# Surface Mount Type

Series : **TC**

POSCAP



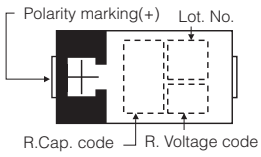
## Features

- Guaranteed at 125 °C
- RoHS compliance, Halogen free

## Specifications

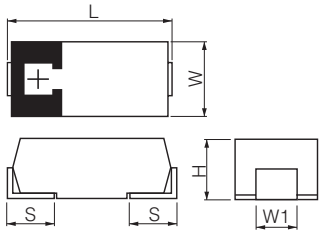
| Size code | D2E | D3L | D4 |
|---|---|---|---|
| Category temperature range | –55 °C to +125 °C | | |
| Rated voltage range | 4 V.DC to 6.3 V.DC | 2.5 V.DC to 10 V.DC | |
| Category voltage range | 3.2 V.DC to 5.0 V.DC | 2.0 V.DC to 8.0 V.DC | |
| Rated capacitance range | 100 µF to 330 µF | 150 µF to 680 µF | 330 µF to 1000 µF |
| Capacitance tolerance | ±20 % (120 Hz / + 20 °C) | | |
| Leakage current | Please see the attached characteristics list | | |
| Dissipation factor (tan $\delta$) | Please see the attached characteristics list | | |
| Surge voltage (V.DC) | Rated voltage × 1.15 | | |
| Endurance | +125 °C, 1000 h Category temperature range voltage applied | | |
| | Capacitance change | Within ±20 % of the initial value | |
| | tan $\delta$ | ≦ 2 times of the initial limit | |
| | DC leakage current | ≦ 2 times of the initial limit | |
| Damp heat (Steady State) | +60 °C, 90 % to 95 %, 500 h, No-applied voltage | | |
| | Capacitance change | Within +50 %, –20 % of the initial value (ETCF1000M6H (5H)) | |
| | | Within +40 %, –20 % of the initial value (Except for above model) | |
| | tan $\delta$ | ≦ 1.5 times of the initial limit | |
| | DC leakage current | ≦ 3 times of the initial limit | |

## Marking




| R. Voltage (V.DC) | 2.5 | 4.0 | 6.3 | 10.0 |
|---|---|---|---|---|
| Code | e | g | j | A |

## Dimensions (not to scale)




Unit : mm

| Size code | L±0.3 | W±0.2 | H±0.2*1 | S±0.2 | W1±0.1 |
|---|---|---|---|---|---|
| D2E | 7.3 | 4.3 | 1.8 | 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 |

✻ Externals of figure are the reference.
✻ 1 ±0.1 : D2E

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

## Characteristics list

| Series | Rated voltage (V.DC) | Rated temp. (°C) | Category voltage (V.DC) | Category temp. (°C) | Rated capacitance (µF) | Case size (mm) L | W | H | Size code | Specifications Ripple *1 current (mArm.s.) | ESR *2 (mΩ max.) | tan δ *3 | LC *4 (µA) | Standard Part number | Min. Packaging Q'ty (pcs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TCE | 2.5 | 105 | 2.0 | 125 | 680 | 7.3 | 4.3 | 2.8 | D3L | 3500 | 12 | 0.10 | 170.0 | ETCE680MCL | 2500 |
| | | 105 | 2.0 | 125 | | 7.3 | 4.3 | 2.8 | | 3100 | 15 | 0.10 | 170.0 | ETCE680MFL | 2500 |
| | | 105 | 2.0 | 125 | 1000 | 7.3 | 4.3 | 3.8 | D4 | 3900 | 15 | 0.15 | 250.0 | ETCE1000MF | 2000 |
| | 4 | 105 | 3.2 | 125 | 150 | 7.3 | 4.3 | 1.8 | D2E | 2800 | 18 | 0.10 | 60.0 | 4TCE150MI | 3000 |
| | | 105 | 3.2 | 125 | 220 | 7.3 | 4.3 | 1.8 | | 3100 | 15 | 0.10 | 88.0 | 4TCE220MF | 3000 |
| | | 105 | 3.2 | 125 | | 7.3 | 4.3 | 1.8 | | 2800 | 18 | 0.10 | 88.0 | 4TCE220MI | 3000 |
| | | 105 | 3.2 | 125 | | 7.3 | 4.3 | 1.8 | | 2400 | 25 | 0.10 | 88.0 | 4TCE220M | 3000 |
| | | 105 | 3.2 | 125 | 330 | 7.3 | 4.3 | 1.8 | | 2800 | 18 | 0.10 | 132.0 | 4TCE330MI | 3000 |
| | | 105 | 3.2 | 125 | | 7.3 | 4.3 | 1.8 | | 2400 | 25 | 0.10 | 132.0 | 4TCE330M | 3000 |
| | | 105 | 3.2 | 125 | 470 | 7.3 | 4.3 | 2.8 | D3L | 3500 | 12 | 0.10 | 188.0 | 4TCE470MCL | 2500 |
| | | 105 | 3.2 | 125 | | 7.3 | 4.3 | 2.8 | | 3100 | 15 | 0.10 | 188.0 | 4TCE470MFL | 2500 |
| | | 105 | 3.2 | 125 | | 7.3 | 4.3 | 2.8 | | 2800 | 18 | 0.10 | 188.0 | 4TCE470MIL | 2500 |
| | | 105 | 3.2 | 125 | | 7.3 | 4.3 | 2.8 | | 2400 | 25 | 0.10 | 188.0 | 4TCE470ML | 2500 |
| | 6.3 | 105 | 5.0 | 125 | 100 | 7.3 | 4.3 | 1.8 | D2E | 2800 | 18 | 0.10 | 63.0 | 6TCE100MI | 3000 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 1.8 | | 2400 | 25 | 0.10 | 63.0 | 6TCE100M | 3000 |
| | | 105 | 5.0 | 125 | 150 | 7.3 | 4.3 | 1.8 | | 3100 | 15 | 0.10 | 94.5 | 6TCE150MF | 3000 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 1.8 | | 2800 | 18 | 0.10 | 94.5 | 6TCE150MI | 3000 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 1.8 | | 2400 | 25 | 0.15 | 94.5 | 6TCE150M | 3000 |
| | | 105 | 5.0 | 125 | 220 | 7.3 | 4.3 | 1.8 | | 2800 | 18 | 0.15 | 138.6 | 6TCE220MI | 3000 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 1.8 | | 2400 | 25 | 0.15 | 138.6 | 6TCE220M | 3000 |
| | | 105 | 5.0 | 125 | 330 | 7.3 | 4.3 | 2.8 | D3L | 3100 | 15 | 0.10 | 207.9 | 6TCE330MFL | 2500 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 2.8 | | 2800 | 18 | 0.10 | 207.9 | 6TCE330MIL | 2500 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 2.8 | | 2400 | 25 | 0.10 | 207.9 | 6TCE330ML | 2500 |
| | | 105 | 5.0 | 125 | 470 | 7.3 | 4.3 | 3.8 | D4 | 3500 | 18 | 0.15 | 296.1 | 6TCE470MI | 2000 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 3.8 | | 3000 | 25 | 0.15 | 296.1 | 6TCE470M | 2000 |
| | | 105 | 5.0 | 125 | 680 | 7.3 | 4.3 | 3.8 | | 3500 | 18 | 0.15 | 428.4 | 6TCE680MI | 2000 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 3.8 | | 3000 | 25 | 0.15 | 428.4 | 6TCE680M | 2000 |
| | 10 | 105 | 8.0 | 125 | 220 | 7.3 | 4.3 | 2.8 | D3L | 2800 | 18 | 0.10 | 220.0 | 10TCE220MIL | 2500 |
| | | 105 | 8.0 | 125 | | 7.3 | 4.3 | 2.8 | | 2400 | 25 | 0.10 | 220.0 | 10TCE220ML | 2500 |
| | | 105 | 8.0 | 125 | 330 | 7.3 | 4.3 | 3.8 | D4 | 3000 | 25 | 0.10 | 330.0 | 10TCE330M | 2000 |
| TCF | 2.5 | 105 | 2.0 | 125 | 680 | 7.3 | 4.3 | 2.8 | D3L | 4400 | 6 | 0.10 | 170.0 | ETCF680M6L | 2500 |
| | | 105 | 2.0 | 125 | | 7.3 | 4.3 | 2.8 | | 4400 | 7 | 0.10 | 170.0 | ETCF680M7L | 2500 |
| | | 105 | 2.0 | 125 | | 7.3 | 4.3 | 2.8 | | 4400 | 10 | 0.10 | 170.0 | ETCF680ML | 2500 |
| | | 105 | 2.0 | 125 | | 7.3 | 4.3 | 3.8 | D4 | 6100 | 5 | 0.10 | 170.0 | ETCF680M5H | 2000 |
| | | 105 | 2.0 | 125 | 1000 | 7.3 | 4.3 | 3.8 | | 6100 | 5 | 0.10 | 250.0 | ETCF1000M5H | 2000 |
| | | 105 | 2.0 | 125 | | 7.3 | 4.3 | 3.8 | | 5600 | 6 | 0.10 | 250.0 | ETCF1000M6H | 2000 |
| | 4 | 105 | 3.2 | 125 | 330 | 7.3 | 4.3 | 2.8 | D3L | 4000 | 12 | 0.10 | 132.0 | 4TCF330ML | 2500 |
| | | 105 | 3.2 | 125 | 470 | 7.3 | 4.3 | 2.8 | | 4400 | 10 | 0.10 | 188.0 | 4TCF470ML | 2500 |
| | | 105 | 3.2 | 125 | 680 | 7.3 | 4.3 | 3.8 | D4 | 4400 | 10 | 0.10 | 272.0 | 4TCF680MAH | 2000 |
| | 6.3 | 105 | 5.0 | 125 | 220 | 7.3 | 4.3 | 2.8 | D3L | 6100 | 5 | 0.10 | 138.6 | 6TCF220M5L | 2500 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 2.8 | | 4600 | 9 | 0.10 | 138.6 | 6TCF220M9L | 2500 |
| | | 105 | 5.0 | 125 | | 7.3 | 4.3 | 2.8 | | 4000 | 12 | 0.10 | 138.6 | 6TCF220ML | 2500 |
| | | 105 | 5.0 | 125 | 330 | 7.3 | 4.3 | 2.8 | | 3900 | 9 | 0.10 | 207.9 | 6TCF330M9L | 2500 |
| | | 105 | 5.0 | 125 | 470 | 7.3 | 4.3 | 3.8 | D4 | 4400 | 10 | 0.10 | 296.1 | 6TCF470MAH | 2000 |
| | 10 | 105 | 10.0 | 125 | 150 | 7.3 | 4.3 | 2.8 | D3L | 3600 | 15 | 0.10 | 150.0 | 10TCF150ML | 2500 |

✻1 Ripple current (100 kHz/ +45 °C ), ✻2 ESR (100 kHz/+20 °C) ✻3 tan δ (120 Hz/+20 °C) ✻4 After 5 minutes

◆ Please refer to each page in this catarog for “Reflow conditions” and “Taping specifications”.

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