

TCH Low ESR Hermetic Series



SMD Low ESR Tantalum Capacitors with Conductive Polymer Electrode in Hermetic Package



FEATURES

- Aerospace & Hi-Rel applications
- Low ESR conductive polymer electrode
- Endurance up to 10 000 hrs. on selected codes
- Ceramic case hermetic packaging
- Stability under humidity and ambient atmosphere exposure
- Large case sizes including CTC-21D provide high capacitance values
- Developed with ESA to suit aerospace applications
- Ongoing ESA qualification
- Manufacturing and screening utilizing AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operation life



APPLICATIONS

- Aerospace
- Defence
- Power supplies
- Pulse power

MARKING

9 CASE



For additional information on Q-process please consult the AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors" (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

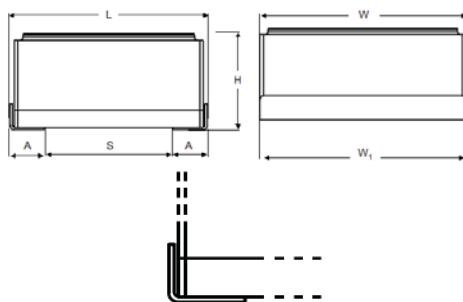
CASE DIMENSIONS: millimeters (inches)

| Code | Type | L±0.20 (0.008) | W±0.20 (0.008) | H Max. | W ₁ ±0.20 (0.008) | A±0.20 (0.008) | S Min. |
|-------------|---------------------|---------------------------------|---------------------------------|-----------------|---------------------------------|--------------------------------|-----------------|
| 9 (CTC-21D) | J-lead (L-shape) | 11.50 ± 0.50 (0.453 ± 0.020) | 12.50 ± 0.50 (0.492 ± 0.020) | 6.15 (0.242) | 12.50 ± 0.50 (0.492 ± 0.020) | 1.90 ± 0.50 (0.075 ± 0.020) | 7.00 (0.276) |
| 9 (CTC-21D) | Undertab | 11.00 (0.433) | 12.50 (0.492) | 5.95 (0.234) | 10.50 (0.413) | 1.50 (0.059) | 7.80 (0.307) |

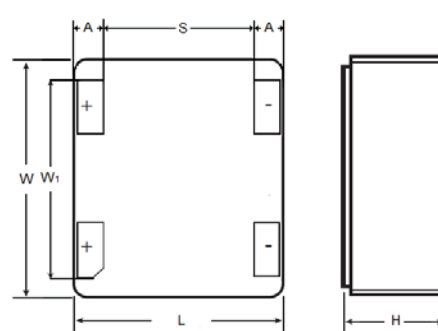
Available ratings

Engineering samples - please contact manufacturer

'J' Lead Termination (L-shape)



Undertab Termination



TECHNICAL SPECIFICATIONS

| | | | | | | | | | | |
|------------------------------------|---|----|----|------|----|------|----|----|----|-----|
| Technical Data: | All technical data relate to an ambient temperature of +25°C | | | | | | | | | |
| Capacitance Range: | 15 µF to 680 µF | | | | | | | | | |
| Capacitance Tolerance: | ±20% | | | | | | | | | |
| Leakage Current DCL: | 0.1CV | | | | | | | | | |
| Rated Voltage (V _R) | ≤ +85°C | 10 | 16 | 20 | 25 | 35 | 50 | 63 | 75 | 100 |
| Category Voltage (V _C) | ≤ +125°C | 7 | 11 | 13.5 | 17 | 23.5 | 33 | 42 | 50 | 66 |
| Temperature Range: | -55°C to +125°C | | | | | | | | | |
| Reliability: | 1% per 1000 hours at 85°C, V _R with 0.1Ω/Vseries impedance, 60% confidence level | | | | | | | | | |
| Termination Finish: | Gold Plating (Undertab), Sn/Pb (J-lead) | | | | | | | | | |





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HOW TO ORDER

AVX PART NUMBER

| | | | | | | | | | |
|-----------------|-------------------------------------|---|------------------------------|---|--|------------------|--|---|--|
| TCH T | 9 T | 687 T | M T | 016 T | W T | 0040 T | U T |  LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT |  RoHS COMPLIANT |
| Type | Case Size See table above | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Tolerance M = ±20% | Rated DC Voltage 010 = 10Vdc 050 = 50Vdc 016 = 16Vdc 063 = 63Vdc 020 = 20Vdc 075 = 75Vdc 025 = 25Vdc 100 = 100Vdc 035 = 35Vdc | Packaging W = Waffle B = Bulk | ESR in mΩ | Termination J = 'J' lead (L-shape) U = Undertab | For RoHS compliant products, please select correct termination style. | |

CAPACITANCE AND VOLTAGE RANGE (CASE CODE BEFORE THE BRACKETS)

| Capacitance | | Rated Voltage DC (V _R) at 85°C | | | | | | | | |
|-------------|------|--|--------|--------|--------|--------|--------|---------|---------|---------|
| μF | Code | 10V | 16V | 20V | 25V | 35V | 50V | 63V | 75V | 100V |
| 15 | 156 | | | | | | | | | 9(150)* |
| 22 | 226 | | | | | | | | 9(120)* | 9(150) |
| 33 | 336 | | | | | | | 9(100)* | 9(120) | |
| 47 | 476 | | | | | | 9(70) | 9(100)* | | |
| 68 | 686 | | | | | | 9(70)* | | | |
| 100 | 107 | | | | 9(50)* | 9(55) | | | | |
| 150 | 157 | | | 9(45)* | 9(50) | 9(55)* | | | | |
| 220 | 227 | 9(40)* | 9(40) | 9(45)* | 9(50)* | | | | | |
| 330 | 337 | 9(40) | 9(40)* | 9(45)* | | | | | | |
| 470 | 477 | 9(40)* | 9(40)* | | | | | | | |
| 680 | 687 | 9(40)* | 9(40) | | | | | | | |

Available Ratings: (ESR ratings in mOhms in brackets)
 Engineering samples - please contact manufacturer
 *Codes under development – upon request, please contact manufacturer



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RATINGS & PART NUMBER REFERENCE

| AVX Part No. | Case Size | Capacitance (µF) | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | DCL (µA) Max. | DF % Max. | ESR Max. (mΩ) @ 100kHz | MSL | 100kHz RMS Current (A) | | |
|------------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-----------|------------------------|-----|------------------------|------|-------|
| | | | | | | | | | | | 25°C | 85°C | 125°C |
| 10 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9227M010W0040# | 9 | 220 | 10 | 85 | 7 | 125 | 220 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| TCH9337M010W0040# | 9 | 330 | 10 | 85 | 7 | 125 | 330 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| TCH9477M010W0040# | 9 | 470 | 10 | 85 | 7 | 125 | 470 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| TCH9687M010W0040# | 9 | 680 | 10 | 85 | 7 | 125 | 680 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| 16 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9227M016W0040# | 9 | 220 | 16 | 85 | 10 | 125 | 352 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| TCH9337M016W0040# | 9 | 330 | 16 | 85 | 10 | 125 | 528 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| TCH9477M016W0040# | 9 | 470 | 16 | 85 | 10 | 125 | 752 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| TCH9687M016W0040# | 9 | 680 | 16 | 85 | 10 | 125 | 1088 | 8 | 40 | 1 | 3.16 | 2.84 | 1.26 |
| 20 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9157M020W0045# | 9 | 150 | 20 | 85 | 13 | 125 | 300 | 8 | 45 | 1 | 2.98 | 2.68 | 1.19 |
| TCH9227M020W0045# | 9 | 220 | 20 | 85 | 13 | 125 | 440 | 8 | 45 | 1 | 2.98 | 2.68 | 1.19 |
| TCH9337M020W0045# | 9 | 330 | 20 | 85 | 13 | 125 | 660 | 8 | 45 | 1 | 2.98 | 2.68 | 1.19 |
| 25 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9107M025W0050# | 9 | 100 | 25 | 85 | 17 | 125 | 250 | 8 | 50 | 1 | 2.83 | 2.55 | 1.13 |
| TCH9157M025W0050# | 9 | 150 | 25 | 85 | 17 | 125 | 357 | 8 | 50 | 1 | 2.83 | 2.55 | 1.13 |
| TCH9227M025W0050# | 9 | 220 | 25 | 85 | 17 | 125 | 550 | 8 | 50 | 1 | 2.83 | 2.55 | 1.13 |
| 35 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9107M035W0055# | 9 | 100 | 35 | 85 | 23 | 125 | 350 | 8 | 55 | 1 | 2.69 | 2.42 | 1.08 |
| TCH9157M035W0055# | 9 | 150 | 35 | 85 | 23 | 125 | 525 | 8 | 55 | 1 | 2.69 | 2.42 | 1.08 |
| 50 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9476M050W0070# | 9 | 47 | 50 | 85 | 33 | 125 | 235 | 8 | 70 | 1 | 2.39 | 2.15 | 0.96 |
| TCH9686M050W0070# | 9 | 68 | 50 | 85 | 33 | 125 | 340 | 8 | 70 | 1 | 2.39 | 2.15 | 0.96 |
| 63 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9336M063W0100# | 9 | 33 | 63 | 85 | 33 | 125 | 215 | 8 | 100 | 1 | 2.00 | 1.80 | 0.80 |
| TCH9476M063W0100# | 9 | 47 | 63 | 85 | 33 | 125 | 296 | 8 | 100 | 1 | 2.00 | 1.80 | 0.80 |
| 75 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9226M075W0120# | 9 | 22 | 75 | 85 | 33 | 125 | 165 | 8 | 120 | 1 | 1.82 | 1.64 | 0.73 |
| TCH9336M075W0120# | 9 | 33 | 75 | 85 | 33 | 125 | 248 | 8 | 120 | 1 | 1.82 | 1.64 | 0.73 |
| 100 Volt @ 85°C | | | | | | | | | | | | | |
| TCH9156M100W0150# | 9 | 15 | 100 | 85 | 33 | 125 | 150 | 8 | 150 | 1 | 1.63 | 1.47 | 0.65 |
| TCH9226M100W0150# | 9 | 22 | 100 | 85 | 33 | 125 | 220 | 8 | 150 | 1 | 1.63 | 1.47 | 0.65 |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with a maximum DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

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QUALIFICATION TABLE

| TEST | TCH low ESR hermetic series (Temperature range -55°C to +125°C) | | | | | | | | | | |
|------------------------------|--|---------------|----------------|--------------------|------------------------------|------------|------------|-----------|------------|------------|--|
| | Condition | | | Characteristics | | | | | | | |
| Endurance | Determine after application of rated voltage for 2000 (10000) +48/0 hours at 85±2°C and then leaving min. 2 hours at room temperature. Also determine of 125°C temperature, category voltage for 2000 +48/-0 hours and then leaving min. 2 hours at room temperature. Power supply impedance to be < 3Ω. | | | Visual examination | no visible damage | | | | | | |
| | | | | DCL | 1.25 x initial limit | | | | | | |
| | | | | ΔC/C | within ±20% of initial value | | | | | | |
| | | | | DF | 1.5 x initial limit | | | | | | |
| | | | | ESR | 2 x initial limit | | | | | | |
| Storage Life | 125°C, 0V, 2000h | | | Visual examination | no visible damage | | | | | | |
| | | | | DCL | 2 x initial limit | | | | | | |
| | | | | ΔC/C | within ±20% of initial value | | | | | | |
| | | | | DF | 1.5 x initial limit | | | | | | |
| | | | | ESR | 2 x initial limit | | | | | | |
| Humidity | Determine after storage without applied voltage at 40±2°C and 90±2% relative humidity for 56 days and then recovery min. 2 hours at room temperature. | | | Visual examination | no visible damage | | | | | | |
| | | | | DCL | 1.25 x initial limit | | | | | | |
| | | | | ΔC/C | within ±10% of initial value | | | | | | |
| | | | | DF | initial limit | | | | | | |
| | | | | ESR | 1.25 x initial limit | | | | | | |
| Temperature Stability | Step | Temperature°C | Duration (min) | | +20°C | -55°C | +20°C | +85°C | +125°C | +20°C | |
| | 1 | +22 | 15 | DCL | IL* | n/a | IL* | 10 x IL* | 12.5 x IL* | IL* | |
| | 2 | -55 | 15 | | | | | | | | |
| | 3 | +22 | 15 | ΔC/C | IL* | +0/-20% | ±5% | +20/-0% | +30/-0% | ±5% | |
| | 4 | +85 | 15 | DF | IL* | 1.5 x IL* | IL* | 1.5 x IL* | 2 x IL* | IL* | |
| | 5 | +125 | 15 | ESR | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* | 1.5 x IL* | 1.5 x IL* | 1.25 x IL* | |
| | 6 | +22 | 15 | | | | | | | | |
| Surge Voltage | Test temperature: 85°C+3/0°C Surge voltage: 1.3 x rated voltage Series protection resistance: 33Ω Discharge resistance: 33Ω Number of cycles: 1000x Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge | | | Visual examination | no visible damage | | | | | | |
| | | | | DCL | initial limit | | | | | | |
| | | | | ΔC/C | within ±20% of initial value | | | | | | |
| | | | | DF | initial limit | | | | | | |
| | | | | ESR | 1.25 x initial limit | | | | | | |

*Initial Limit



Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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