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PRODUCT DATASHEET

PTC Devices

A60 Series PTC Devices



Description

The JDTFUSE A60 Series is designed to provide overcurrent protection to 60Vdc maximum voltage with a maximum 40A short circuit rating.

Features

- Resettable feature
- 60Vdc max voltage w/max 40A short circuit rating
- Ideal for a broad range of general electronics using a low voltage power supply
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- RoHS compliant, Lead-Free and HalogenFree*

Agency Approvals

Agency	File Number
c UL us	E460196

Regulation	Standard
RoHS	2002/95/EC
Halogen Free	EN14582

Applications

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

Performance Specification

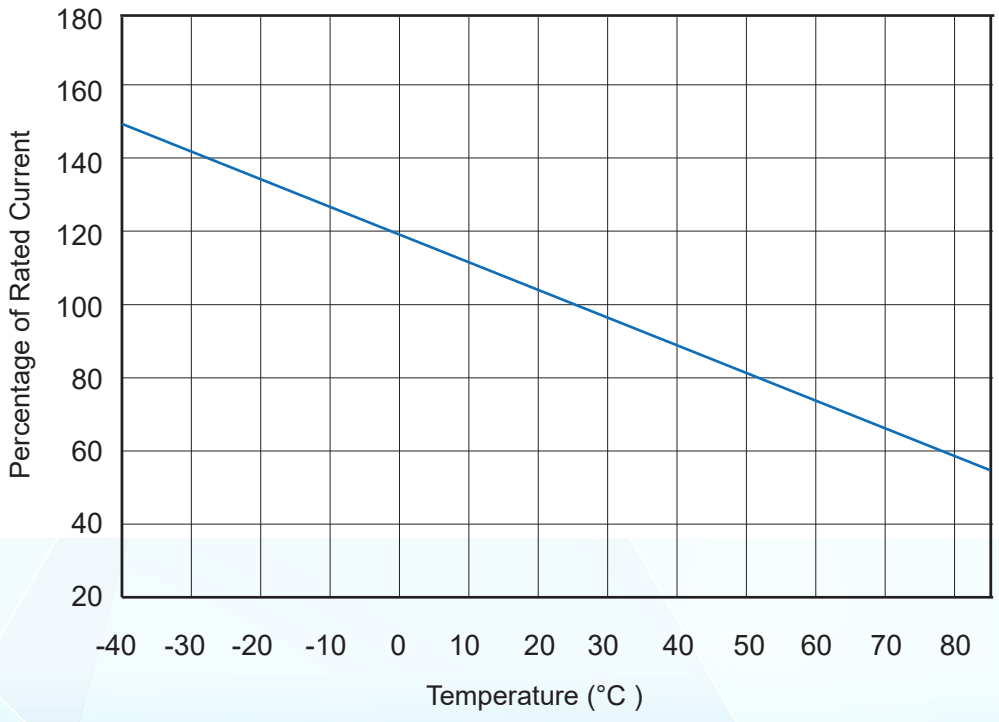
Model	I hold @25°C (A)	I trip @25°C (A)	Vmax (V)	I max (A)	P d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R i min (Ω)	R1max (Ω)
A60-003	0.03	0.09	60	40	1.00	0.15	10.0	33.0	110.5
A60-005	0.05	0.15	60	40	1.00	0.25	10.0	7.50	44.2
A60-010	0.10	0.25	60	40	1.00	0.50	10.0	2.50	6.75
A60-017	0.17	0.35	60	40	1.00	0.85	10.0	2.00	4.80
A60-020	0.20	0.40	60	40	1.00	1.00	10.0	1.50	4.26
A60-025	0.25	0.50	60	40	1.00	1.25	10.0	1.00	2.93
A60-030	0.30	0.60	60	40	1.00	1.50	10.0	0.76	2.04
A60-040	0.40	0.80	60	40	1.00	2.00	10.0	0.52	1.29
A60-050	0.50	1.00	60	40	1.00	2.50	10.0	0.41	1.16
A60-065	0.65	1.30	60	40	1.00	3.25	10.0	0.27	0.72
A60-075	0.75	1.50	60	40	1.00	3.75	10.0	0.18	0.60
A60-090	0.90	1.80	60	40	1.00	4.50	10.0	0.14	0.465
A60-110	1.10	2.20	60	40	1.51	5.50	10.0	0.14	0.375
A60-135	1.35	2.70	60	40	1.71	6.75	10.0	0.12	0.285
A60-160	1.60	3.20	60	40	1.98	8.00	11.4	0.09	0.210
A60-185	1.85	3.70	60	40	2.10	9.25	12.6	0.08	0.180
A60-250	2.50	5.00	60	40	2.50	12.5	15.6	0.05	0.120
A60-300	3.00	6.00	60	40	2.80	15.0	19.8	0.04	0.090
A60-375	3.75	7.50	60	40	3.20	18.75	24.0	0.03	0.075
A60-500	5.00	10.0	60	40	3.50	25.0	30.0	0.015	0.075

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).
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

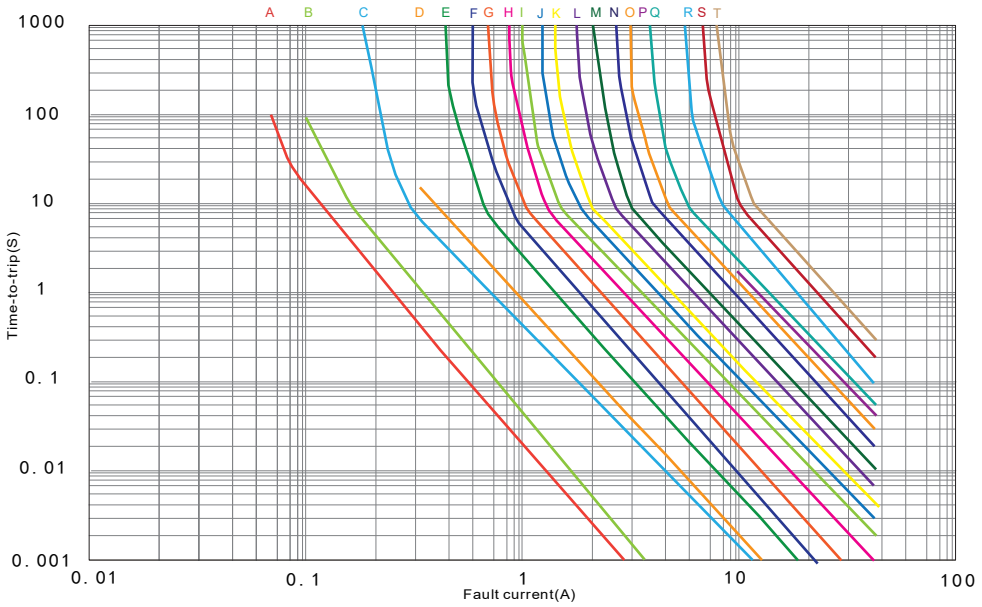
Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical
Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change
Ambient operating conditions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

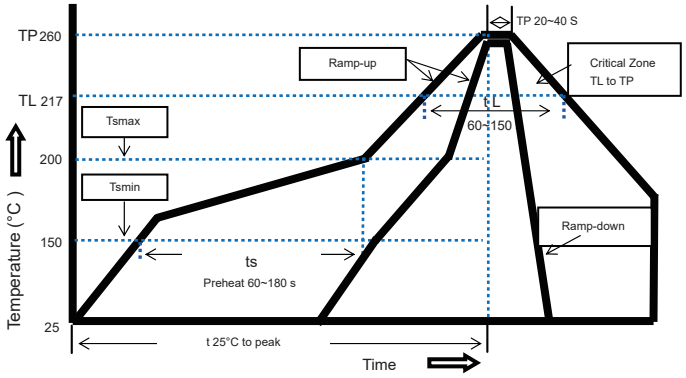
A=A60-003
B=A60-005
C=A60-010
D=A60-017
E=A60-020
F=A60-025
G=A60-030
H=A60-040
I=A60-050
J=A60-065
K=A60-075
L=A60-090
M=A60-110
N=A60-135
O=A60-160
P=A60-185
Q=A60-250
R=A60-300
S=A60-375
T=A60-500



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
A60-003	0.047	0.041	0.036	0.030	0.027	0.024	0.021	0.018	0.015	0.011
A60-005	0.079	0.069	0.060	0.050	0.045	0.041	0.035	0.030	0.025	0.018
A60-010	0.158	0.138	0.119	0.100	0.090	0.081	0.070	0.060	0.050	0.036
A60-017	0.269	0.235	0.202	0.170	0.153	0.138	0.119	0.102	0.085	0.061
A60-020	0.316	0.276	0.238	0.200	0.180	0.162	0.140	0.120	0.100	0.072
A60-025	0.395	0.345	0.298	0.250	0.225	0.203	0.175	0.150	0.125	0.090
A60-030	0.474	0.414	0.357	0.300	0.270	0.243	0.210	0.180	0.150	0.108
A60-040	0.632	0.552	0.476	0.400	0.360	0.324	0.280	0.240	0.200	0.144
A60-050	0.790	0.690	0.595	0.500	0.450	0.405	0.350	0.300	0.250	0.180
A60-065	1.027	0.897	0.774	0.650	0.585	0.527	0.455	0.390	0.325	0.234
A60-075	1.185	1.035	0.893	0.750	0.675	0.608	0.525	0.450	0.375	0.270
A60-090	1.422	1.242	1.071	0.900	0.810	0.729	0.630	0.540	0.450	0.324
A60-110	1.738	1.518	1.309	1.100	0.990	0.891	0.770	0.660	0.550	0.396
A60-135	2.133	1.863	1.607	1.350	1.215	1.094	0.945	0.810	0.675	0.486
A60-160	2.528	2.208	1.904	1.600	1.440	1.296	1.120	0.960	0.800	0.576
A60-185	2.923	2.553	2.202	1.850	1.665	1.499	1.295	1.110	0.925	0.666
A60-250	3.950	3.450	2.975	2.500	2.250	2.025	1.750	1.500	1.250	0.900
A60-300	4.740	4.140	3.570	3.000	2.700	2.430	2.100	1.800	1.500	1.080
A60-375	5.925	5.175	4.463	3.750	3.375	3.038	2.625	2.250	1.875	1.350
A60-500	7.900	6.900	5.950	5.000	4.500	4.050	3.500	3.000	2.500	1.800

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.)

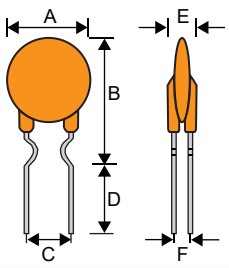


FIG 1

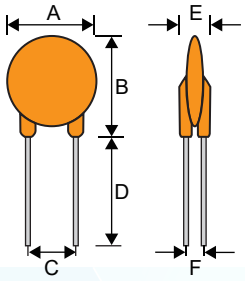


FIG 2

PHYSICAL SPECIFICATIONS :

Lead Materials : A60-030~A60-185:Tinned copper clad steel wire (CP wire);
A60-250~A60-500:Tinned copper wire.

Lead Solderability: MIL-STD-202.

Encapsulation: Flame retardant epoxy resin, This meets the requirements of UL-94V-0.

Model	A Max.	B Max.	C Typ.	D Min.	E Max.	F Typ.	Lead φ	FIG
A60-003	7.40	12.0	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-005	7.40	12.0	5.1±0.5	7.60	3.10	1.10	0.50	2
A60-010	7.40	12.0	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-017	7.40	12.0	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-020	7.40	12.0	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-025	7.40	12.0	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-030	7.40	13.0	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-040	7.60	13.5	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-050	7.90	13.7	5.1±0.5	7.60	3.10	1.10	0.50	1
A60-065	9.40	15.6	5.1±0.5	7.60	3.10	1.20	0.60	1
A60-075	10.2	16.4	5.1±0.5	7.60	3.10	1.20	0.60	1
A60-090	11.2	16.7	5.1±0.5	7.60	3.10	1.20	0.60	1
A60-110	12.8	17.7	5.1±0.5	7.60	3.10	1.40	0.80	2
A60-135	14.5	18.7	5.1±0.5	7.60	3.10	1.40	0.80	2
A60-160	16.3	20.5	5.1±0.5	7.60	3.10	1.40	0.80	2
A60-185	17.5	21.6	5.1±0.5	7.60	3.10	1.40	0.80	2
A60-250	21.0	25.3	10.2±0.5	7.60	3.10	1.40	0.80	2
A60-300	24.5	28.6	10.2±0.5	7.60	3.10	1.40	0.80	2
A60-375	27.2	31.8	10.2±0.5	7.60	3.10	1.40	0.80	2
A60-500	27.2	31.8	10.2±0.5	7.60	3.10	1.40	0.80	2

Packaging Quantity

Model	Bag QTY
A60-003~A60-185	1000
A60-250~A60-500	500

Tape & Reel packaging per EIA468-B standard.

Cross Reference

Model	Cross Reference		
	Tyco / PolySwitch®	Bourns / POLY-FUSE®	Polytronics / EVERFUSE®
A60-003	RXEF003	MF-R003	RLD60P003XF
A60-005	RXEF005	MF-R005	RLD60P005XF
A60-010	RXEF010	MF-R010	RLD60P010XF
A60-017	RXEF017	MF-R017	RLD60P017XF
A60-020	RXEF020	MF-R020	RLD60P020XF
A60-025	RXEF025	MF-R025	RLD60P025XF
A60-030	RXEF030	MF-R030	RLD60P030XF
A60-040	RXEF040	MF-R040	RLD60P040XF
A60-050	RXEF050	MF-R050	RLD60P050XF
A60-065	RXEF065	MF-R065	RLD60P065XF
A60-075	RXEF075	MF-R075	RLD60P075XF
A60-090	RXEF090	MF-R090	RLD60P090XF
A60-110	RXEF110	MF-RX110	RLD60P110XF
A60-135	RXEF135	MF-RX135	RLD60P135XF
A60-160	RXEF160	MF-RX160	RLD60P160XF
A60-185	RXEF185	MF-RX185	RLD60P185XF
A60-250	RXEF250	MF-RX250	RLD60P250XF
A60-300	RXEF300	MF-RX300	RLD60P300XF
A60-375	RXEF375	MF-RX375	RLD60P375XF

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