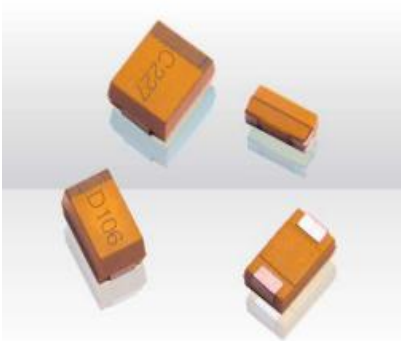


# CA45 Series

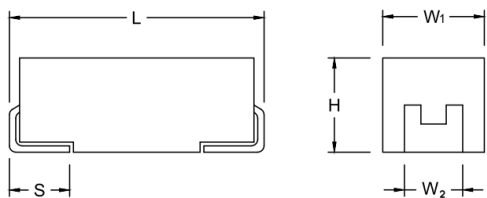
## Standard Chip Tantalum Capacitors

### Features

- Epoxy molded encapsulation, Chip, Easy for integration, Polarized;
- Small in size, Light in weight, Stable in electrical & storage performances , Long life-span, High reliability;
- Typical applications include decoupling and filtering in industrial and automotive end applications such as DC/DC converters , portable electronics , telecommunications , and control units;
- Operative Standard: QJ/PWV109-2003;



### Dimensions (mm)



| Case Code | EIA Code | EIA Metric | L         | W <sub>1</sub> | H         | W <sub>2</sub> | S         |
|-----------|----------|------------|-----------|----------------|-----------|----------------|-----------|
| A         | 1206     | 3216-16    | 3.20±0.20 | 1.60±0.20      | 1.60±0.20 | 0.80±0.20      | 1.20±0.20 |
| B         | 1210     | 3528-19    | 3.50±0.20 | 2.80±0.20      | 1.90±0.20 | 0.80±0.20      | 2.20±0.20 |
| C         | 2312     | 6032-25    | 6.00±0.20 | 3.20±0.20      | 2.50±0.20 | 1.30±0.20      | 2.20±0.20 |
| D         | 2917     | 7343-28    | 7.30±0.20 | 4.30±0.20      | 2.80±0.20 | 1.30±0.20      | 2.40±0.20 |
| E         | 2917     | 7343-43    | 7.30±0.40 | 4.30±0.40      | 4.10±0.40 | 1.30±0.20      | 2.40±0.20 |
| V         | 2924     | 7361-36    | 7.30±0.40 | 6.10±0.40      | 3.60±0.40 | 1.35±0.20      | 3.00±0.20 |
| W         | 2924     | 7361-41    | 7.30±0.40 | 6.10±0.40      | 4.10±0.40 | 1.35±0.20      | 3.00±0.20 |
| G         | 3329     | 8575-45    | 8.50±0.40 | 7.50±0.40      | 4.50±0.40 | 1.80±0.20      | 4.50±0.20 |
| S         | 4335     | 11090-45   | 11.0±0.40 | 9.00±0.40      | 4.50±0.40 | 1.50±0.20      | 7.00±0.20 |
| T         | 4349     | 110125-55  | 11.0±0.40 | 12.5±0.40      | 5.50±0.40 | 1.50±0.20      | 10.5±0.20 |

### How to order

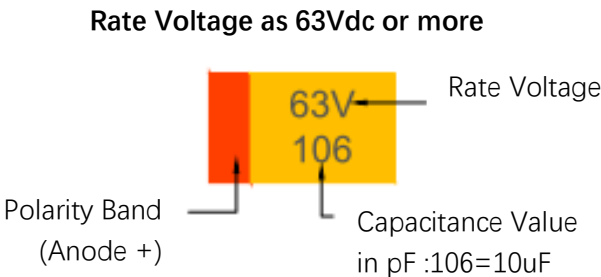
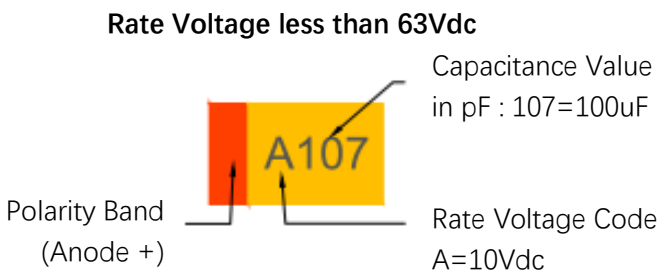
|      |           |                              |                                                                                                                                                                     |                               |                                                                                                                                                    |                                         |
|------|-----------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| CA45 | -         | D                            | 010                                                                                                                                                                 | M                             | 107                                                                                                                                                | T                                       |
| Type | Separator | Case Size<br>See table above | Rated DC voltage<br>2R5=2.5Vdc; 004=4Vdc;<br>6R3=6.3Vdc; 010=10Vdc<br>016=16Vdc; 020=20Vdc<br>025=25Vdc; 035=35Vdc<br>050=50Vdc; 063=63Vdc<br>075=75Vdc; 100=100Vdc | Tolerance<br>K=±10%<br>M=±20% | Capacitance Code<br>pF code: 1st two digits<br>represent significant figures,<br>3rd digit represents<br>multiplier (number of<br>zeros to follow) | Package<br>T=Reel<br>W=Waffle<br>B=Bulk |

### Environmental Compliance

RoHS Compliant (6/6) according to Directive 2002/95/EC when ordered with 100%Sn solder, Gold plated or Non-magnetic 100% Sn solder.



### Marking



### Technical Specifications

|                                    |         |                                                             |     |     |     |    |    |    |    |    |    |    |     |
|------------------------------------|---------|-------------------------------------------------------------|-----|-----|-----|----|----|----|----|----|----|----|-----|
| Technical Data                     |         | All technical data relate to an ambient temperature of +25℃ |     |     |     |    |    |    |    |    |    |    |     |
| Capacitance Range                  |         | 0.10 μF ~1000 μF                                            |     |     |     |    |    |    |    |    |    |    |     |
| Capacitance Tolerance              |         | ±10%; ±20%;                                                 |     |     |     |    |    |    |    |    |    |    |     |
| Rated Voltage (V <sub>R</sub> )    | ≤+85℃:  | 2.5                                                         | 4   | 6.3 | 10  | 16 | 20 | 25 | 35 | 50 | 63 | 75 | 100 |
| Category Voltage (V <sub>C</sub> ) | ≤+125℃: | 1.7                                                         | 2.7 | 4   | 6.3 | 10 | 15 | 17 | 23 | 33 | 40 | 50 | 63  |
| Surge Voltage (V <sub>S</sub> )    | ≤+85℃:  | 3.3                                                         | 5.2 | 8   | 13  | 20 | 26 | 32 | 46 | 65 | 82 | 97 | 130 |
| Surge Voltage (V <sub>S</sub> )    | ≤+125℃: | 2.2                                                         | 3.4 | 5   | 8   | 13 | 16 | 20 | 28 | 40 | 50 | 60 | 80  |
| Temperature Range                  |         | -55℃ to +125℃                                               |     |     |     |    |    |    |    |    |    |    |     |
| Termination Finished               |         | Sn Plating (standard), Gold and SnPb Plating upon request   |     |     |     |    |    |    |    |    |    |    |     |



CAPACITANCE AND RATED VOLTAGE RANGE  
(LETTER DENOTES CASE SIZE)

| Rated Voltage (V) | 2.5       | 4     | 6.3     | 10    | 16    | 20    | 25    | 35    | 50    | 63    |
|-------------------|-----------|-------|---------|-------|-------|-------|-------|-------|-------|-------|
| Capacitance (μF)  | Case Code |       |         |       |       |       |       |       |       |       |
| 0.47              |           |       |         |       |       |       |       | A     | A     |       |
| 0.68              |           |       |         |       |       |       |       | A     | A     |       |
| 1                 |           |       |         |       |       |       |       | A/B   | A/B   | C     |
| 1.5               |           |       |         |       |       |       |       | A/B   | B/C   | D     |
| 2.2               |           |       |         |       |       |       | A     | A/B   | B/C/D | D     |
| 3.3               |           |       |         |       |       | A     | A/B/C | B/C   | C/D   | D     |
| 4.7               |           |       |         |       |       | A     | A/B/C | B/C/D | C/D   | E     |
| 6.8               |           |       |         |       | A     | A/B/C | B/C/D | B/C/D | C/D/E | E     |
| 10                |           |       |         | A     | A/B   | A/B/C | B/C/D | C/D/E | D/E/V | E/W   |
| 15                |           |       |         | A     | A/B/C | B/C/D | C/D   | C/D/E | D/E/V | E/V/W |
| 22                |           |       | A       | A/B   | A/B/C | B/C/D | C/D   | C/D/E | E/V   | V/W/G |
| 33                |           |       | A       | A/B/C | B/C/D | C/D   | D/E   | D/E   | W/G   | T     |
| 47                |           | A     | A/B     | A/B/C | C/D   | C/D/E | D/E   | D/E/V | S/T   | T     |
| 68                |           | A     | A/B/C   | B/C/D | C/D   | C/D/E | D/E   | E/V   | T     | T     |
| 100               |           | A/B   | A/B/C   | B/C/D | C/D/E | D/E/V | E/V/W | G/S/T | T     |       |
| 150               |           | B/C/D | B/C/D   | C/D/E | D/E/V | D/E/V | E/V   | T     |       |       |
| 220               |           | B/C/D | B/C/D/E | C/D/E | D/E/V | E/V/W | G/S   |       |       |       |
| 330               |           | C/D   | C/D/E   | D/E/V | E/V/W | E/V   | T     |       |       |       |
| 470               |           | C/D/E | D/E/V   | E/V   | E/W   | T     |       |       |       |       |
| 680               | C/D/E     | D/E   | E/V/W   | E/S/T | T     |       |       |       |       |       |
| 1000              | D/E       | D/E/V | E/V/G   | T     |       |       |       |       |       |       |
| 1500              | D/E/V     | E/V   | T       |       |       |       |       |       |       |       |
| 2200              | V         |       |         |       |       |       |       |       |       |       |



RATING & PART NUMBER REFERENCE

| Part Number    | Rated Voltage (V) | Capacitance (μF) | Case Code | Rated Temp (°C) | Category Voltage | Category Temp (°C) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR(mΩ) @25℃ 100KHz | Max. Ripple @100KHz IRMS (A) |       |       |
|----------------|-------------------|------------------|-----------|-----------------|------------------|--------------------|------------------|----------------------|-------------------------|------------------------------|-------|-------|
|                |                   |                  |           |                 |                  |                    |                  |                      |                         | 25℃                          | 85℃   | 125℃  |
| CA45-C2R5#687T | 2.5               | 680              | C         | 85              | 1.7              | 125                | 17.0             | 18                   | 0.2                     | 0.671                        | 0.402 | 0.268 |
| CA45-D2R5#687T | 2.5               | 680              | D         | 85              | 1.7              | 125                | 17.0             | 16                   | 0.2                     | 0.725                        | 0.435 | 0.290 |
| CA45-E2R5#687T | 2.5               | 680              | E         | 85              | 1.7              | 125                | 17.0             | 10                   | 0.2                     | 0.791                        | 0.474 | 0.316 |
| CA45-D2R5#108T | 2.5               | 1000             | D         | 85              | 1.7              | 125                | 25.0             | 20                   | 0.2                     | 0.725                        | 0.435 | 0.290 |
| CA45-E2R5#108T | 2.5               | 1000             | E         | 85              | 1.7              | 125                | 25.0             | 14                   | 0.2                     | 0.791                        | 0.474 | 0.316 |
| CA45-D2R5#158T | 2.5               | 1500             | D         | 85              | 1.7              | 125                | 37.5             | 60                   | 0.2                     | 0.725                        | 0.435 | 0.290 |
| CA45-E2R5#158T | 2.5               | 1500             | E         | 85              | 1.7              | 125                | 37.5             | 20                   | 0.2                     | 0.791                        | 0.474 | 0.316 |
| CA45-V2R5#158T | 2.5               | 1500             | V         | 85              | 1.7              | 125                | 37.5             | 20                   | 0.2                     | 0.866                        | 0.520 | 0.346 |
| CA45-V2R5#228T | 2.5               | 2200             | V         | 85              | 1.7              | 125                | 55.0             | 50                   | 0.2                     | 0.866                        | 0.520 | 0.346 |
| CA45-A004#476T | 4                 | 47               | A         | 85              | 2.7              | 125                | 1.9              | 11                   | 8                       | 0.090                        | 0.054 | 0.036 |
| CA45-A004#686T | 4                 | 68               | A         | 85              | 2.7              | 125                | 2.7              | 24                   | 2.5                     | 0.161                        | 0.097 | 0.064 |
| CA45-A004#107T | 4                 | 100              | A         | 85              | 2.7              | 125                | 4.0              | 30                   | 2                       | 0.180                        | 0.108 | 0.072 |
| CA45-B004#107T | 4                 | 100              | B         | 85              | 2.7              | 125                | 4.0              | 12                   | 0.9                     | 0.289                        | 0.173 | 0.115 |
| CA45-B004#157T | 4                 | 150              | B         | 85              | 2.7              | 125                | 6.0              | 10                   | 1.5                     | 0.224                        | 0.134 | 0.089 |
| CA45-C004#157T | 4                 | 150              | C         | 85              | 2.7              | 125                | 6.0              | 6                    | 0.3                     | 0.548                        | 0.329 | 0.219 |
| CA45-D004#157T | 4                 | 150              | D         | 85              | 2.7              | 125                | 6.0              | 8                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-B004#227T | 4                 | 220              | B         | 85              | 2.7              | 125                | 8.8              | 18                   | 1                       | 0.274                        | 0.164 | 0.110 |
| CA45-C004#227T | 4                 | 220              | C         | 85              | 2.7              | 125                | 8.8              | 12                   | 1.1                     | 0.286                        | 0.172 | 0.114 |
| CA45-D004#227T | 4                 | 220              | D         | 85              | 2.7              | 125                | 8.8              | 8                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-C004#337T | 4                 | 330              | C         | 85              | 2.7              | 125                | 13.2             | 10                   | 0.9                     | 0.316                        | 0.190 | 0.126 |
| CA45-D004#337T | 4                 | 330              | D         | 85              | 2.7              | 125                | 13.2             | 8                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-C004#477T | 4                 | 470              | C         | 85              | 2.7              | 125                | 18.8             | 14                   | 0.5                     | 0.424                        | 0.255 | 0.170 |
| CA45-D004#477T | 4                 | 470              | D         | 85              | 2.7              | 125                | 18.8             | 8                    | 0.5                     | 0.458                        | 0.275 | 0.183 |
| CA45-E004#477T | 4                 | 470              | E         | 85              | 2.7              | 125                | 18.8             | 10                   | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-D004#687T | 4                 | 680              | D         | 85              | 2.7              | 125                | 27.2             | 12                   | 0.5                     | 0.458                        | 0.275 | 0.183 |
| CA45-E004#687T | 4                 | 680              | E         | 85              | 2.7              | 125                | 27.2             | 14                   | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-D004#108T | 4                 | 1000             | D         | 85              | 2.7              | 125                | 40.0             | 60                   | 0.3                     | 0.592                        | 0.355 | 0.237 |
| CA45-E004#108T | 4                 | 1000             | E         | 85              | 2.7              | 125                | 40.0             | 14                   | 0.3                     | 0.645                        | 0.387 | 0.258 |
| CA45-V004#108T | 4                 | 1000             | V         | 85              | 2.7              | 125                | 40.0             | 12                   | 0.2                     | 0.866                        | 0.520 | 0.346 |
| CA45-E004#158T | 4                 | 1500             | E         | 85              | 2.7              | 125                | 60.0             | 30                   | 0.2                     | 0.791                        | 0.474 | 0.316 |
| CA45-V004#158T | 4                 | 1500             | V         | 85              | 2.7              | 125                | 60.0             | 30                   | 0.2                     | 0.866                        | 0.520 | 0.346 |
| CA45-A6R3#226T | 6.3               | 22               | A         | 85              | 4                | 125                | 1.4              | 6                    | 3                       | 0.147                        | 0.088 | 0.059 |
| CA45-A6R3#336T | 6.3               | 33               | A         | 85              | 4                | 125                | 2.1              | 8                    | 2.2                     | 0.172                        | 0.103 | 0.069 |
| CA45-A6R3#476T | 6.3               | 47               | A         | 85              | 4                | 125                | 3.0              | 12                   | 2.5                     | 0.161                        | 0.097 | 0.064 |
| CA45-B6R3#476T | 6.3               | 47               | B         | 85              | 4                | 125                | 3.0              | 6                    | 1                       | 0.274                        | 0.164 | 0.110 |
| CA45-A6R3#686T | 6.3               | 68               | A         | 85              | 4                | 125                | 4.3              | 20                   | 4                       | 0.127                        | 0.076 | 0.051 |
| CA45-B6R3#686T | 6.3               | 68               | B         | 85              | 4                | 125                | 4.3              | 8                    | 0.9                     | 0.289                        | 0.173 | 0.115 |
| CA45-C6R3#686T | 6.3               | 68               | C         | 85              | 4                | 125                | 4.3              | 6                    | 1.2                     | 0.274                        | 0.164 | 0.110 |
| CA45-A6R3#107T | 6.3               | 100              | A         | 85              | 4                | 125                | 6.3              | 35                   | 2                       | 0.180                        | 0.108 | 0.072 |
| CA45-B6R3#107T | 6.3               | 100              | B         | 85              | 4                | 125                | 6.3              | 12                   | 1.7                     | 0.210                        | 0.126 | 0.084 |
| CA45-C6R3#107T | 6.3               | 100              | C         | 85              | 4                | 125                | 6.3              | 8                    | 0.9                     | 0.316                        | 0.190 | 0.126 |
| CA45-B6R3#157T | 6.3               | 150              | B         | 85              | 4                | 125                | 9.5              | 10                   | 1.2                     | 0.250                        | 0.150 | 0.100 |
| CA45-C6R3#157T | 6.3               | 150              | C         | 85              | 4                | 125                | 9.5              | 8                    | 1.2                     | 0.274                        | 0.164 | 0.110 |
| CA45-D6R3#157T | 6.3               | 150              | D         | 85              | 4                | 125                | 9.5              | 8                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-B6R3#227T | 6.3               | 220              | B         | 85              | 4                | 125                | 13.9             | 30                   | 1.2                     | 0.250                        | 0.150 | 0.100 |
| CA45-C6R3#227T | 6.3               | 220              | C         | 85              | 4                | 125                | 13.9             | 10                   | 0.7                     | 0.359                        | 0.215 | 0.143 |
| CA45-D6R3#227T | 6.3               | 220              | D         | 85              | 4                | 125                | 13.9             | 8                    | 0.4                     | 0.512                        | 0.307 | 0.205 |
| CA45-E6R3#227T | 6.3               | 220              | E         | 85              | 4                | 125                | 13.9             | 8                    | 0.4                     | 0.559                        | 0.335 | 0.224 |
| CA45-C6R3#337T | 6.3               | 330              | C         | 85              | 4                | 125                | 20.8             | 12                   | 0.5                     | 0.424                        | 0.255 | 0.170 |
| CA45-D6R3#337T | 6.3               | 330              | D         | 85              | 4                | 125                | 20.8             | 8                    | 0.4                     | 0.512                        | 0.307 | 0.205 |
| CA45-E6R3#337T | 6.3               | 330              | E         | 85              | 4                | 125                | 20.8             | 8                    | 0.4                     | 0.559                        | 0.335 | 0.224 |
| CA45-D6R3#477T | 6.3               | 470              | D         | 85              | 4                | 125                | 29.6             | 12                   | 0.3                     | 0.592                        | 0.355 | 0.237 |
| CA45-E6R3#477T | 6.3               | 470              | E         | 85              | 4                | 125                | 29.6             | 10                   | 0.4                     | 0.559                        | 0.335 | 0.224 |
| CA45-V6R3#477T | 6.3               | 470              | V         | 85              | 4                | 125                | 29.6             | 10                   | 0.4                     | 0.612                        | 0.367 | 0.245 |

- # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- Please do not use multimeter through the measuring procedures.
- Capacitance and DF measured at :100Hz, U=2.2°-1.0V, U~=1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- Voltage derating is applied at +125C°.（The DCL parameter should be read after 5 minutes when it connected to the circuit）.
- Special size and demand could consult with us.



RATING & PART NUMBER REFERENCE

| Part Number    | Rated Voltage (V) | Capacitance (μF) | Case Code | Rated Temp (°C) | Category Voltage | Category Temp (°C) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR(mΩ) @25℃ 100KHz | Max. Ripple @100KHz IRMS (A) |       |       |
|----------------|-------------------|------------------|-----------|-----------------|------------------|--------------------|------------------|----------------------|-------------------------|------------------------------|-------|-------|
|                |                   |                  |           |                 |                  |                    |                  |                      |                         | 25℃                          | 85℃   | 125℃  |
| CA45-E6R3#687T | 6.3               | 680              | E         | 85              | 4                | 125                | 42.8             | 10                   | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-V6R3#687T | 6.3               | 680              | V         | 85              | 4                | 125                | 42.8             | 10                   | 0.5                     | 0.548                        | 0.329 | 0.219 |
| CA45-W6R3#687T | 6.3               | 680              | W         | 85              | 4                | 125                | 42.8             | 12                   | 0.2                     | 1.000                        | 0.600 | 0.400 |
| CA45-E6R3#108T | 6.3               | 1000             | E         | 85              | 4                | 125                | 63.0             | 20                   | 0.2                     | 0.791                        | 0.474 | 0.316 |
| CA45-V6R3#108T | 6.3               | 1000             | V         | 85              | 4                | 125                | 63.0             | 15                   | 0.2                     | 0.866                        | 0.520 | 0.346 |
| CA45-G6R3#108W | 6.3               | 1000             | G         | 85              | 4                | 125                | 63.0             | 16                   | 0.2                     | 1.095                        | 0.657 | 0.438 |
| CA45-T6R3#158W | 6.3               | 1500             | T         | 85              | 4                | 125                | 94.5             | 16                   | 0.2                     | 1.285                        | 0.771 | 0.514 |
| CA45-A010#106T | 10                | 10               | A         | 85              | 6.3              | 125                | 1.0              | 6                    | 3                       | 0.147                        | 0.088 | 0.059 |
| CA45-A010#156T | 10                | 15               | A         | 85              | 6.3              | 125                | 1.5              | 6                    | 3.2                     | 0.143                        | 0.086 | 0.057 |
| CA45-A010#226T | 10                | 22               | A         | 85              | 6.3              | 125                | 2.2              | 10                   | 3                       | 0.147                        | 0.088 | 0.059 |
| CA45-B010#226T | 10                | 22               | B         | 85              | 6.3              | 125                | 2.2              | 6                    | 1.9                     | 0.199                        | 0.119 | 0.079 |
| CA45-A010#336T | 10                | 33               | A         | 85              | 6.3              | 125                | 3.3              | 15                   | 1.7                     | 0.196                        | 0.117 | 0.078 |
| CA45-B010#336T | 10                | 33               | B         | 85              | 6.3              | 125                | 3.3              | 6                    | 1.8                     | 0.204                        | 0.122 | 0.082 |
| CA45-C010#336T | 10                | 33               | C         | 85              | 6.3              | 125                | 3.3              | 6                    | 1.5                     | 0.245                        | 0.147 | 0.098 |
| CA45-A010#476T | 10                | 47               | A         | 85              | 6.3              | 125                | 4.7              | 40                   | 2                       | 0.180                        | 0.108 | 0.072 |
| CA45-B010#476T | 10                | 47               | B         | 85              | 6.3              | 125                | 4.7              | 8                    | 1                       | 0.274                        | 0.164 | 0.110 |
| CA45-C010#476T | 10                | 47               | C         | 85              | 6.3              | 125                | 4.7              | 6                    | 0.9                     | 0.316                        | 0.190 | 0.126 |
| CA45-B010#686T | 10                | 68               | B         | 85              | 6.3              | 125                | 6.8              | 6                    | 1.4                     | 0.231                        | 0.139 | 0.093 |
| CA45-C010#686T | 10                | 68               | C         | 85              | 6.3              | 125                | 6.8              | 6                    | 0.8                     | 0.335                        | 0.201 | 0.134 |
| CA45-D010#686T | 10                | 68               | D         | 85              | 6.3              | 125                | 6.8              | 6                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-B010#107T | 10                | 100              | B         | 85              | 6.3              | 125                | 10.0             | 18                   | 1.4                     | 0.231                        | 0.139 | 0.093 |
| CA45-C010#107T | 10                | 100              | C         | 85              | 6.3              | 125                | 10.0             | 8                    | 1                       | 0.300                        | 0.180 | 0.120 |
| CA45-D010#107T | 10                | 100              | D         | 85              | 6.3              | 125                | 10.0             | 8                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-C010#157T | 10                | 150              | C         | 85              | 6.3              | 125                | 15.0             | 8                    | 0.9                     | 0.316                        | 0.190 | 0.126 |
| CA45-D010#157T | 10                | 150              | D         | 85              | 6.3              | 125                | 15.0             | 8                    | 0.6                     | 0.418                        | 0.251 | 0.167 |
| CA45-E010#157T | 10                | 150              | E         | 85              | 6.3              | 125                | 15.0             | 8                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-C010#227T | 10                | 220              | C         | 85              | 6.3              | 125                | 22.0             | 16                   | 0.9                     | 0.316                        | 0.190 | 0.126 |
| CA45-D010#227T | 10                | 220              | D         | 85              | 6.3              | 125                | 22.0             | 8                    | 0.5                     | 0.458                        | 0.275 | 0.183 |
| CA45-E010#227T | 10                | 220              | E         | 85              | 6.3              | 125                | 22.0             | 8                    | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-D010#337T | 10                | 330              | D         | 85              | 6.3              | 125                | 33.0             | 10                   | 0.5                     | 0.458                        | 0.275 | 0.183 |
| CA45-E010#337T | 10                | 330              | E         | 85              | 6.3              | 125                | 33.0             | 8                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-V010#337T | 10                | 330              | V         | 85              | 6.3              | 125                | 33.0             | 10                   | 0.5                     | 0.548                        | 0.329 | 0.219 |
| CA45-E010#477T | 10                | 470              | E         | 85              | 6.3              | 125                | 47.0             | 10                   | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-V010#477T | 10                | 470              | V         | 85              | 6.3              | 125                | 47.0             | 10                   | 0.2                     | 0.866                        | 0.520 | 0.346 |
| CA45-E010#687T | 10                | 680              | E         | 85              | 6.3              | 125                | 68.0             | 14                   | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-S010#687W | 10                | 680              | S         | 85              | 6.3              | 125                | 68.0             | 12                   | 0.2                     | 1.183                        | 0.710 | 0.473 |
| CA45-T010#687W | 10                | 680              | T         | 85              | 6.3              | 125                | 68.0             | 12                   | 0.2                     | 1.285                        | 0.771 | 0.514 |
| CA45-T010#108W | 10                | 1000             | T         | 85              | 6.3              | 125                | 100.0            | 16                   | 0.2                     | 1.285                        | 0.771 | 0.514 |
| CA45-A016#685T | 16                | 6.8              | A         | 85              | 10               | 125                | 1.1              | 6                    | 3.5                     | 0.136                        | 0.082 | 0.055 |
| CA45-A016#106T | 16                | 10               | A         | 85              | 10               | 125                | 1.6              | 6                    | 3                       | 0.147                        | 0.088 | 0.059 |
| CA45-B016#106T | 16                | 10               | B         | 85              | 10               | 125                | 1.6              | 6                    | 2.5                     | 0.173                        | 0.104 | 0.069 |
| CA45-A016#156T | 16                | 15               | A         | 85              | 10               | 125                | 2.4              | 6                    | 2                       | 0.180                        | 0.108 | 0.072 |
| CA45-B016#156T | 16                | 15               | B         | 85              | 10               | 125                | 2.4              | 6                    | 2                       | 0.194                        | 0.116 | 0.077 |
| CA45-C016#156T | 16                | 15               | C         | 85              | 10               | 125                | 2.4              | 6                    | 1.8                     | 0.224                        | 0.134 | 0.089 |
| CA45-A016#226T | 16                | 22               | A         | 85              | 10               | 125                | 3.5              | 15                   | 3                       | 0.147                        | 0.088 | 0.059 |
| CA45-B016#226T | 16                | 22               | B         | 85              | 10               | 125                | 3.5              | 6                    | 2.2                     | 0.185                        | 0.111 | 0.074 |
| CA45-C016#226T | 16                | 22               | C         | 85              | 10               | 125                | 3.5              | 6                    | 1.5                     | 0.245                        | 0.147 | 0.098 |
| CA45-B016#336T | 16                | 33               | B         | 85              | 10               | 125                | 5.3              | 8                    | 2                       | 0.194                        | 0.116 | 0.077 |
| CA45-C016#336T | 16                | 33               | C         | 85              | 10               | 125                | 5.3              | 6                    | 1.2                     | 0.274                        | 0.164 | 0.110 |
| CA45-D016#336T | 16                | 33               | D         | 85              | 10               | 125                | 5.3              | 6                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-C016#476T | 16                | 47               | C         | 85              | 10               | 125                | 7.5              | 6                    | 1                       | 0.300                        | 0.180 | 0.120 |
| CA45-D016#476T | 16                | 47               | D         | 85              | 10               | 125                | 7.5              | 6                    | 0.9                     | 0.342                        | 0.205 | 0.137 |
| CA45-C016#686T | 16                | 68               | C         | 85              | 10               | 125                | 10.9             | 6                    | 1.2                     | 0.274                        | 0.164 | 0.110 |
| CA45-D016#686T | 16                | 68               | D         | 85              | 10               | 125                | 10.9             | 6                    | 0.6                     | 0.418                        | 0.251 | 0.167 |

1 # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.

2 Please do not use multimeter through the measuring procedures.

3 Capacitance and DF measured at :100Hz, U\_\_=2.2°-1.0V, U~=1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.

4 Voltage derating is applied at +125℃. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .

5 Special size and demand could consult with us.



RATING & PART NUMBER REFERENCE

| Part Number    | Rated Voltage (V) | Capacitance (μF) | Case Code | Rated Temp (°C) | Category Voltage | Category Temp (°C) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR(mΩ) @25℃ 100KHz | Max. Ripple @100KHz IRMS (A) |       |       |
|----------------|-------------------|------------------|-----------|-----------------|------------------|--------------------|------------------|----------------------|-------------------------|------------------------------|-------|-------|
|                |                   |                  |           |                 |                  |                    |                  |                      |                         | 25℃                          | 85℃   | 125℃  |
| CA45-C016#107T | 16                | 100              | C         | 85              | 10               | 125                | 16.0             | 8                    | 1                       | 0.300                        | 0.180 | 0.120 |
| CA45-D016#107T | 16                | 100              | D         | 85              | 10               | 125                | 16.0             | 6                    | 0.6                     | 0.418                        | 0.251 | 0.167 |
| CA45-E016#107T | 16                | 100              | E         | 85              | 10               | 125                | 16.0             | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-D016#157T | 16                | 150              | D         | 85              | 10               | 125                | 24.0             | 6                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-E016#157T | 16                | 150              | E         | 85              | 10               | 125                | 24.0             | 8                    | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-V016#157T | 16                | 150              | V         | 85              | 10               | 125                | 24.0             | 8                    | 0.5                     | 0.548                        | 0.329 | 0.219 |
| CA45-D016#227T | 16                | 220              | D         | 85              | 10               | 125                | 35.2             | 15                   | 0.9                     | 0.342                        | 0.205 | 0.137 |
| CA45-E016#227T | 16                | 220              | E         | 85              | 10               | 125                | 35.2             | 10                   | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-V016#227T | 16                | 220              | V         | 85              | 10               | 125                | 35.2             | 8                    | 0.5                     | 0.548                        | 0.329 | 0.219 |
| CA45-E016#337T | 16                | 330              | E         | 85              | 10               | 125                | 52.8             | 12                   | 0.8                     | 0.395                        | 0.237 | 0.158 |
| CA45-V016#337T | 16                | 330              | V         | 85              | 10               | 125                | 52.8             | 12                   | 0.8                     | 0.433                        | 0.260 | 0.173 |
| CA45-W016#337T | 16                | 330              | W         | 85              | 10               | 125                | 52.8             | 10                   | 0.2                     | 1.000                        | 0.600 | 0.400 |
| CA45-E016#477T | 16                | 470              | E         | 85              | 10               | 125                | 75.2             | 16                   | 0.8                     | 0.395                        | 0.237 | 0.158 |
| CA45-W016#477T | 16                | 470              | W         | 85              | 10               | 125                | 75.2             | 12                   | 0.2                     | 1.000                        | 0.600 | 0.400 |
| CA45-T016#687W | 16                | 680              | T         | 85              | 10               | 125                | 108.8            | 12                   | 0.1                     | 1.817                        | 1.090 | 0.727 |
| CA45-A020#335T | 20                | 3.3              | A         | 85              | 15               | 125                | 0.7              | 4                    | 4.5                     | 0.120                        | 0.072 | 0.048 |
| CA45-A020#475T | 20                | 4.7              | A         | 85              | 15               | 125                | 0.9              | 6                    | 3                       | 0.147                        | 0.088 | 0.059 |
| CA45-A020#685T | 20                | 6.8              | A         | 85              | 15               | 125                | 1.4              | 6                    | 2.4                     | 0.165                        | 0.099 | 0.066 |
| CA45-B020#685T | 20                | 6.8              | B         | 85              | 15               | 125                | 1.4              | 6                    | 2.4                     | 0.177                        | 0.106 | 0.071 |
| CA45-C020#685T | 20                | 6.8              | C         | 85              | 15               | 125                | 1.4              | 6                    | 1.9                     | 0.218                        | 0.131 | 0.087 |
| CA45-A020#106T | 20                | 10               | A         | 85              | 15               | 125                | 2.0              | 8                    | 5                       | 0.114                        | 0.068 | 0.046 |
| CA45-B020#106T | 20                | 10               | B         | 85              | 15               | 125                | 2.0              | 6                    | 2                       | 0.194                        | 0.116 | 0.077 |
| CA45-C020#106T | 20                | 10               | C         | 85              | 15               | 125                | 2.0              | 6                    | 1.2                     | 0.274                        | 0.164 | 0.110 |
| CA45-B020#156T | 20                | 15               | B         | 85              | 15               | 125                | 3.0              | 6                    | 2                       | 0.194                        | 0.116 | 0.077 |
| CA45-C020#156T | 20                | 15               | C         | 85              | 15               | 125                | 3.0              | 6                    | 1.7                     | 0.230                        | 0.138 | 0.092 |
| CA45-D020#156T | 20                | 15               | D         | 85              | 15               | 125                | 3.0              | 6                    | 1                       | 0.324                        | 0.194 | 0.130 |
| CA45-B020#226T | 20                | 22               | B         | 85              | 15               | 125                | 4.4              | 6                    | 1.8                     | 0.204                        | 0.122 | 0.082 |
| CA45-C020#226T | 20                | 22               | C         | 85              | 15               | 125                | 4.4              | 6                    | 1.6                     | 0.237                        | 0.142 | 0.095 |
| CA45-D020#226T | 20                | 22               | D         | 85              | 15               | 125                | 4.4              | 6                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-C020#336T | 20                | 33               | C         | 85              | 15               | 125                | 6.6              | 6                    | 1.2                     | 0.274                        | 0.164 | 0.110 |
| CA45-D020#336T | 20                | 33               | D         | 85              | 15               | 125                | 6.6              | 6                    | 0.9                     | 0.342                        | 0.205 | 0.137 |
| CA45-C020#476T | 20                | 47               | C         | 85              | 15               | 125                | 9.4              | 6                    | 0.9                     | 0.316                        | 0.190 | 0.126 |
| CA45-D020#476T | 20                | 47               | D         | 85              | 15               | 125                | 9.4              | 6                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-E020#476T | 20                | 47               | E         | 85              | 15               | 125                | 9.4              | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-C020#686T | 20                | 68               | C         | 85              | 15               | 125                | 13.6             | 8                    | 0.5                     | 0.424                        | 0.255 | 0.170 |
| CA45-D020#686T | 20                | 68               | D         | 85              | 15               | 125                | 13.6             | 6                    | 0.4                     | 0.512                        | 0.307 | 0.205 |
| CA45-E020#686T | 20                | 68               | E         | 85              | 15               | 125                | 13.6             | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-D020#107T | 20                | 100              | D         | 85              | 15               | 125                | 20.0             | 8                    | 0.5                     | 0.458                        | 0.275 | 0.183 |
| CA45-E020#107T | 20                | 100              | E         | 85              | 15               | 125                | 20.0             | 6                    | 0.4                     | 0.559                        | 0.335 | 0.224 |
| CA45-V020#107T | 20                | 100              | V         | 85              | 15               | 125                | 20.0             | 8                    | 0.5                     | 0.548                        | 0.329 | 0.219 |
| CA45-D020#157T | 20                | 150              | D         | 85              | 15               | 125                | 30.0             | 10                   | 0.9                     | 0.342                        | 0.205 | 0.137 |
| CA45-E020#157T | 20                | 150              | E         | 85              | 15               | 125                | 30.0             | 8                    | 0.3                     | 0.645                        | 0.387 | 0.258 |
| CA45-V020#157T | 20                | 150              | V         | 85              | 15               | 125                | 30.0             | 8                    | 0.3                     | 0.707                        | 0.424 | 0.283 |
| CA45-E020#227T | 20                | 220              | E         | 85              | 15               | 125                | 44.0             | 12                   | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-V020#227T | 20                | 220              | V         | 85              | 15               | 125                | 44.0             | 12                   | 0.9                     | 0.408                        | 0.245 | 0.163 |
| CA45-W020#227T | 20                | 220              | W         | 85              | 15               | 125                | 44.0             | 10                   | 0.2                     | 1.000                        | 0.600 | 0.400 |
| CA45-E020#337T | 20                | 330              | E         | 85              | 15               | 125                | 66.0             | 12                   | 0.8                     | 0.395                        | 0.237 | 0.158 |
| CA45-V020#337T | 20                | 330              | V         | 85              | 15               | 125                | 66.0             | 12                   | 0.8                     | 0.433                        | 0.260 | 0.173 |
| CA45-T020#477W | 20                | 470              | T         | 85              | 15               | 125                | 94.0             | 12                   | 0.2                     | 1.285                        | 0.771 | 0.514 |
| CA45-A025#225T | 25                | 2.2              | A         | 85              | 17               | 125                | 0.6              | 6                    | 6.3                     | 0.102                        | 0.061 | 0.041 |
| CA45-A025#335T | 25                | 3.3              | A         | 85              | 17               | 125                | 0.8              | 6                    | 3.7                     | 0.133                        | 0.080 | 0.053 |
| CA45-B025#335T | 25                | 3.3              | B         | 85              | 17               | 125                | 0.8              | 6                    | 3.5                     | 0.146                        | 0.088 | 0.059 |
| CA45-C025#335T | 25                | 3.3              | C         | 85              | 17               | 125                | 0.8              | 6                    | 2.5                     | 0.190                        | 0.114 | 0.076 |
| CA45-A025#475T | 25                | 4.7              | A         | 85              | 17               | 125                | 1.2              | 6                    | 3.1                     | 0.145                        | 0.087 | 0.058 |

- 1 # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- 2 Please do not use multimeter through the measuring procedures.
- 3 Capacitance and DF measured at :100Hz, U<sub>DC</sub>=2.2~1.0V, U<sub>AC</sub>~1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- 4 Voltage derating is applied at +125C°. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .
- 5 Special size and demand could consult with us.



RATING & PART NUMBER REFERENCE

| Part Number    | Rated Voltage (V) | Capacitance (μF) | Case Code | Rated Temp (°C) | Category Voltage | Category Temp (°C) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR(mΩ) @25℃ 100KHz | Max. Ripple @100KHz IRMS (A) |       |       |
|----------------|-------------------|------------------|-----------|-----------------|------------------|--------------------|------------------|----------------------|-------------------------|------------------------------|-------|-------|
|                |                   |                  |           |                 |                  |                    |                  |                      |                         | 25℃                          | 85℃   | 125℃  |
| CA45-B025#475T | 25                | 4.7              | B         | 85              | 17               | 125                | 1.2              | 6                    | 1.5                     | 0.224                        | 0.134 | 0.089 |
| CA45-C025#475T | 25                | 4.7              | C         | 85              | 17               | 125                | 1.2              | 6                    | 2.4                     | 0.194                        | 0.116 | 0.077 |
| CA45-B025#685T | 25                | 6.8              | B         | 85              | 17               | 125                | 1.7              | 6                    | 2.8                     | 0.164                        | 0.098 | 0.065 |
| CA45-C025#685T | 25                | 6.8              | C         | 85              | 17               | 125                | 1.7              | 6                    | 1.9                     | 0.218                        | 0.131 | 0.087 |
| CA45-D025#685T | 25                | 6.8              | D         | 85              | 17               | 125                | 1.7              | 6                    | 1.4                     | 0.274                        | 0.164 | 0.110 |
| CA45-B025#106T | 25                | 10               | B         | 85              | 17               | 125                | 2.5              | 6                    | 2.5                     | 0.173                        | 0.104 | 0.069 |
| CA45-C025#106T | 25                | 10               | C         | 85              | 17               | 125                | 2.5              | 6                    | 1.5                     | 0.245                        | 0.147 | 0.098 |
| CA45-D025#106T | 25                | 10               | D         | 85              | 17               | 125                | 2.5              | 6                    | 1                       | 0.324                        | 0.194 | 0.130 |
| CA45-C025#156T | 25                | 15               | C         | 85              | 17               | 125                | 3.8              | 6                    | 1.5                     | 0.245                        | 0.147 | 0.098 |
| CA45-D025#156T | 25                | 15               | D         | 85              | 17               | 125                | 3.8              | 6                    | 1                       | 0.324                        | 0.194 | 0.130 |
| CA45-C025#226T | 25                | 22               | C         | 85              | 17               | 125                | 5.5              | 6                    | 1.4                     | 0.254                        | 0.152 | 0.101 |
| CA45-D025#226T | 25                | 22               | D         | 85              | 17               | 125                | 5.5              | 6                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-D025#336T | 25                | 33               | D         | 85              | 17               | 125                | 8.3              | 6                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-E025#336T | 25                | 33               | E         | 85              | 17               | 125                | 8.3              | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-D025#476T | 25                | 47               | D         | 85              | 17               | 125                | 11.8             | 6                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-E025#476T | 25                | 47               | E         | 85              | 17               | 125                | 11.8             | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-D025#686T | 25                | 68               | D         | 85              | 17               | 125                | 17.0             | 6                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-E025#686T | 25                | 68               | E         | 85              | 17               | 125                | 17.0             | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-E025#107T | 25                | 100              | E         | 85              | 17               | 125                | 25.0             | 10                   | 0.3                     | 0.645                        | 0.387 | 0.258 |
| CA45-V025#107T | 25                | 100              | V         | 85              | 17               | 125                | 25.0             | 8                    | 0.3                     | 0.707                        | 0.424 | 0.283 |
| CA45-W025#107T | 25                | 100              | W         | 85              | 17               | 125                | 25.0             | 8                    | 0.25                    | 0.894                        | 0.537 | 0.358 |
| CA45-E025#157T | 25                | 150              | E         | 85              | 17               | 125                | 37.5             | 10                   | 0.8                     | 0.395                        | 0.237 | 0.158 |
| CA45-V025#157T | 25                | 150              | V         | 85              | 17               | 125                | 37.5             | 10                   | 0.4                     | 0.612                        | 0.367 | 0.245 |
| CA45-G025#227W | 25                | 220              | G         | 85              | 17               | 125                | 55.0             | 10                   | 0.2                     | 1.095                        | 0.657 | 0.438 |
| CA45-S025#227W | 25                | 220              | S         | 85              | 17               | 125                | 55.0             | 10                   | 0.2                     | 1.183                        | 0.710 | 0.473 |
| CA45-T025#337W | 25                | 330              | T         | 85              | 17               | 125                | 82.5             | 10                   | 0.2                     | 1.285                        | 0.771 | 0.514 |
| CA45-A035#474T | 35                | 0.47             | A         | 85              | 23               | 125                | 0.5              | 4                    | 12                      | 0.074                        | 0.044 | 0.029 |
| CA45-A035#684T | 35                | 0.68             | A         | 85              | 23               | 125                | 0.5              | 4                    | 8                       | 0.090                        | 0.054 | 0.036 |
| CA45-A035#105T | 35                | 1                | A         | 85              | 23               | 125                | 0.5              | 4                    | 7.5                     | 0.093                        | 0.056 | 0.037 |
| CA45-B035#105T | 35                | 1                | B         | 85              | 23               | 125                | 0.5              | 4                    | 4                       | 0.137                        | 0.082 | 0.055 |
| CA45-A035#155T | 35                | 1.5              | A         | 85              | 23               | 125                | 0.5              | 6                    | 7                       | 0.096                        | 0.058 | 0.039 |
| CA45-B035#155T | 35                | 1.5              | B         | 85              | 23               | 125                | 0.5              | 6                    | 5                       | 0.122                        | 0.073 | 0.049 |
| CA45-A035#225T | 35                | 2.2              | A         | 85              | 23               | 125                | 0.8              | 6                    | 4.5                     | 0.120                        | 0.072 | 0.048 |
| CA45-B035#225T | 35                | 2.2              | B         | 85              | 23               | 125                | 0.8              | 6                    | 4                       | 0.137                        | 0.082 | 0.055 |
| CA45-B035#335T | 35                | 3.3              | B         | 85              | 23               | 125                | 1.2              | 6                    | 3.5                     | 0.146                        | 0.088 | 0.059 |
| CA45-C035#335T | 35                | 3.3              | C         | 85              | 23               | 125                | 1.2              | 6                    | 2.5                     | 0.190                        | 0.114 | 0.076 |
| CA45-B035#475T | 35                | 4.7              | B         | 85              | 23               | 125                | 1.6              | 6                    | 3.1                     | 0.156                        | 0.093 | 0.062 |
| CA45-C035#475T | 35                | 4.7              | C         | 85              | 23               | 125                | 1.6              | 6                    | 2.2                     | 0.202                        | 0.121 | 0.081 |
| CA45-D035#475T | 35                | 4.7              | D         | 85              | 23               | 125                | 1.6              | 6                    | 1.5                     | 0.265                        | 0.159 | 0.106 |
| CA45-B035#685T | 35                | 6.8              | B         | 85              | 23               | 125                | 2.4              | 6                    | 3                       | 0.158                        | 0.095 | 0.063 |
| CA45-C035#685T | 35                | 6.8              | C         | 85              | 23               | 125                | 2.4              | 6                    | 1.8                     | 0.224                        | 0.134 | 0.089 |
| CA45-D035#685T | 35                | 6.8              | D         | 85              | 23               | 125                | 2.4              | 6                    | 1.3                     | 0.284                        | 0.171 | 0.114 |
| CA45-C035#106T | 35                | 10               | C         | 85              | 23               | 125                | 3.5              | 6                    | 1.6                     | 0.237                        | 0.142 | 0.095 |
| CA45-D035#106T | 35                | 10               | D         | 85              | 23               | 125                | 3.5              | 6                    | 1                       | 0.324                        | 0.194 | 0.130 |
| CA45-E035#106T | 35                | 10               | E         | 85              | 23               | 125                | 3.5              | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-C035#156T | 35                | 15               | C         | 85              | 23               | 125                | 5.3              | 6                    | 1.4                     | 0.254                        | 0.152 | 0.101 |
| CA45-D035#156T | 35                | 15               | D         | 85              | 23               | 125                | 5.3              | 6                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-E035#156T | 35                | 15               | E         | 85              | 23               | 125                | 5.3              | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-C035#226T | 35                | 22               | C         | 85              | 23               | 125                | 7.7              | 6                    | 1.4                     | 0.254                        | 0.152 | 0.101 |
| CA45-D035#226T | 35                | 22               | D         | 85              | 23               | 125                | 7.7              | 6                    | 0.7                     | 0.387                        | 0.232 | 0.155 |
| CA45-E035#226T | 35                | 22               | E         | 85              | 23               | 125                | 7.7              | 6                    | 0.5                     | 0.500                        | 0.300 | 0.200 |
| CA45-D035#336T | 35                | 33               | D         | 85              | 23               | 125                | 11.6             | 6                    | 0.9                     | 0.342                        | 0.205 | 0.137 |
| CA45-E035#336T | 35                | 33               | E         | 85              | 23               | 125                | 11.6             | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-D035#476T | 35                | 47               | D         | 85              | 23               | 125                | 16.5             | 8                    | 1.2                     | 0.296                        | 0.177 | 0.118 |

- 1 # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- 2 Please do not use multimeter through the measuring procedures.
- 3 Capacitance and DF measured at :100Hz, U<sub>+</sub>=2.2°-1.0V, U<sub>-</sub>=1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- 4 Voltage derating is applied at +125C°. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .
- 5 Special size and demand could consult with us.



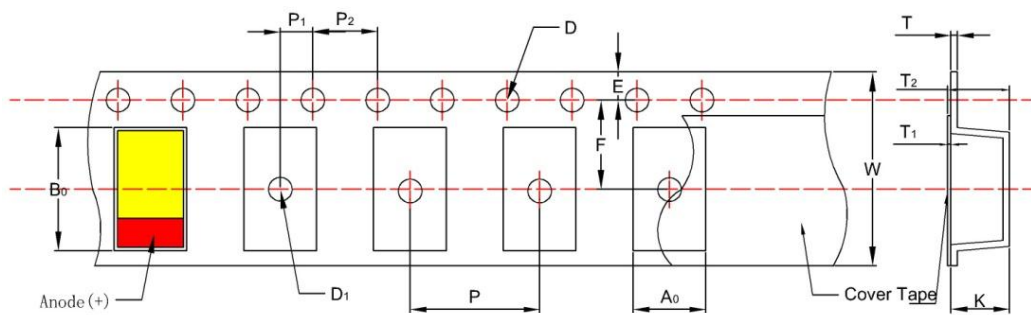


RATING & PART NUMBER REFERENCE

| Part Number    | Rated Voltage (V) | Capacitance (μF) | Case Code | Rated Temp (°C) | Category Voltage | Category Temp (°C) | Max DCL(μA) @25℃ | Max DF(%) @25℃ 100Hz | Max ESR(mΩ) @25℃ 100KHz | Max. Ripple @100KHz IRMS (A) |       |       |
|----------------|-------------------|------------------|-----------|-----------------|------------------|--------------------|------------------|----------------------|-------------------------|------------------------------|-------|-------|
|                |                   |                  |           |                 |                  |                    |                  |                      |                         | 25℃                          | 85℃   | 125℃  |
| CA45-E035#476T | 35                | 47               | E         | 85              | 23               | 125                | 16.5             | 6                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-V035#476T | 35                | 47               | V         | 85              | 23               | 125                | 16.5             | 6                    | 0.4                     | 0.612                        | 0.367 | 0.245 |
| CA45-E035#686T | 35                | 68               | E         | 85              | 23               | 125                | 23.8             | 8                    | 1                       | 0.354                        | 0.212 | 0.141 |
| CA45-V035#686T | 35                | 68               | V         | 85              | 23               | 125                | 23.8             | 6                    | 0.5                     | 0.548                        | 0.329 | 0.219 |
| CA45-G035#107W | 35                | 100              | G         | 85              | 23               | 125                | 35.0             | 8                    | 0.25                    | 0.980                        | 0.588 | 0.392 |
| CA45-S035#107W | 35                | 100              | S         | 85              | 23               | 125                | 35.0             | 8                    | 0.25                    | 1.058                        | 0.635 | 0.423 |
| CA45-T035#107W | 35                | 100              | T         | 85              | 23               | 125                | 35.0             | 8                    | 0.25                    | 1.149                        | 0.689 | 0.460 |
| CA45-T035#157W | 35                | 150              | T         | 85              | 23               | 125                | 52.5             | 8                    | 0.2                     | 1.285                        | 0.771 | 0.514 |
| CA45-A050#474T | 50                | 0.47             | A         | 85              | 33               | 125                | 0.5              | 4                    | 9.5                     | 0.083                        | 0.050 | 0.033 |
| CA45-A050#684T | 50                | 0.68             | A         | 85              | 33               | 125                | 0.5              | 4                    | 7.9                     | 0.091                        | 0.054 | 0.036 |
| CA45-A050#105T | 50                | 1                | A         | 85              | 33               | 125                | 0.5              | 4                    | 6.6                     | 0.099                        | 0.060 | 0.040 |
| CA45-B050#105T | 50                | 1                | B         | 85              | 33               | 125                | 0.5              | 6                    | 6                       | 0.112                        | 0.067 | 0.045 |
| CA45-B050#155T | 50                | 1.5              | B         | 85              | 33               | 125                | 0.8              | 8                    | 5.4                     | 0.118                        | 0.071 | 0.047 |
| CA45-C050#155T | 50                | 1.5              | C         | 85              | 33               | 125                | 0.8              | 6                    | 4.5                     | 0.141                        | 0.085 | 0.057 |
| CA45-B050#225T | 50                | 2.2              | B         | 85              | 33               | 125                | 1.1              | 8                    | 4.5                     | 0.129                        | 0.077 | 0.052 |
| CA45-C050#225T | 50                | 2.2              | C         | 85              | 33               | 125                | 1.1              | 6                    | 2.5                     | 0.190                        | 0.114 | 0.076 |
| CA45-D050#225T | 50                | 2.2              | D         | 85              | 33               | 125                | 1.1              | 6                    | 2.5                     | 0.205                        | 0.123 | 0.082 |
| CA45-C050#335T | 50                | 3.3              | C         | 85              | 33               | 125                | 1.7              | 6                    | 2                       | 0.212                        | 0.127 | 0.085 |
| CA45-D050#335T | 50                | 3.3              | D         | 85              | 33               | 125                | 1.7              | 6                    | 2                       | 0.229                        | 0.137 | 0.092 |
| CA45-C050#475T | 50                | 4.7              | C         | 85              | 33               | 125                | 2.4              | 4                    | 1.4                     | 0.254                        | 0.152 | 0.101 |
| CA45-D050#475T | 50                | 4.7              | D         | 85              | 33               | 125                | 2.4              | 6                    | 1.2                     | 0.296                        | 0.177 | 0.118 |
| CA45-C050#685T | 50                | 6.8              | C         | 85              | 33               | 125                | 3.4              | 6                    | 1                       | 0.300                        | 0.180 | 0.120 |
| CA45-D050#685T | 50                | 6.8              | D         | 85              | 33               | 125                | 3.4              | 6                    | 1                       | 0.324                        | 0.194 | 0.130 |
| CA45-E050#685T | 50                | 6.8              | E         | 85              | 33               | 125                | 3.4              | 6                    | 1.5                     | 0.289                        | 0.173 | 0.115 |
| CA45-D050#106T | 50                | 10               | D         | 85              | 33               | 125                | 5.0              | 6                    | 0.8                     | 0.362                        | 0.217 | 0.145 |
| CA45-E050#106T | 50                | 10               | E         | 85              | 33               | 125                | 5.0              | 6                    | 1                       | 0.354                        | 0.212 | 0.141 |
| CA45-V050#106T | 50                | 10               | V         | 85              | 33               | 125                | 5.0              | 6                    | 0.65                    | 0.480                        | 0.288 | 0.192 |
| CA45-D050#156T | 50                | 15               | D         | 85              | 33               | 125                | 7.5              | 6                    | 0.6                     | 0.418                        | 0.251 | 0.167 |
| CA45-E050#156T | 50                | 15               | E         | 85              | 33               | 125                | 7.5              | 6                    | 0.6                     | 0.456                        | 0.274 | 0.183 |
| CA45-V050#156T | 50                | 15               | V         | 85              | 33               | 125                | 7.5              | 6                    | 0.6                     | 0.500                        | 0.300 | 0.200 |
| CA45-E050#226T | 50                | 22               | E         | 85              | 33               | 125                | 11.0             | 8                    | 0.9                     | 0.373                        | 0.224 | 0.149 |
| CA45-V050#226T | 50                | 22               | V         | 85              | 33               | 125                | 11.0             | 8                    | 0.6                     | 0.500                        | 0.300 | 0.200 |
| CA45-W050#336T | 50                | 33               | W         | 85              | 33               | 125                | 16.5             | 6                    | 0.3                     | 0.816                        | 0.490 | 0.327 |
| CA45-G050#336W | 50                | 33               | G         | 85              | 33               | 125                | 16.5             | 6                    | 0.3                     | 0.894                        | 0.537 | 0.358 |
| CA45-S050#476W | 50                | 47               | S         | 85              | 33               | 125                | 23.5             | 6                    | 0.3                     | 0.966                        | 0.580 | 0.386 |
| CA45-T050#476W | 50                | 47               | T         | 85              | 33               | 125                | 23.5             | 6                    | 0.3                     | 1.049                        | 0.629 | 0.420 |
| CA45-T050#686W | 50                | 68               | T         | 85              | 33               | 125                | 34.0             | 6                    | 0.25                    | 1.149                        | 0.689 | 0.460 |
| CA45-T050#107W | 50                | 100              | T         | 85              | 33               | 125                | 50.0             | 8                    | 0.25                    | 1.149                        | 0.689 | 0.460 |
| CA45-C063#105T | 63                | 1                | C         | 85              | 40               | 125                | 0.6              | 6                    | 5                       | 0.134                        | 0.080 | 0.054 |
| CA45-D063#155T | 63                | 1.5              | D         | 85              | 40               | 125                | 0.9              | 6                    | 3.5                     | 0.173                        | 0.104 | 0.069 |
| CA45-D063#225T | 63                | 2.2              | D         | 85              | 40               | 125                | 1.4              | 6                    | 2                       | 0.229                        | 0.137 | 0.092 |
| CA45-D063#335T | 63                | 3.3              | D         | 85              | 40               | 125                | 2.1              | 6                    | 1.5                     | 0.265                        | 0.159 | 0.106 |
| CA45-E063#475T | 63                | 4.7              | E         | 85              | 40               | 125                | 3.0              | 6                    | 1                       | 0.354                        | 0.212 | 0.141 |
| CA45-E063#685T | 63                | 6.8              | E         | 85              | 40               | 125                | 4.3              | 6                    | 0.8                     | 0.395                        | 0.237 | 0.158 |
| CA45-E063#106T | 63                | 10               | E         | 85              | 40               | 125                | 6.3              | 8                    | 0.6                     | 0.456                        | 0.274 | 0.183 |
| CA45-W063#106T | 63                | 10               | W         | 85              | 40               | 125                | 6.3              | 6                    | 0.4                     | 0.707                        | 0.424 | 0.283 |
| CA45-E063#156T | 63                | 15               | E         | 85              | 40               | 125                | 9.5              | 8                    | 0.4                     | 0.559                        | 0.335 | 0.224 |
| CA45-V063#156T | 63                | 15               | V         | 85              | 40               | 125                | 9.5              | 8                    | 0.4                     | 0.612                        | 0.367 | 0.245 |
| CA45-W063#156T | 63                | 15               | W         | 85              | 40               | 125                | 9.5              | 6                    | 0.4                     | 0.707                        | 0.424 | 0.283 |
| CA45-V063#226T | 63                | 22               | V         | 85              | 40               | 125                | 13.9             | 8                    | 0.4                     | 0.612                        | 0.367 | 0.245 |
| CA45-W063#226T | 63                | 22               | W         | 85              | 40               | 125                | 13.9             | 6                    | 0.4                     | 0.707                        | 0.424 | 0.283 |
| CA45-G063#226W | 63                | 22               | G         | 85              | 40               | 125                | 13.9             | 6                    | 0.4                     | 0.775                        | 0.465 | 0.310 |
| CA45-T063#336W | 63                | 33               | T         | 85              | 40               | 125                | 20.8             | 6                    | 0.3                     | 1.049                        | 0.629 | 0.420 |
| CA45-T063#476W | 63                | 47               | T         | 85              | 40               | 125                | 29.6             | 6                    | 0.3                     | 1.049                        | 0.629 | 0.420 |
| CA45-T063#686W | 63                | 68               | T         | 85              | 40               | 125                | 42.8             | 6                    | 0.25                    | 1.149                        | 0.689 | 0.460 |

- 1 # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- 2 Please do not use multimeter through the measuring procedures.
- 3 Capacitance and DF measured at :100Hz, U\_ =2.2°-1.0V, U~ =1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- 4 Voltage derating is applied at +125℃°. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .
- 5 Special size and demand could consult with us.

A,B,C,D,E,V,W Case Product Packaging



Embossed (Plastic) Carrier Tape Dimensions

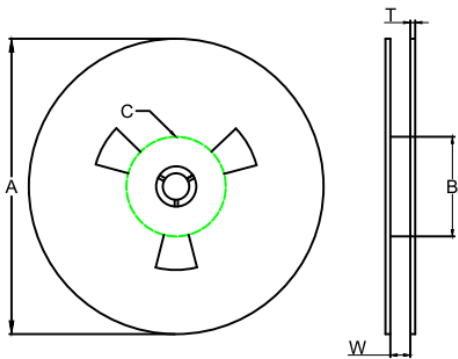
Diagram of Taping Dimensions

| Case | A <sub>0</sub> ±0.10 | B <sub>0</sub> ±0.10 | K±0.10 | W±0.30 | E±0.10 | F±0.05 | P±0.10 | P <sub>1</sub> ±0.05 | P <sub>2</sub> ±0.10 | D+0.20 | D <sub>1</sub> +0.25 |
|------|----------------------|----------------------|--------|--------|--------|--------|--------|----------------------|----------------------|--------|----------------------|
| A    | 1.83                 | 3.57                 | 1.65   | 8      | 1.75   | 3.5    | 4      | 2                    | 4                    | 1.5    | 1                    |
| B    | 3.15                 | 3.77                 | 2.22   | 8      | 1.75   | 3.5    | 4      | 2                    | 4                    | 1.5    | 1                    |
| C    | 3.45                 | 6.4                  | 2.92   | 12     | 1.75   | 5.5    | 8      | 2                    | 4                    | 1.5    | 1.5                  |
| D    | 4.48                 | 7.62                 | 3.22   | 12     | 1.75   | 5.5    | 8      | 2                    | 4                    | 1.5    | 1.5                  |
| E    | 4.5                  | 7.5                  | 4.5    | 12     | 1.75   | 5.5    | 8      | 2                    | 4                    | 1.5    | 1.5                  |
| V    | 6.4                  | 7.6                  | 4.4    | 12     | 1.75   | 5.5    | 8      | 2                    | 4                    | 1.5    | 1.5                  |
| W    | 7.2                  | 8.1                  | 4.75   | 16     | 1.75   | 7.5    | 12     | 2                    | 4                    | 1.5    | 1.5                  |

±0.2mm over 10 sprocket hole spaces

Reel Dimensions

| Reel Size  | Tape Wide | A        | B      | C         | W           | T         |
|------------|-----------|----------|--------|-----------|-------------|-----------|
| 180mm (7") | 8mm       | 178±2.00 | 50 min | 13.0±0.50 | 8.4+1.5/-0  | 1.50±0.50 |
| 180mm (7") | 12mm      | 178±2.00 | 50 min | 13.0±0.50 | 12.4+1.5/-0 | 1.50±0.50 |
| 180mm (7") | 16mm      | 178±2.00 | 50 min | 13.0±0.50 | 16.4+1.5/-1 | 1.50±0.50 |



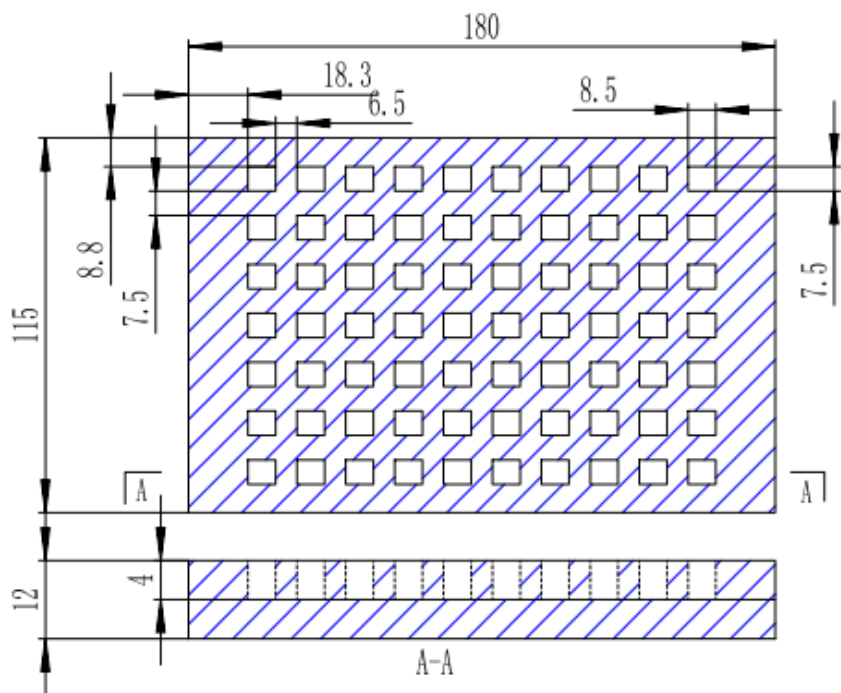
Reel Dimensions

Packaging Quantity

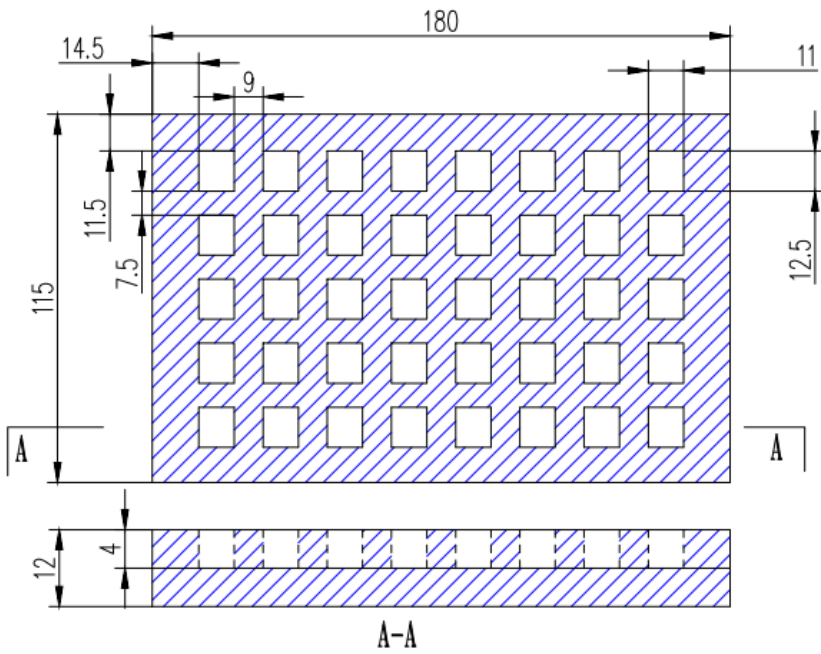
| Case size              | A    | B    | C   | D   | E   | V   | W   |
|------------------------|------|------|-----|-----|-----|-----|-----|
| Quantity (pcs / plate) | 2000 | 2000 | 500 | 500 | 400 | 400 | 400 |

G, S, T Case Product Packaging

The dimensions of the tray see the figure below . G size have 70 pcs per tray. Both Case size “S” and “T” have 40 pcs per tray .



G Case Packaging



S,T Case Packaging



A.C. OPERATION, RIPPLE VOLTAGE AND RIPPLE CURRENT

In an a.c. application heat is generated within the capacitor by both the a.c. component of the signal (which will depend upon the signal form, amplitude and frequency), and by the d.c. leakage. For practical purposes the second factor is insignificant. The actual power dissipated in the capacitor is calculated using the formula:

$P = I^2 R$

and rearranged to  $I = \text{SQRT } (P/R)$  .....(Eq. 1)

- where
- I = rms ripple current, amperes
  - R = equivalent series resistance, ohms
  - U = rms ripple voltage, volts
  - P = power dissipated, watts
  - Z = impedance, ohms, at frequency under consideration

Maximum a.c. ripple voltage (U<sub>max</sub>). From the Ohms' law equation:

$U_{max} = IR$  .....(Eq. 2)

- Where P is the maximum permissible power dissipated as listed for the product under consideration (see tables).  
However care must be taken to ensure that:
1. The d.c. working voltage of the capacitor must not be exceeded by the sum of the positive peak of the applied a.c. voltage and the d.c. bias voltage.
  2. The sum of the applied d.c. bias voltage and the negative peak of the a.c. voltage must not allow a voltage reversal in excess of the "Reverse Voltage" .

Historical ripple calculations.

Previous ripple current and voltage values were calculated using an empirically derived power dissipation required to give a 10°C (30°C for polymer) rise of the capacitors body temperature from room temperature, usually in free air. These values are shown in Table below "Power Dissipation Ratings" . Equation 1 then allows the maximum ripple current to be established, and Equation 2, the maximum ripple voltage.

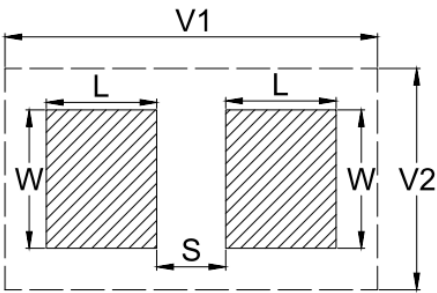
Power Dissipation Ratings (In Free Air)

| Case Size                                | A     | B     | C     | D     | E     | V     | W     | G     | S     | T     |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Max. Power Dissipation<br>@+25C° (Watts) | 0.065 | 0.075 | 0.090 | 0.105 | 0.125 | 0.150 | 0.200 | 0.240 | 0.280 | 0.330 |

Land Dimension /Courtyard

| Case code | Metric Size Code | Density Level A: Maximum (Most) Land Protrusion (mm) |      |      |       |     | Density Level B : Median (Nominal) Land Protrusion (mm) |      |      |      |     | Density Level C: Minimum (Least) Land Protrusion (mm) |      |      |      |      |
|-----------|------------------|------------------------------------------------------|------|------|-------|-----|---------------------------------------------------------|------|------|------|-----|-------------------------------------------------------|------|------|------|------|
|           |                  | W                                                    | L    | S    | V1    | V2  | W                                                       | L    | S    | V1   | V2  | W                                                     | L    | S    | V1   | V2   |
| A         | 3216–18          | 1.35                                                 | 2.20 | 0.62 | 6.02  | 2.8 | 1.23                                                    | 1.8  | 0.82 | 4.92 | 2.3 | 1.13                                                  | 1.42 | 0.98 | 4.06 | 2.04 |
| B         | 3528–21          | 2.35                                                 | 2.21 | 0.92 | 6.32  | 4.0 | 2.23                                                    | 1.8  | 1.12 | 5.22 | 3.5 | 2.13                                                  | 1.42 | 1.28 | 4.36 | 3.24 |
| C         | 6032–25          | 2.35                                                 | 2.77 | 2.37 | 8.92  | 4.5 | 2.23                                                    | 2.37 | 2.57 | 7.82 | 4   | 2.13                                                  | 1.99 | 2.73 | 6.96 | 3.74 |
| D         | 7343–31          | 2.55                                                 | 2.77 | 3.67 | 10.22 | 5.6 | 2.43                                                    | 2.37 | 3.87 | 9.12 | 5.1 | 2.33                                                  | 1.99 | 4.03 | 8.26 | 4.84 |
| E         | 7343–43          | 2.55                                                 | 2.77 | 3.67 | 10.22 | 5.6 | 2.43                                                    | 2.37 | 3.87 | 9.12 | 5.1 | 2.33                                                  | 1.99 | 4.03 | 8.26 | 4.84 |

- Density Level A:** For low-density product applications. Recommended for wave solder applications and provides a wider process window for reflow solder processes.
- Density Level B:** For products with a moderate level of component density. Provides a robust solder attachment condition for reflow solder processes.
- Density Level C:** For high component density product applications. Before adapting the minimum land pattern variations the user should perform qualification testing based on the conditions outlined in IPC standard 7351 (IPC–7351).
- 1 Height of these chips may create problems in wave soldering.
  - 2 Land pattern geometry is too small for silkscreen outline.



Surface Mount Footprints

Soldering Process

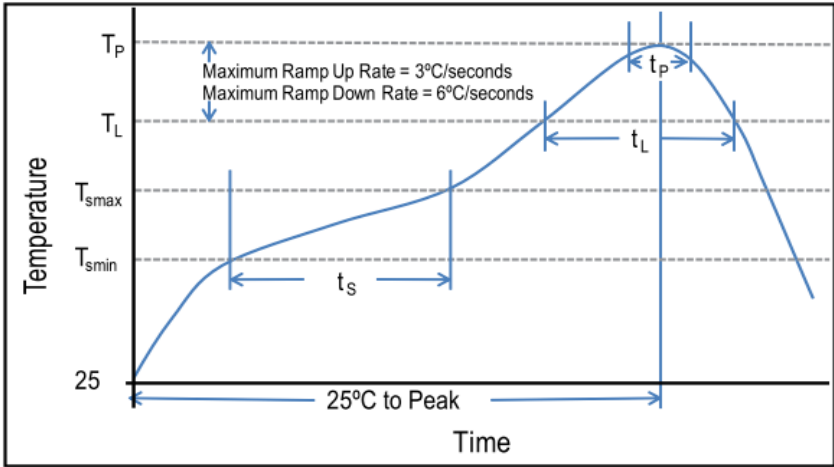
XIANGYEE tantalum capacitors are compatible with wave (single or dual), convection, IR, or vapor phase reflow techniques. Preheating of these components is recommended to avoid extreme thermal stress. XIANGYEE's recommended profile conditions for convection and IR reflow reflect the profile conditions of the IPC/J-STD-020D standard for moisture sensitivity testing. The devices can safely withstand a maximum of three reflow passes at these conditions.

Hand soldering should be performed with care due to the difficulty in process control. If performed, care should be taken to avoid contact of the soldering iron to the molded case. The iron should be used to heat the solder pad, applying solder between the pad and the termination, until reflow occurs. Once reflow occurs, the iron should be removed immediately. “Wiping” the edges of a chip and heating the top surface is not recommended.

During typical reflow operations, a slight darkening of the gold- colored epoxy may be observed. This slight darkening is normal and not harmful to the product. Marking permanency is not affected by this change.

| Profile Feature                                                    | SnPb Assembly       | Pb-Free Assembly    |
|--------------------------------------------------------------------|---------------------|---------------------|
| Preheat/Soak                                                       |                     |                     |
| Temperature Minimum (T <sub>Smin</sub> )                           | 100°C               | 150°C               |
| Temperature Maximum (T <sub>Smax</sub> )                           | 150°C               | 200°C               |
| Time (t <sub>s</sub> ) from T <sub>Smin</sub> to T <sub>Smax</sub> | 60 – 120 seconds    | 60 – 120 seconds    |
| Ramp-up Rate (T <sub>L</sub> to T <sub>P</sub> )                   | 3°C/seconds maximum | 3°C/seconds maximum |
| Liquidous Temperature (T <sub>L</sub> )                            | 183°C               | 217°C               |
| Time Above Liquidous (t <sub>L</sub> )                             | 60 – 150 seconds    | 60 – 150 seconds    |
| Peak Temperature (T <sub>P</sub> )                                 | 220°C* , 235°C**    | 250°C* , 260°C**    |
| Time within 5°C of Maximum Peak Temperature (t <sub>P</sub> )      | 20 seconds maximum  | 30 seconds maximum  |
| Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )                 | 6°C/seconds maximum | 6°C/seconds maximum |
| Time 25°C to Peak Temperature                                      | 6 minutes maximum   | 8 minutes maximum   |

Note: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow.  
\*Case Size D, E      \*\*Case Size A, B, C



Recommended Reflow Profile

Storage

Tantalum dielectric chip capacitors are unaffected by the following storage condition for 2 years:  
Temperature: -10°C – +40°C Humidity: 60% RH maximum  
Atmospheric pressure: 860 mbar ~ 1060mbar  
Tantalum capacitors exhibit a very low random failure rate after long periods of storage and apart from this there are no known modes of failure under normal storage conditions. All capacitors will withstand any environmental conditions within their ratings for the periods given in the detail specifications. Storage for longer periods under high humidity conditions may affect the leakage current of resin protected capacitors. Solderability of solder coated surfaces may be affected by storage of excess of 2 years.