

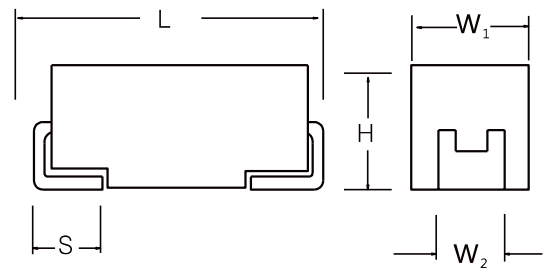
CA45U Low ESR Chip Tantalum Capacitors (SMD Tantalum Capacitors)

◆ Brief Introduction

Low ESR series of robust MnO₂ solid tantalum electrolyte capacitors
 Power supply applications, general medium power DC/DC convertors
 Operating Standard: QJ/PWV330-2010
 Factory quality control system: Military Standard GJB90018-2009
 Meets RoHS 2.0, Reach requirement

◆ Specifications

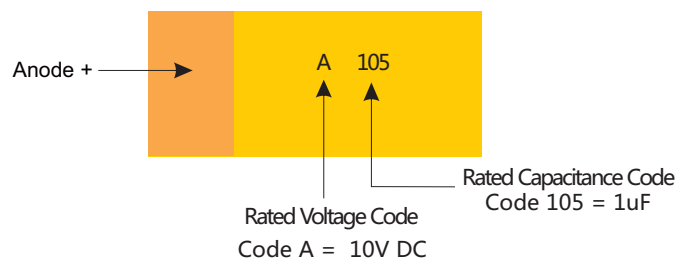
Operating Temperature Range: -55°C ~ +125°C; >85°C(with rated voltage derating);
 DC Leakage at 25°C: $I_o \leq 0.01C_R U_R$ or 0.5uA (Choose the greater one)
 Capacitance Range: 1uF~1000uF
 Voltage Range: 6.3V, 10V, 16V, 25V, 35V, 50V, 63V, 75V, 100V
 Capacitance Tolerance: K: +/-10%; M: +/-20% (+/-20% tolerance is standard)
 SPQ: A,B case: 2000pcs/reel; C,D case: 500pcs/reel; E case: 400pcs/reel
 Low ESR parameter please refer to Table 3
 How to order, please refer to Part Number System



◆ Table 1 Dimensions (Unit: mm)

| Case Size | | L±0.2 | W ₁ ±0.2 | H±0.4 | S±0.2 | W ₂ ±0.2 |
|-----------|------|-------|---------------------|-------|-------|---------------------|
| P | 2012 | 2.00 | 1.25 | 1.20 | 0.50 | 0.90 |
| A | 3216 | 3.20 | 1.60 | 1.60 | 0.80 | 1.20 |
| B | 3528 | 3.50 | 2.80 | 1.90 | 0.80 | 2.20 |
| C | 6032 | 6.00 | 3.20 | 2.50 | 1.30 | 2.20 |
| D | 7343 | 7.30 | 4.30 | 2.80 | 1.30 | 2.40 |
| E | 7343 | 7.30 | 4.30 | 4.10 | 1.30 | 2.40 |

◆ Marking on Chip Tantalum Capacitor Body



Voltage Code Table for Chip Tantalum Capacitors

| Voltage Code | G | J | A | C | D | E | V | H | T |
|---------------|----|------|-----|-----|-----|-----|-----|-----|-----|
| Rated Voltage | 4V | 6.3V | 10V | 16V | 20V | 25V | 35V | 40V | 50V |

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◆Table 2 Temperature Characteristics

| Max | | | | | |
|---------|------|------|-------|------------------|-------------------|
| t gδ(%) | | | | DCL (μA) | |
| -55°C | 25°C | 85°C | 125°C | 85°C | 125°C |
| 6 | 4 | 6 | | 8 I ₀ | 10 I ₀ |
| 8 | 6 | 8 | | | |
| 10 | 8 | 10 | | | |
| 12 | 10 | 12 | | | |
| 14 | 12 | 14 | | | |
| 18 | 16 | 18 | | | |

◆Table 3 Electrical Characteristics

| Nominal Capacitance uF | Case Code | Max DCL at +25°C μA | Max DF(100Hz) at +25°C | Max ESR (100 kHz) +25°C Ω | Ripple Current (A) 100KHz Max | | |
|---|-----------|------------------------|---------------------------|--------------------------------|------------------------------------|-------|--------|
| | | | | | +25°C | +85°C | +125°C |
| Rated Voltage 4V, Category Voltage 2.7V | | | | | | | |
| 68 | C | 2.7 | 6.0 | 0.2 | 0.307 | 0.277 | 0.123 |
| 100 | C | 4.0 | 8.0 | 0.2 | 0.307 | 0.277 | 0.123 |
| 150 | C | 6.0 | 8.0 | 0.2 | 0.307 | 0.277 | 0.123 |
| 220 | D | 8.8 | 10.0 | 0.1 | 0.396 | 0.357 | 0.159 |
| 330 | D | 13 | 10.0 | 0.1 | 0.396 | 0.357 | 0.159 |
| 470 | D | 19 | 12.0 | 0.1 | 0.396 | 0.357 | 0.159 |
| 680 | E | 27 | 16.0 | 0.1 | 1.535 | 1.381 | 0.614 |
| 1000 | E | 40 | 16.0 | 0.07 | 1.535 | 1.381 | 0.614 |
| Rated Voltage 6.3V, Category Voltage 4V | | | | | | | |
| 15 | C | 0.9 | 6.0 | 0.4 | 0.926 | 0.833 | 0.370 |
| 22 | C | 1.4 | 6.0 | 0.35 | 0.926 | 0.833 | 0.370 |
| 33 | C | 2.0 | 6.0 | 0.3 | 0.926 | 0.833 | 0.370 |
| 47 | C | 2.9 | 6.0 | 0.2 | 0.926 | 0.833 | 0.370 |
| 68 | C | 4.1 | 6.0 | 0.2 | 0.926 | 0.833 | 0.370 |
| 68 | D | 4.1 | 8.0 | 0.175 | 0.926 | 0.833 | 0.370 |
| 100 | B | 6.3 | 10.0 | 0.4 | 0.433 | 0.26 | 0.173 |
| 100 | C | 6.0 | 8.0 | 0.2 / 0.15 | 0.856 | 0.770 | 0.342 |
| 100 | D | 6.0 | 8.0 | 0.15 | 0.913 | 0.822 | 0.365 |
| 150 | C | 9.0 | 8.0 | 0.2 | 0.742 | 0.668 | 0.297 |
| 150 | D | 9.0 | 8.0 | 0.15 | 0.742 | 0.668 | 0.297 |
| 220 | D | 13.2 | 10.0 | 0.1 | 1.225 | 1.102 | 0.490 |
| 330 | D | 19.8 | 10.0 | 0.1 | 1.225 | 1.102 | 0.490 |
| 330 | E | 19.8 | 10.0 | 0.1 | 1.285 | 1.156 | 0.514 |
| 470 | D | 28.2 | 12.0 | 0.1 | 1.095 | 0.986 | 0.438 |
| 470 | E | 28.2 | 12.0 | 0.1 | 1.095 | 0.986 | 0.438 |
| 680 | E | 40.8 | 12.0 | 0.1 | 1.593 | 1.434 | 0.637 |
| 1000 | E | 60.0 | 16.0 | 0.1 | 1.816 | 1.634 | 0.726 |
| 1000 | V | 63 | 15.0 | 0.1 | 1.225 | 0.735 | 0.490 |



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◆Table 3 Electrical Characteristics

| Nominal Capacitance uF | Case Code | Max DCL at +25°C μ A | Max DF(100Hz) at +25°C | Max ESR (100 kHz) +25°C Ω | Ripple Current (A) 100KHz Max | | |
|--|-----------|-----------------------------|---------------------------|---------------------------------------|------------------------------------|-------|--------|
| | | | | | +25°C | +85°C | +125°C |
| Rated Voltage 10V, Category Voltage 6.3V | | | | | | | |
| 10.0 | C | 1.5 | 6.0 | 0.5 | 0.565 | 0.508 | 0.226 |
| 15.0 | C | 1.5 | 6.0 | 0.4 | 0.565 | 0.508 | 0.226 |
| 22.0 | C | 2.2 | 6.0 | 0.345 | 0.565 | 0.508 | 0.226 |
| 33.0 | C | 3.3 | 6.0 | 0.3 | 0.565 | 0.508 | 0.226 |
| 47.0 | D | 4.7 | 6.0 | 0.2 | 0.866 | 0.780 | 0.346 |
| 68.0 | D | 6.0 | 6.0 | 0.15 | 1.000 | 0.900 | 0.400 |
| 100 | D | 10 | 8.0 | 0.1 | 1.200 | 1.100 | 0.490 |
| 150 | D | 8.0 | 8.0 | 0.1 | 1.225 | 1.102 | 0.490 |
| 220 | D | 22 | 10.0 | 0.125 | 1.095 | 0.986 | 0.438 |
| 330 | E | 33 | 12.0 | 0.8 | 1.095 | 0.986 | 0.438 |
| 470 | E | 47 | 12.0 | 0.1 | 1.285 | 1.162 | 0.51 |
| 470 | E | 47 | 12.0 | 0.15 | 1.049 | 0.949 | 0.416 |
| Rated Voltage 16V, Category Voltage 10V | | | | | | | |
| 6.8 | C | 1.1 | 6.0 | 0.5 | 0.132 | 0.119 | 0.053 |
| 10.0 | C | 1.6 | 6.0 | 0.5 | 0.132 | 0.119 | 0.053 |
| 15.0 | C | 2.4 | 6.0 | 0.4 | 0.632 | 0.569 | 0.253 |
| 22.0 | D | 3.6 | 6.0 | 0.25 | 0.632 | 0.569 | 0.253 |
| 33.0 | C | 5.3 | 6.0 | 0.3 | 0.632 | 0.569 | 0.253 |
| 33.0 | D | 5.3 | 6.0 | 0.2 | 0.816 | 0.735 | 0.327 |
| 47.0 | D | 7.5 | 6.0 | 0.2 | 1.000 | 0.900 | 0.400 |
| 68.0 | D | 10.9 | 6.0 | 0.15 | 1.000 | 0.900 | 0.400 |
| 100 | E | 16.0 | 6.0 | 0.125 | 1.095 | 0.986 | 0.438 |
| 100 | D | 16.0 | 6.0 | 0.1 | 1.285 | 1.156 | 0.514 |
| 150 | E | 24.0 | 6.0 | 0.1 | 1.285 | 1.156 | 0.514 |
| 220 | E | 35.0 | 10.0 | 0.2 | 1.285 | 1.156 | 0.514 |
| Rated Voltage 20V, Category Voltage 13V | | | | | | | |
| 4.7 | C | 2.3 | 6.0 | 0.6 | 0.738 | 0.665 | 0.295 |
| 6.8 | C | 3.4 | 6.0 | 0.5 | 0.738 | 0.665 | 0.295 |
| 10 | C | 5.0 | 6.0 | 0.45 | 0.738 | 0.665 | 0.295 |
| 15 | D | 7.5 | 6.0 | 0.275 | 0.738 | 0.665 | 0.295 |
| 22 | D | 11.0 | 6.0 | 0.275 | 0.816 | 0.735 | 0.326 |
| 33.0 | D | 5.3 | 6.0 | 0.2 | 0.866 | 0.780 | 0.346 |
| 47.0 | D | 7.5 | 6.0 | 0.175 | 0.926 | 0.833 | 0.370 |
| 47.0 | E | 7.5 | 6.0 | 0.15 | 1.049 | 0.944 | 0.420 |
| 68.0 | D | 10.9 | 6.0 | 0.15 | 1.000 | 0.900 | 0.400 |
| 68.0 | E | 10.9 | 1.0 | 0.15 | 1.049 | 0.944 | 0.420 |
| 100 | E | 16.0 | 8.0 | 0.12 | 1.049 | 0.944 | 0.420 |
| 150 | E | 24 | 8.0 | 0.12 | 1.049 | 0.944 | 0.420 |



◆Table 3 Electrical Characteristics

| Nominal Capacitance uF | Case Code | Max DCL at +25°C μ A | Max DF(100Hz) at +25°C | Max ESR (100 kHz) +25°C Ω | Ripple Current (A) 100KHz Max | | |
|---|-----------|-----------------------------|---------------------------|---------------------------------------|------------------------------------|-------|--------|
| | | | | | +25°C | +85°C | +125°C |
| Rated Voltage 25V, Category Voltage 16V | | | | | | | |
| 4.7 | C | 2.3 | 6.0 | 0.6 | 0.469 | 0.422 | 0.188 |
| 6.8 | C | 3.4 | 6.0 | 0.5 | 0.469 | 0.422 | 0.188 |
| 10 | C | 5.0 | 6.0 | 0.45 | 0.494 | 0.445 | 0.198 |
| 15 | D | 7.5 | 6.0 | 0.3 | 0.738 | 0.665 | 0.295 |
| 22 | D | 11.0 | 6.0 | 0.3 | 0.866 | 0.780 | 0.346 |
| 33.0 | D | 5.3 | 6.0 | 0.3 | 0.707 | 0.636 | 0.283 |
| 47.0 | D | 7.5 | 6.0 | 0.25 | 0.908 | 0.817 | 0.363 |
| 68.0 | E | 10.9 | 6.0 | 0.2 | 0.908 | 0.817 | 0.363 |
| 100 | E | 16.0 | 8.0 | 0.1 | 0.908 | 0.817 | 0.363 |
| Rated Voltage 35V, Category Voltage 20V | | | | | | | |
| 4.7 | C | 2.3 | 6.0 | 0.6 | 0.428 | 0.385 | 0.171 |
| 6.8 | D | 3.4 | 6.0 | 0.4 | 0.612 | 0.551 | 0.245 |
| 10 | D | 5.0 | 6.0 | 0.4 | 0.707 | 0.636 | 0.283 |
| 15 | D | 7.5 | 6.0 | 0.3 | 0.856 | 0.771 | 0.343 |
| 22 | E | 11.0 | 6.0 | 0.3 | 0.775 | 0.697 | 0.410 |
| 22 | D | 11.0 | 6.0 | 0.3 | 0.707 | 0.636 | 0.283 |
| 33.0 | C | 5.3 | 6.0 | 0.25 | 0.812 | 0.731 | 0.325 |
| 47.0 | D | 7.5 | 6.0 | 0.3 | 0.742 | 0.667 | 0.297 |
| Rated Voltage 50V, Category Voltage 32V | | | | | | | |
| 2.2 | C | 1.1 | 6.0 | 0.5 | 0.742 | 0.667 | 0.297 |
| 2.2 | D | 1.6 | 6.0 | 0.8 | 0.742 | 0.667 | 0.297 |
| 3.3 | D | 1.6 | 6.0 | 0.6 | 0.742 | 0.667 | 0.297 |
| 4.7 | D | 2.3 | 6.0 | 0.3 | 0.742 | 0.667 | 0.297 |
| 6.8 | D | 3.4 | 6.0 | 0.3 | 0.700 | 0.600 | 0.300 |
| 10 | E | 5.0 | 6.0 | 0.3 | 0.742 | 0.667 | 0.297 |
| 15 | E | 7.5 | 6.0 | 0.3 | 0.742 | 0.667 | 0.297 |
| Rated Voltage 63V, Category Voltage 40V | | | | | | | |
| 1.0 | C | 0.7 | 6.0 | 2.0 | 0.742 | 0.667 | 0.297 |
| 1,5 | D | 0.7 | 6.0 | 1.5 | 0.742 | 0.667 | 0.297 |
| 2.2 | D | 0.7 | 6.0 | 0.8 | 0.742 | 0.667 | 0.297 |
| 3.3 | D | 1.6 | 6.0 | 0.6 | 0.742 | 0.667 | 0.297 |
| 4.7 | E | 2.3 | 6.0 | 0.6 | 0.742 | 0.667 | 0.297 |
| 6.8 | E | 3.4 | 6.0 | 0.5 | 0.700 | 0.600 | 0.300 |
| 10 | E | 6.3 | 6.0 | 0.4 | 0.742 | 0.667 | 0.297 |

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◆ **Table 3 Electrical Characteristics**

| Nominal Capacitance uF | Case Code | Max DCL at +25°C μ A | Max DF(100Hz) at +25°C | Max ESR (100 kHz) +25°C Ω | Ripple Current (A) 100KHz Max | | |
|--|-----------|-----------------------------|---------------------------|---------------------------------------|------------------------------------|-------|--------|
| | | | | | +25°C | +85°C | +125°C |
| Rated Voltage 75V, Category Voltage 50V | | | | | | | |
| 1.0 | D | 0.7 | 6.0 | 2.0 | 0.742 | 0.667 | 0.297 |
| 1.5 | D | 0.7 | 6.0 | 1.5 | 0.742 | 0.667 | 0.297 |
| 3.3 | E | 1.6 | 6.0 | 0.8 | 0.742 | 0.667 | 0.297 |
| 4.7 | E | 2.3 | 6.0 | 0.6 | 0.742 | 0.667 | 0.297 |
| 6.8 | E | 3.4 | 6.0 | 0.6 | 0.700 | 0.600 | 0.300 |
| Rated Voltage 100V, Category Voltage 63V | | | | | | | |
| 1.5 | D | 1.5 | 6.0 | 2.0 | 0.742 | 0.667 | 0.297 |
| 2.2 | E | 2.2 | 6.0 | 1.5 | 0.742 | 0.667 | 0.297 |
| 3.3 | E | 3.3 | 6.0 | 0.8 | 0.742 | 0.667 | 0.297 |

Important Note

1. Please do not use multimeter to test tantalum capacitors.
2. Capacitance and DF measured at :100Hz , $U_{-} = 2.2^{-.10}V$, $U_{\sim} = 1.0^{-.05}V$,
Frequency = 100Hz. Test only applied to series equivalent circuit.
3. Please refer to derating voltage or category voltage if temperature > 85°C
4. The DCL parameter should be read after 5 minutes when it connected to the circuit.
5. For special requirement please consult to our sales.

◆ How to order

| <u>CA45U</u> | <u>T</u> | <u>107</u> | <u>K</u> | <u>0006</u> | <u>000B</u> | <u>R</u> | <u>401</u> |
|--------------|-------------------------------------|---|------------------------|---|--|---------------------------|---|
| <u>Type</u> | <u>Material Code</u> | <u>Capacitance Code</u> | <u>Tolerance</u> | <u>For DC Voltage</u> | <u>Size Code</u> | <u>Package Code</u> | <u>Suffix Indicate Low ESR</u> |
| CA45U | T: Tantalum Cap For CA45U | pF Code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) 106 = 10uF 105 = 1uF | K: +/-10% M: +/-20% | 0006: 6.3VDC 0010: 10VDC 0035: 35VDC 0050: 50VDC 0100: 100VDC | 000A: A case 000B: B case 000C: C case 000D: D case 000E: E case | R: Tape & Reel | Low ESR code in mΩ 151: mean 150m Ω (0.15 Ω) 202: mean 2000m Ω (2 Ω) 750: mean 75m Ω (0.075 Ω) |