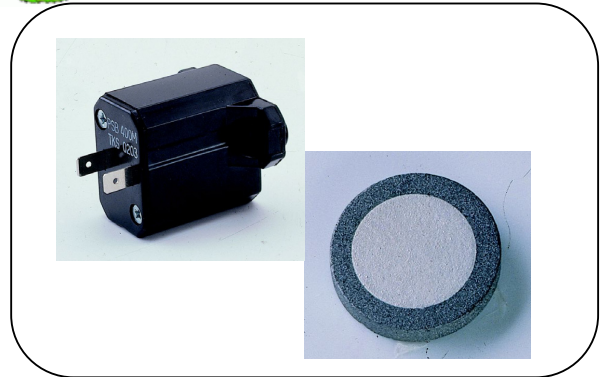


CPTC Thermistor: PS Series Motor Starter



■ Features

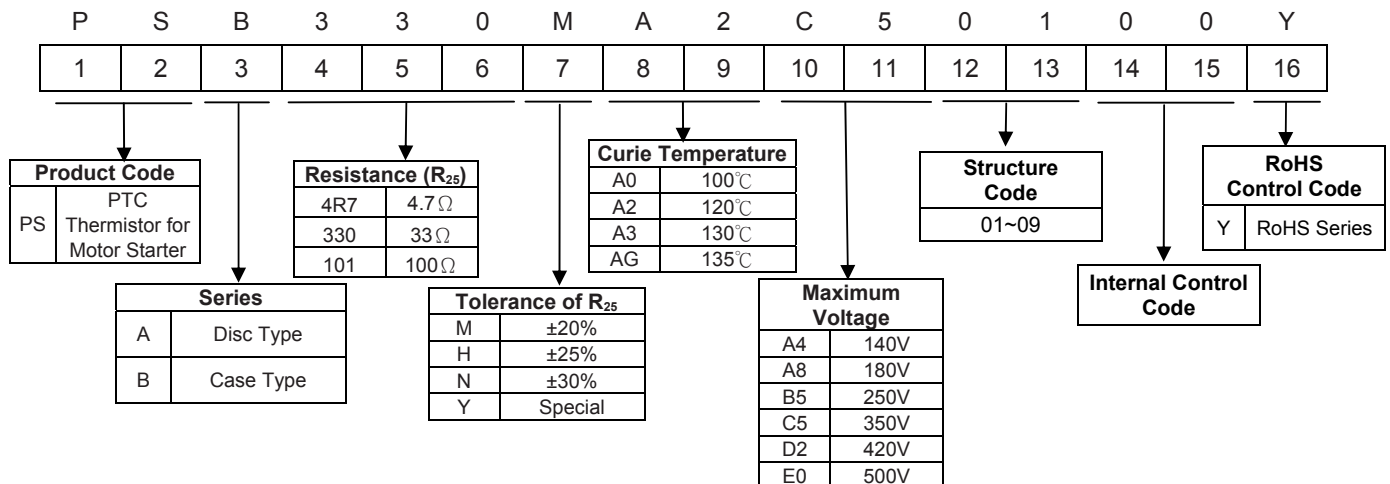
- RoHS compliant
 - Two versions available
 - PSA versions are uncased, metallized disk for clamp-contacting
 - PSB versions are cased
- Voltage ratings: from 160V_{AC} to 500V_{AC}
- Stable over a long life
- No noise generated
- Operating temperature range :
 - 10 ~ +85°C (V=V_{max})
 - 25 ~ +125°C (V=0)
- Agency Recognition: UL / cUL / CQC / TUV



■ Recommended Applications

- Home appliances (Fridge, Air conditioner)

■ Part No. Code

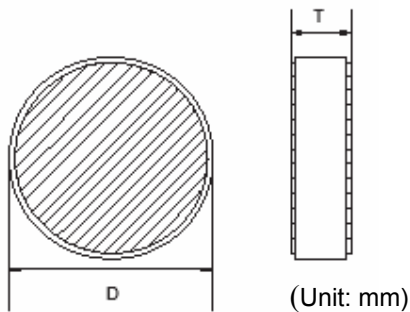


CPTC Thermistor: PS Series Motor Starter



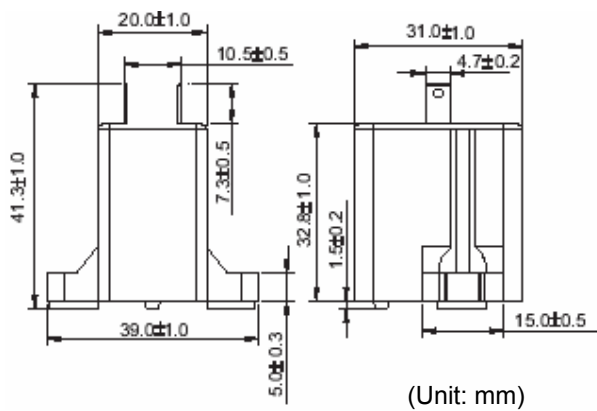
■ Dimensions

PSA Series

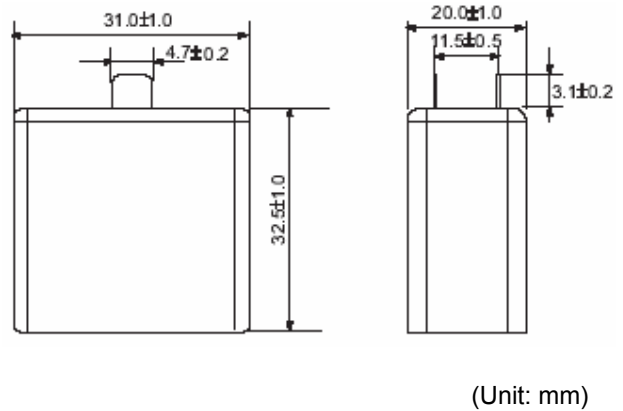


PSB Series

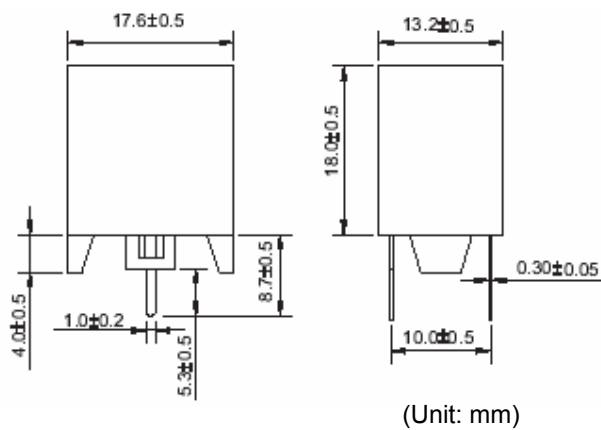
PSB□□□□□□□□01



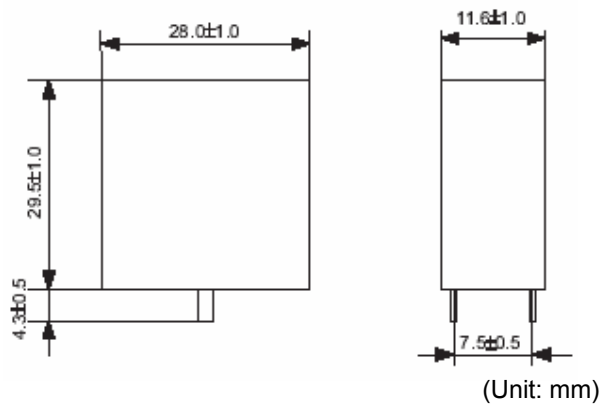
PSB□□□□□□□□02



PSB□□□□□□□□03



PSB□□□□□□□□09



CPTC Thermistor: PS Series

Motor Starter



■ Characteristics

PSA Series

| Part No. | Curie Temperature | Nominal Zero-power Resistance | Max. Voltage | Max. Current | Operating Time | Equilibrium Power | Recovery Time | Reference Coil Resistance | Dimensions | | Safety Approvals | | | |
|---------------|---------------------|-------------------------------|-------------------------------------|----------------------|--------------------|----------------------|-----------------------|---------------------------|---|-------------|------------------|-----|-----|-----|
| | T _c (°C) | R ₂₅ (Ω) | V _{max} (V _{AC}) | I _{max} (A) | t _o (s) | P _{max} (W) | t _{rmax} (s) | R _{ref} (Ω) | D (mm) | T (mm) | UL | cUL | CQC | TUV |
| PSA3R3□A2A604 | 120±10 | 3.3 | 160 | 12 | 0.3-1.2 | 3.5 | 90 | 10 | 20.0 ^{+0.5} _{-1.0} | 2.5 ±0.2 | √ | √ | √ | √ |
| PSA3R9□A2A604 | | 3.9 | 160 | 12 | 0.3-1.2 | 3.5 | 90 | 10 | | | √ | √ | √ | √ |
| PSA4R7□A2A804 | | 4.7 | 180 | 12 | 0.3-1.2 | 3.5 | 90 | 10 | | | √ | √ | √ | √ |
| PSA5R6□A2A804 | | 5.6 | 180 | 12 | 0.3-1.2 | 3.5 | 90 | 10 | | | √ | √ | √ | √ |
| PSA6R8□A2B204 | | 6.8 | 220 | 10 | 0.3-1.2 | 3.5 | 90 | 15 | | | √ | √ | √ | √ |
| PSA100□A2B404 | | 10 | 240 | 10 | 0.2-0.8 | 3 | 85 | 15 | | | √ | √ | √ | √ |
| PSA150□A2B604 | | 15 | 260 | 10 | 0.2-0.8 | 3 | 85 | 25 | | | √ | √ | √ | √ |
| PSA220□A2C004 | | 22 | 300 | 9 | 0.2-0.8 | 3 | 85 | 25 | | | √ | √ | √ | √ |
| PSA330□A2C004 | | 33 | 300 | 9 | 0.2-0.8 | 3 | 85 | 25 | | | √ | √ | √ | √ |
| PSA470□A2C004 | | 47 | 300 | 9 | 0.2-0.8 | 3 | 85 | 25 | | | √ | √ | √ | √ |
| PSA680□A2C204 | | 68 | 320 | 9 | 0.2-0.8 | 3 | 85 | 25 | | | √ | √ | √ | √ |
| PSA4R7□A2A705 | 120±10 | 4.7 | 170 | 12 | 0.2-1.0 | 3.2 | 80 | 10 | 17.5 ^{+0.5} _{-1.0} | 2.5 ±0.2 | √ | √ | √ | √ |
| PSA5R6□A2A905 | | 5.6 | 190 | 12 | 0.2-1.0 | 3.2 | 80 | 10 | | | √ | √ | √ | √ |
| PSA6R8□A2B205 | | 6.8 | 220 | 10 | 0.2-1.0 | 3.2 | 80 | 15 | | | √ | √ | √ | √ |
| PSA100□A2B405 | | 10 | 240 | 9 | 0.2-1.0 | 3 | 80 | 20 | | | √ | √ | √ | √ |
| PSA150□A2B605 | | 15 | 260 | 8 | 0.2-1.0 | 3 | 80 | 20 | | | √ | √ | √ | √ |
| PSA220□A2B805 | | 22 | 280 | 8 | 0.2-0.8 | 3 | 80 | 15 | | | √ | √ | √ | √ |
| PSA330□A2B805 | | 33 | 280 | 7 | 0.2-0.8 | 3 | 80 | 20 | | | √ | √ | √ | √ |
| PSA470□A2C005 | | 47 | 300 | 6 | 0.2-0.8 | 3 | 80 | 20 | | | √ | √ | √ | √ |
| PSA680□A2C005 | | 68 | 300 | 5 | 0.2-0.8 | 3 | 80 | 20 | | | √ | √ | √ | √ |
| PSA3R3□AGA604 | 135±10 | 3.3 | 160 | 12 | 0.3-1.2 | 3.5 | 70 | 10 | 20.0 ^{+0.5} _{-1.0} | 2.5 ±0.2 | √ | √ | √ | √ |
| PSA3R9□AGA604 | | 3.9 | 160 | 12 | 0.3-1.2 | 3.5 | 70 | 10 | | | √ | √ | √ | √ |
| PSA4R7□AGA804 | | 4.7 | 180 | 12 | 0.3-1.2 | 3.5 | 70 | 10 | | | √ | √ | √ | √ |
| PSA5R6□AGA804 | | 5.6 | 180 | 12 | 0.3-1.2 | 3.5 | 70 | 10 | | | √ | √ | √ | √ |
| PSA6R8□AGB004 | | 6.8 | 200 | 10 | 0.3-1.2 | 3.5 | 70 | 15 | | | √ | √ | √ | √ |
| PSA100□AGB304 | | 10 | 230 | 9 | 0.2-1.0 | 3.2 | 65 | 15 | | | √ | √ | √ | √ |
| PSA150□AGB504 | | 15 | 250 | 8 | 0.2-1.0 | 3.2 | 65 | 15 | | | √ | √ | √ | √ |
| PSA220□AGC004 | | 22 | 300 | 7 | 0.2-1.0 | 3.2 | 65 | 20 | | | √ | √ | √ | √ |
| PSA330□AGC604 | | 33 | 360 | 6 | 0.2-1.0 | 3.2 | 65 | 25 | | | √ | √ | √ | √ |
| PSA470□AGD004 | | 47 | 400 | 5 | 0.2-1.0 | 3.2 | 65 | 35 | | | √ | √ | √ | √ |
| PSA680□AGD304 | | 68 | 430 | 4 | 0.2-1.0 | 3.2 | 65 | 55 | | | √ | √ | √ | √ |

Note1: □=Tolerance of R₂₅

Note2: UL&cUL File No. E138827 , CQC File No. CQC03001008127~128 , TUV File No. R50030891

CPTC Thermistor: PS Series

Motor Starter



PSA Series

| Part No. | Curie Temperature | Nominal Zero-power Resistance | Maximum Voltage | Maximum Current | Operating Time | Equilibrium Power | Recovery Time | Reference Coil Resistance | Dimensions | | Safety Approvals | | | |
|---------------|---------------------|-------------------------------|-------------------------------------|----------------------|--------------------|----------------------|-----------------------|---------------------------|---|-------------|------------------|-----|-----|-----|
| | T _c (°C) | R ₂₅ (Ω) | V _{max} (V _{AC}) | I _{max} (A) | t _o (s) | P _{max} (W) | t _{rmax} (s) | R _{ref} (Ω) | D (mm) | T (mm) | UL | cUL | CQC | TUV |
| PSA4R7□AGA805 | 135±10 | 4.7 | 180 | 10 | 0.3-1.0 | 3.4 | 65 | 15 | 17.5 ^{+0.5} _{-1.0} | 2.5 ±0.2 | √ | √ | √ | √ |
| PSA5R6□AGA805 | | 5.6 | 180 | 10 | 0.3-1.0 | 3.4 | 65 | 15 | | | √ | √ | √ | √ |
| PSA6R8□AGB005 | | 6.8 | 200 | 9 | 0.3-1.0 | 3.4 | 65 | 15 | | | √ | √ | √ | √ |
| PSA100□AGB205 | | 10 | 220 | 8 | 0.3-1.0 | 3.2 | 65 | 20 | | | √ | √ | √ | √ |
| PSA150□AGB405 | | 15 | 240 | 7 | 0.2-0.8 | 3.2 | 65 | 20 | | | √ | √ | √ | √ |
| PSA220□AGB805 | | 22 | 280 | 6 | 0.2-0.8 | 3.2 | 65 | 25 | | | √ | √ | √ | √ |
| PSA330□AGC205 | | 33 | 320 | 4 | 0.2-0.8 | 3.2 | 65 | 45 | | | √ | √ | √ | √ |
| PSA470□AGC505 | | 47 | 350 | 4 | 0.2-0.8 | 3.2 | 65 | 45 | | | √ | √ | √ | √ |
| PSA680□AGD005 | | 68 | 400 | 4 | 0.2-0.8 | 3.2 | 65 | 45 | | | √ | √ | √ | √ |
| PSA4R7□AGA606 | 135±10 | 4.7 | 160 | 10 | 0.2-0.6 | 3 | 50 | 15 | 16 ^{+0.5} _{-1.0} | 2.5 ±0.2 | √ | √ | √ | √ |
| PSA5R6□AGA706 | | 5.6 | 170 | 10 | 0.2-0.6 | 3 | 50 | 15 | | | √ | √ | √ | √ |
| PSA6R8□AGA806 | | 6.8 | 180 | 9 | 0.2-0.6 | 3 | 50 | 15 | | | √ | √ | √ | √ |
| PSA100□AGB006 | | 10 | 200 | 8 | 0.2-0.6 | 3 | 50 | 15 | | | √ | √ | √ | √ |
| PSA150□AGB306 | | 15 | 230 | 7 | 0.2-0.6 | 3 | 50 | 20 | | | √ | √ | √ | √ |
| PSA220□AGB506 | | 22 | 250 | 6 | 0.2-0.6 | 3 | 50 | 20 | | | √ | √ | √ | √ |
| PSA6R8□AGA607 | 135±10 | 6.8 | 160 | 8 | 0.1-0.6 | 2.8 | 45 | 15 | 14 ^{+0.5} _{-1.0} | 2.5 ±0.2 | √ | √ | √ | √ |
| PSA100□AGA807 | | 10 | 180 | 7 | 0.1-0.6 | 2.8 | 45 | 20 | | | √ | √ | √ | √ |
| PSA150□AGB407 | | 15 | 240 | 6 | 0.1-0.6 | 2.8 | 45 | 25 | | | √ | √ | √ | √ |
| PSA220□AGB407 | | 22 | 240 | 5 | 0.1-0.5 | 2.8 | 45 | 25 | | | √ | √ | √ | √ |
| PSA330□AGB507 | | 33 | 250 | 4 | 0.1-0.5 | 2.8 | 45 | 30 | | | √ | √ | √ | √ |

Note1: □=Tolerance of R₂₅

Note2: UL&cUL File No. E138827 , CQC File No. CQC03001008127~128 , TUV File No. R50030891

CPTC Thermistor: PS Series

Motor Starter



PSB Series

| Part No. | Curie Temperature | Nominal Zero-power Resistance | Maximum Voltage | Maximum Current | Operating Time | Equilibrium Power | Recovery Time | Reference Coil Resistance | Safety Approvals | | | |
|---------------|---------------------|-------------------------------|-------------------------------------|----------------------|--------------------|----------------------|-----------------------|---------------------------|------------------|-----|-----|-----|
| | T _c (°C) | R ₂₅ (Ω) | V _{max} (V _{AC}) | I _{max} (A) | t _o (s) | P _{max} (W) | t _{rmax} (s) | R _{ref} (Ω) | UL | cUL | CQC | TUV |
| PSB100□A2B2** | 120 ±10 | 10 | 220 | 9 | 0.4-2.0 | 5 | 130 | 25 | √ | √ | √ | √ |
| PSB150□A2B5** | | 15 | 250 | 8 | 0.4-2.0 | 5 | 130 | 25 | √ | √ | √ | √ |
| PSB220□A2C0** | | 22 | 300 | 7 | 0.4-2.0 | 5 | 130 | 25 | √ | √ | √ | √ |
| PSB330□A2C5** | | 33 | 350 | 6 | 0.2-2.0 | 5 | 130 | 30 | √ | √ | √ | √ |
| PSB400□A2C0** | | 40 | 300 | 5 | 0.2-1.5 | 4 | 120 | 25 | √ | √ | √ | √ |
| PSB470□A2D0** | | 47 | 400 | 5 | 0.2-1.5 | 4 | 120 | 25 | √ | √ | √ | √ |
| PSB101□A2E0** | | 100 | 500 | 4 | 0.2-1.5 | 4 | 95 | 10 | √ | √ | √ | √ |
| PSB330□A2B503 | | 33 | 250 | 4.5 | 0.1-0.5 | 2.3 | 60 | 30 | | | | |
| PSB400□A2B503 | | 40 | 250 | 4 | 0.1-0.5 | 2.3 | 60 | 30 | | | | |
| PSB470□A2B503 | | 47 | 250 | 4 | 0.1-0.5 | 2.3 | 60 | 30 | | | | |
| PSB150□A3B5** | 130 ±10 | 15 | 250 | 8 | 0.4-2.0 | 5 | 120 | 15 | √ | √ | √ | √ |
| PSB220□A3C0** | | 22 | 300 | 7 | 0.4-2.0 | 5 | 120 | 25 | √ | √ | √ | √ |
| PSB330□A3C5** | | 33 | 350 | 6 | 0.2-2.0 | 5 | 120 | 25 | √ | √ | √ | √ |
| PSB470□A3B5** | | 47 | 250 | 5 | 0.2-2.0 | 5 | 120 | 25 | √ | √ | √ | √ |

Note1: □=Tolerance of R₂₅

Note2: **= Dimensions code for 01 , 02 or 09

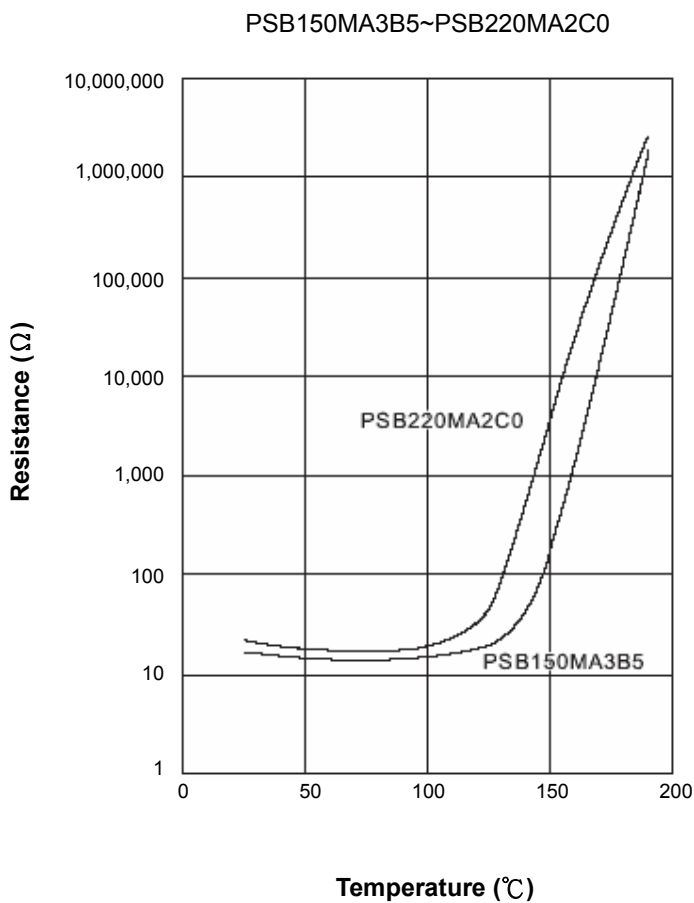
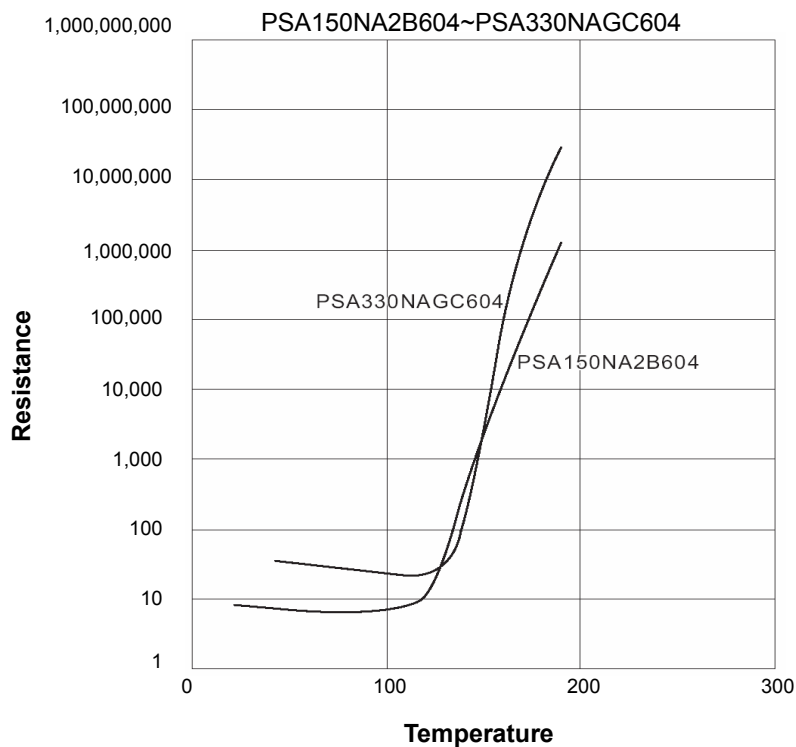
Note3: UL&cUL File No. E138827 , CQC File No. CQC03001008127~128 , TUV File No. R50031360

CPTC Thermistor: PS Series

Motor Starter



R-T Characteristic Curve (Representative)



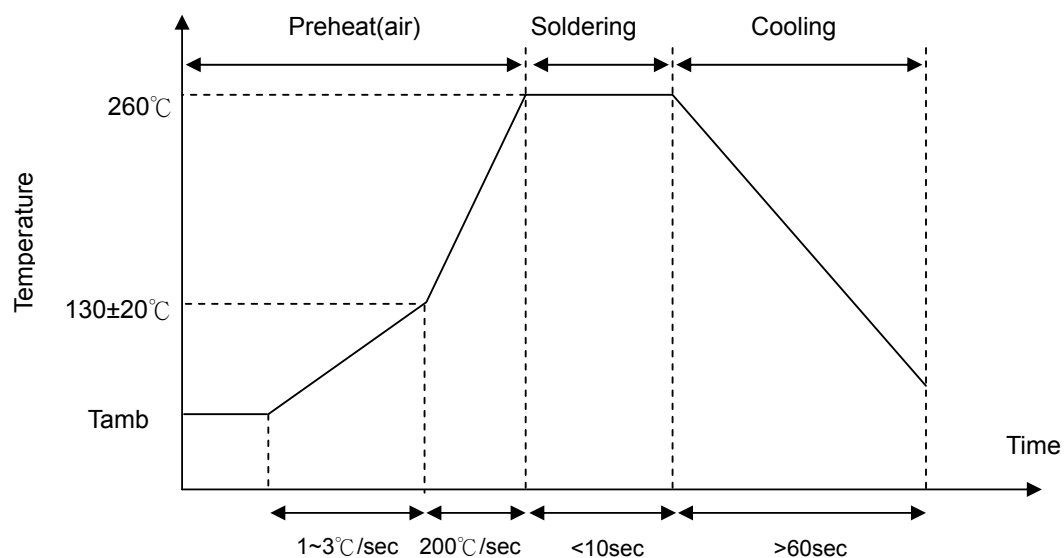
CPTC Thermistor: PS Series

Motor Starter



■ Soldering Recommendation

● Wave Flow Soldering Profile



● Recommended Reworking Conditions With Soldering Iron

| Item | Conditions |
|-----------------------------------|----------------------------|
| Temperature of Soldering Iron-tip | 360°C (max.) |
| Soldering Time | 2 sec (max.) |
| Distance from coating | 6 mm (min.) |

CPTC Thermistor: PS Series

Motor Starter



■ Reliability Test

| Item | Standard | Test conditions / Methods | Specifications |
|---|---------------|--|--|
| Tensile Strength of Terminals * | IEC60068-2-21 | Fasten body and apply a force gradually to each lead until $40 \pm 0.5N$ for 10 ± 1 sec. in the direction of lead axis. | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Bending Strength of Terminals * | IEC60068-2-21 | Hold body and apply a force to each lead until $20 \pm 0.5N$ gradually at 90° to lead axis in the direction of body, and keep for 10 ± 1 sec., and do this in the opposite direction. | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Temp. cycle | IEC60068-2-14 | $-40 \pm 3^\circ C \times 30min. \rightarrow +85 \pm 2^\circ C \times 30min. \times 5Cycles$ excessive time: $2min < T < 3min$ | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Vibration * | IEC60068-2-6 | Fasten body to baseboard with solder perfectly and supply sine wave oscillation at frequency from 10 HZ to 55HZ all oscillation with of 0.75 mm Vibrato for 24 cycles in each of 3 naturally perpendicular plane for a total of 6 hours | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Shock * | IEC60068-2-27 | Putting the PTC product in the shock equipment shock wave: half-sine $\Delta V = 1.0m/s$; Acceleration: $50m/s^2$; Pulse time: 30ms | $ \Delta R/R25 \leq 20\%$ No damage observed |
| The highest temperature and max. voltage load | IEC60738-1 | $85 \pm 5^\circ C$, V_{max} , R_{cref} , for $1000 \pm 5hrs$. At $25^\circ C$ to check exterior, normal resistance, | $ \Delta R/R25 \leq 20\%$ No damage observed |
| The highest temperature storage | IEC60068-2-2 | $85 \pm 5^\circ C$, for 1000hrs | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Room Temperature Intermittent Load | IEC60738-1 | $25 \pm 5^\circ C$, V_{max} , R_{cref} , 1min. on and 5min. off $\times 100,000$ cycles At $25^\circ C$ to check exterior, normal resistance, operating times, Recovery Times, Power Consumption. | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Climatic sequence | IEC60738-1 | $+40^\circ C, 20\%R.H \times 24hrs \rightarrow 100^\circ C \times 16hrs \rightarrow 25^\circ C \times 2hrs \rightarrow +40^\circ C, 95\%R.H \times 24hrs \rightarrow 0^\circ C \times 2hrs \rightarrow +40^\circ C, 95\%R.H \times 24hrs \rightarrow 25^\circ C \times (1\sim 2)hrs$ to check exterior, normal resistance | $ \Delta R/R25 \leq 20\%$ No damage observed |
| Humidity | IEC60068-2-3 | $40 \pm 5^\circ C, 90\sim 95\%RH, 40 \pm 5VDC$, For $1000 \pm 2hrs$ | $ \Delta R/R25 \leq 20\%$ No damage observed |

* : Only application for PSB series

CPTC Thermistor: PS Series Motor Starter



■ Packaging

● PSA series :

| Disc Size/mm | Quantity (PCS/Box) |
|------------------|--------------------|
| $\Phi \geq 17.5$ | 1000 |
| $\Phi \leq 16$ | 1500 |

● PSB series : Bulk packing 50pcs/bag

■ Storage condition of products

(I) Storage Conditions:

Storage Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$

Relative humidity: $\leq 75\% \text{RH}$

Varistor must be kept away from sunlight and stored in a non-corrosive atmosphere.

(II) Period of Storage: 1 year