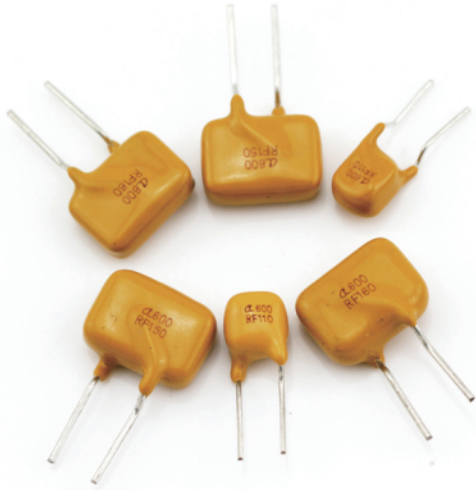


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PRODUCT DATASHEET

PTC Devices

## A600 Series PTC Devices



### Description

The JDTFUSE A600 Series is designed to protect against power fault events typically found in telecom applications. This series is designed to be used in applications that need to meet the requirements of GR-1089-CORE and UL60950/EN60950/IEC60950. These resettable devices also help to meet the requirements of ITU K.20, K.21 and K.44.

### Features

- 0.03 - 0.5A hold current range, 60VDC operating voltage
- 600VAC interrupt rating
- Fast time-to-trip
- Binned and sorted narrow resistance ranges available
- RoHS compliant, Lead-Free and Halogen-Free\*



### Agency Approvals

Agency	File Number
	E472196

### Applications

Secondary overcurrent protection for:

- Central Office Equipment(CO)
- Customer Premises Equipment(CE)
- Alarm systems
- Set Top Boxes(STB)
- Voice over IP(VOIP)
- Subscriber Line Interface Circuit (SLIC)

Regulation	Standard
	2002/95/EC
	EN14582

**Performance Specification**

Model	I <sub>hold</sub> @25°C (A)	I <sub>trip</sub> @25°C (A)	V <sub>max</sub> V <sub>int</sub> / V <sub>op</sub> (V)	I <sub>max</sub> (A)	P <sub>d</sub> Typ. (W)	Maximum Time To Trip		Resistance		
						Current (A)	Time (Sec)	R <sub>i min</sub> (Ω)	R <sub>i max</sub> (Ω)	R <sub>1max</sub> (Ω)
A600-030	0.03	0.06	600/60	3.0	1.0	0.50	5.0	90	220	350
A600-050	0.05	0.10	600/60	3.0	1.0	0.50	5.0	15	90	350
A600-110	0.11	0.22	600/60	3.0	1.5	0.55	5.0	6.0	19	30
A600-150	0.15	0.30	600/60	3.0	1.5	0.75	5.0	5.0	14	22
A600-160	0.16	0.32	600/60	3.0	1.5	0.80	5.0	4.0	12	18
A600-200	0.20	0.40	600/60	3.0	1.5	1.00	10.0	5.0	13	24
A600-400	0.40	0.80	600/60	3.0	2.5	2.00	15.0	2.8	4.0	7.0
A600-500	0.50	1.00	600/60	3.0	5.0	2.50	15.0	2.5	4.5	7.0

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.

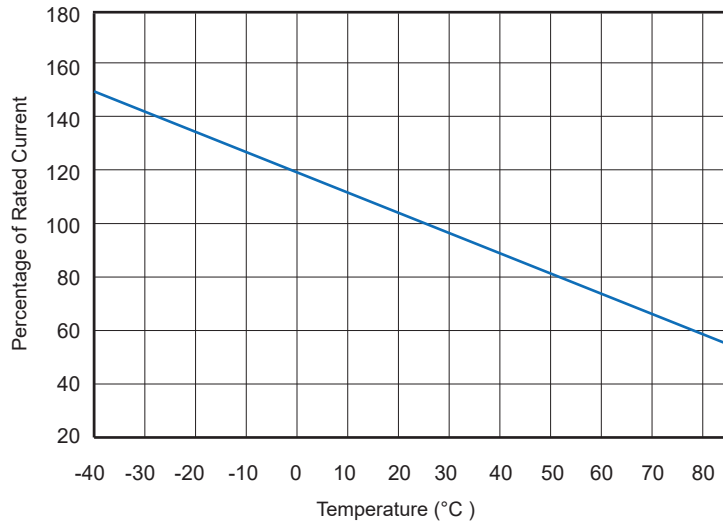
**Environmental Specifications**

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

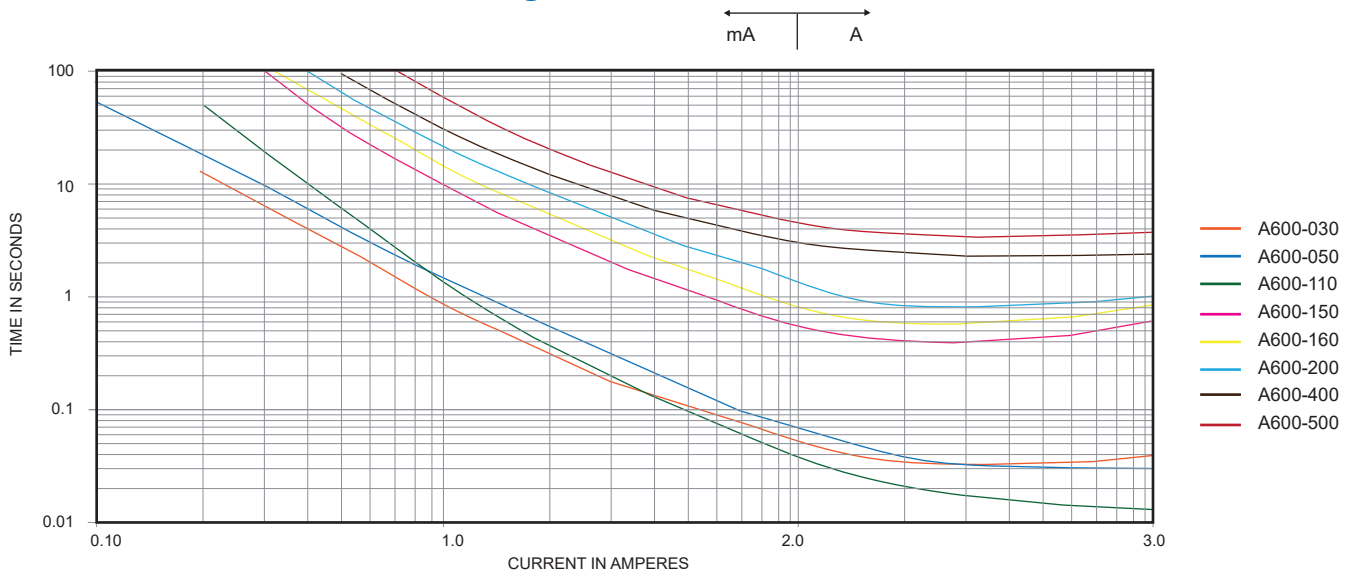
Ambient operating conditions : - 40 °C to +85 °C

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

## Thermal Derating Curve



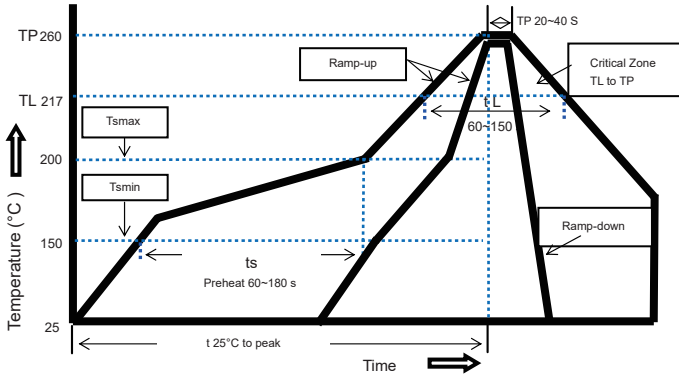
## Average Time-Current Curve



## 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
A600-030	0.044	0.039	0.036	0.030	0.026	0.024	0.021	0.020	0.017
A600-050	0.073	0.065	0.060	0.050	0.044	0.040	0.036	0.033	0.028
A600-110	0.160	0.143	0.132	0.110	0.097	0.088	0.078	0.073	0.062
A600-150	0.218	0.195	0.180	0.150	0.132	0.120	0.107	0.099	0.084
A600-160	0.232	0.208	0.192	0.160	0.141	0.128	0.114	0.106	0.090
A600-200	0.290	0.260	0.240	0.200	0.176	0.160	0.142	0.132	0.112
A600-400	0.580	0.520	0.480	0.400	0.352	0.320	0.284	0.264	0.224
A600-500	0.725	0.650	0.600	0.500	0.440	0.400	0.355	0.330	0.280

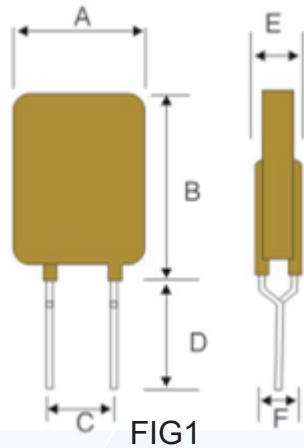
## Soldering Parameters



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 mac.
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.)



### PHYSICAL SPECIFICATIONS :

Materials : J600: Tin-plated copper, 22AWG, Φ0.65mm(0.026 in).  
 Lead Solderability : MIL-STD-202, Method 208E

Model	A Max.	B Max.	C Typ.	D Min.	E Max.	FIG
A600-030	7.0	11.5	5.1±0.5	7.6	6.0	1
A600-050	10.0	12.0	5.1±0.5	7.6	6.0	1
A600-110	14.0	14.0	5.1±0.5	7.6	6.0	1
A600-150	14.5	14.0	5.1±0.5	7.6	6.0	1
A600-160	14.5	14.0	5.1±0.5	7.6	6.0	1
A600-200	19.5	14.0	5.1±0.5	7.6	6.0	1
A600-400	18.2	22.0	10.2±0.5	7.6	6.5	1
A600-500	18.2	22.0	10.2±0.5	7.6	6.5	1

## Packaging Quantity

A600	150	RA	B-0.5	Reel QTY	Bag QTY
Product	Hold	Rx=	B-x.x=	500	500
Series	Current (mA)	Resistance range (Optional)	Resistance bin range within 0.5 ohms in one lot(Optional)		

Tape & Reel packaging per EIA468-B standard.

## Cross Reference

Model	Cross Reference		
	Tyco / PolySwitch®	Bourns / POLY-FUSE®	Polytronics / EVERFUSE®
A600-030	TRF600-030	-	HVR600P030CF
A600-050	TRF600-050	-	HVR600P050CF
A600-110	TRF600-110	MF-R011/600	HVR600P110CF
A600-150	TRF600-150	MF-R015/600	HVR600P150CF
A600-160	TRF600-160	MF-R016/600	HVR600P160CF
A600-200	TRF600-200	MF-R020/600	HVR600P200CF

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“POLY-FUSE” is a registered trademark of Littelfuse, Inc.

“EVERFUSE” is a registered trademark of Polytronics Technology Corp.

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