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PRODUCT DATASHEET

PTC Devices

A600 Series PTC Devices

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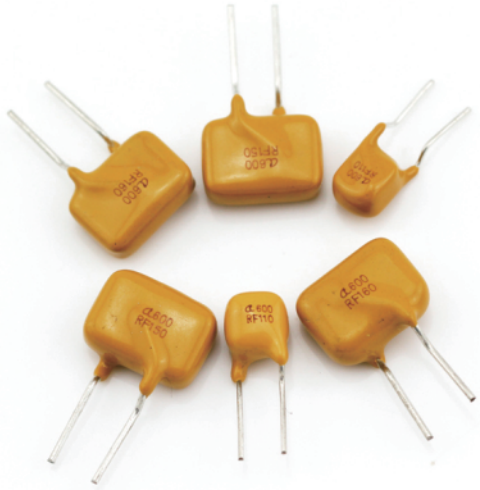


Description

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

- 60VDC operating voltage
- 600VAC interrupt rating voltage
- Fast time-to-trip
- Binned and sorted narrow resistance ranges available
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- RoHS compliant, Lead-Free and Halogen-Free*

Applications

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

Agency Approvals

Agency	File Number
c UL us	E472196

Regulation	Standard
RoHS	2002/95/EC
Halogen Free	EN14582

Performance Specification

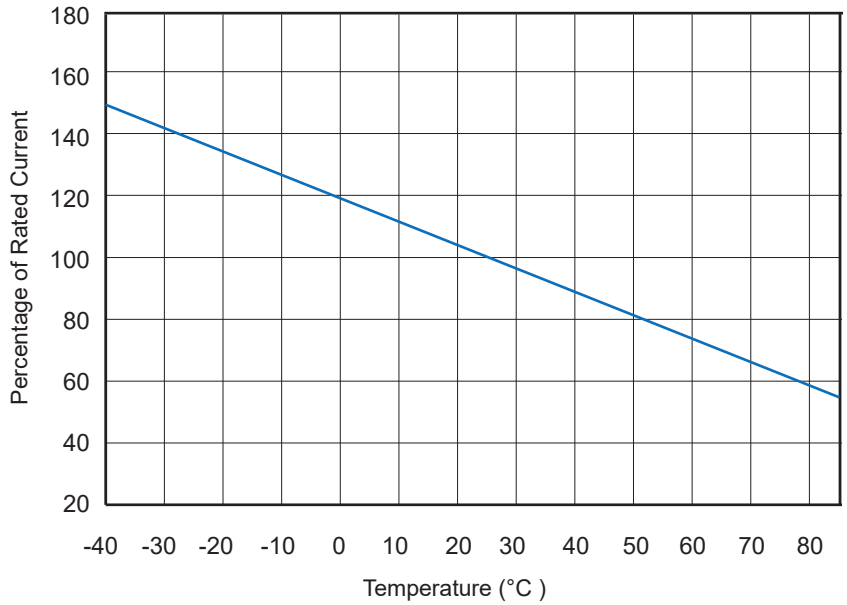
Model	I hold @25°C (A)	I trip @25°C (A)	Vmax Vint / Vop (V)	I max (A)	P d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R i min (Ω)	R1max (Ω)
A600-030	0.03	0.06	600/60	1.0	1.0	0.50	5.0	90.0	374.0
A600-050	0.05	0.10	600/60	1.0	1.0	0.50	8.0	50.0	153.0
A600-060	0.06	0.12	600/60	1.0	1.0	0.50	10.0	30.0	90.0
A600-080	0.08	0.16	600/60	1.0	1.0	0.50	8.0	20.0	68.0
A600-110	0.11	0.22	600/60	1.0	1.5	0.55	5.0	10.0	32.3
A600-120	0.12	0.24	600/60	1.0	1.5	0.60	5.0	8.0	25.5
A600-150	0.15	0.30	600/60	1.0	1.5	1.00	5.0	6.0	20.4
A600-160	0.16	0.32	600/60	1.0	1.5	1.00	5.0	4.0	17.0
A600-180	0.18	0.36	600/60	1.0	1.5	0.90	8.0	3.0	13.6
A600-200	0.20	0.40	600/60	3.0	1.5	1.00	10.0	2.0	18.7
A600-300	0.30	0.60	600/60	3.0	1.5	1.50	15.0	3.1	9.18
A600-400	0.40	0.80	600/60	3.0	1.5	2.00	15.0	2.8	6.80
A600-500	0.50	1.00	600/60	3.0	1.5	2.50	15.0	2.5	6.75

I hold = Hold Current. Maximum current device will not trip in 23°C still air.
I trip = Trip Current. Minimum current at which the device will always trip in 23°C still air.
V max = Maximum operating voltage device can withstand without damage at rated current (Imax).
V int = Maximum impulse voltage.
V op = Maximum operating voltage.
I max = Maximum fault current device can withstand without damage at rated voltage (V max).
Pd = Power dissipation when device is in the tripped state in 23°C still air environment at rated voltage.
Ri min = Minimum device resistance prior to tripping at 23°C.
R1max = 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

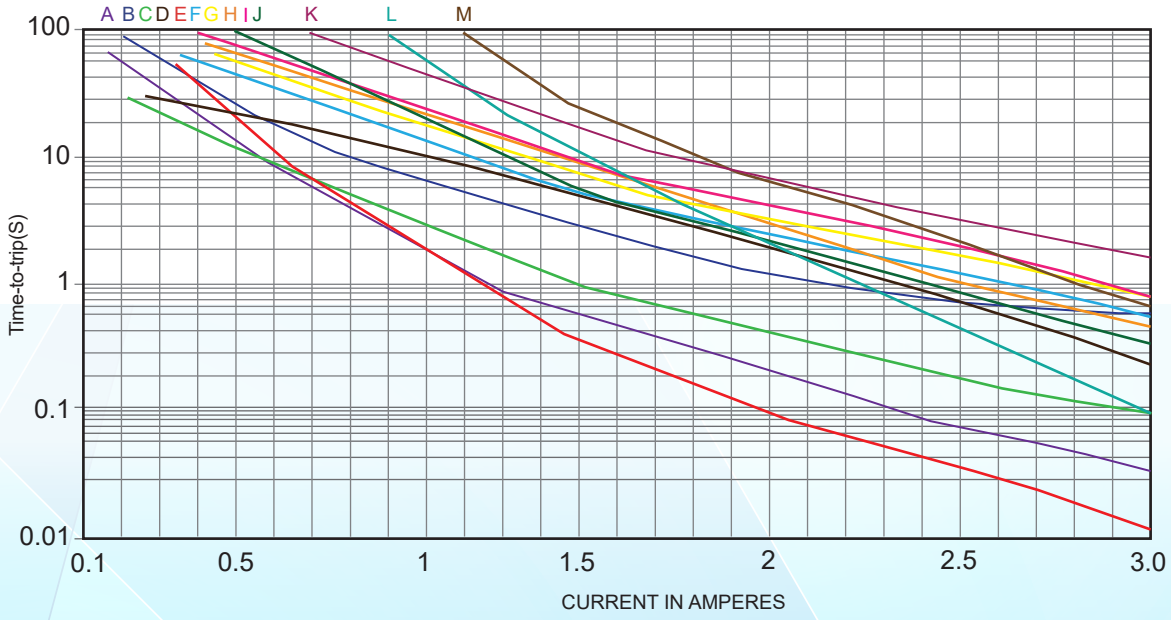
Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change
Ambient operating conditions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

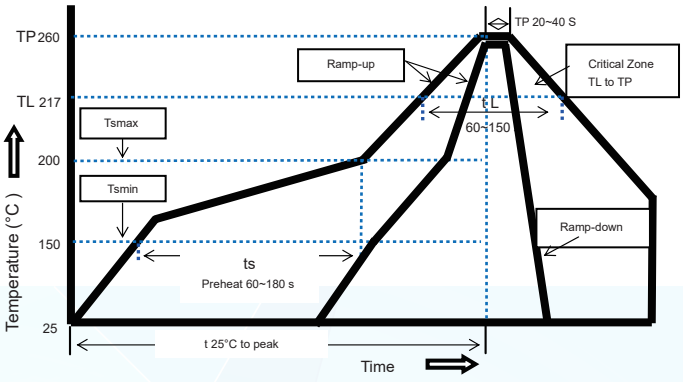
A=A600-030
B=A600-050
C=A600-060
D=A600-080
E=A600-110
F=A600-120
G=A600-150
H=A600-160
I=A600-180
J=A600-200
K=A600-300
L=A600-400
M=A600-500



I_{hold} Versus Temperature

Model	Maximum ambient operating temperature (T_{mao}) vs. hold current (I_{hold})									
	- 40°C	- 20°C	0°C	23°C	30°C	40°C	50°C	60°C	70°C	85°C
A600-030	0.047	0.041	0.036	0.030	0.028	0.025	0.022	0.019	0.016	0.012
A600-050	0.079	0.069	0.060	0.050	0.046	0.042	0.037	0.032	0.027	0.020
A600-060	0.095	0.083	0.071	0.060	0.055	0.050	0.044	0.038	0.032	0.024
A600-080	0.126	0.110	0.095	0.080	0.074	0.066	0.058	0.051	0.043	0.032
A600-110	0.174	0.152	0.131	0.110	0.101	0.091	0.080	0.070	0.059	0.044
A600-120	0.190	0.166	0.143	0.120	0.110	0.100	0.088	0.077	0.065	0.048
A600-150	0.237	0.207	0.179	0.150	0.138	0.125	0.110	0.096	0.081	0.060
A600-160	0.253	0.221	0.190	0.160	0.147	0.133	0.117	0.102	0.086	0.064
A600-180	0.284	0.248	0.214	0.180	0.166	0.149	0.131	0.115	0.097	0.072
A600-200	0.316	0.276	0.238	0.200	0.184	0.166	0.146	0.128	0.108	0.080
A600-300	0.474	0.414	0.357	0.300	0.276	0.249	0.219	0.192	0.162	0.120
A600-400	0.632	0.552	0.476	0.400	0.368	0.332	0.292	0.256	0.216	0.160
A600-500	0.790	0.690	0.595	0.500	0.460	0.415	0.365	0.320	0.270	0.200

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.)

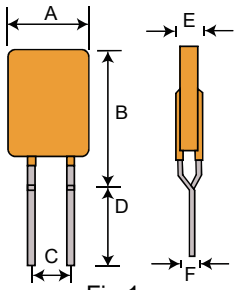


Fig 1

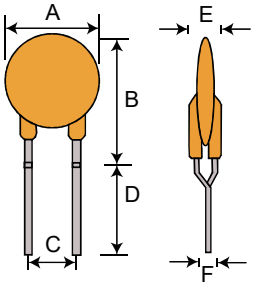


Fig 2

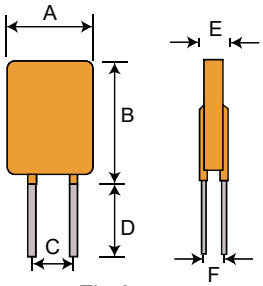


Fig 3

Model	A Max.	B Max.	C Typ.	D Min.	E Max.	F Typ.	Lead φ	FIG
A600-030	7.0	14.5	5.1±0.5	7.6	6.5	/	0.6	1
A600-050	7.0	14.5	5.1±0.5	7.6	6.5	/	0.6	1
A600-060	11.0	17.5	5.1±0.5	7.6	6.5	/	0.6	2
A600-080	11.0	17.5	5.1±0.5	7.6	6.5	2.20	0.6	2/3
A600-110	7.00	14.5	5.1±0.5	7.6	6.5	/	0.6	1
A600-120	14.5	16.5	5.1±0.5	7.6	6.5	/	0.8	1
A600-150	14.5	16.5	5.1±0.5	7.6	6.5	/	0.8	1
A600-160	14.5	16.5	5.1±0.5	7.6	6.5	/	0.8	1
A600-180	14.5	16.5	5.1±0.5	7.6	6.5	/	0.8	1
A600-200	9.50	22.0	5.1±0.5	7.6	6.5	/	0.8	1
A600-300	18.5	25.5	10.2±0.5	7.6	6.5	2.20	0.8	3
A600-400	18.5	25.5	10.2±0.5	7.6	6.5	2.20	0.8	3
A600-500	18.5	25.5	10.2±0.5	7.6	6.5	2.20	0.8	3

PHYSICAL SPECIFICATIONS :

Lead Materials : A600-030~A600-500:Tinned Copper.
Lead Solderability: MIL-STD-202.
Encapsulation: Flame retardant epoxy resin, This meets the requirements of UL-94V-0.

Packaging Quantity

Model	Bag QTY
A600-030~A600-110	1000
A600-120~A600-500	500

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