/0.72 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Kink |
| A30-300 | 11.4/0.45 | 17.3/0.68 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-400 | 14.0/0.55 | 20.1/0.79 | 5.1/0.20 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-500 | 14.0/0.55 | 24.9/0.98 | 10.2/0.40 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-600 | 16.5/0.65 | 24.9/0.98 | 10.2/0.40 | 7.6/0.3 | 3.0/0.12 | 1.2/0.05 | Straight |
| A30-700 | 19.1/0.75 | 26.7/1.05 | 10.2/0.40 | 7.6/0.3 | 3.0/0.12 | 2.0/0.08 | Straight |
| A30-800 | 21.6/0.85 | 29.2/1.15 | 10.2/0.40 | 7.6/0.3 | 3.0/0.12 | 2.0/0.08 | Straight |
| A30-900 | 24.1/0.95 | 29.7/1.17 | 10.2/0.40 | 7.6/0.3 | 3.0/0.12 | 2.0/0.08 | Straight |

PHYSICAL SPECIFICATIONS :

Materials : Leads A30-030 ~ 250: Tin-platedcopper-cladsteel,0.205mm²(24AWG),Φ0.51mm(0.020in).
A30-300 ~ 900: Tin-plated copper, 0.52mm² (20AWG), Φ0.81mm(0.032 in).

Lead Solderability : MIL-STD-202, Method 208E

Packaging Quantity

| A30 | 135 | K or S | R or U | Model | Reel QTY | Bag QTY |
|-------------|---------|---------------|-------------|-------------------|----------|---------|
| Radial type | Hold | K= Kink leads | | A30-030 ~ A30-075 | - | 500 |
| 30 V | Current | | R=Tape&reel | A30-090 ~ A30-250 | 3000 | 500 |
| | (A) | S=Straight | U= Bulk | A30-300 ~ A30-400 | 1500 | 500 |
| | | leads | packaged | A30-500 ~ A30-900 | - | 500 |

Tape & Reel packaging per EIA468-B standard.

Cross Reference

| Model | Cross Reference | | |
|---------|--------------------|---------------------|-------------------------|
| | Tyco / PolySwitch® | Bourns / POLY-FUSE® | Polytronics / EVERFUSE® |
| A30-030 | - | - | - |
| A30-040 | - | - | - |
| A30-050 | - | - | - |
| A30-065 | - | - | - |
| A30-075 | - | - | - |
| A30-090 | RUEF090 | MF-R090-0-9 | RLD30P090UF |
| A30-110 | RUEF110 | MF-R110 | RLD30P110UF |
| A30-135 | RUEF135 | MF-R135 | RLD30P135UF |
| A30-160 | RUEF160 | MF-R160 | RLD30P160UF |
| A30-185 | RUEF185 | MF-R185 | RLD30P185UF |
| A30-250 | RUEF250 | MF-R250 | RLD30P250UF |
| A30-300 | RUEF300 | MF-R300 | RLD30P300UF |
| A30-400 | RUEF400 | MF-R400 | RLD30P400UF |
| A30-500 | RUEF500 | MF-R500 | RLD30P500UF |
| A30-600 | RUEF600 | MF-R600 | RLD30P600UF |
| A30-700 | RUEF700 | MF-R700 | RLD30P700UF |
| A30-800 | RUEF800 | MF-R800 | RLD30P800UF |
| A30-900 | RUEF900 | MF-R900 | RLD30P900UF |

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