# NPCAP™-PMA Series

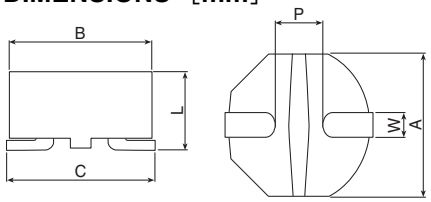
- Low profile and higher capacitance with the new structure.
- Super low ESR, impedance and high heat resistance have been obtained by using conductive polymer as electrolyte.
- Endurance : 105℃ 5,000 hours
- Suitable for DC-DC converters, voltage regulators and decoupling applications used on computer motherboards etc.
- Non solvent resistant type
- **RoHS Compliant**
- Halogen Free
- Exterior resin : Flame-retardant epoxy resin(UL94 V-0)


## ◆ SPECIFICATIONS

| Items | Characteristics | |
|---|---|---|
| **Category Temperature Range** | -55 to +105℃ | |
| **Rated Voltage Range** | 6.3 to 25Vdc | |
| **Capacitance Tolerance** | ±20% (M) | (at 20℃ , 120Hz) |
| **Surge Voltage** | Rated voltage(V) × 1.15 | (at 105℃ ) |
| **Leakage Current** | Shall not exceed values shown in STANDARD RATINGS. | (at 20℃ after 2 minutes) |
| **Dissipation Factor (tan δ )** | 0.12 max. | (at 20℃ , 120Hz) |
| **Low Temperature Characteristics (Max. Impedance Ratio)** | Z(-25℃ ) / Z(+20℃ ) ≦ 1.15<br>Z(-55℃ ) / Z(+20℃ ) ≦ 1.25 | (at 100kHz) |
| **Endurance** | The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 5,000 hours at 105℃ . | |
| | Appearance | No significant damage |
| | Capacitance change | ≦ ±20% of the initial value |
| | D.F. (tan δ ) | ≦ 200% of the initial specified value |
| | ESR | ≦ 200% of the initial specified value |
| | Leakage current | ≦ The initial specified value |
| **Damp Heat (Steady State)** | The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 500 hours at 60℃ , 90 to 95% RH without voltage applied. | |
| | Appearance | No significant damage |
| | Capacitance change | ≦ -20 to +40% of the initial value |
| | D.F. (tan δ ) | ≦ 200% of the initial specified value |
| | ESR | ≦ 200% of the initial specified value |
| | Leakage current | ≦ The initial specified value |
| **Surge Voltage** | The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 105℃ for 30 seconds through a protective resistor(R=1kΩ)and discharge for 5 minutes 30 seconds. | |
| | Appearance | No significant damage |
| | Capacitance change | ≦ ±20% of the initial value |
| | D.F. (tan δ ) | ≦ 200% of the initial specified value |
| | ESR | ≦ 200% of the initial specified value |
| | Leakage current | ≦ The initial specified value |
| **Failure Rate** | 0.5% per 1,000 hours maximum (Confidence level 60% at 105℃ ) | |

*Note : If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment : DC rated voltage is applied to the capacitors for 120 minutes at 105℃ .

## ◆ DIMENSIONS [mm]




| Size Code | A | B | C | L | W | P |
|---|---|---|---|---|---|---|
| F30 | 7.0±0.1 | 7.0±0.1 | 7.2±0.2 | 3.0max. | 1.2±0.2 | 2.65±0.1 |

## ◆ MARKING

EX) 25V22μF


● Rated voltage symbol

| Rated voltage(Vdc) | 6.3 | 16 | 20 | 25 |
|---|---|---|---|---|
| Symbol | j | C | D | E |

● Capacitance symbol
Capacitance code (ex. 22μF:220)

Please contact us for mass production schedule.
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## ◆ PART NUMBERING SYSTEM

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | P | M | A | □ | □ | □ | A | R | A | □ | □ | □ | M | F | 3 | 0 | S |

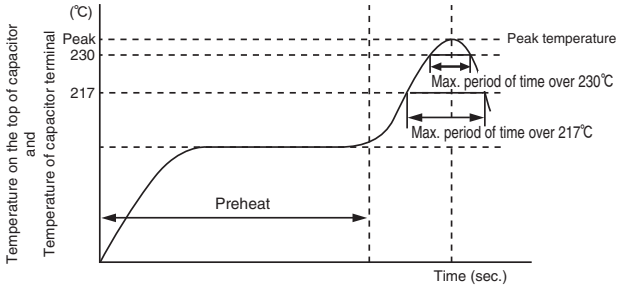
- Supplement code
- Size code
- Capacitance tolerance code
- Capacitance code (ex. 22μF:220, 39μF:390)
- Taping code
- Terminal code
- Voltage code (ex. 20V:200, 25V:250)
- Series code
- Category

## ◆ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size code | Leakage current (μA max./ after 2min.) | ESR (mΩ max./20℃ , 100k to 300kHz) | Rated ripple current (mArms/105℃ , 100kHz) | Part No. |
|---|---|---|---|---|---|---|
| 6.3 | 220 | F30 | 693 | 35 | 2,300 | APMA6R3ARA221MF30S |
| 16 | 56 | F30 | 448 | 40 | 2,200 | APMA160ARA560MF30S |
| 20 | 39 | F30 | 390 | 45 | 2,100 | APMA200ARA390MF30S |
| 25 | 22 | F30 | 275 | 50 | 2,000 | APMA250ARA220MF30S |
| | 33 | F30 | 412 | 50 | 2,000 | APMA250ARA330MF30S |

## ◆ RECOMMENDED REFLOW SOLDERING CONDITIONS

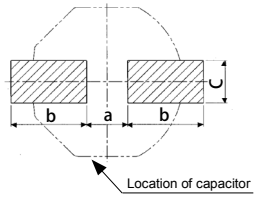
● Reflow Profile



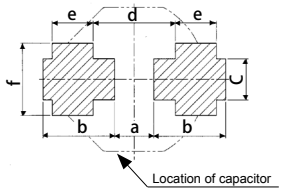

| Voltage range (Vdc) | Preheat | Time maintained above 217℃ | Time maintained above 230℃ | Peak temp. | Reflow number |
|---|---|---|---|---|---|
| 6.3 to 25V | 150 to 180℃ 120 sec. max. | 50 sec. max. | 40 sec. max. | 260℃ max. | 1-cycle only |
| | | 40 sec. max. | 30 sec. max. | | 2-cycles allowed |

● Recommended Solder Land [mm]

< PMA Only >




< Share with Ta/Al multilayer capacitors (7343 size) >




Solder land on PC board

| Size code | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| F30 | 1.9 | 3.5 | 2.0 | 4.0 | 2.0 | 3.0 |

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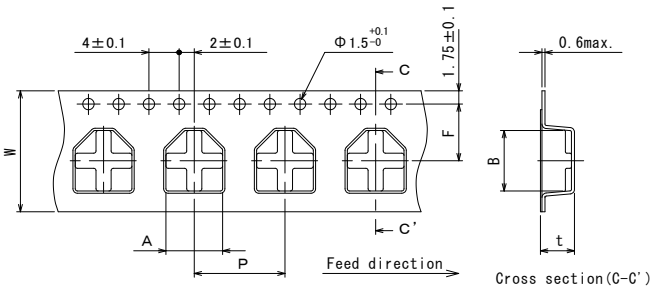
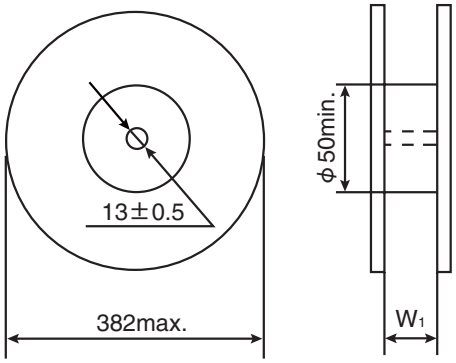
## ◆ CARRIER TAPE [mm]

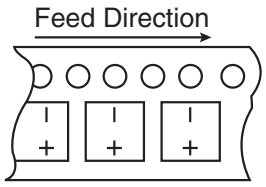



| Items / Size Code | W | A | B | F | P | t |
|---|---|---|---|---|---|---|
| | ±0.3 | ±0.2 | ±0.2 | ±0.1 | ±0.1 | ±0.2 |
| F30 | 16.0 | 7.5 | 8.0 | 7.5 | 12.0 | 4.4 |

## ◆ REEL DIMENSIONS [mm]




## ◆ POLARITY




| Size Code | Quantity (pcs./reel) | Quantity (pcs./reel) | W1 (mm) |
|---|---|---|---|
| F30 | 1,000 | 7,000 | 18 |

## ◆ Storage

Store PMA series capacitors in a cool, dry place. Store at a temperature between 5 and 35℃ , with a humidity of 75%RH or less. PMA series capacitors are sealed in a special laminated aluminum bag. Use all capacitors once the bag is opened. Return unused capacitors to the bag, and seal it with a zipper. Please refer to the following storage conditions.

- Maximum storage term before the bag is opened :Within 2 years after manufacturing
- Maximum storage condition after the bag is opened : Within 7 days after the bag is opened

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