

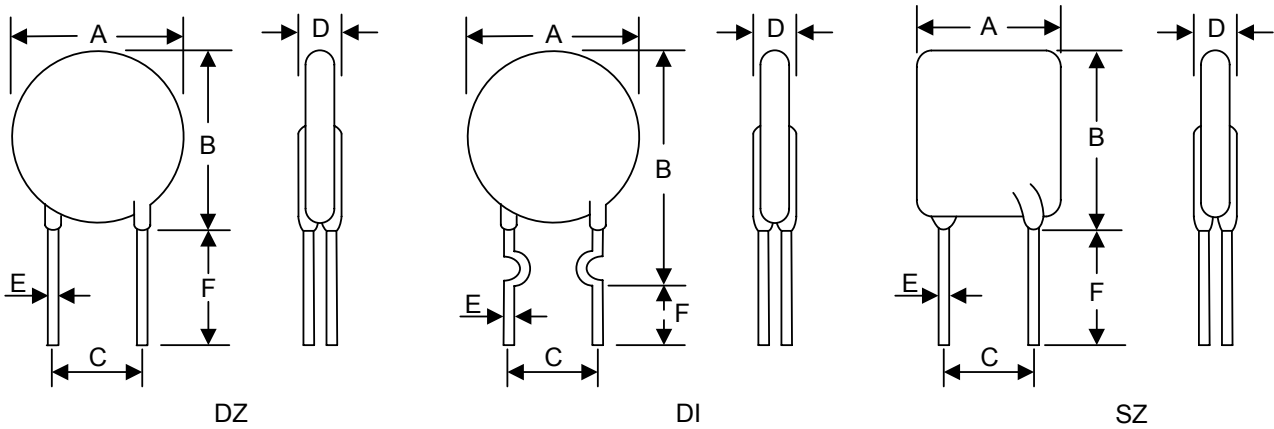
Positive Temperature Coefficient (PTC) Data Sheet

Features

- Radial leaded devices.
- Over-current protection
- High voltage surge capabilities
- 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. | |
| BK60-005 | 6.0 | 8.5 | 5.1 | 3.1 | 0.5 | 7.6 | DZ |
| BK60-010 | 6.0 | 9.5 | 5.1 | 3.1 | 0.5 | 7.6 | DZ |
| BK60-017 | 7.4 | 12.7 | 5.1 | 3.1 | 0.5 | 7.6 | DZ |
| BK60-020 | 7.4 | 12.7 | 5.1 | 3.1 | 0.5 | 7.6 | DZ |
| BK60-025 | 7.4 | 12.7 | 5.1 | 3.1 | 0.5 | 7.6 | DZ |
| BK60-030 | 7.4 | 13.0 | 5.1 | 3.1 | 0.5 | 7.6 | DZ |
| BK60-040 | 7.4 | 14.2 | 5.1 | 3.1 | 0.5 | 4.6 | DI |
| BK60-050 | 7.5 | 14.5 | 5.1 | 3.1 | 0.5 | 4.6 | DI |
| BK60-065 | 9.4 | 16.1 | 5.1 | 3.1 | 0.5 | 4.6 | DI |
| BK60-075 | 10.2 | 16.8 | 5.1 | 3.1 | 0.5 | 4.6 | DI |
| BK60-090 | 11.2 | 18.0 | 5.1 | 3.1 | 0.5 | 4.6 | DI |
| BK60-110 | 11.0 / 13.0 | 16.0 / 18.0 | 5.1 | 3.1 | 0.8 | 7.6 | SZ / DZ |
| BK60-135 | 14.5 | 19.6 | 5.1 | 3.1 | 0.8 | 7.6 | DZ |

| Part Number | A | B | C | D | E | F | Style. |
|-------------|------|------|------|------|------|------|--------|
| | Max. | Max. | ±0.6 | Max. | Typ. | Min. | |
| BK60-160 | 16.3 | 21.3 | 5.1 | 3.1 | 0.8 | 7.6 | DZ |
| BK60-185 | 17.5 | 22.9 | 5.1 | 3.1 | 0.8 | 7.6 | DZ |
| BK60-250 | 21.6 | 26.6 | 10.5 | 3.1 | 0.8 | 7.6 | DZ |
| BK60-300 | 24.8 | 30.0 | 10.5 | 3.1 | 0.8 | 7.6 | DZ |
| BK60-375 | 27.2 | 32.0 | 10.5 | 3.1 | 0.8 | 7.6 | DZ |

Electrical Characteristics

| Part Number | I_H | I_T | V_{MAX} | I_{MAX} | R_{MAX} | R_{MIN} | $Pd_{typ.}$ |
|-------------|-------|-------|--------------------|-----------|-----------|-----------|-------------|
| | (A) | (A) | (V _{DC}) | (A) | (Ω) | (Ω) | (W) |
| BK60-005 | 0.05 | 0.10 | 60 | 40 | 25.0 | 7.50 | 0.30 |
| BK60-010 | 0.10 | 0.20 | 60 | 40 | 7.50 | 2.50 | 0.38 |
| BK60-017 | 0.17 | 0.34 | 60 | 40 | 5.80 | 1.80 | 0.48 |
| BK60-020 | 0.20 | 0.40 | 60 | 40 | 3.30 | 1.50 | 0.41 |
| BK60-025 | 0.25 | 0.50 | 60 | 40 | 2.20 | 1.00 | 0.45 |
| BK60-030 | 0.30 | 0.60 | 60 | 40 | 1.55 | 0.70 | 0.49 |
| BK60-040 | 0.40 | 0.80 | 60 | 40 | 1.10 | 0.50 | 0.56 |
| BK60-050 | 0.50 | 1.00 | 60 | 40 | 0.85 | 0.35 | 0.77 |
| BK60-065 | 0.65 | 1.30 | 60 | 40 | 0.65 | 0.30 | 0.88 |
| BK60-075 | 0.75 | 1.50 | 60 | 40 | 0.55 | 0.25 | 0.92 |
| BK60-090 | 0.90 | 1.80 | 60 | 40 | 0.45 | 0.20 | 0.99 |
| BK60-110 | 1.10 | 2.20 | 60 | 40 | 0.33 | 0.15 | 1.50 |
| BK60-135 | 1.35 | 2.70 | 60 | 40 | 0.27 | 0.12 | 1.70 |
| BK60-160 | 1.60 | 3.20 | 60 | 40 | 0.22 | 0.09 | 1.90 |
| BK60-185 | 1.85 | 3.70 | 60 | 40 | 0.18 | 0.08 | 2.10 |
| BK60-250 | 2.50 | 5.00 | 60 | 40 | 0.11 | 0.05 | 2.50 |
| BK60-300 | 3.00 | 6.00 | 60 | 40 | 0.09 | 0.04 | 2.80 |
| BK60-375 | 3.75 | 7.50 | 60 | 40 | 0.08 | 0.03 | 3.20 |

- 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.

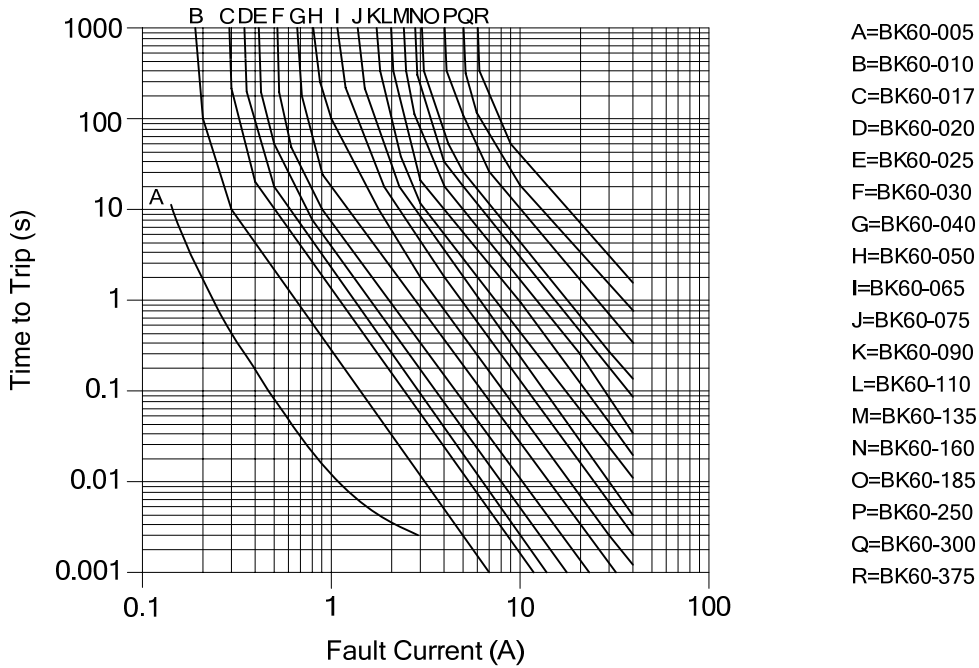
Thermal Derating Chart – I_H (A)

| Part Number | Maximum Ambient Operating Temperatures (°C) | | | | | | | | |
|-------------|---|------|------|------|------|------|------|------|------|
| | -20 | 0 | 25 | 30 | 40 | 50 | 60 | 70 | 85 |
| BK60-005 | 0.07 | 0.06 | 0.05 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 |
| BK60-010 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.07 | 0.06 | 0.05 | 0.04 |
| BK60-017 | 0.23 | 0.20 | 0.17 | 0.15 | 0.14 | 0.12 | 0.11 | 0.09 | 0.07 |
| BK60-020 | 0.27 | 0.24 | 0.20 | 0.18 | 0.16 | 0.14 | 0.13 | 0.11 | 0.08 |
| BK60-025 | 0.34 | 0.30 | 0.25 | 0.23 | 0.20 | 0.18 | 0.16 | 0.14 | 0.10 |
| BK60-030 | 0.41 | 0.36 | 0.30 | 0.27 | 0.24 | 0.22 | 0.19 | 0.16 | 0.12 |
| BK60-040 | 0.54 | 0.48 | 0.40 | 0.36 | 0.32 | 0.29 | 0.25 | 0.22 | 0.16 |
| BK60-050 | 0.68 | 0.60 | 0.50 | 0.45 | 0.41 | 0.36 | 0.32 | 0.27 | 0.20 |
| BK60-065 | 0.88 | 0.77 | 0.65 | 0.59 | 0.53 | 0.47 | 0.41 | 0.35 | 0.26 |
| BK60-075 | 1.02 | 0.89 | 0.75 | 0.68 | 0.61 | 0.54 | 0.47 | 0.41 | 0.30 |
| BK60-090 | 1.22 | 1.07 | 0.90 | 0.81 | 0.73 | 0.65 | 0.57 | 0.49 | 0.36 |
| BK60-110 | 1.50 | 1.31 | 1.10 | 0.99 | 0.89 | 0.79 | 0.69 | 0.59 | 0.44 |
| BK60-135 | 1.84 | 1.61 | 1.35 | 1.22 | 1.09 | 0.97 | 0.85 | 0.73 | 0.54 |
| BK60-160 | 2.18 | 1.90 | 1.60 | 1.44 | 1.30 | 1.15 | 1.01 | 0.86 | 0.64 |
| BK60-185 | 2.52 | 2.20 | 1.85 | 1.67 | 1.50 | 1.33 | 1.17 | 1.00 | 0.74 |
| BK60-250 | 3.40 | 2.98 | 2.50 | 2.25 | 2.03 | 1.80 | 1.58 | 1.35 | 1.00 |
| BK60-300 | 4.08 | 3.57 | 3.00 | 2.70 | 2.43 | 2.18 | 1.89 | 1.62 | 1.20 |
| BK60-375 | 5.10 | 4.46 | 3.75 | 3.38 | 3.04 | 2.70 | 2.36 | 2.03 | 1.50 |

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 | $T \leq \max. \text{ Time to trip } (T_{trip})$ |
| 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 |

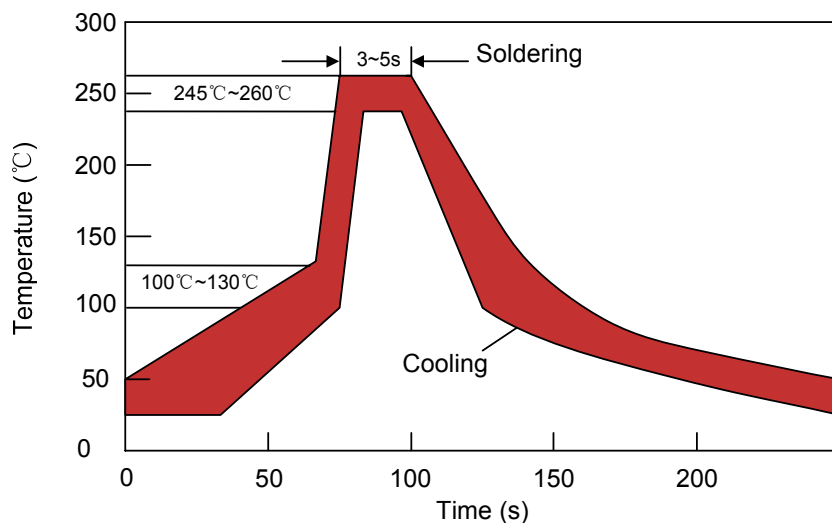
Typical Time-to-Trip Charts @25°C



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.

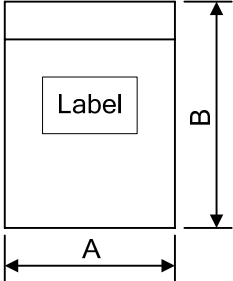
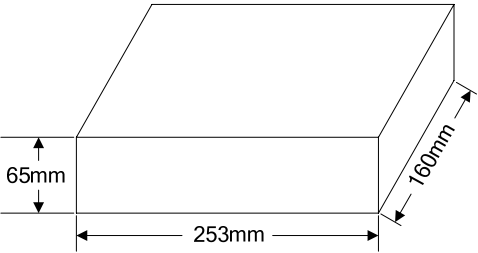
Mechanical Characteristics

| 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 $\geq 95\%$ | 245±5°C, 2±1s, dipping depth=0.5inch max from the body |
| Resistance to soldering heat | No visible damage, Electrical OK, $ \Delta R/R0 \leq 50\%$ | 260±5°C, 10+2/-0s |
| Damp heat, steady state | No visible damage, Electrical OK, $ \Delta R/R0 \leq 20\%$ | 40±2°C, 90~95 % RH, total 48Hrs, after 4Hrs test electrical parameter |
| Temperature cycling | No visible damage, Electrical OK, $ \Delta R/R0 \leq 20\%$ | Ta=-10+0/-1°C 30min, Ta=70+1/-0°C 30min, 5cycles, after 1hr test electrical parameter |

Packaging

| Bag | Part Number | Dimension A×B (mm) | Quantity |
|---|-------------|--------------------|----------------------------|
|  | BK60-005 | 120×150 | 1000pcs/bag 6000pcs/box |
| | BK60-010 | | |
| | BK60-017 | | |
| | BK60-020 | | |
| | BK60-025 | | |
| | BK60-030 | | |
| | BK60-040 | | |
| | BK60-050 | | |
| | BK60-065 | | |
|  | BK60-075 | 120×150 | 500pcs/bag 3000pcs/box |
| | BK60-090 | | |
| | BK60-110 | | |
| | BK60-135 | | |
| | BK60-160 | 150×200 | 500pcs/bag 2000pcs/box |
| | BK60-185 | | |
| | BK60-250 | | |
| | BK60-300 | 150×200 | 200pcs/bag 800pcs/box |
| | BK60-375 | | |

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