

Specifications

| Items | Condition | Specifications | | | | | | |
|--|--|--|---|-----|-----|-----|----|------------|
| | | 2.0 | 2.5 | 4.0 | 6.3 | 8.0 | 10 | |
| Rated voltage (V) | - | 2.0 | 2.5 | 4.0 | 6.3 | 8.0 | 10 | |
| Surge voltage (V) | - | 2.3 | 2.9 | 4.6 | 7.2 | 9.2 | 12 | |
| Category temperature range (°C) | - | -55 to +105 | | | | | | |
| Capacitance tolerance (%) | 120Hz/20°C | M : ±20 | | | | | | |
| Rated capacitance range (μF) | 120Hz/20°C | 47 to 470 | | | | | | |
| 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 |
| | | +105°C | Z/Z _{20°C} | | | | | 0.6 to 2.0 |
| Endurance | 105°C, 1,000h rated voltage applied ※Rated temp. 85°C products: 85°C, 1,000h, rated voltage applied | ΔC/C | Within±20% of the initial value | | | | | |
| | | DF | ≤ 1.5 times of the initial limit | | | | | |
| | | LC | Within the initial limit | | | | | |
| Damp heat (Steady State) | 60°C, 90 to 95%RH, 500h, No-applied voltage | ΔC/C | Within+50%, -20% (2R5TPE220MAFB(MAZB,MAPB), 2R5TPE330MAZB,2TPE330MFB(MAFB,MADGB) ETPE330MA9GB(MAFB),2TPE470MAJGB) | | | | | |
| | | | Within+40%, -20% of the initial value (Except for the above model) | | | | | |
| | | DF | ≤ 1.5 times of the initial limit | | | | | |
| Surge | 105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied ※Rated temp 85°C products:85°C | ΔC/C | Within±5% of the initial value | | | | | |
| | | DF | Within the initial limit | | | | | |
| | | LC | ≤ 3 times of the initial limit | | | | | |

Marking and dimensions

Rated capacitance※3

Rated voltage※1

Lot. No.※2

※1 The rated voltage is as follows.

| R.V. | 2.0 | 2.5 | 4.0 | 6.3 | 8.0 | 10 |
|------|-----|-----|-----|-----|-----|----|
| Mark | d | e | g | j | k | A |

※2 Lot.No.shows roughly manufacturing date.

※3 The rated capacitance is as follows.

| Capacitance(μF) | 47 | 100 | 120 | 150 | 220 | 330 | 470 |
|-----------------|----|-----|-----|-----|-----|-----|-----|
| Mark | S7 | A8 | C8 | E8 | J8 | N8 | S8 |

| Size code | L ±0.2 | W ±0.2 | H ±0.1 | S ±0.2 | W1 ±0.1 |
|-----------|--------|--------|--------|--------|---------|
| B2 | 3.5 | 2.8 | 1.9 | 0.8 | 2.2 |

(unit : mm)

Recommended land pattern dimension of PWB

| Size code | a | b | c |
|-----------|-----|-----|-----|
| B2 | 1.6 | 2.7 | 1.4 |

(unit : mm)

Size list

RV:Rated voltage

| μF \ RV | 2.0 | 2.5 | 4.0 | 6.3 | 8.0 | 10.0 |
|---------|-----|-----|-----|-----|-----|------|
| 47 | | | | | | B2 |
| 100 | | | B2 | B2 | B2 | |
| 120 | | | | B2 | | |
| 150 | | | B2 | B2 | | |
| 220 | | B2 | B2 | B2 | | |
| 330 | B2 | B2 | | | | |
| 470 | B2 | | | | | |

TPE series characteristics list

| 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 (mΩ max) 100kHz/20°C | Maximum allowable ripple current (mA rms) 100kHz※1 | MSL | |
|---------------|----------------|-------------------|------------------------|------------------------|----------------------|---------------------------|------------|-------------------|--------------------------|--|----------------------|----------------------|
| | | | | | | | | | | | Reflow temp. ≤ 260°C | Reflow temp. ≤ 250°C |
| B2 | 10TPE47MAZB | 10 | 85 | 47 | 8.0 | 105 | 8.0 | 47.0 | 35 | 1400 | 3 | 3 |
| | 8TPE100MAZB | 8.0 | 85 | 100 | 6.3 | 105 | 8.0 | 80.0 | 35 | 1400 | 3 | 3 |
| | 6TPE220MAZB | 6.3 | 85 | 220 | 5.0 | 105 | 10 | 138.6 | 35 | 1400 | 3 | 3 |
| | 6TPE220MAPB※2 | 6.3 | 85 | 220 | 5.0 | 105 | 10 | 138.6 | 25 | 1400 | 3 | 3 |
| | 6TPE150MAZB | 6.3 | 85 | 150 | 5.0 | 105 | 8.0 | 94.5 | 35 | 1400 | 3 | 3 |
| | 6TPE150MAPB | 6.3 | 85 | 150 | 5.0 | 105 | 8.0 | 94.5 | 25 | 1600 | 3 | 3 |
| | 6TPE120MAZB | 6.3 | 85 | 120 | 5.0 | 105 | 8.0 | 75.6 | 35 | 1400 | 3 | 3 |
| | 6TPE100MPB | 6.3 | 105 | 100 | 6.3 | 105 | 8.0 | 63.0 | 25 | 1600 | 3 | 3 |
| | 6TPE100MAZB | 6.3 | 85 | 100 | 5.0 | 105 | 8.0 | 63.0 | 35 | 1400 | 3 | 3 |
| | 4TPE220MAZB | 4.0 | 85 | 220 | 3.2 | 105 | 8.0 | 88.0 | 35 | 1400 | 3 | 3 |
| | 4TPE150MAZB | 4.0 | 85 | 150 | 3.2 | 105 | 8.0 | 60.0 | 35 | 1400 | 3 | 3 |
| | 4TPE100MZB | 4.0 | 105 | 100 | 4.0 | 105 | 8.0 | 40.0 | 35 | 1400 | 3 | 3 |
| | 2R5TPE330MAZB | 2.5 | 85 | 330 | 2.0 | 105 | 8.0 | 82.5 | 35 | 1400 | 3 | 3 |
| | ETPE330MAFB※2 | 2.5 | 85 | 330 | 2.0 | 105 | 8.0 | 165.0 | 15 | 2700 | 3 | 3 |
| | ETPE330MA9GB※2 | 2.5 | 85 | 330 | 2.0 | 105 | 8.0 | 165.0 | 9/300kHz | 3200 | 3 | 3 |
| | 2R5TPE220MZB | 2.5 | 105 | 220 | 2.5 | 105 | 8.0 | 55.0 | 35 | 1400 | 3 | 3 |
| | 2R5TPE220MLB | 2.5 | 105 | 220 | 2.5 | 105 | 8.0 | 55.0 | 21 | 1700 | 3 | 3 |
| | 2R5TPE220MFGB | 2.5 | 105 | 220 | 2.5 | 105 | 8.0 | 110.0 | 15/300kHz | 1800 | 3 | 3 |
| | 2R5TPE220MAZB | 2.5 | 85 | 220 | 2.0 | 105 | 8.0 | 55.0 | 35 | 1400 | 3 | 3 |
| | 2R5TPE220MAPB | 2.5 | 85 | 220 | 2.0 | 105 | 8.0 | 55.0 | 25 | 1600 | 3 | 3 |
| 2R5TPE220MAFB | 2.5 | 85 | 220 | 2.0 | 105 | 8.0 | 110.0 | 15 | 2000 | 3 | 3 | |
| 2TPE470MAJGB | 2.0 | 85 | 470 | 1.8 | 105 | 10 | 188.0 | 11/300kHz | 2300 | 3 | 3 | |
| 2TPE330MFB | 2.0 | 105 | 330 | 2.0 | 105 | 8.0 | 132.0 | 15 | 2000 | 3 | 3 | |
| 2TPE330MAFB | 2.0 | 85 | 330 | 1.8 | 105 | 8.0 | 132.0 | 15 | 2000 | 3 | 3 | |
| 2TPE330MADGB | 2.0 | 85 | 330 | 1.8 | 105 | 8.0 | 132.0 | 13/300kHz | 2000 | 3 | 3 | |

※1 100k to 500kHz,45°C ※2 Under development

Surface mount type

TPE Series



RoHS compliance, Halogen free

Low profile: 1.5mm and Large capacitance: 6.3V470μF (D15E)

Low ESR: 7mΩ (D2E)

Specifications

| Items | | Condition | | Specifications | | | |
|--|---|--|---------------------|--|-----|-----|----|
| Rated voltage (V) | | - | | 2.5 | 4.0 | 6.3 | 10 |
| Surge voltage (V) | | - | | 2.9 | 4.6 | 7.2 | 12 |
| Category temperature range (°C) | | - | | -55 to +105 | | | |
| Capacitance tolerance (%) | | 120Hz/20°C | | M : ±20 | | | |
| Rated capacitance range (μF) | | 120Hz/20°C | | 68 to 1,500 | | | |
| 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 | | | |
| | | +105°C | Z/Z _{20°C} | 0.6 to 2.0 | | | |
| Endurance | 105°C, 2,000h, rated voltage applied ※Rated temp, 85°C products: 85°C, 1,000h, rated voltage applied 6TPE330MAP,6TPE470MAZU:85°C,2,000h | ΔC/C | | Within±20% of the initial value | | | |
| | | DF | | ≤ 1.5 times of the initial limit | | | |
| | | LC | | Within the initial limit | | | |
| Damp heat (Steady State) | 60°C, 90 to 95%RH, 500h, No-applied voltage | ΔC/C | | Within+50%, -20% of the initial value (2R5TPE470M (I,F,C,9,7), 2R5TPE330M (I,F,C,9,7), 2R5TPE220M (I,F,9), 2R5TPE1000M (I,F), 2R5TPE1500M (F,C)) | | | |
| | | DF | | Within+40%, -20% of the initial value (Except for the above model) | | | |
| | | LC | | ≤ 1.5 times of the initial limit | | | |
| Surge | 105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied ※Rated temp. 85°C products: 85°C | 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 | W ±0.2 | H ±0.2※1 | S ±0.2 | W1 ±0.1 |
|-----------|--------|--------|----------|--------|---------|
| D15E | 7.3 | 4.3 | 1.4 | 1.1 | 2.4 |
| 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 |

※1 ±0.1: D2E, D15E

※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 |
|-----------|-----|-----|-----|
| D15E | 2.4 | 2.9 | 3.7 |
| D2E | 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 | RV | 2.5 | 4.0 | 6.3 | 10.0 |
|-------|-----|-----|-----|------------|------|
| 68 | | | | | D2E |
| 100 | | | | D2E | |
| 150 | | | D2E | D2E | |
| 220 | D2E | | D2E | D2E | D3L |
| 330 | D2E | | D2E | D2E,D3L,D4 | D4 |
| 470 | D2E | | D3L | D4,D15E | |
| 680 | D3L | | | D4 | |
| 1,000 | D4 | | | | |
| 1,500 | D4 | | | | |

TPE series characteristics list

| 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 |
| D15E | 6TPE470MAZU | 6.3 | 85 | 470 | 5.0 | 105 | 10 | 296.1 | 35 | 1700 | 3 | 2a |
| D2E | 10TPE68M | 10 | 105 | 68 | 10 | 105 | 10 | 68.0 | 25 | 2400 | 3 | 2a |
| | 6TPE330MAP | 6.3 | 85 | 330 | 5.0 | 105 | 10 | 207.9 | 25 | 2400 | 3 | 2a |
| | 6TPE220MAP | 6.3 | 85 | 220 | 5.0 | 105 | 10 | 138.6 | 25 | 2400 | 3 | 2a |
| | 6TPE220M | 6.3 | 105 | 220 | 6.3 | 105 | 10 | 138.6 | 25 | 2400 | 3 | 2a |
| | 6TPE220MI | 6.3 | 105 | 220 | 6.3 | 105 | 10 | 138.6 | 18 | 2800 | 3 | 2a |
| | 6TPE150M | 6.3 | 105 | 150 | 6.3 | 105 | 10 | 94.5 | 25 | 2400 | 3 | 2a |
| | 6TPE150MI | 6.3 | 105 | 150 | 6.3 | 105 | 10 | 94.5 | 18 | 2800 | 3 | 2a |
| | 6TPE150MF | 6.3 | 105 | 150 | 6.3 | 105 | 10 | 94.5 | 15 | 3100 | 3 | 2a |
| | 6TPE100M | 6.3 | 105 | 100 | 6.3 | 105 | 10 | 63.0 | 25 | 2400 | 3 | 2a |
| | 6TPE100MI | 6.3 | 105 | 100 | 6.3 | 105 | 10 | 63.0 | 18 | 2800 | 3 | 2a |
| | 4TPE330M | 4.0 | 105 | 330 | 4.0 | 105 | 10 | 132.0 | 25 | 2400 | 3 | 2a |
| | 4TPE330MI | 4.0 | 105 | 330 | 4.0 | 105 | 10 | 132.0 | 18 | 2800 | 3 | 2a |
| | 4TPE220M | 4.0 | 105 | 220 | 4.0 | 105 | 10 | 88.0 | 25 | 2400 | 3 | 2a |
| | 4TPE220MI | 4.0 | 105 | 220 | 4.0 | 105 | 10 | 88.0 | 18 | 2800 | 3 | 2a |
| | 4TPE220MF | 4.0 | 105 | 220 | 4.0 | 105 | 10 | 88.0 | 15 | 3100 | 3 | 2a |
| | 4TPE150MI | 4.0 | 105 | 150 | 4.0 | 105 | 10 | 60.0 | 18 | 2800 | 3 | 2a |
| | 2R5TPE470MI | 2.5 | 105 | 470 | 2.5 | 105 | 10 | 117.5 | 18 | 2800 | 3 | 2a |
| | 2R5TPE470MF | 2.5 | 105 | 470 | 2.5 | 105 | 10 | 117.5 | 15 | 3100 | 3 | 2a |
| | 2R5TPE470MC | 2.5 | 105 | 470 | 2.5 | 105 | 10 | 117.5 | 12 | 3500 | 3 | 2a |
| | 2R5TPE470M9 | 2.5 | 105 | 470 | 2.5 | 105 | 10 | 117.5 | 9 | 3900 | 3 | 2a |
| 2R5TPE470M7 | 2.5 | 105 | 470 | 2.5 | 105 | 10 | 117.5 | 7 | 4400 | 3 | 2a | |
| 2R5TPE330M | 2.5 | 105 | 330 | 2.5 | 105 | 10 | 82.5 | 25 | 2400 | 3 | 2a | |
| 2R5TPE330MI | 2.5 | 105 | 330 | 2.5 | 105 | 10 | 82.5 | 18 | 2800 | 3 | 2a | |
| 2R5TPE330MF | 2.5 | 105 | 330 | 2.5 | 105 | 10 | 82.5 | 15 | 3100 | 3 | 2a | |
| 2R5TPE330MC | 2.5 | 105 | 330 | 2.5 | 105 | 10 | 82.5 | 12 | 3500 | 3 | 2a | |
| 2R5TPE330M9 | 2.5 | 105 | 330 | 2.5 | 105 | 10 | 82.5 | 9 | 3900 | 3 | 2a | |
| 2R5TPE330M7 | 2.5 | 105 | 330 | 2.5 | 105 | 10 | 82.5 | 7 | 4400 | 3 | 2a | |
| 2R5TPE220M | 2.5 | 105 | 220 | 2.5 | 105 | 10 | 55.0 | 25 | 2400 | 3 | 2a | |
| 2R5TPE220MI | 2.5 | 105 | 220 | 2.5 | 105 | 10 | 55.0 | 18 | 2800 | 3 | 2a | |
| 2R5TPE220MF | 2.5 | 105 | 220 | 2.5 | 105 | 10 | 55.0 | 15 | 3100 | 3 | 2a | |
| 2R5TPE220M9 | 2.5 | 105 | 220 | 2.5 | 105 | 10 | 55.0 | 9 | 3900 | 3 | 2a | |
| D3L | 10TPE220ML | 10 | 105 | 220 | 10 | 105 | 10 | 220.0 | 25 | 2400 | — | 2a |
| | 10TPE220MIL | 10 | 105 | 220 | 10 | 105 | 10 | 220.0 | 18 | 2800 | — | 2a |
| | 6TPE330MAL | 6.3 | 85 | 330 | 5.0 | 105 | 10 | 207.9 | 25 | 2400 | 3 | 2a |
| | 6TPE330MA9EL | 6.3 | 85 | 330 | 5.0 | 105 | 10 | 207.9 | 9/500kHz | 3900 | 3 | 2a |
| | 6TPE330ML | 6.3 | 105 | 330 | 6.3 | 105 | 10 | 207.9 | 25 | 2400 | 3 | 2a |
| | 6TPE330MIL | 6.3 | 105 | 330 | 6.3 | 105 | 10 | 207.9 | 18 | 2800 | 3 | 2a |
| | 6TPE330MFL | 6.3 | 105 | 330 | 6.3 | 105 | 10 | 207.9 | 15 | 3100 | 3 | 2a |
| | 4TPE470ML | 4.0 | 105 | 470 | 4.0 | 105 | 10 | 188.0 | 25 | 2400 | 3 | 2a |
| | 4TPE470MIL | 4.0 | 105 | 470 | 4.0 | 105 | 10 | 188.0 | 18 | 2800 | 3 | 2a |
| | 4TPE470MFL | 4.0 | 105 | 470 | 4.0 | 105 | 10 | 188.0 | 15 | 3100 | 3 | 2a |
| | 4TPE470MCL | 4.0 | 105 | 470 | 4.0 | 105 | 10 | 188.0 | 12 | 3500 | 3 | 2a |
| | 4TPE470MAL | 4.0 | 105 | 470 | 4.0 | 105 | 10 | 188.0 | 10 | 4400 | 3 | 2a |
| D4 | 2R5TPE680MFL | 2.5 | 105 | 680 | 2.5 | 105 | 10 | 170.0 | 15 | 3100 | 3 | 2a |
| | 2R5TPE680MCL | 2.5 | 105 | 680 | 2.5 | 105 | 10 | 170.0 | 12 | 3500 | 3 | 2a |
| | 10TPE330M | 10 | 105 | 330 | 10 | 105 | 10 | 330.0 | 25 | 3000 | — | 2a |
| | 6TPE680M | 6.3 | 105 | 680 | 6.3 | 105 | 15 | 428.4 | 25 | 3000 | 3 | 2a |
| | 6TPE680MI | 6.3 | 105 | 680 | 6.3 | 105 | 15 | 428.4 | 18 | 3500 | 3 | 2a |
| | 6TPE470M | 6.3 | 105 | 470 | 6.3 | 105 | 15 | 296.1 | 25 | 3000 | 3 | 2a |
| | 6TPE470MI | 6.3 | 105 | 470 | 6.3 | 105 | 15 | 296.1 | 18 | 3500 | 3 | 2a |
| | 6TPE330MAA | 6.3 | 85 | 330 | 5.0 | 105 | 15 | 207.9 | 10 | 4400 | 3 | 2a |
| | 2R5TPE1000MF | 2.5 | 105 | 1000 | 2.5 | 105 | 15 | 250.0 | 15 | 3900 | 3 | 2a |
| | 2R5TPE1500MF | 2.5 | 105 | 1500 | 2.5 | 105 | 15 | 375.0 | 15 | 3900 | — | 2a |
| 2R5TPE1500MC | 2.5 | 105 | 1500 | 2.5 | 105 | 15 | 375.0 | 12 | 4400 | — | 2a | |

※1 100k to 500kHz,45°C



Стандарт Электрон Связь

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