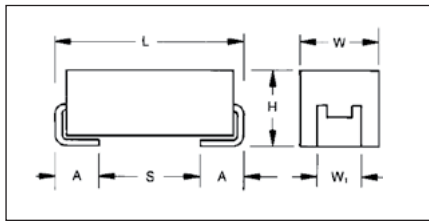


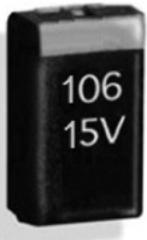
TAZ SERIES

CWR09 - MIL-PRF-55365/4 Established Reliability, COTS-Plus & Space Level



MARKING

(White marking on black body)



Polarity Stripe (+)

**Capacitance Code
Rated Voltage**

This is the original high reliability molded tantalum chip series and the case sizes still represent the most flexible of surface mount form factors. TAZ offers nine case sizes, eight of which (A through H) are fully qualified to MILPRF-55365/4, and also includes the original sub-miniature R case (non-QPL).

This series is fully interchangeable with CWR06 conformational types, while offering the advantages of molded body/compliant termination construction (ensuring no TCE mismatch with any substrate). This construction is compatible with a wide range of SMT board assembly processes including convection reflow solder, conductive epoxy or compression bonding techniques.

The parts also carry full polarity and capacitance / voltage marking. The five smaller cases are characterized by their low profile construction, with the A case being the world's smallest

molded military tantalum chip.

All 4V to 50V ratings are qualified to MIL-PRF-55365 Weibull "B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.

For Space Level applications, KYOCERA AVXSRC 9000 qualification is recommended (see ratings table for part number availability).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365). In addition, the molding compound has been selected to meet the requirements of UL 94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

CASE DIMENSIONS:

millimeters (inches)

| Case Code | Length (L) ±0.38 (0.015) | Width (W) ±0.38 (0.015) | Height (H) ±0.38 (0.015) | Term. Width (W _t) | Term. Length (A) +0.25/-0.13 (+0.010/-0.005) | S min | Typical Weight (g) |
|-----------|--------------------------------|--|--------------------------------|---|--|-----------------|--------------------|
| A | 2.54 (0.100) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 0.38 (0.015) | 0.016 |
| B | 3.81 (0.150) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 1.65 (0.065) | 0.025 |
| C | 5.08 (0.200) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 2.92 (0.115) | 0.035 |
| D | 3.81 (0.150) | 2.54 (0.100) | 1.27 (0.050) | 2.41±0.13/-0.25 (0.095±0.005/-0.010) | 0.76 (0.030) | 1.65 (0.065) | 0.045 |
| E | 5.08 (0.200) | 2.54 (0.100) | 1.27 (0.050) | 2.41±0.13/-0.25 (0.095±0.005/-0.010) | 0.76 (0.030) | 2.92 (0.115) | 0.065 |
| F | 5.59 (0.220) | 3.43 (0.135) | 1.78 (0.070) | 3.30±0.13 (0.130±0.005) | 0.76 (0.030) | 3.43 (0.135) | 0.125 |
| G | 6.73 (0.265) | 2.79 (0.110) | 2.79 (0.110) | 2.67±0.13 (0.105±0.005) | 1.27 (0.050) | 3.56 (0.140) | 0.205 |
| H | 7.24 (0.285) | 3.81 (0.150) | 2.79 (0.110) | 3.68±0.13/-0.51 (0.145±0.005/-0.020) | 1.27 (0.050) | 4.06 (0.160) | 0.335 |
| R | 2.05 (0.081) ±0.20 (0.008) | 1.30 (0.051) +0.20 (0.008) -0.10 (0.004) | 1.20 (0.047) max | 1.0±0.10 (0.039±0.004) | 0.50 (0.020) +0.30 (0.012) -0.20 (0.008) | 0.71 (0.028) | 0.010 |

CWR09 MIL-PRF-55365/4

CAPACITANCE AND RATED VOLTAGE, V_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

| Capacitance | | Rated Voltage DC (V _R) at 85°C | | | | | | | |
|-------------|------|--|--------|---------|---------|---------|---------|---------|---------|
| µF | Code | 4V (C) | 6V (D) | 10V (F) | 15V (H) | 20V (J) | 25V (K) | 35V (M) | 50V (N) |
| 0.10 | 104 | | | | | | | | A |
| 0.15 | 154 | | | | | | | | A |
| 0.22 | 224 | | | | | | | A | B |
| 0.33 | 334 | R | | R | | | A | | B |
| 0.47 | 474 | | | R | | A | | B | C |
| 0.68 | 684 | | | | A | B | | C | D |
| 1.0 | 105 | | | A/R | | B | C | D | E |
| 1.5 | 155 | | A | | B | C | D | E | F |
| 2.2 | 225 | A/R | | B | C | D | E | | F |
| 3.3 | 335 | | B | C | D | E | | F | G |
| 4.7 | 475 | B | C | D | E | | F | G | H |
| 6.8 | 685 | C | D | E | | F | G | H | |
| 10 | 106 | D | E | | F | | G | | |
| 15 | 156 | E | | F | | G | H | | |
| 22 | 226 | | F | | G | H | | | |
| 33 | 336 | F | | G | H | | | | |
| 47 | 476 | | G | | H | | | | |
| 68 | 686 | G | H | | | | | | |
| 100 | 107 | H | | | | | | | |

TAZ SERIES

CWR09 - MIL-PRF-55365/4 Established Reliability,
COTS-Plus & Space Level



HOW TO ORDER

COTS-PLUS & MIL QPL (CWR09):

| TAZ | H | 686 | * | 006 | C | □ | # | @ | 0 | ^ | ++ |
|------|-----------|--|--|--|--|--|--|--|--|---|--|
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | Standard or Low ESR Range C = Std ESR | Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 8 for additional packaging options. | Inspection Level S = Std. Conformance L = Group A M = MIL (JAN) CWR09 | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER | Qualification Level 0 = N/A T = T Level 9 = SRC9000 | Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only) | Surge Test Option 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull |

For RoHS compliant products, please select correct termination style.

CWR09 P/N CROSS REFERENCE:

| CWR09 | D | ^ | 686 | * | C | + | □ |
|-------|--|---|--|--|---|---|---|
| Type | Voltage Code D = 4Vdc C = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc N = 50Vdc | Termination Finish H = Solder Plated D = Solder Fused C = Hot Solder Dipped B = Gold Plated | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER | Surge Test Option A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull If blank, None required | Packaging Bulk = Standard TR = 7" T&R TR13 = 13" T&R W = Waffle See page 8 for additional packaging options. |

For RoHS compliant products, please select correct termination style.

SPACE LEVEL OPTIONS TO SRC9000*:

| TAZ | H | 686 | * | 006 | C | □ | L | C | 9 | ^ | ++ |
|------|-----------|--|--|--|---|--|---------------------------------|--|------------------------------------|--|---|
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | Standard or Low ESR Range C = Std ESR L = Low ESR | Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 8 for additional packaging options. | Inspection Level L = Group A | Reliability Grade Weibull: C = 0.01%/1000 hrs. 90% conf. | Qualification Level 9 = SRC9000 | Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated | Surge Test Option 45 = 10 cycles, -55°C & +85°C before Weibull GC = Group C Testing and Data OR = TOR compliant testing and data |

For RoHS compliant products, please select correct termination style.

*Contact factory for SRC9000 Space Level SCD details.

TECHNICAL SPECIFICATIONS

| | | | | | | | | | | |
|------------------------------------|---|-----|-----|------|------|------|------|------|------|--|
| Technical Data: | Unless otherwise specified, all technical data relate to an ambient temperature of 25°C | | | | | | | | | |
| Capacitance Range: | 0.10 µF to 100 µF | | | | | | | | | |
| Capacitance Tolerance: | ±5%; ±10%; ±20% | | | | | | | | | |
| Rated Voltage (V _R) | ≤ 85°C: | 4 | 6 | 10 | 15 | 20 | 25 | 35 | 50 | |
| Category Voltage (V _C) | ≤ 125°C: | 2.7 | 4 | 6.7 | 10 | 13.3 | 16.7 | 23.3 | 33.3 | |
| Surge Voltage (V _S) | ≤ 85°C: | 5.3 | 8 | 13.3 | 20 | 26.7 | 33.3 | 46.7 | 66.7 | |
| Surge Voltage (V _S) | ≤ 125°C: | 3.5 | 5.3 | 8.7 | 13.3 | 17.8 | 22.2 | 31.1 | 44.5 | |
| Temperature Range: | -55°C to +125°C | | | | | | | | | |

TAZ SERIES

CWR09 - MIL-PRF-55365/4 Established Reliability,
COTS-Plus & Space Level



| RATING & PART NUMBER REFERENCE | | | | Parametric Specifications by Rating per MIL-PRF-55365/4 | | | | | | | | | Typical RMS Ripple Data by Rating | | | | | | |
|--------------------------------|-------------------------------|---------------------------------|------|---|------------------|--------------|---------|-------|--------|--------|-------------|-------|-----------------------------------|-------------|-------------|--------------|-------------|-------------|--------------|
| | | | | Cap @ 120Hz | DC Rated Voltage | ESR @ 100kHz | DCL max | | | DF Max | | | Power Dissipation | 25°C Ripple | 85°C Ripple | 125°C Ripple | 25°C Ripple | 85°C Ripple | 125°C Ripple |
| | | | | | | | +25°C | +85°C | +125°C | +25°C | +(85/125)°C | -55°C | | | | | | | |
| CWR09 P/N | MIL & COTS-Plus P/N | SRC9000 P/N | Case | µF @ 25°C | V @ +85°C | Ohms @ +25°C | (µA) | (µA) | (µA) | (%) | (%) | (%) | W | A (100kHz) | A (100kHz) | V (100kHz) | V (100kHz) | V (100kHz) | |
| | TAZ R 334 * 004 C # @ 0 ^ + + | | R | 0.33 | 4 | 45 | 1 | 10 | 12 | 6 | 8 | 8 | 0.030 | 0.03 | 0.02 | 0.01 | 1.16 | 1.05 | 0.46 |
| | TAZ R 225 * 004 C # @ 0 ^ + + | | R | 2.2 | 4 | 12 | 1 | 10 | 12 | 6 | 8 | 8 | 0.030 | 0.05 | 0.05 | 0.02 | 0.60 | 0.54 | 0.24 |
| CWR09C^225* @ + | TAZ A 225 * 004 C # @ 0 ^ + + | TAZ A 225 * 004 C □ L C 9 ^ + + | A | 2.2 | 4 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.08 | 0.07 | 0.03 | 0.63 | 0.57 | 0.25 |
| CWR09C^475* @ + | TAZ B 475 * 004 C # @ 0 ^ + + | TAZ B 475 * 004 C □ L C 9 ^ + + | B | 4.7 | 4 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.09 | 0.08 | 0.04 | 0.75 | 0.67 | 0.30 |
| CWR09C^685* @ + | TAZ C 685 * 004 C # @ 0 ^ + + | TAZ C 685 * 004 C □ L C 9 ^ + + | C | 6.8 | 4 | 5.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.12 | 0.11 | 0.05 | 0.64 | 0.58 | 0.26 |
| CWR09C^106* @ + | TAZ D 106 * 004 C # @ 0 ^ + + | TAZ D 106 * 004 C □ L C 9 ^ + + | D | 10 | 4 | 4 | 1 | 10 | 12 | 8 | 8 | 10 | 0.080 | 0.14 | 0.13 | 0.06 | 0.57 | 0.51 | 0.23 |
| CWR09C^156* @ + | TAZ E 156 * 004 C # @ 0 ^ + + | TAZ E 156 * 004 C □ L C 9 ^ + + | E | 15 | 4 | 3.5 | 1 | 10 | 12 | 8 | 10 | 12 | 0.090 | 0.16 | 0.14 | 0.06 | 0.56 | 0.51 | 0.22 |
| CWR09C^336* @ + | TAZ F 336 * 004 C # @ 0 ^ + + | TAZ F 336 * 004 C □ L C 9 ^ + + | F | 33 | 4 | 2.2 | 2 | 20 | 24 | 8 | 10 | 12 | 0.100 | 0.21 | 0.19 | 0.09 | 0.47 | 0.42 | 0.19 |
| CWR09C^686* @ + | TAZ G 686 * 004 C # @ 0 ^ + + | TAZ G 686 * 004 C □ L C 9 ^ + + | G | 68 | 4 | 1.1 | 3 | 30 | 36 | 10 | 12 | 12 | 0.125 | 0.34 | 0.30 | 0.13 | 0.37 | 0.33 | 0.15 |
| CWR09C^107* @ + | TAZ H 107 * 004 C # @ 0 ^ + + | TAZ H 107 * 004 C □ L C 9 ^ + + | H | 100 | 4 | 0.9 | 4 | 40 | 48 | 10 | 12 | 12 | 0.150 | 0.41 | 0.37 | 0.16 | 0.37 | 0.33 | 0.15 |
| CWR09D^155* @ + | TAZ A 155 * 006 C # @ 0 ^ + + | TAZ A 155 * 006 C □ L C 9 ^ + + | A | 1.5 | 6 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.08 | 0.07 | 0.03 | 0.63 | 0.57 | 0.25 |
| CWR09D^335* @ + | TAZ B 335 * 006 C # @ 0 ^ + + | TAZ B 335 * 006 C □ L C 9 ^ + + | B | 3.3 | 6 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.09 | 0.08 | 0.04 | 0.75 | 0.67 | 0.30 |
| CWR09D^475* @ + | TAZ C 475 * 006 C # @ 0 ^ + + | TAZ C 475 * 006 C □ L C 9 ^ + + | C | 4.7 | 6 | 5.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.12 | 0.11 | 0.05 | 0.64 | 0.58 | 0.26 |
| CWR09D^685* @ + | TAZ D 685 * 006 C # @ 0 ^ + + | TAZ D 685 * 006 C □ L C 9 ^ + + | D | 6.8 | 6 | 4.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.13 | 0.12 | 0.05 | 0.60 | 0.54 | 0.24 |
| CWR09D^106* @ + | TAZ E 106 * 006 C # @ 0 ^ + + | TAZ E 106 * 006 C □ L C 9 ^ + + | E | 10 | 6 | 3.5 | 1 | 10 | 12 | 8 | 10 | 12 | 0.090 | 0.16 | 0.14 | 0.06 | 0.56 | 0.51 | 0.22 |
| CWR09D^226* @ + | TAZ F 226 * 006 C # @ 0 ^ + + | TAZ F 226 * 006 C □ L C 9 ^ + + | F | 22 | 6 | 2.2 | 2 | 20 | 24 | 8 | 10 | 12 | 0.100 | 0.21 | 0.19 | 0.09 | 0.47 | 0.42 | 0.19 |
| CWR09D^476* @ + | TAZ G 476 * 006 C # @ 0 ^ + + | TAZ G 476 * 006 C □ L C 9 ^ + + | G | 47 | 6 | 1.1 | 3 | 30 | 36 | 10 | 12 | 12 | 0.125 | 0.34 | 0.30 | 0.13 | 0.37 | 0.33 | 0.15 |
| CWR09D^686* @ + | TAZ H 686 * 006 C # @ 0 ^ + + | TAZ H 686 * 006 C □ L C 9 ^ + + | H | 68 | 6 | 0.9 | 4 | 40 | 48 | 10 | 12 | 12 | 0.150 | 0.41 | 0.37 | 0.16 | 0.37 | 0.33 | 0.15 |
| | TAZ R 334 * 010 C # @ 0 ^ + + | | R | 0.33 | 10 | 50 | 1 | 10 | 12 | 6 | 8 | 8 | 0.030 | 0.02 | 0.02 | 0.01 | 1.22 | 1.10 | 0.49 |
| | TAZ R 474 * 010 C # @ 0 ^ + + | | R | 0.47 | 10 | 50 | 1 | 10 | 12 | 6 | 8 | 8 | 0.030 | 0.02 | 0.02 | 0.01 | 1.22 | 1.10 | 0.49 |
| | TAZ R 105 * 010 C # @ 0 ^ + + | | R | 1 | 10 | 10 | 1 | 10 | 12 | 6 | 8 | 8 | 0.030 | 0.05 | 0.05 | 0.02 | 0.55 | 0.49 | 0.22 |
| CWR09F^105* @ + | TAZ A 105 * 010 C # @ 0 ^ + + | TAZ A 105 * 010 C □ L C 9 ^ + + | A | 1 | 10 | 10 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.07 | 0.06 | 0.03 | 0.71 | 0.64 | 0.28 |
| CWR09F^225* @ + | TAZ B 225 * 010 C # @ 0 ^ + + | TAZ B 225 * 010 C □ L C 9 ^ + + | B | 2.2 | 10 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.09 | 0.08 | 0.04 | 0.75 | 0.67 | 0.30 |
| CWR09F^335* @ + | TAZ C 335 * 010 C # @ 0 ^ + + | TAZ C 335 * 010 C □ L C 9 ^ + + | C | 3.3 | 10 | 5.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.12 | 0.11 | 0.05 | 0.64 | 0.58 | 0.26 |
| CWR09F^475* @ + | TAZ D 475 * 010 C # @ 0 ^ + + | TAZ D 475 * 010 C □ L C 9 ^ + + | D | 4.7 | 10 | 4.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.13 | 0.12 | 0.05 | 0.60 | 0.54 | 0.24 |
| CWR09F^685* @ + | TAZ E 685 * 010 C # @ 0 ^ + + | TAZ E 685 * 010 C □ L C 9 ^ + + | E | 6.8 | 10 | 3.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.16 | 0.14 | 0.06 | 0.56 | 0.51 | 0.22 |
| CWR09F^156* @ + | TAZ F 156 * 010 C # @ 0 ^ + + | TAZ F 156 * 010 C □ L C 9 ^ + + | F | 15 | 10 | 2.5 | 2 | 20 | 24 | 8 | 10 | 12 | 0.100 | 0.20 | 0.18 | 0.08 | 0.50 | 0.45 | 0.20 |
| CWR09F^336* @ + | TAZ G 336 * 010 C # @ 0 ^ + + | TAZ G 336 * 010 C □ L C 9 ^ + + | G | 33 | 10 | 1.1 | 3 | 30 | 36 | 10 | 12 | 12 | 0.125 | 0.34 | 0.30 | 0.13 | 0.37 | 0.33 | 0.15 |
| CWR09F^476* @ + | TAZ H 476 * 010 C # @ 0 ^ + + | TAZ H 476 * 010 C □ L C 9 ^ + + | H | 47 | 10 | 0.9 | 5 | 50 | 60 | 10 | 12 | 12 | 0.150 | 0.41 | 0.37 | 0.16 | 0.37 | 0.33 | 0.15 |
| CWR09H^684* @ + | TAZ A 684 * 015 C # @ 0 ^ + + | TAZ A 684 * 015 C □ L C 9 ^ + + | A | 0.68 | 15 | 12 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.06 | 0.06 | 0.03 | 0.77 | 0.70 | 0.31 |
| CWR09H^155* @ + | TAZ B 155 * 015 C # @ 0 ^ + + | TAZ B 155 * 015 C □ L C 9 ^ + + | B | 1.5 | 15 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.09 | 0.08 | 0.04 | 0.75 | 0.67 | 0.30 |
| CWR09H^225* @ + | TAZ C 225 * 015 C # @ 0 ^ + + | TAZ C 225 * 015 C □ L C 9 ^ + + | C | 2.2 | 15 | 5.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.12 | 0.11 | 0.05 | 0.64 | 0.58 | 0.26 |
| CWR09H^335* @ + | TAZ D 335 * 015 C # @ 0 ^ + + | TAZ D 335 * 015 C □ L C 9 ^ + + | D | 3.3 | 15 | 5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.13 | 0.11 | 0.05 | 0.63 | 0.57 | 0.25 |
| CWR09H^475* @ + | TAZ E 475 * 015 C # @ 0 ^ + + | TAZ E 475 * 015 C □ L C 9 ^ + + | E | 4.7 | 15 | 4 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.15 | 0.14 | 0.06 | 0.60 | 0.54 | 0.24 |
| CWR09H^106* @ + | TAZ F 106 * 015 C # @ 0 ^ + + | TAZ F 106 * 015 C □ L C 9 ^ + + | F | 10 | 15 | 2.5 | 2 | 20 | 24 | 6 | 8 | 8 | 0.100 | 0.20 | 0.18 | 0.08 | 0.50 | 0.45 | 0.20 |
| CWR09H^226* @ + | TAZ G 226 * 015 C # @ 0 ^ + + | TAZ G 226 * 015 C □ L C 9 ^ + + | G | 22 | 15 | 1.1 | 4 | 40 | 48 | 6 | 8 | 8 | 0.125 | 0.34 | 0.30 | 0.13 | 0.37 | 0.33 | 0.15 |
| CWR09H^336* @ + | TAZ H 336 * 015 C # @ 0 ^ + + | TAZ H 336 * 015 C □ L C 9 ^ + + | H | 33 | 15 | 0.9 | 5 | 50 | 60 | 8 | 10 | 10 | 0.150 | 0.41 | 0.37 | 0.16 | 0.37 | 0.33 | 0.15 |
| CWR09J^474* @ + | TAZ A 474 * 020 C # @ 0 ^ + + | TAZ A 474 * 020 C □ L C 9 ^ + + | A | 0.47 | 20 | 14 | 1 | 10 | 12 | 8 | 8 | 10 | 0.050 | 0.06 | 0.05 | 0.02 | 0.84 | 0.75 | 0.33 |
| CWR09J^684* @ + | TAZ B 684 * 020 C # @ 0 ^ + + | TAZ B 684 * 020 C □ L C 9 ^ + + | B | 0.68 | 20 | 10 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.08 | 0.08 | 0.03 | 0.84 | 0.75 | 0.33 |
| CWR09J^105* @ + | TAZ B 105 * 020 C # @ 0 ^ + + | TAZ B 105 * 020 C □ L C 9 ^ + + | B | 1 | 20 | 12 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.08 | 0.07 | 0.03 | 0.92 | 0.82 | 0.37 |
| CWR09J^155* @ + | TAZ C 155 * 020 C # @ 0 ^ + + | TAZ C 155 * 020 C □ L C 9 ^ + + | C | 1.5 | 20 | 6 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.11 | 0.10 | 0.04 | 0.67 | 0.60 | 0.27 |
| CWR09J^225* @ + | TAZ D 225 * 020 C # @ 0 ^ + + | TAZ D 225 * 020 C □ L C 9 ^ + + | D | 2.2 | 20 | 5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.13 | 0.11 | 0.05 | 0.63 | 0.57 | 0.25 |
| CWR09J^335* @ + | TAZ E 335 * 020 C # @ 0 ^ + + | TAZ E 335 * 020 C □ L C 9 ^ + + | E | 3.3 | 20 | 4 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.15 | 0.14 | 0.06 | 0.60 | 0.54 | 0.24 |
| CWR09J^685* @ + | TAZ F 685 * 020 C # @ 0 ^ + + | TAZ F 685 * 020 C □ L C 9 ^ + + | F | 6.8 | 20 | 2.4 | 2 | 20 | 24 | 6 | 8 | 8 | 0.100 | 0.20 | 0.18 | 0.08 | 0.49 | 0.44 | 0.20 |
| CWR09J^156* @ + | TAZ G 156 * 020 C # @ 0 ^ + + | TAZ G 156 * 020 C □ L C 9 ^ + + | G | 15 | 20 | 1.1 | 3 | 30 | 36 | 6 | 8 | 8 | 0.125 | 0.34 | 0.30 | 0.13 | 0.37 | 0.33 | 0.15 |
| CWR09J^226* @ + | TAZ H 226 * 020 C # @ 0 ^ + + | TAZ H 226 * 020 C □ L C 9 ^ + + | H | 22 | 20 | 0.9 | 4 | 40 | 48 | 6 | 8 | 8 | 0.150 | 0.41 | 0.37 | 0.16 | 0.37 | 0.33 | 0.15 |

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

NOTE: KYOCERA AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



TAZ SERIES

CWR09 - MIL-PRF-55365/4 Established Reliability,
COTS-Plus & Space Level



| RATING & PART NUMBER REFERENCE | | | | Parametric Specifications by Rating per MIL-PRF-55365/4 | | | | | | | | | Typical RMS Ripple Data by Rating | | | | | | |
|--------------------------------|------------------------------|--------------------------------|------|---|---------------------|-----------------|---------|-------|--------|--------|-----------------|-------|-----------------------------------|----------------|----------------|-----------------|----------------|----------------|-----------------|
| | | | | Cap @ 120Hz | DC Rated Voltage | ESR @ 100kHz | DCL max | | | DF Max | | | Power Dissipation | 25°C Ripple | 85°C Ripple | 125°C Ripple | 25°C Ripple | 85°C Ripple | 125°C Ripple |
| | | | | | | | +25°C | +85°C | +125°C | +25°C | +(85/125) °C | -55°C | | | | | | | |
| CWR09 P/N | MIL & COTS-Plus P/N | SRC9000 P/N | Case | µF @ 25°C | V @ +85°C | Ohms @ +25°C | (µA) | (µA) | (µA) | (%) | (%) | (%) | W | A (100kHz) | A (100kHz) | A (100kHz) | V (100kHz) | V (100kHz) | V (100kHz) |
| CWR09K^334* @+ | TAZ A 334 * 025 C □ @ 0 ^ ++ | TAZ A 334 * 025 C □ L C 9 ^ ++ | A | 0.33 | 25 | 15 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.06 | 0.05 | 0.02 | 0.87 | 0.78 | 0.35 |
| CWR09K^684* @+ | TAZ B 684 * 025 C □ @ 0 ^ ++ | TAZ B 684 * 025 C □ L C 9 ^ ++ | B | 0.68 | 25 | 7.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.10 | 0.09 | 0.04 | 0.72 | 0.65 | 0.29 |
| CWR09K^105* @+ | TAZ C 105 * 025 C □ @ 0 ^ ++ | TAZ C 105 * 025 C □ L C 9 ^ ++ | C | 1 | 25 | 6.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.11 | 0.10 | 0.04 | 0.70 | 0.63 | 0.28 |
| CWR09K^155* @+ | TAZ D 155 * 025 C □ @ 0 ^ ++ | TAZ D 155 * 025 C □ L C 9 ^ ++ | D | 1.5 | 25 | 6.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.11 | 0.10 | 0.04 | 0.72 | 0.65 | 0.29 |
| CWR09K^225* @+ | TAZ E 225 * 025 C □ @ 0 ^ ++ | TAZ E 225 * 025 C □ L C 9 ^ ++ | E | 2.2 | 25 | 3.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.16 | 0.14 | 0.06 | 0.56 | 0.51 | 0.22 |
| CWR09K^475* @+ | TAZ F 475 * 025 C □ @ 0 ^ ++ | TAZ F 475 * 025 C □ L C 9 ^ ++ | F | 4.7 | 25 | 2.5 | 2 | 20 | 24 | 6 | 8 | 8 | 0.100 | 0.20 | 0.18 | 0.08 | 0.50 | 0.45 | 0.20 |
| CWR09K^685* @+ | TAZ G 685 * 025 C □ @ 0 ^ ++ | TAZ G 685 * 025 C □ L C 9 ^ ++ | G | 6.8 | 25 | 1.2 | 2 | 20 | 24 | 6 | 8 | 8 | 0.125 | 0.32 | 0.29 | 0.13 | 0.39 | 0.35 | 0.15 |
| CWR09K^106* @+ | TAZ G 106 * 025 C □ @ 0 ^ ++ | TAZ G 106 * 025 C □ L C 9 ^ ++ | G | 10 | 25 | 1.4 | 3 | 30 | 36 | 6 | 8 | 8 | 0.125 | 0.30 | 0.27 | 0.12 | 0.42 | 0.38 | 0.17 |
| CWR09K^156* @+ | TAZ H 156 * 025 C □ @ 0 ^ ++ | TAZ H 156 * 025 C □ L C 9 ^ ++ | H | 15 | 25 | 1 | 4 | 40 | 48 | 6 | 8 | 8 | 0.150 | 0.39 | 0.35 | 0.15 | 0.39 | 0.35 | 0.15 |
| CWR09M^224* @+ | TAZ A 224 * 035 C # @ 0 ^ ++ | TAZ A 224 * 035 C L C 9 ^ ++ | A | 0.22 | 35 | 18 | 1 | 035 | 12 | 6 | 8 | 8 | 0.050 | 0.05 | 0.05 | 0.02 | 0.95 | 0.85 | 0.38 |
| CWR09M^474* @+ | TAZ B 474 * 035 C # @ 0 ^ ++ | TAZ B 474 * 035 C L C 9 ^ ++ | B | 0.47 | 35 | 10 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.08 | 0.08 | 0.03 | 0.84 | 0.75 | 0.33 |
| CWR09M^684* @+ | TAZ C 684 * 035 C # @ 0 ^ ++ | TAZ C 684 * 035 C L C 9 ^ ++ | C | 0.68 | 35 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.10 | 0.09 | 0.04 | 0.77 | 0.70 | 0.31 |
| CWR09M^105* @+ | TAZ D 105 * 035 C # @ 0 ^ ++ | TAZ D 105 * 035 C L C 9 ^ ++ | D | 1 | 35 | 6.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.11 | 0.10 | 0.04 | 0.72 | 0.65 | 0.29 |
| CWR09M^155* @+ | TAZ E 155 * 035 C # @ 0 ^ ++ | TAZ E 155 * 035 C L C 9 ^ ++ | E | 1.5 | 35 | 4.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.14 | 0.13 | 0.06 | 0.64 | 0.57 | 0.25 |
| CWR09M^335* @+ | TAZ F 335 * 035 C # @ 0 ^ ++ | TAZ F 335 * 035 C L C 9 ^ ++ | F | 3.3 | 35 | 2.5 | 1 | 10 | 12 | 6 | 8 | 8 | 0.100 | 0.20 | 0.18 | 0.08 | 0.50 | 0.45 | 0.20 |
| CWR09M^475* @+ | TAZ G 475 * 035 C # @ 0 ^ ++ | TAZ G 475 * 035 C L C 9 ^ ++ | G | 4.7 | 35 | 1.5 | 2 | 20 | 24 | 6 | 8 | 8 | 0.125 | 0.29 | 0.26 | 0.12 | 0.43 | 0.39 | 0.17 |
| CWR09M^685* @+ | TAZ H 685 * 035 C # @ 0 ^ ++ | TAZ H 685 * 035 C L C 9 ^ ++ | H | 6.8 | 35 | 1.3 | 3 | 30 | 36 | 6 | 8 | 8 | 0.150 | 0.34 | 0.31 | 0.14 | 0.44 | 0.40 | 0.18 |
| CWR09N^104* @+ | TAZ A 104 * 050 C # @ 0 ^ ++ | TAZ A 104 * 050 C L C 9 ^ ++ | A | 0.1 | 50 | 22 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.05 | 0.04 | 0.02 | 1.05 | 0.94 | 0.42 |
| CWR09N^154* @+ | TAZ A 154 * 050 C # @ 0 ^ ++ | TAZ A 154 * 050 C L C 9 ^ ++ | A | 0.15 | 50 | 17 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.05 | 0.05 | 0.02 | 0.92 | 0.83 | 0.37 |
| CWR09N^224* @+ | TAZ B 224 * 050 C # @ 0 ^ ++ | TAZ B 224 * 050 C L C 9 ^ ++ | B | 0.22 | 50 | 14 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.07 | 0.06 | 0.03 | 0.99 | 0.89 | 0.40 |
| CWR09N^334* @+ | TAZ B 334 * 050 C # @ 0 ^ ++ | TAZ B 334 * 050 C L C 9 ^ ++ | B | 0.33 | 50 | 12 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.08 | 0.07 | 0.03 | 0.92 | 0.82 | 0.37 |
| CWR09N^474* @+ | TAZ C 474 * 050 C # @ 0 ^ ++ | TAZ C 474 * 050 C L C 9 ^ ++ | C | 0.47 | 50 | 8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.10 | 0.09 | 0.04 | 0.77 | 0.70 | 0.31 |
| CWR09N^684* @+ | TAZ D 684 * 050 C # @ 0 ^ ++ | TAZ D 684 * 050 C L C 9 ^ ++ | D | 0.68 | 50 | 7 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.11 | 0.10 | 0.04 | 0.75 | 0.67 | 0.30 |
| CWR09N^105* @+ | TAZ E 105 * 050 C # @ 0 ^ ++ | TAZ E 105 * 050 C L C 9 ^ ++ | E | 1 | 50 | 6 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.12 | 0.11 | 0.05 | 0.73 | 0.66 | 0.29 |
| CWR09N^155* @+ | TAZ F 155 * 050 C # @ 0 ^ ++ | TAZ F 155 * 050 C L C 9 ^ ++ | F | 1.5 | 50 | 4 | 1 | 10 | 12 | 6 | 8 | 8 | 0.100 | 0.16 | 0.14 | 0.06 | 0.63 | 0.57 | 0.25 |
| CWR09N^225* @+ | TAZ F 225 * 050 C # @ 0 ^ ++ | TAZ F 225 * 050 C L C 9 ^ ++ | F | 2.2 | 50 | 2.5 | 2 | 20 | 24 | 6 | 8 | 8 | 0.100 | 0.20 | 0.18 | 0.08 | 0.50 | 0.45 | 0.20 |
| CWR09N^335* @+ | TAZ G 335 * 050 C # @ 0 ^ ++ | TAZ G 335 * 050 C L C 9 ^ ++ | G | 3.3 | 50 | 2 | 2 | 20 | 24 | 6 | 8 | 8 | 0.125 | 0.25 | 0.23 | 0.10 | 0.50 | 0.45 | 0.20 |
| CWR09N^475* @+ | TAZ H 475 * 050 C # @ 0 ^ ++ | TAZ H 475 * 050 C L C 9 ^ ++ | H | 4.7 | 50 | 1.5 | 3 | 30 | 36 | 6 | 8 | 8 | 0.150 | 0.32 | 0.28 | 0.13 | 0.47 | 0.43 | 0.19 |

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

NOTE: KYOCERA AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

TAZ SERIES



CWR19 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level



An extended range of capacitor ratings beyond CWR09 that is fully qualified to MIL-PRF-55365/11, this series represents the most flexible of surface mount form factors, offering nine case sizes (the original A through H of CWR09) and adds the new X case size.

The molded body / compliant termination construction ensures no TCE mismatch with any substrate. This construction is compatible with a wide range of SMT board assembly processes including convection reflow solder, conductive epoxy or compression bonding techniques. The parts also carry full polarity and capacitance / voltage marking.

The four smaller cases are characterized by their low profile construction, with the A case being the world's smallest molded military tantalum chip.

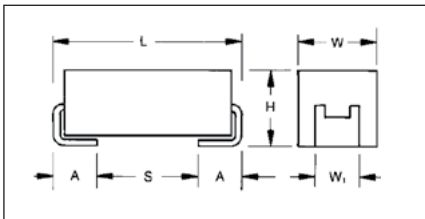
The series is qualified to MIL-PRF-55365 Weibull

"B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.

For Space Level applications, SRC 9000 qualification is recommended (see ratings table for part number availability).

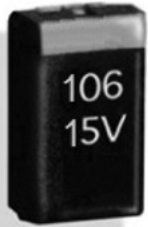
There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365). In addition, the molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



MARKING

(White marking on black body)



Polarity Stripe (+)
Capacitance Code
Rated Voltage

CASE DIMENSIONS:

millimeters (inches)

| Case Code | Length (L) ±0.38 (0.015) | Width (W) ±0.38 (0.015) | Height (H) ±0.38 (0.015) | Term. Width (W _t) | Term. Length (A) +0.25/-0.13 (+0.010/-0.005) | S min | Typical Weight (g) |
|-----------|--------------------------------|-------------------------------|--------------------------------|---|--|--------------|--------------------|
| A | 2.54 (0.100) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 0.38 (0.015) | 0.016 |
| B | 3.81 (0.150) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 1.65 (0.065) | 0.025 |
| C | 5.08 (0.200) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 2.92 (0.115) | 0.035 |
| D | 3.81 (0.150) | 2.54 (0.100) | 1.27 (0.050) | 2.41±0.13/-0.25 (0.095±0.005/-0.010) | 0.76 (0.030) | 1.65 (0.065) | 0.045 |
| E | 5.08 (0.200) | 2.54 (0.100) | 1.27 (0.050) | 2.41±0.13/-0.25 (0.095±0.005/-0.010) | 0.76 (0.030) | 2.92 (0.115) | 0.065 |
| F | 5.59 (0.220) | 3.43 (0.135) | 1.78 (0.070) | 3.30±0.13 (0.130±0.005) | 0.76 (0.030) | 3.43 (0.135) | 0.125 |
| G | 6.73 (0.265) | 2.79 (0.110) | 2.79 (0.110) | 2.67±0.13 (0.105±0.005) | 1.27 (0.050) | 3.56 (0.140) | 0.205 |
| H | 7.24 (0.285) | 3.81 (0.150) | 2.79 (0.110) | 3.68±0.13/-0.51 (0.145±0.005/-0.020) | 1.27 (0.050) | 4.06 (0.160) | 0.335 |
| X | 6.93 (0.273) | 5.41 (0.213) | 2.74 (0.108) | 3.05±0.13 (0.120±0.005) | 1.19 (0.047) | 3.67 (0.144) | 0.420 |

CWR19-MIL-PRF 55365/11

CAPACITANCE AND RATED VOLTAGE, V_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

| Capacitance | | Rated Voltage DC (V _R) at 85°C | | | | | | |
|-------------|------|--|--------|---------|---------|---------|---------|---------|
| µF | Code | 4V (C) | 6V (D) | 10V (F) | 15V (H) | 20V (J) | 25V (K) | 35V (M) |
| 0.33 | 334 | | | | | | | A |
| 0.47 | 474 | | | | | | A | |
| 0.68 | 684 | | | | | A | | |
| 1.0 | 105 | | | | A | A | B | |
| 1.5 | 155 | | | | A | B | | |
| 2.2 | 225 | | | A | A | B | D | |
| 3.3 | 335 | A | A | A | B | | E | |
| 4.7 | 475 | A | A | B/C | B/C/D | E | | |
| 6.8 | 685 | A | B | B/C/D | D/E | E | F | G |
| 10 | 106 | B | B | B/C/D/E | D/E | E/F | | H |
| 15 | 156 | B | B/D/E | D/E | E/F | F | G | X |
| 22 | 226 | B/D | D/E | E | F | G | G/H | |
| 33 | 336 | D/E | E | F | F/G | H | H/X | |
| 47 | 476 | E | F | F/G | G/H | H/X | | |
| 68 | 686 | E | F/G | G | G/H | | | |
| 100 | 107 | F | G | G/H | H | | | |
| 150 | 157 | G | G | H/X | | | | |
| 220 | 227 | H | H | H | | | | |
| 330 | 337 | H | H | | | | | |

TAZ SERIES

CWR19 - MIL-PRF-55365/11 Established Reliability,
COTS-Plus & Space Level



HOW TO ORDER

COTS-PLUS & MIL QPL (CWR19):

| TAZ | H | 227 | * | 006 | C | □ | # | @ | 0 | ^ | ++ |
|-------------|------------------|---|---|--|---|---|---|---|---|--|---|
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc | Standard or Low ESR Range C = Std ESR | Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 8 for additional packaging options. | Inspection Level S = Std. Conformance L = Group A M = MIL (JAN) CWR19 | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER | Qualification Level 0 = N/A T = T Level 9 = SRC9000 | Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only) | Surge Test Option 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull |

For RoHS compliant products, please select correct termination style.

CWR19 P/N CROSS REFERENCE:

| CWR19 | D | ^ | 227 | * | C | H | + | □ |
|-------------|--|--|---|---|--|------------------|--|--|
| Type | Voltage Code C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc | Termination Finish H = Solder Plated K = Solder Fused C = Hot Solder Dipped B = Gold Plated | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER | Case Size | Surge Test Option A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None required | Packaging Bulk = Standard TR = 7" T&R TR13 = 13" T&R W = Waffle See page 8 for additional packaging options. |

For RoHS compliant products, please select correct termination style.

SPACE LEVEL OPTIONS TO SRC9000*:

| TAZ | H | 227 | * | 006 | C | □ | L | C | 9 | ^ | ++ |
|-------------|------------------|---|---|--|--|---|--|---|---|---|--|
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc | Standard or Low ESR Range C = Std ESR L = Low ESR | Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 8 for additional packaging options. | Inspection Level L = Group A | Reliability Grade Weibull: C = 0.01%/1000 hrs. 90% conf. | Qualification Level 9 = SRC9000 | Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated | Surge Test Option 45 = 10 cycles, -55°C & +85°C before Weibull GC = Group C Testing and Data OR = TOR compliant testing and data |

For RoHS compliant products, please select correct termination style.

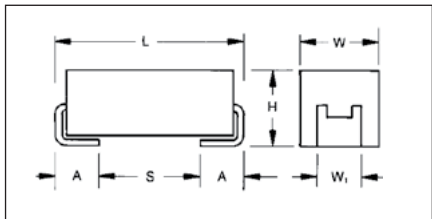
*Contact factory for SRC9000 Space Level SCD details.

TECHNICAL SPECIFICATIONS

| | | | | | | | | | |
|------------------------------------|---|-----|-----|------|------|------|------|------|--|
| Technical Data: | Unless otherwise specified, all technical data relate to an ambient temperature of 25°C | | | | | | | | |
| Capacitance Range: | 0.33 μF to 330 μF | | | | | | | | |
| Capacitance Tolerance: | ±5%; ±10%; ±20% | | | | | | | | |
| Rated Voltage (V _R) | ≤ 85°C: | 4 | 6 | 10 | 15 | 20 | 25 | 35 | |
| Category Voltage (V _C) | ≤ 125°C: | 2.7 | 4 | 6.7 | 10 | 13.3 | 16.7 | 23.3 | |
| Surge Voltage (V _S) | ≤ 85°C: | 5.3 | 8 | 13.3 | 20 | 26.7 | 33.3 | 46.7 | |
| Surge Voltage (V _S) | ≤ 125°C: | 3.5 | 5.3 | 8.7 | 13.3 | 17.8 | 22.2 | 31.1 | |
| Temperature Range: | -55°C to +125°C | | | | | | | | |

TAZ SERIES

CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level



MARKING

(White marking on black body)



Polarity Stripe (+)

**Capacitance Code
Rated Voltage**

A low ESR version of CWR09 and CWR19 that is fully qualified to MIL-PRF-55365/11, the CWR29 series represents the most flexible of surface mount form factors and the optimum power handling for all filtering applications. It is offered in nine case sizes (the original A through H of CWR09 and adding the new X case size).

The molded body / compliant termination construction ensures no TCE mismatch with any substrate. This construction is compatible with a wide range of SMT board assembly processes including convection reflow solder, conductive epoxy or compression bonding techniques. The parts also carry full polarity and capacitance / voltage marking.

The five smaller cases are characterized by their low profile construction, with the A case being the world's smallest molded military tantalum chip.

The series is qualified to MIL-PRF-55365 Weibull "B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.

For Space Level applications, SRC 9000 qualification is recommended (see ratings table for part number availability).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365). In addition, the molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

CASE DIMENSIONS:

millimeters (inches)

| Case Code | Length (L) ±0.38 (0.015) | Width (W) ±0.38 (0.015) | Height (H) ±0.38 (0.015) | Term. Width (W _t) | Term. Length (A) +0.25/-0.13 (+0.010/-0.005) | S min | Typical Weight (g) |
|-----------|--------------------------------|-------------------------------|--------------------------------|---|--|--------------|--------------------|
| A | 2.54 (0.100) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 0.38 (0.015) | 0.016 |
| B | 3.81 (0.150) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 1.65 (0.065) | 0.025 |
| C | 5.08 (0.200) | 1.27 (0.050) | 1.27 (0.050) | 1.27±0.13 (0.050±0.005) | 0.76 (0.030) | 2.92 (0.115) | 0.035 |
| D | 3.81 (0.150) | 2.54 (0.100) | 1.27 (0.050) | 2.41±0.13/-0.25 (0.095±0.005/-0.010) | 0.76 (0.030) | 1.65 (0.065) | 0.045 |
| E | 5.08 (0.200) | 2.54 (0.100) | 1.27 (0.050) | 2.41±0.13/-0.25 (0.095±0.005/-0.010) | 0.76 (0.030) | 2.92 (0.115) | 0.065 |
| F | 5.59 (0.220) | 3.43 (0.135) | 1.78 (0.070) | 3.30±0.13 (0.130±0.005) | 0.76 (0.030) | 3.43 (0.135) | 0.125 |
| G | 6.73 (0.265) | 2.79 (0.110) | 2.79 (0.110) | 2.67±0.13 (0.105±0.005) | 1.27 (0.050) | 3.56 (0.140) | 0.205 |
| H | 7.24 (0.285) | 3.81 (0.150) | 2.79 (0.110) | 3.68±0.13/-0.51 (0.145±0.005/-0.020) | 1.27 (0.050) | 4.06 (0.160) | 0.335 |
| X | 6.93 (0.273) | 5.41 (0.213) | 2.74 (0.108) | 3.05±0.13 (0.120±0.005) | 1.19 (0.047) | 3.67 (0.144) | 0.420 |

CWR29-MIL-PRF 55365/11

CAPACITANCE AND RATED VOLTAGE, V_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

| Capacitance | | Rated Voltage DC (V _R) at 85°C | | | | | | | |
|-------------|------|--|--------|---------|---------|---------|---------|---------|---------|
| µF | Code | 4V (C) | 6V (D) | 10V (F) | 15V (H) | 20V (J) | 25V (K) | 35V (M) | 50V (N) |
| 0.10 | 104 | | | | | | | | A |
| 0.15 | 154 | | | | | | | | A |
| 0.22 | 224 | | | | | | | A | B |
| 0.33 | 334 | | | | | | A | A | B |
| 0.47 | 474 | | | | | A | A | B | C |
| 0.68 | 684 | | | | A | A/B | B | C | D |
| 1.0 | 105 | | | A | A | A/B | B/C | D | E |
| 1.5 | 155 | | A | | A/B | B/C | D | E | F |
| 2.2 | 225 | A | | A/B | A/C | B/D | D/E | | F |
| 3.3 | 335 | A | A/B | A/C | B/D | D/E | E | F | G |
| 4.7 | 475 | A/B | A/C | B/C/D | B/C/D/E | E | F | G | H |
| 6.8 | 685 | A/C | B/D | B/C/D/E | D/E | E/F | F/G | G/H | |
| 10 | 106 | B/D | B/E | B/C/D/E | D/E/F | E/F | G | H | |
| 15 | 156 | B/E | B/D/E | D/E/F | E/F | F/G | G/H | X | |
| 22 | 226 | B/D | D/E/F | E | F/G | G/H | G/H | | |
| 33 | 336 | D/E/F | E | F/G | F/G/H | H | H/X | | |
| 47 | 476 | E | F/G | F/G/H | G/H | H/X | | | |
| 68 | 686 | E/G | F/G/H | G | G/H | | | | |
| 100 | 107 | F/H | G | G/H | H | | | | |
| 150 | 157 | G | G | H/X | | | | | |
| 220 | 227 | H | H | H | | | | | |
| 330 | 337 | H | H | | | | | | |

HOW TO ORDER

COTS-PLUS & MIL QPL (CWR29):

| | | | | | | | | | | | |
|-------------|------------------|---|---|---|---|---|---|---|---|--|---|
| TAZ | H | 227 | * | 006 | L | □ | # | @ | 0 | ^ | ++ |
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | Standard or Low ESR Range L = Low ESR | Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 8 for additional packaging options. | Inspection Level S = Std. Conformance L = Group A M = MIL (JAN) CWR29 | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER | Qualification Level 0 = N/A T = T Level 9 = SRC9000 | Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only) | Surge Test Option 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull |

For RoHS compliant products, please select correct termination style.

CWR29 P/N CROSS REFERENCE:

| | | | | | | | | |
|--------------|---|--|---|---|--|------------------|--|--|
| CWR29 | D | ^ | 227 | * | C | H | + | □ |
| Type | Voltage Code C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc N = 50Vdc | Termination Finish H = Solder Plated K = Solder Fused C = Hot Solder Dipped B = Gold Plated | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER | Case Size | Surge Test Option A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None required | Packaging Bulk = Standard TR = 7" T&R TR13 = 13" T&R W = Waffle See page 8 for additional packaging options. |

For RoHS compliant products, please select correct termination style.

SPACE LEVEL OPTIONS TO SRC9000*:

| | | | | | | | | | | | |
|-------------|------------------|---|---|---|--|---|--|---|---|---|--|
| TAZ | H | 227 | * | 006 | C | □ | L | C | 9 | ^ | ++ |
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | Standard or Low ESR Range C = Std ESR L = Low ESR | Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle See page 8 for additional packaging options. | Inspection Level L = Group A | Reliability Grade Weibull: C = 0.01%/1000 hrs. 90% conf. | Qualification Level 9 = SRC9000 | Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated | Surge Test Option 45 = 10 cycles, -55°C & +85°C before Weibull GC = Group C Testing and Data OR = TOR compliant testing and data |

For RoHS compliant products, please select correct termination style.

*Contact factory for SRC9000 Space Level SCD details.

TECHNICAL SPECIFICATIONS

| | | | | | | | | | | |
|------------------------------------|---|-----|-----|------|------|------|------|------|------|--|
| Technical Data: | Unless otherwise specified, all technical data relate to an ambient temperature of 25°C | | | | | | | | | |
| Capacitance Range: | 0.10 μF to 330 μF | | | | | | | | | |
| Capacitance Tolerance: | ±5%; ±10%; ±20% | | | | | | | | | |
| Rated Voltage (V _R) | ≤ 85°C: | 4 | 6 | 10 | 15 | 20 | 25 | 35 | 50 | |
| Category Voltage (V _C) | ≤125°C: | 2.7 | 4 | 6.7 | 10 | 13.3 | 16.7 | 23.3 | 33.3 | |
| Surge Voltage (V _S) | ≤ 85°C: | 5.3 | 8 | 13.3 | 20 | 26.7 | 33.3 | 46.7 | 66.7 | |
| Surge Voltage (V _S) | ≤125°C: | 3.5 | 5.3 | 8.7 | 13.3 | 17.8 | 22.2 | 31.1 | 44.5 | |
| Temperature Range: | -55°C to +125°C | | | | | | | | | |

TAZ SERIES

CWR29 - MIL-PRF-55365/11 Established Reliability,
COTS-Plus & Space Level



| RATING & PART NUMBER REFERENCE | | | | Parametric Specifications by Rating per MIL-PRF-55365/11 | | | | | | | | | Typical RMS Ripple Data by Rating | | | | | | |
|--------------------------------|-----------------------|-----------------------|------|--|---------------------|-----------------|---------|-------|--------|--------|-------------|-------|-----------------------------------|----------------|----------------|-----------------|----------------|----------------|-----------------|
| | | | | Cap @ 120Hz | DC Rated Voltage | ESR @ 100kHz | DCL max | | | DF Max | | | Power Dissipation | 25°C Ripple | 85°C Ripple | 125°C Ripple | 25°C Ripple | 85°C Ripple | 125°C Ripple |
| | | | | | | | +25°C | +85°C | +125°C | +25°C | +(85/125)°C | -55°C | | | | | | | |
| CWR29 P/N | MIL & COTS-Plus P/N | SRC9000 P/N | Case | µF @ 25°C | V @ +85°C | Ohms @ +25°C | (µA) | (µA) | (µA) | (%) | (%) | (%) | W | A (100kHz) | A (100kHz) | A (100kHz) | V (100kHz) | V (100kHz) | V (100kHz) |
| CWR29M*105*@D+ | TAZ D 105*035L□#@0^++ | TAZ D 105*035L□LC9^++ | D | 1 | 35 | 2.2 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.19 | 0.17 | 0.08 | 0.42 | 0.38 | 0.17 |
| CWR29M*155*@E+ | TAZE 155*035L□#@0^++ | TAZE 155*035L□LC9^++ | E | 1.5 | 35 | 1.3 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.26 | 0.24 | 0.11 | 0.34 | 0.31 | 0.14 |
| CWR29M*335*@F+ | TAZF 335*035L□#@0^++ | TAZF 335*035L□LC9^++ | F | 3.3 | 35 | 0.7 | 1 | 10 | 12 | 6 | 8 | 8 | 0.100 | 0.38 | 0.34 | 0.15 | 0.26 | 0.24 | 0.11 |
| CWR29M*475*@G+ | TAZ G 475*035L□#@0^++ | TAZ G 475*035L□LC9^++ | G | 4.7 | 35 | 0.375 | 2 | 20 | 24 | 6 | 8 | 8 | 0.125 | 0.58 | 0.52 | 0.23 | 0.22 | 0.19 | 0.09 |
| CWR29M*685*@G+ | TAZ G 685*035L□#@0^++ | TAZ G 685*035L□LC9^++ | G | 6.8 | 35 | 0.375 | 3 | 30 | 36 | 6 | 8 | 8 | 0.125 | 0.58 | 0.52 | 0.23 | 0.22 | 0.19 | 0.09 |
| CWR29M*685*@H+ | TAZ H 685*035L□#@0^++ | TAZ H 685*035L□LC9^++ | H | 6.8 | 35 | 0.5 | 3 | 30 | 36 | 6 | 8 | 8 | 0.150 | 0.55 | 0.49 | 0.22 | 0.27 | 0.25 | 0.11 |
| CWR29M*106*@H+ | TAZ H 106*035L□#@0^++ | TAZ H 106*035L□LC9^++ | H | 10 | 35 | 0.5 | 4 | 40 | 48 | 8 | 10 | 10 | 0.150 | 0.55 | 0.49 | 0.22 | 0.27 | 0.25 | 0.11 |
| CWR29M*156*@X+ | TAZ X 156*035L□#@0^++ | TAZ X 156*035L□LC9^++ | X | 15 | 35 | 0.19 | 6 | 60 | 72 | 6 | 8 | 8 | 0.200 | 1.03 | 0.92 | 0.41 | 0.19 | 0.18 | 0.08 |
| CWR29N*104*@A+ | TAZ A 104*050L□#@0^++ | TAZ A 104*050L□LC9^++ | A | 0.1 | 50 | 12 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.06 | 0.06 | 0.03 | 0.77 | 0.70 | 0.31 |
| CWR29N*154*@A+ | TAZ A 154*050L□#@0^++ | TAZ A 154*050L□LC9^++ | A | 0.15 | 50 | 12 | 1 | 10 | 12 | 6 | 8 | 8 | 0.050 | 0.06 | 0.06 | 0.03 | 0.77 | 0.70 | 0.31 |
| CWR29N*224*@B+ | TAZ B 224*050L□#@0^++ | TAZ B 224*050L□LC9^++ | B | 0.22 | 50 | 6.8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.10 | 0.09 | 0.04 | 0.69 | 0.62 | 0.28 |
| CWR29N*334*@B+ | TAZ B 334*050L□#@0^++ | TAZ B 334*050L□LC9^++ | B | 0.33 | 50 | 4.8 | 1 | 10 | 12 | 6 | 8 | 8 | 0.070 | 0.12 | 0.11 | 0.05 | 0.58 | 0.52 | 0.23 |
| CWR29N*474*@C+ | TAZ C 474*050L□#@0^++ | TAZ C 474*050L□LC9^++ | C | 0.47 | 50 | 3.2 | 1 | 10 | 12 | 6 | 8 | 8 | 0.075 | 0.15 | 0.14 | 0.06 | 0.49 | 0.44 | 0.20 |
| CWR29N*684*@D+ | TAZ D 684*050L□#@0^++ | TAZ D 684*050L□LC9^++ | D | 0.68 | 50 | 2.3 | 1 | 10 | 12 | 6 | 8 | 8 | 0.080 | 0.19 | 0.17 | 0.07 | 0.43 | 0.39 | 0.17 |
| CWR29N*105*@E+ | TAZE 105*050L□#@0^++ | TAZE 105*050L□LC9^++ | E | 1 | 50 | 1.7 | 1 | 10 | 12 | 6 | 8 | 8 | 0.090 | 0.23 | 0.21 | 0.09 | 0.39 | 0.35 | 0.16 |
| CWR29N*155*@F+ | TAZF 155*050L□#@0^++ | TAZF 155*050L□LC9^++ | F | 1.5 | 50 | 1.1 | 1 | 10 | 12 | 6 | 8 | 8 | 0.100 | 0.30 | 0.27 | 0.12 | 0.33 | 0.30 | 0.13 |
| CWR29N*225*@F+ | TAZF 225*050L□#@0^++ | TAZF 225*050L□LC9^++ | F | 2.2 | 50 | 0.7 | 2 | 20 | 24 | 6 | 8 | 8 | 0.100 | 0.38 | 0.34 | 0.15 | 0.26 | 0.24 | 0.11 |
| CWR29N*335*@G+ | TAZ G 335*050L□#@0^++ | TAZ G 335*050L□LC9^++ | G | 3.3 | 50 | 0.5 | 2 | 20 | 24 | 6 | 8 | 8 | 0.125 | 0.50 | 0.45 | 0.20 | 0.25 | 0.23 | 0.10 |
| CWR29N*475*@H+ | TAZ H 475*050L□#@0^++ | TAZ H 475*050L□LC9^++ | H | 4.7 | 50 | 0.5 | 3 | 30 | 36 | 6 | 8 | 8 | 0.150 | 0.55 | 0.49 | 0.22 | 0.27 | 0.25 | 0.11 |

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

NOTE: KYOCERA AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Kyocera AVX:

[TAZD106K010CRSB0000](#) [TAZF106K015CRSB0023](#) [TAZF156K010CRSZ0000](#) [TAZF475K025CRSZ0000](#)
[TAZF476K010CRSB0800](#) [TAZG106K025CRSB0000](#) [TAZG335K050CBSZ0900](#) [TAZG336K010CRSZ0000](#)
[TAZH476M010CRSZ0800](#) [TAZH685K035CRSB0800](#) [TAZA105J010CRSZ0000](#) [TAZA225K010CRSB0823](#)
[TAZE106K015CRSZ0900](#) [TAZE225K025CRSZ0900](#) [TAZE685K010CRSZ0800](#) [TAZF156K010CRSZ0800](#)
[TAZF335K035CRSZ0000](#) [TAZG106K025CRSB0823](#) [TAZG226M015CRSB0800](#) [TAZG686K010CRSB0800](#)
[TAZH107K010XRSZ0000](#) [TAZH156K025CRSZ0800](#) [TAZH156M025CRSZ0800](#) [TAZH226K025CRSB0000](#)
[TAZH336K015CRSZ0800](#) [TAZH475K050CBSB0800](#) [TAZD105K035CBSZ0900](#) [TAZD106K010CRSZ0800](#)
[TAZH685K035CSSZ0800](#) [TAZA105K010CBSZ0900](#) [TAZA105K010CRSZ0000](#) [TAZB105K025CRSB0000](#)
[TAZE105M050CBMM0900](#) [TAZE225K025CBSZ0900](#) [TAZE226K010CRSB0800](#) [TAZG336K010CRSZ0800](#)
[TAZH106K035LRB0023](#) [TAZH107K010CRSB0800](#) [TAZH226K020CRSZ0000](#) [TAZH475K050CRSB0024](#)
[TAZG106K025CRSZ0800](#) [TAZG106M025CRSZ0000](#) [TAZH156M025CBSZ0000](#) [TAZH476M010CBSZ0000](#)
[TAZB105K020CRSZ0000](#) [TAZB106K010CRSB0823](#) [TAZD475M010CRSB0800](#) [TAZE685K010CRSZ0000](#)
[TAZF106K015CRSZ0800](#) [TAZG106K025CRSB0023](#) [TAZG106K025CRSZ0000](#) [TAZF685K025XSSZ0800](#)
[TAZH226K020CBSZ0900](#) [TAZH475K050CSSB0000](#) [TAZD105K035CRSB0845](#) [TAZA104K050CBMB0800](#)
[TAZA104M050CBSZ0000](#) [TAZA105K010CBSB0024](#) [TAZA105K015CBSZ0900](#) [TAZA155K010XBSZ0056](#)
[TAZA225K010CRSB0800](#) [TAZA334K025CBSB0000](#) [TAZA334K025CRSB0000](#) [TAZB105K025CBSB0023](#)
[TAZB105K025CRSB0800](#) [TAZB225J010CBSZ0000](#) [TAZB225K010CBSZ0000](#) [TAZB475K010CBSB0023](#)
[TAZB475K010CRSB0000](#) [TAZB475K010CRSB0800](#) [TAZD105K035CBSB0023](#) [TAZD105K035CRSB0800](#)
[TAZD106K010CRSB0800](#) [TAZD335K015CRMB0924](#) [TAZD684K050CBSB0800](#) [TAZD685K010CBSB0800](#)
[TAZD685K010CRSB0800](#) [TAZE105K050CBSB0000](#) [TAZE105K050CRSB0800](#) [TAZE105K050CRSZ0000](#)
[TAZE335K025CBSB0800](#) [TAZF156K010CBLB9812](#) [TAZF225K050CBSB0023](#) [TAZF335K035CRSB0023](#)
[TAZF475K025CBSB0800](#) [TAZF476K010CBSB0024](#) [TAZF476K010CRSB0024](#) [TAZF685K020CBLB9812](#)
[TAZF685K020CBSB0000](#) [TAZG106J025CBLB9812](#) [TAZG226K015CRSZ0000](#) [TAZG336M010CRSZ0000](#)
[TAZG475K035CRSB0823](#) [TAZG686K010LRB0000](#) [TAZH106M035XBSB0058](#) [TAZH106M035XRSB0058](#)
[TAZH107K010CRSB0000](#) [TAZH107K015LBLC9812](#) [TAZH107K015LBSB0800](#) [TAZH226K025CRSZ0000](#)