

Surface mount type TH Series

RoHS compliance, Halogen free
higher thermal resistance: 125°C guaranteed (ambient temperature)
For the Industrial equipment

Specifications

| Items | Condition | Specifications | | | | | | | | |
|--|--|--|---------------------------------------|----|------------|-----|----|------------|-----|-----|
| | | THB | | | THC | | | THE | | |
| Series | - | THB | | | THC | | | THE | | |
| Rated voltage (V) | - | 4.0 | 6.3 | 10 | 2.5 | 6.3 | 10 | 2.5 | 4.0 | 6.3 |
| Surge voltage (V) | - | 4.6 | 7.2 | 12 | 2.9 | 7.2 | 12 | 2.9 | 4.6 | 7.2 |
| Category temperature range (°C) | - | -55 to +125 | | | | | | | | |
| Capacitance tolerance (%) | 120Hz/20°C | M : ±20 | | | | | | | | |
| Rated capacitance range (μF) | 120Hz/20°C | 220 to 470 | | | 68 to 220 | | | 150 to 330 | | |
| Dissipation Factor (DF) | 120Hz/20°C | Please see the attached characteristics list | | | | | | | | |
| Leakage current | Rated voltage applied, after 5 minutes | Please see the attached characteristics list | | | | | | | | |
| Equivalent series resistance (ESR) | 100kHz/20°C | Please see the attached characteristics list | | | | | | | | |
| Characteristics of impedance ratio at high temp. and low temp. | 100kHz/+20°C | -55°C | Z/Z _{20°C} | | 0.6 to 2.0 | | | | | |
| | | +125°C | Z/Z _{20°C} | | 0.6 to 2.0 | | | | | |
| Endurance | 125°C, 1,000h, category voltage applied | ΔC/C | Within±20% of the initial value | | | | | | | |
| | | DF | ≤ 2 times of the initial limit | | | | | | | |
| | | LC | ≤ 2 times of the initial limit | | | | | | | |
| Damp heat (Steady State) | 60°C, 90 to 95%RH, 500h, No-applied voltage | ΔC/C | Within+40%, -20% of the initial value | | | | | | | |
| | | DF | ≤ 1.5 times of the initial limit | | | | | | | |
| | | LC | ≤ 3 times of the initial limit | | | | | | | |
| Surge | 105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied | ΔC/C | Within±5% of the initial value | | | | | | | |
| | | DF | Within the initial limit | | | | | | | |
| | | LC | ≤ 3 times of the initial limit | | | | | | | |

Marking and dimensions

(unit : mm)

| Size code | L ±0.3※1 | W ±0.2 | H ±0.1※2 | S ±0.2 | W1 ±0.1 |
|-----------|----------|--------|----------|--------|---------|
| D2E | 7.3 | 4.3 | 1.8 | 1.3 | 2.4 |
| D2 | 7.3 | 4.3 | 1.9 | 1.3 | 2.4 |
| D3L | 7.3 | 4.3 | 2.8 | 1.3 | 2.4 |
| D4 | 7.3 | 4.3 | 3.8 | 1.3 | 2.4 |

※1 ±0.2:D2 ※2 ±0.2:D3L,D4

※1 The rated voltage is as follows.

| R.V. | 2.5 | 4.0 | 6.3 | 10 |
|------|-----|-----|-----|----|
| Mark | e | g | j | A |

※2 Lot.No.shows roughly manufacturing date.

Recommended land pattern dimension of PWB

(unit : mm)

| Size code | a | b | c |
|-----------|-----|-----|-----|
| D2E | 2.4 | 2.9 | 3.7 |
| D2 | 2.4 | 2.9 | 3.7 |
| D3L | 2.4 | 2.9 | 3.7 |
| D4 | 2.4 | 2.9 | 3.7 |

Size list

RV:Rated voltage

| μF | Series | RV | | | |
|-----|--------|-----|-----|-----|------|
| | | 2.5 | 4.0 | 6.3 | 10.0 |
| 68 | THC | | | | D2 |
| | THE | | | D2E | |
| 150 | THB | | | D3L | D4 |
| | THE | D2 | | | |
| 220 | THC | | | | |
| | THE | | D2E | | |
| 330 | THB | | D3L | D4 | D4 |
| | THE | D2E | | | |
| 470 | THB | | | D4 | |

TH series characteristics list

| Series | Size code | Part number | Rated voltage (V) | Rated temperature (°C) | Rated capacitance (μF) | Category voltage (V) | Category temperature (°C) | DF (% max) | LC (μA) max/5min. | ESR (mΩmax) 100kHz/20°C | Maximum allowable ripple current (mA rms) 100kHz※1 | MSL | |
|--------|-----------|-------------|-------------------|------------------------|------------------------|----------------------|---------------------------|------------|-------------------|-------------------------|--|----------------------|----------------------|
| | | | | | | | | | | | | Reflow temp. ≤ 260°C | Reflow temp. ≤ 250°C |
| THB | D3L | 6THB220ML | 6.3 | 105 | 220 | 4.0 | 125 | 10 | 138.6 | 40 | 2000 | — | 5 |
| | | 4THB330ML | 4.0 | 105 | 330 | 2.5 | 125 | 10 | 132.0 | 40 | 2000 | — | 5 |
| | D4 | 10THB330M | 10 | 105 | 330 | 6.3 | 125 | 10 | 330.0 | 35 | 3000 | — | 5 |
| | | 10THB220M | 10 | 105 | 220 | 6.3 | 125 | 10 | 220.0 | 40 | 3000 | — | 5 |
| | | 6THB470M | 6.3 | 105 | 470 | 4.0 | 125 | 15 | 296.1 | 35 | 3000 | — | 5 |
| | | 6THB330M | 6.3 | 105 | 330 | 4.0 | 125 | 10 | 207.9 | 40 | 3000 | — | 5 |
| THC | D2 | 10THC68M | 10 | 105 | 68 | 6.3 | 125 | 10 | 68.0 | 45 | 1700 | — | 5 |
| | | 6THC150M | 6.3 | 105 | 150 | 4.0 | 125 | 10 | 94.5 | 40 | 1900 | — | 5 |
| | | 2R5THC220M | 2.5 | 105 | 220 | 1.6 | 125 | 10 | 55.0 | 45 | 1700 | — | 5 |
| THE | D2E | 6THE150M | 6.3 | 105 | 150 | 4.0 | 125 | 10 | 94.5 | 25 | 2400 | — | 5 |
| | | 6THE150MI | 6.3 | 105 | 150 | 4.0 | 125 | 10 | 94.5 | 18 | 2800 | — | 5 |
| | | 4THE220M | 4.0 | 105 | 220 | 2.5 | 125 | 10 | 88.0 | 25 | 2400 | — | 5 |
| | | 4THE220MI | 4.0 | 105 | 220 | 2.5 | 125 | 10 | 88.0 | 18 | 2800 | — | 5 |
| | | 4THE220MF | 4.0 | 105 | 220 | 2.5 | 125 | 10 | 88.0 | 15 | 3100 | — | 5 |
| | | 2R5THE330M | 2.5 | 105 | 330 | 1.6 | 125 | 10 | 82.5 | 25 | 2400 | — | 5 |
| | | 2R5THE330MI | 2.5 | 105 | 330 | 1.6 | 125 | 10 | 82.5 | 18 | 2800 | — | 5 |
| | | 2R5THE330MF | 2.5 | 105 | 330 | 1.6 | 125 | 10 | 82.5 | 15 | 3100 | — | 5 |

※1 100k to 500kHz,45°C