

# DATA SHEET

## POSITIVE TEMPERATURE COEFFICIENT AC/DC POWER SUPPLY

BK30 series

RoHS compliant & Halogen free



Product specification— November 05, 2018 V.0



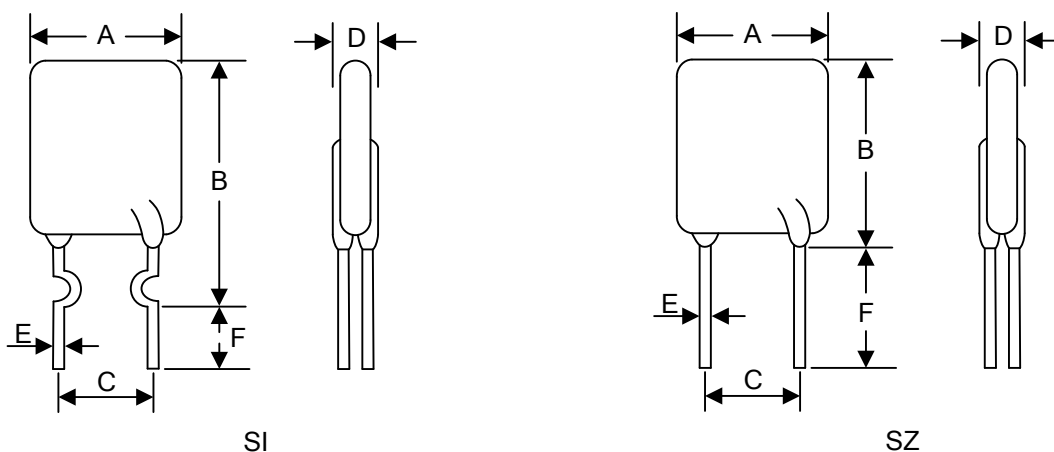
## Positive Temperature Coefficient (PTC) Data Sheet

### Features

- Radial leaded devices.
- Over-current protection
- Flame retardant epoxy polymer insulating material meets UL94 V-0 requirement.
- Available in lead-free version.
- Meets MSL level 1, per J-STD-020
- Safety certification: UL: E244500



### Dimensions (Unit: mm)



Part Number	A	B	C	D	E	F	Style.
	Max.	Max.	±0.6	Max.	Typ.	Min.	
BK30-090	7.4	14.5 / 14.2	5.1	3.1	0.5	4.6 / 7.6	SI / SZ
BK30-110	7.4	17.8 / 14.2	5.1	3.1	0.5	4.6 / 7.6	SI / SZ
BK30-135	9.2	15.8	5.1	3.1	0.5	4.6	SI
BK30-160	9.5	16.5	5.1	3.1	0.5	4.6	SI
BK30-185	9.8	18.6	5.1	3.1	0.5	4.6	SI
BK30-200	11.0	17.2	5.1	3.1	0.5	4.6	SI
BK30-250	13.2	20.5	5.1	3.1	0.5	4.6	SI
BK30-300	13.2	17.3	5.1	3.1	0.8	7.6	SZ
BK30-400	14.0	20.1	5.1	3.1	0.8	7.6	SZ
BK30-500	14.0	20.1	10.5	3.1	0.8	7.6	SZ
BK30-600	17.5	24.9	10.5	3.1	0.8	7.6	SZ
BK30-700	17.5	24.9	10.5	3.1	0.8	7.6	SZ
BK30-800	23.5	29.2	10.5	3.1	0.8	7.6	SZ
BK30-900	24.3	29.7	10.5	3.1	0.8	7.6	SZ

## Electrical Characteristics

Part Number	$I_H$	$I_T$	$V_{MAX}$	$I_{MAX}$	$R_{MAX}$	$R_{MIN}$	$Pd_{typ.}$
	(A)	(A)	(V <sub>DC</sub> )	(A)	( $\Omega$ )	( $\Omega$ )	(W)
BK30-090	0.90	1.80	30	40	0.220	0.090	0.60
BK30-110	1.10	2.20	30	40	0.200	0.070	0.70
BK30-135	1.35	2.70	30	40	0.160	0.055	0.80
BK30-160	1.60	3.20	30	40	0.140	0.045	0.90
BK30-185	1.85	3.70	30	40	0.120	0.035	1.00
BK30-200	2.00	4.00	30	40	0.100	0.040	1.20
BK30-250	2.50	5.00	30	40	0.080	0.027	1.20
BK30-300	3.00	6.00	30	40	0.070	0.022	2.00
BK30-400	4.00	8.00	30	40	0.060	0.010	2.50
BK30-500	5.00	10.00	30	40	0.050	0.010	3.00
BK30-600	6.00	12.00	30	40	0.040	0.005	3.50
BK30-700	7.00	14.00	30	40	0.030	0.005	3.80
BK30-800	8.00	16.00	30	40	0.025	0.005	4.00
BK30-900	9.00	18.00	30	40	0.020	0.005	4.20

- $I_H$  = Hold current: maximum current device will pass without tripping in 25°C still air.
- $I_T$  = Trip current: minimum current at which the device will trip in 25°C still air.
- $V_{MAX}$  = Maximum voltage device can withstand without damage at rated current.
- $I_{MAX}$  = Maximum fault current device can withstand without damage at rated voltage.
- $R_{MAX}$  = Maximum resistance of device in initial (un-soldered) state.
- $R_{MIN}$  = Minimum resistance of device in initial (un-soldered) state.
- $Pd_{typ.}$  = Typical power dissipation from device when in the tripped state at 25°C still air.

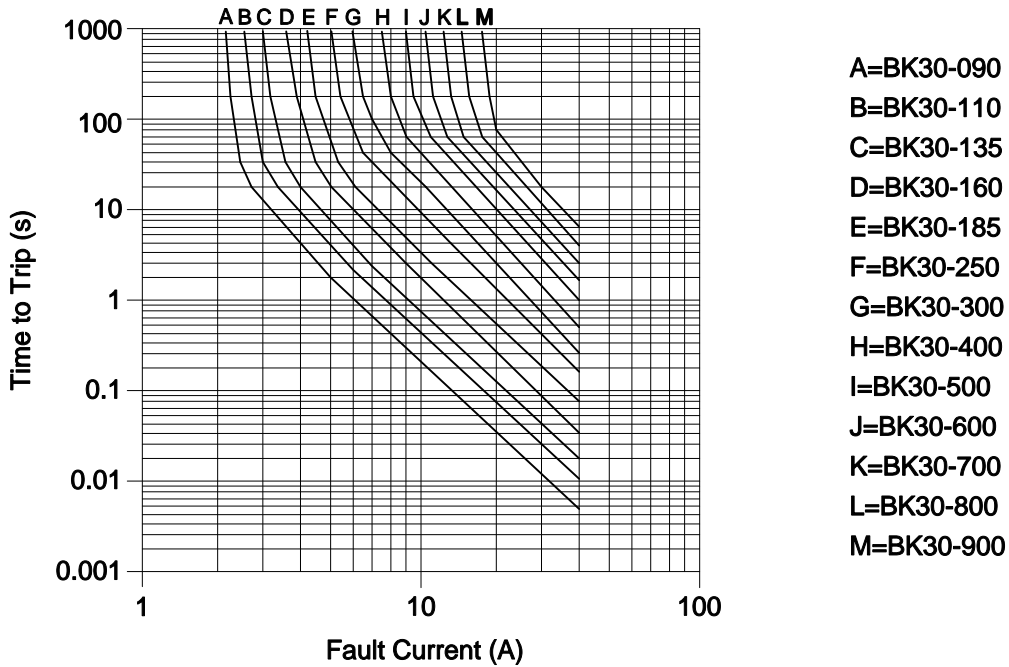
## Thermal Derating Chart – $I_H$ (A)

Part Number	Maximum Ambient Operating Temperatures (°C)								
	-20	0	25	30	40	50	60	70	85
BK30-090	1.17	1.04	0.90	0.82	0.75	0.69	0.61	0.55	0.47
BK30-110	1.43	1.27	1.10	1.00	0.91	0.85	0.75	0.67	0.57
BK30-135	1.76	1.55	1.35	1.23	1.12	1.04	0.92	0.82	0.70
BK30-160	2.08	1.84	1.60	1.46	1.33	1.23	1.09	0.98	0.83
BK30-185	2.41	2.13	1.85	1.68	1.54	1.42	1.26	1.13	0.96
BK30-200	2.60	2.30	2.00	1.82	1.66	1.54	1.36	1.22	1.04
BK30-250	3.25	2.88	2.50	2.28	2.08	1.93	1.70	1.53	1.30
BK30-300	3.90	3.45	3.00	2.73	2.49	2.31	2.04	1.83	1.56
BK30-400	5.20	4.60	4.00	3.64	3.32	3.08	2.72	2.44	2.08
BK30-500	6.50	5.75	5.00	4.55	4.15	3.85	3.40	3.05	2.60
BK30-600	7.80	6.90	6.00	5.46	4.98	4.62	4.08	3.66	3.12
BK30-700	9.10	8.05	7.00	6.37	5.81	5.39	4.76	4.27	3.64
BK30-800	10.40	9.20	8.00	7.28	6.64	6.16	5.44	4.88	4.16
BK30-900	11.70	10.35	9.00	8.19	7.47	6.93	6.12	5.49	4.68

**Test Procedures and Requirement**

Items	Test Conditions	Accept/Reject Criteria
Resistance	In still air @25°C	$R_{min} \leq R \leq R_{max}$
Time to Trip	Specified current, $V_{max}$ , 25°C	$T \leq \text{max. Time to trip } (T_{trip})$
Hold Current	30 min, at $I_H$	No trip
Trip Cycle Life	$V_{max}$ , $I_{max}$ , 100 cycles	No arcing or burning
Trip Endurance	$V_{max}$ , 24hours	No arcing or burning

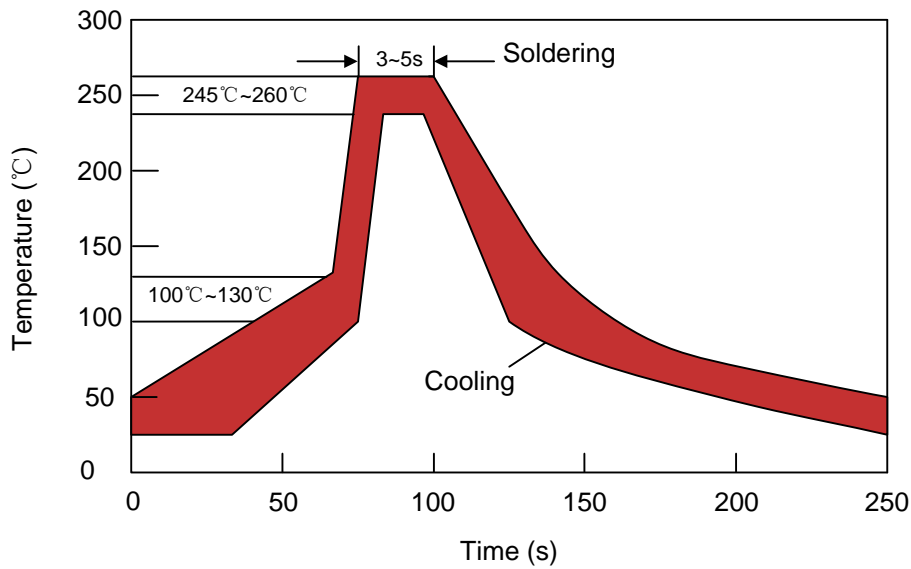
**Typical Time-to-Trip Charts @25°C**



**Storage Recommendations**

- Storage Temperature: -10°C~+40°C
- Relative Humidity: ≤80%RH
- Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year.

### Wave Soldering Recommendation Parameters



Items	Conditions
Pre-Heating Zone	Refer to the condition recommended by the flux manufacturer. Maximum ramping rate should not exceed 4°C/sec.
Soldering Zone	Maximum solder temperature should not exceed 260°C
Cooling Zone	Forced cooling

### Manual Soldering Recommendation Parameters

Items	Conditions
Soldering condition	The highest power of the manual soldering iron should be 30W or less, soldering temperature should not be higher than 280°C.
Soldering time	The soldering time should be kept within 3 seconds, otherwise it might cause insulation layer cracking, and increased part resistance.
Soldering position	The distance on the leads between the soldering point and bottom of the PPTC body should be equal or greater than 4mm.
Other	The soldering iron should not contact the PPTC body except the leads. If the soldering conditions are kept to lower temperature, less time and larger distance, the outcome of the soldering will be better.

- Notes: 1. Before using the device must be stored in the original bags, if the storage conditions do not guarantee, the device may not be able to meet the given value.  
 2. The devices can't used for reflow soldering.

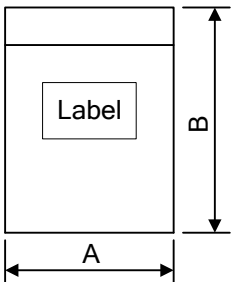
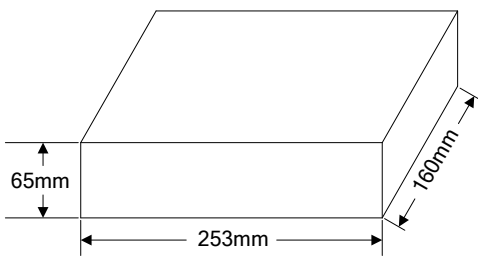
**Mechanical Characteristics**

Items	Specifications	Test Conditions/Methods
Tensile strength	No visible damage	1.0Kgf, 10 seconds
Bending strength	No visible damage	0.5Kgf, 90° , 3 times
Vibration	No visible damage	Freq: 10-55Hz, Amp: 0.75mm, 1min

**Reliability Test**

Items	Specifications	Test Conditions/Methods
Solder ability	No visible damage, Solder OK, Solder area ≥95%	245±5°C, 2±1s, dipping depth=0.5inch max from the body
Resistance to soldering heat	No visible damage, Electrical OK,  ΔR/R0  ≤50%	260±5°C, 10+2/-0s
Damp heat, steady state	No visible damage, Electrical OK,  ΔR/R0  ≤20%	40±2°C, 90~95 % RH, total 48Hrs, after 4Hrs test electrical parameter
Temperature cycling	No visible damage, Electrical OK,  ΔR/R0  ≤20%	Ta=-10+0/-1°C 30min, Ta=70+1/-0°C 30min, 5cycles, after 1hr test electrical parameter

**Packaging**

Bag	Part Number	Dimension AxB (mm)	Quantity
	BK30-090	120x150	1000pcs/bag 4000pcs/box
	BK30-110		
	BK30-135		
	BK30-160	150x200	
	BK30-185		
	BK30-200		
	BK30-250	150x200	500pcs/bag 2000pcs/box
	BK30-300	120x150	
	BK30-400	150x200	
	BK30-500		
	BK30-600	150x200	200pcs/bag 800pcs/box
	BK30-700		
	BK30-800		
	BK30-900		