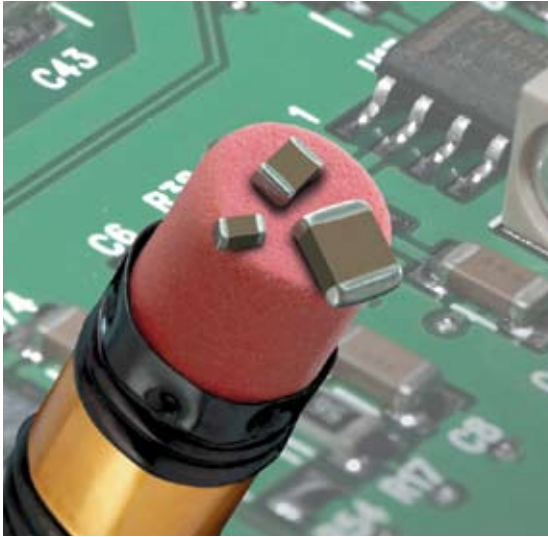


# TANCERAM® CHIP CAPACITORS



TANCERAM® chip capacitors can replace tantalum capacitors in many applications and offer several key advantages over traditional tantalums. Because Tanceram® capacitors exhibit extremely low ESR, equivalent circuit performance can often be achieved using considerably lower capacitance values. Low DC leakage reduces current drain, extending the battery life of portable products. Tancerams® high DC breakdown voltage ratings offer improved reliability and eliminate large voltage de-rating common when designing with tantalums.

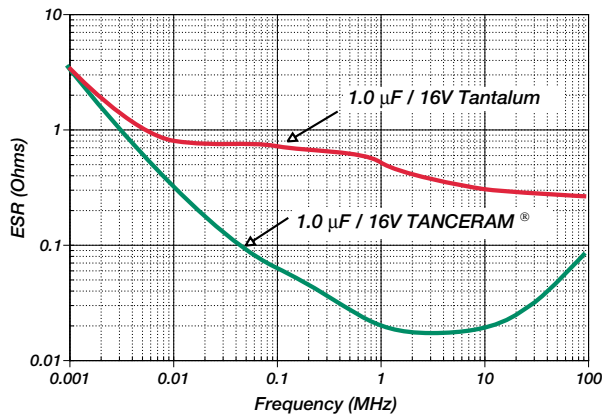
## ADVANTAGES

- Low ESR
- Higher Surge Voltage
- Reduced CHIP Size
- Higher Insulation Resistance
- Low DC Leakage
- Non-polarized Devices
- Improved Reliability
- Higher Ripple Current

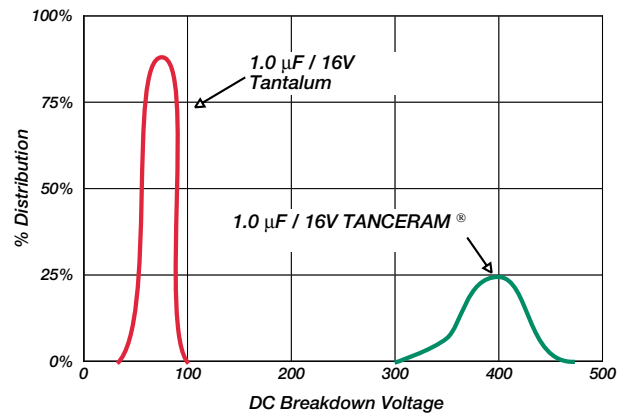
## APPLICATIONS

- Switching Power Supply Smoothing (Input/Output)
- DC/DC Converter Smoothing (Input/Output)
- Backlighting Inverters
- General Digital Circuits

Typical ESR Comparison



Typical Breakdown Voltage Comparison



## HOW TO ORDER TANCERAM®

|   |                               |  |  |   |  |                                |  |
|---|-------------------------------|--|--|---|--|--------------------------------|--|
| <b>250</b>  | <b>R18</b>                    | <b>Y</b>   | <b>105</b>   | <b>Z</b>  | <b>V</b>   | <b>4</b>                       | <b>E</b>   |
| <b>VOLTAGE</b><br>500 = 50 V<br>250 = 25 V<br>160 = 16 V<br>100 = 10 V<br>6R3 = 6.3 V | <b>CASE SIZE</b><br>See Chart | <b>DIELECTRIC</b><br>W = X7R<br>X = X5R<br>Y = Y5V | <b>CAPACITANCE</b><br>1st two digits are significant; third digit denotes number of zeros.<br>474 = 0.47 µF<br>105 = 1.00 µF | <b>TOLERANCE</b><br>Y5V<br>Z = +80% -20%<br>X7R/X5R<br>K = ±10%<br>M = ±20% | <b>TERMINATION</b><br>V = Ni barrier w/<br>100% Sn Plating | <b>MARKING</b><br>4 = Unmarked | <b>TAPE MODIFIER</b><br>Code Type Reel<br>E Plastic 7"<br>T Paper 7"<br>Tape specifications conform to EIA RS481 |

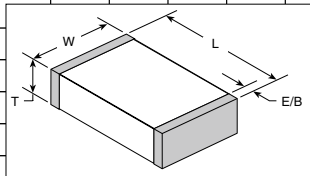
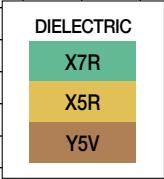
P/N written: 250R18Y105ZV4E



# TANCERAM® CHIP CAPACITORS

## CAPACITANCE SELECTION

| CASE SIZE   |     |                 | 50 V           | 25 V | 16 V | 10 V | 6.3 V | 50 V | 25 V | 16 V | 10 V | 6.3 V | 50 V | 25 V | 16 V | 10 V | 6.3 V | 50 V | 25 V | 16 V | 10 V | 6.3 V | 50 V | 25 V | 16 V | 10 V | 6.3 V | 50 V | 25 V | 16 V | 10 V | 6.3 V | 50 V | 25 V | 16 V | 10 V | 6.3 V |   |  |
|-------------|-----|-----------------|----------------|------|------|------|-------|------|------|------|------|-------|------|------|------|------|-------|------|------|------|------|-------|------|------|------|------|-------|------|------|------|------|-------|------|------|------|------|-------|---|--|
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
| 0402<br>R07 | L   | .040 ±.004      | (1.02 ±.10)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | W   | .020 ±.004      | (0.51 ±.10)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | T   | .025 Max.       | (0.64)         |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | E/B | .008 ±.004      | (0.20±.10)     |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
| 0603<br>R14 | L   | .063 ±.008      | (1.60 ±.20)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | W   | .032 ±.008      | (0.81 ±.20)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | T   | .035 Max.       | (0.89)         |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | E/B | .010±.005       | (.25±.13)      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
| 0805<br>R15 | L   | .080 ±.010      | (2.03 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | W   | .050 ±.010      | (1.27 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | T   | .060 Max.       | (1.52)         |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | E/B | .020±.010       | (0.51±.25)     |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
| 1206<br>R18 | L   | .125 ±.010      | (3.17 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | W   | .062 ±.010      | (1.57 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | T   | .070 Max.       | (1.78)         |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | E/B | .020 +.015-0.10 | (0.51+.38-.25) |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
| 1210<br>S41 | L   | .125 ±.010      | (3.18 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | W   | .095 ±.010      | (2.41 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | T   | .110 Max.       | (2.8)          |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | E/B | .020 +.015-0.10 | (0.51+.38-.25) |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             |     |                 |                |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
| 1812<br>S43 | L   | .175 ±.010      | (4.45 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | W   | .125 ±.010      | (3.17 ±.25)    |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | T   | .110 Max.       | (2.8)          |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | E/B | .035±.020       | (0.89±.51)     |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |   |  |
|             | * T | .140 Max.       | (3.55)         |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       |      |      |      |      |       | * |  |



## ELECTRICAL CHARACTERISTICS

|   | X7R  | X5R   | Y5V   |
|---|--|---|---|
| Temperature Coefficient:                  | ±15% (-55 to +125°C)   | ±15% (-55 to +85°C)                             | +22%, -82% (-30 to +85°C)                       |
| Dissipation Factor:                       | For ≥ 50 VDC: 5% max.<br>For ≤ 25 VDC: 10% max.  | For ≥ 50 VDC: 5% max.<br>For ≤ 25 VDC: 10% max. | For ≥ 10 VDC: 16% max.<br>For 6.3 VDC: 20% max. |
| Insulation Resistance (Min. @ 25°C, WVDC) | 500 ΩF or 10 GΩ, whichever is less   |   |   |
| Dielectric Strength:                      | 2.5 X WVDC, 25°C, 50mA max.  |   |   |
| Test Conditions:                          | Capacitance values ≤ 22 μF: 1.0kHz±50Hz @ 1.0±0.2 Vrms<br>Capacitance values > 22 μF: 120Hz±10Hz @ 0.5V±0.1 Vrms |   |   |
| Other:                                    | See page 20 for additional dielectric specifications.  |   |   |

