

# TBJ Series



## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level



### MARKING

(Brown marking on gold body)



Polarity Stripe (+)

"J" for "JAN" Brand  
Capacitance Code

Rated Voltage  
Manufacturer's ID

Fully qualified to MIL-PRF-55365/8, the CWR11 is the military version of EIA-535BAAC, with four case sizes designed for maximum packaging efficiency on 8mm & 12mm tape for high volume production (ensuring no TCE mismatch with any substrate). This construction is compatible with a wide range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques. The part also carries full polarity, capacitance / voltage and JAN brand marking.

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, AVX SRC9000 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).

The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of NASA SP-R-0022A.

### CASE DIMENSIONS: millimeters (inches)

| Case Code | EIA Metric | Length (L)                 | Width (W)                  | Height (H)                 | Term. Width (W <sub>t</sub> )<br>±0.10 (±0.004) | Term. Length A<br>±0.30 (±0.012) | S min        |
|-----------|------------|----------------------------|----------------------------|----------------------------|-------------------------------------------------|----------------------------------|--------------|
| A         | 3216-18    | 3.20±0.20<br>(0.126±0.008) | 1.60±0.20<br>(0.063±0.008) | 1.60±0.20<br>(0.063±0.008) | 1.20 (0.047)                                    | 0.80 (0.031)                     | 1.80 (0.071) |
| B         | 3528-21    | 3.50±0.20<br>(0.138±0.008) | 2.80±0.20<br>(0.110±0.008) | 1.90±0.20<br>(0.075±0.008) | 2.20 (0.087)                                    | 0.80 (0.031)                     | 1.40 (0.055) |
| C         | 6032-28    | 6.00±0.30<br>(0.236±0.012) | 3.20±0.30<br>(0.126±0.012) | 2.50±0.30<br>(0.098±0.012) | 2.20 (0.087)                                    | 1.30 (0.051)                     | 2.90 (0.114) |
| D         | 7343-31    | 7.30±0.30<br>(0.287±0.012) | 4.30±0.30<br>(0.169±0.012) | 2.80±0.30<br>(0.110±0.012) | 2.40 (0.094)                                    | 1.30 (0.051)                     | 4.40 (0.173) |

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (MIL VOLTAGE CODE) RANGE CASE SIZE

| Capacitance |      | Rated voltage DC (V <sub>R</sub> ) to 85°C |        |         |         |         |         |         |         |
|-------------|------|--------------------------------------------|--------|---------|---------|---------|---------|---------|---------|
| μF          | Code | 4V (C)                                     | 6V (D) | 10V (F) | 15V (H) | 20V (J) | 25V (K) | 35V (M) | 50V (N) |
| 0.10        | 104  |                                            |        |         |         |         |         | A       | A       |
| 0.15        | 154  |                                            |        |         |         |         |         | A       | B       |
| 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       |
| 1.0         | 105  |                                            |        | A       | A       | A       | B       | B       | C       |
| 1.5         | 155  |                                            | A      | A       | A       | B       | B       | C       | D       |
| 2.2         | 225  | A                                          | A      | A       | B       | B       | C       | C       | D       |
| 3.3         | 335  |                                            | A      | B       | B       | B       | C       | C       | D       |
| 4.7         | 475  | A                                          | B      | B       | B       | C       | C       | D       | D       |
| 6.8         | 685  | B                                          | B      | B       |         | C       | D       | D       |         |
| 10          | 106  | B                                          | B      |         | C       |         | D       |         |         |
| 15          | 156  | B                                          | C      | C       |         | D       | D       |         |         |
| 22          | 226  |                                            | C      |         | D       | D       |         |         |         |
| 33          | 336  | C                                          |        | D       | D       |         |         |         |         |
| 47          | 476  |                                            | D      |         |         |         |         |         |         |
| 68          | 686  | D                                          | D      |         |         |         |         |         |         |
| 100         | 107  | D                                          |        |         |         |         |         |         |         |
| 150         | 157  |                                            |        |         |         |         |         |         |         |
| 220         | 227  |                                            |        |         |         |         |         |         |         |
| 330         | 337  |                                            |        |         |         |         |         |         |         |



# TBJ Series



**CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level**

## HOW TO ORDER

### COTS-PLUS & MIL QPL (CWR11):

| TBJ  | D         | 686                                                                                                                                      | *                                                        | 006                                                                                                                                | C                                                       |                                                                                                                      | #                                                                                  | @                                                                                                                                              | 0                                                                | ^                                                                                                                                               | ++                                                                                                                                       |
|------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Type | Case Size | Capacitance Code<br>pF code:<br>1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance<br>M = ±20%<br>K = ±10%<br>J = ±5% | Voltage Code<br>004 = 4Vdc<br>006 = 6Vdc<br>010 = 10Vdc<br>015 = 15Vdc<br>020 = 20Vdc<br>025 = 25Vdc<br>035 = 35Vdc<br>050 = 50Vdc | Standard or Low ESR Range<br>C = Std ESR<br>L = Low ESR | Packaging<br>B = Bulk<br>R = 7" T&R<br>S = 13" T&R<br>W = Waffle<br><br>See page 7 for additional packaging options. | Inspection Level<br>S = Std. Conformance<br>L = Group A<br><br>M = MIL (JAN) CWR11 | Reliability Grade<br>Weibull:<br>B = 0.1%/1000 hrs. 90% conf.<br>C = 0.01%/1000 hrs. 90% conf.<br>D = 0.001%/1000 hrs. 90% conf.<br>Z = Non-ER | Qualification Level<br>0 = N/A<br>T = T Level<br><br>9 = SRC9000 | Termination Finish<br>H = Solder Plated<br>0 = Fused Solder Plated<br>8 = Hot Solder Dipped<br>9 = Gold Plated<br>7 = Matte Sn (COTS-Plus only) | Surge Test Option<br>00 = None<br>23 = 10 Cycles, +25°C<br>24 = 10 Cycles, -55°C & +85°C<br>45 = 10 cycles, -55°C & +85°C before Weibull |

### CWR11 P/N CROSS REFERENCE:

| CWR11 | D                                                                                                                  | ^                                                                                                       | 686                                                                                                                                      | *                                                        | @                                                                                                                                                             | +                                                                                                                                                       |                                                                                                                                 |
|-------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Type  | Voltage Code<br>C = 4Vdc<br>D = 6Vdc<br>F = 10Vdc<br>H = 15Vdc<br>J = 20Vdc<br>K = 25Vdc<br>M = 35Vdc<br>N = 50Vdc | Termination Finish<br>H = Solder Plated<br>K = Solder Fused<br>C = Hot Solder Dipped<br>B = Gold Plated | Capacitance Code<br>pF code:<br>1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance<br>M = ±20%<br>K = ±10%<br>J = ±5% | Reliability Grade<br>Weibull:<br>B = 0.1%/1000 hrs. 90% conf.<br>C = 0.01%/1000 hrs. 90% conf.<br>D = 0.001%/1000 hrs. 90% conf.<br>T = T Level<br>A = Non-ER | Surge Test Option<br>A = 10 cycles, +25°C<br>B = 10 cycles, -55°C & +85°C<br>C = 10 cycles, -55°C & +85°C before Weibull<br><br>If blank, None required | Packaging<br>Bulk = Standard<br>TR = 7" T&R<br>TR13 = 13" T&R<br>W = Waffle<br><br>See page 7 for additional packaging options. |

### SPACE LEVEL OPTIONS TO SRC9000\*:

| TBJ  | D         | 686                                                                                                                                      | *                                                        | 006                                                                                                                                | C                                                       |                                                                                                                      | L                               | @                                                                                                                                | 9                                  | ^                                                                                                              | ++                                                                |
|------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Type | Case Size | Capacitance Code<br>pF code:<br>1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance<br>M = ±20%<br>K = ±10%<br>J = ±5% | Voltage Code<br>004 = 4Vdc<br>006 = 6Vdc<br>010 = 10Vdc<br>015 = 15Vdc<br>020 = 20Vdc<br>025 = 25Vdc<br>035 = 35Vdc<br>050 = 50Vdc | Standard or Low ESR Range<br>C = Std ESR<br>L = Low ESR | Packaging<br>B = Bulk<br>R = 7" T&R<br>S = 13" T&R<br>W = Waffle<br><br>See page 7 for additional packaging options. | Inspection Level<br>L = Group A | Reliability Grade<br>Weibull:<br>B = 0.1%/1000 hrs. 90% conf.<br>C = 0.01%/1000 hrs. 90% conf.<br>D = 0.001%/1000 hrs. 90% conf. | Qualification Level<br>9 = SRC9000 | Termination Finish<br>H = Solder Plated<br>0 = Fused Solder Plated<br>8 = Hot Solder Dipped<br>9 = Gold Plated | Surge Test Option<br>45 = 10 cycles, -55°C & +85°C before Weibull |

\*Contact factory for AVX 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:                  | 0.1 µF to 100 µF                                                                        |     |     |      |      |      |      |      |      |  |
| Capacitance Tolerance:              | ±5%; ±10%; ±20%                                                                         |     |     |      |      |      |      |      |      |  |
| Rated Voltage: (V <sub>R</sub> )    | ≤85°C:                                                                                  | 4   | 6   | 10   | 16   | 20   | 25   | 35   | 50   |  |
| Category Voltage: (V <sub>C</sub> ) | 125°C:                                                                                  | 2.7 | 4   | 6.7  | 10   | 13.3 | 16.7 | 23.3 | 33.3 |  |
| Surge Voltage: (V <sub>S</sub> )    | ≤85°C:                                                                                  | 5.3 | 8   | 13.3 | 20   | 26.7 | 33.3 | 46.7 | 66.7 |  |
|                                     | 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                                                                         |     |     |      |      |      |      |      |      |  |



# TBJ Series



## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level

| RATING & PART NUMBER REFERENCE |                               |                               |      | Parametric Specifications by Rating per MIL-PRF-55365/8 |                                     |                                    |               |               |                |              |                    |              | Typical Ripple Data by Rating |                                 |                                 |                                  |                                 |                                 |                                  |
|--------------------------------|-------------------------------|-------------------------------|------|---------------------------------------------------------|-------------------------------------|------------------------------------|---------------|---------------|----------------|--------------|--------------------|--------------|-------------------------------|---------------------------------|---------------------------------|----------------------------------|---------------------------------|---------------------------------|----------------------------------|
|                                |                               |                               |      | Cap<br>@ 120Hz<br>μF<br>@ 25°C                          | DC Rated<br>Voltage<br>V<br>@ +85°C | ESR<br>@ 100kHz<br>Ohms<br>@ +25°C | DCL max       |               |                | DF Max       |                    |              | Power<br>Dissipation          | 25°C<br>Ripple<br>A<br>(100kHz) | 85°C<br>Ripple<br>A<br>(100kHz) | 125°C<br>Ripple<br>A<br>(100kHz) | 25°C<br>Ripple<br>V<br>(100kHz) | 85°C<br>Ripple<br>V<br>(100kHz) | 125°C<br>Ripple<br>V<br>(100kHz) |
| CWR11 P/N                      | AVX COTS-Plus P/N             | AVX SRC9000 P/N               | Case |                                                         |                                     |                                    | +25°C<br>(μA) | +85°C<br>(μA) | +125°C<br>(μA) | +25°C<br>(%) | +(85/125)°C<br>(%) | -55°C<br>(%) | W                             |                                 |                                 |                                  |                                 |                                 |                                  |
| CWR11C225*0+□                  | TBJA 225 * 004 C □ # @ 0 ° ++ | TBJA 225 * 004 C □ L @ 0 ° ++ | A    | 2.2                                                     | 4                                   | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11C475*0+□                  | TBJA 475 * 004 C □ # @ 0 ° ++ | TBJA 475 * 004 C □ L @ 0 ° ++ | A    | 4.7                                                     | 4                                   | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11C685*0+□                  | TBJB 685 * 004 C □ # @ 0 ° ++ | TBJB 685 * 004 C □ L @ 9 ° ++ | B    | 6.8                                                     | 4                                   | 5.5                                | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.12                            | 0.11                            | 0.05                             | 0.68                            | 0.62                            | 0.27                             |
| CWR11C106*0+□                  | TBJB 106 * 004 C □ # @ 0 ° ++ | TBJB 106 * 004 C □ L @ 9 ° ++ | B    | 10                                                      | 4                                   | 4                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.15                            | 0.13                            | 0.06                             | 0.58                            | 0.52                            | 0.23                             |
| CWR11C156*0+□                  | TBJB 156 * 004 C □ # @ 0 ° ++ | TBJB 156 * 004 C □ L @ 9 ° ++ | B    | 15                                                      | 4                                   | 3.5                                | 0.6           | 6             | 7.2            | 6            | 9                  | 9            | 0.085                         | 0.16                            | 0.14                            | 0.06                             | 0.55                            | 0.49                            | 0.22                             |
| CWR11C336*0+□                  | TBJC 336 * 004 C □ # @ 0 ° ++ | TBJC 336 * 004 C □ L @ 9 ° ++ | C    | 33                                                      | 4                                   | 2.2                                | 1.3           | 13            | 15.6           | 6            | 9                  | 9            | 0.110                         | 0.22                            | 0.20                            | 0.09                             | 0.49                            | 0.44                            | 0.20                             |
| CWR11C686*0+□                  | TBJD 686 * 004 C □ # @ 0 ° ++ | TBJD 686 * 004 C □ L @ 9 ° ++ | D    | 68                                                      | 4                                   | 1.1                                | 2.7           | 27            | 32.4           | 6            | 9                  | 9            | 0.150                         | 0.37                            | 0.33                            | 0.15                             | 0.41                            | 0.37                            | 0.16                             |
| CWR11C107*0+□                  | TBJD 107 * 004 C □ # @ 0 ° ++ | TBJD 107 * 004 C □ L @ 9 ° ++ | D    | 100                                                     | 4                                   | 0.9                                | 4             | 40            | 48             | 8            | 12                 | 12           | 0.150                         | 0.41                            | 0.37                            | 0.16                             | 0.37                            | 0.33                            | 0.15                             |
| CWR11D155*0+□                  | TBJA 155 * 006 C □ # @ 0 ° ++ | TBJA 155 * 006 C □ L @ 9 ° ++ | A    | 1.5                                                     | 6                                   | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11D225*0+□                  | TBJA 225 * 006 C □ # @ 0 ° ++ | TBJA 225 * 006 C □ L @ 9 ° ++ | A    | 2.2                                                     | 6                                   | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11D335*0+□                  | TBJA 335 * 006 C □ # @ 0 ° ++ | TBJA 335 * 006 C □ L @ 9 ° ++ | A    | 3.3                                                     | 6                                   | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11D475*0+□                  | TBJB 475 * 006 C □ # @ 0 ° ++ | TBJB 475 * 006 C □ L @ 9 ° ++ | B    | 4.7                                                     | 6                                   | 5.5                                | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.12                            | 0.11                            | 0.05                             | 0.68                            | 0.62                            | 0.27                             |
| CWR11D685*0+□                  | TBJB 685 * 006 C □ # @ 0 ° ++ | TBJB 685 * 006 C □ L @ 9 ° ++ | B    | 6.8                                                     | 6                                   | 4.5                                | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.14                            | 0.12                            | 0.05                             | 0.62                            | 0.56                            | 0.25                             |
| CWR11D106*0+□                  | TBJB 106 * 006 C □ # @ 0 ° ++ | TBJB 106 * 006 C □ L @ 9 ° ++ | B    | 10                                                      | 6                                   | 3.5                                | 0.6           | 6             | 7.2            | 6            | 9                  | 9            | 0.085                         | 0.16                            | 0.14                            | 0.06                             | 0.55                            | 0.49                            | 0.22                             |
| CWR11D156*0+□                  | TBJC 156 * 006 C □ # @ 0 ° ++ | TBJC 156 * 006 C □ L @ 9 ° ++ | C    | 15                                                      | 6                                   | 3                                  | 0.9           | 9             | 10.8           | 6            | 9                  | 9            | 0.110                         | 0.19                            | 0.17                            | 0.08                             | 0.57                            | 0.52                            | 0.23                             |
| CWR11D226*0+□                  | TBJC 226 * 006 C □ # @ 0 ° ++ | TBJC 226 * 006 C □ L @ 9 ° ++ | C    | 22                                                      | 6                                   | 2.2                                | 1.4           | 14            | 16.8           | 6            | 9                  | 9            | 0.110                         | 0.22                            | 0.20                            | 0.09                             | 0.49                            | 0.44                            | 0.20                             |
| CWR11D476*0+□                  | TBJD 476 * 006 C □ # @ 0 ° ++ | TBJD 476 * 006 C □ L @ 9 ° ++ | D    | 47                                                      | 6                                   | 1.1                                | 2.8           | 28            | 33.6           | 6            | 9                  | 9            | 0.150                         | 0.37                            | 0.33                            | 0.15                             | 0.41                            | 0.37                            | 0.16                             |
| CWR11D686*0+□                  | TBJD 686 * 006 C □ # @ 0 ° ++ | TBJD 686 * 006 C □ L @ 9 ° ++ | D    | 68                                                      | 6                                   | 0.9                                | 4.3           | 43            | 51.6           | 6            | 9                  | 9            | 0.150                         | 0.41                            | 0.37                            | 0.16                             | 0.37                            | 0.33                            | 0.15                             |
| CWR11F105*0+□                  | TBJA 105 * 010 C □ # @ 0 ° ++ | TBJA 105 * 010 C □ L @ 9 ° ++ | A    | 1                                                       | 10                                  | 10                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.09                            | 0.08                            | 0.03                             | 0.87                            | 0.78                            | 0.35                             |
| CWR11F155*0+□                  | TBJA 155 * 010 C □ # @ 0 ° ++ | TBJA 155 * 010 C □ L @ 9 ° ++ | A    | 1.5                                                     | 10                                  | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11F225*0+□                  | TBJA 225 * 010 C □ # @ 0 ° ++ | TBJA 225 * 010 C □ L @ 9 ° ++ | A    | 2.2                                                     | 10                                  | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11F335*0+□                  | TBJB 335 * 010 C □ # @ 0 ° ++ | TBJB 335 * 010 C □ L @ 9 ° ++ | B    | 3.3                                                     | 10                                  | 5.5                                | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.12                            | 0.11                            | 0.05                             | 0.68                            | 0.62                            | 0.27                             |
| CWR11F475*0+□                  | TBJB 475 * 010 C □ # @ 0 ° ++ | TBJB 475 * 010 C □ L @ 9 ° ++ | B    | 4.7                                                     | 10                                  | 4.5                                | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.14                            | 0.12                            | 0.05                             | 0.62                            | 0.56                            | 0.25                             |
| CWR11F685*0+□                  | TBJB 685 * 010 C □ # @ 0 ° ++ | TBJB 685 * 010 C □ L @ 9 ° ++ | B    | 6.8                                                     | 10                                  | 3.5                                | 0.7           | 7             | 8.4            | 6            | 9                  | 9            | 0.085                         | 0.16                            | 0.14                            | 0.06                             | 0.55                            | 0.49                            | 0.22                             |
| CWR11F156*0+□                  | TBJC 156 * 010 C □ # @ 0 ° ++ | TBJC 156 * 010 C □ L @ 9 ° ++ | C    | 15                                                      | 10                                  | 2.5                                | 1.5           | 15            | 18             | 6            | 9                  | 9            | 0.110                         | 0.21                            | 0.19                            | 0.08                             | 0.52                            | 0.47                            | 0.21                             |
| CWR11F336*0+□                  | TBJD 336 * 010 C □ # @ 0 ° ++ | TBJD 336 * 010 C □ L @ 9 ° ++ | D    | 33                                                      | 10                                  | 1.1                                | 3.3           | 33            | 39.6           | 6            | 9                  | 9            | 0.150                         | 0.37                            | 0.33                            | 0.15                             | 0.41                            | 0.37                            | 0.16                             |
| CWR11F476*0+□                  | TBJD 476 * 010 C □ # @ 0 ° ++ | TBJD 476 * 010 C □ L @ 9 ° ++ | D    | 47                                                      | 10                                  | 0.9                                | 4.7           | 47            | 56.4           | 6            | 9                  | 9            | 0.150                         | 0.41                            | 0.37                            | 0.16                             | 0.37                            | 0.33                            | 0.15                             |
| CWR11H684*0+□                  | TBJA 684 * 015 C □ # @ 0 ° ++ | TBJA 684 * 015 C □ L @ 9 ° ++ | A    | 0.68                                                    | 15                                  | 12                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.08                            | 0.07                            | 0.03                             | 0.95                            | 0.85                            | 0.38                             |
| CWR11H105*0+□                  | TBJA 105 * 015 C □ # @ 0 ° ++ | TBJA 105 * 015 C □ L @ 9 ° ++ | A    | 1                                                       | 15                                  | 10                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.09                            | 0.08                            | 0.03                             | 0.87                            | 0.78                            | 0.35                             |
| CWR11H155*0+□                  | TBJA 155 * 015 C □ # @ 0 ° ++ | TBJA 155 * 015 C □ L @ 9 ° ++ | A    | 1.5                                                     | 15                                  | 8                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.075                         | 0.10                            | 0.09                            | 0.04                             | 0.77                            | 0.70                            | 0.31                             |
| CWR11H225*0+□                  | TBJB 225 * 015 C □ # @ 0 ° ++ | TBJB 225 * 015 C □ L @ 9 ° ++ | B    | 2.2                                                     | 15                                  | 5.5                                | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.12                            | 0.11                            | 0.05                             | 0.68                            | 0.62                            | 0.27                             |
| CWR11H335*0+□                  | TBJB 335 * 015 C □ # @ 0 ° ++ | TBJB 335 * 015 C □ L @ 9 ° ++ | B    | 3.3                                                     | 15                                  | 5                                  | 0.5           | 5             | 6              | 6            | 8                  | 9            | 0.085                         | 0.13                            | 0.12                            | 0.05                             | 0.65                            | 0.59                            | 0.26                             |
| CWR11H475*0+□                  | TBJB 475 * 015 C □ # @ 0 ° ++ | TBJB 475 * 015 C □ L @ 9 ° ++ | B    | 4.7                                                     | 15                                  | 4                                  | 0.7           | 7             | 8.4            | 6            | 9                  | 9            | 0.085                         | 0.15                            | 0.13                            | 0.06                             | 0.58                            | 0.52                            | 0.23                             |
| CWR11H106*0+□                  | TBJC 106 * 015 C □ # @ 0 ° ++ | TBJC 106 * 015 C □ L @ 9 ° ++ | C    | 10                                                      | 15                                  | 2.5                                | 1.6           | 16            | 19.2           | 6            | 8                  | 9            | 0.110                         | 0.21                            | 0.19                            | 0.08                             | 0.52                            | 0.47                            | 0.21                             |
| CWR11H226*0+□                  | TBJD 226 * 015 C □ # @ 0 ° ++ | TBJD 226 * 015 C □ L @ 9 ° ++ | D    | 22                                                      | 15                                  | 1.1                                | 3.3           | 33            | 39.6           | 6            | 8                  | 9            | 0.150                         | 0.37                            | 0.33                            | 0.15                             | 0.41                            | 0.37                            | 0.16                             |
| CWR11H336*0+□                  | TBJD 336 * 015 C □ # @ 0 ° ++ | TBJD 336 * 015 C □ L @ 9 ° ++ | D    | 33                                                      | 15                                  | 0.9                                | 5.3           | 53            | 63.6           | 6            | 9                  | 9            | 0.150                         | 0.41                            | 0.37                            | 0.16                             | 0.37                            | 0.33                            | 0.15                             |
| CWR11J474*0+□                  | TBJA 474 * 020 C □ # @ 0 ° ++ | TBJA 474 * 020 C □ L @ 9 ° ++ | A    | 0.47                                                    | 20                                  | 14                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.07                            | 0.07                            | 0.03                             | 1.02                            | 0.92                            | 0.41                             |
| CWR11J684*0+□                  | TBJA 684 * 020 C □ # @ 0 ° ++ | TBJA 684 * 020 C □ L @ 9 ° ++ | A    | 0.68                                                    | 20                                  | 12                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.08                            | 0.07                            | 0.03                             | 0.95                            | 0.85                            | 0.38                             |
| CWR11J105*0+□                  | TBJA 105 * 020 C □ # @ 0 ° ++ | TBJA 105 * 020 C □ L @ 9 ° ++ | A    | 1                                                       | 20                                  | 10                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.09                            | 0.08                            | 0.03                             | 0.87                            | 0.78                            | 0.35                             |
| CWR11J155*0+□                  | TBJB 155 * 020 C □ # @ 0 ° ++ | TBJB 155 * 020 C □ L @ 9 ° ++ | B    | 1.5                                                     | 20                                  | 6                                  | 0.5           | 5             | 6              | 6            | 9                  | 9            | 0.085                         | 0.12                            | 0.11                            | 0.05                             | 0.71                            | 0.64                            | 0.29                             |
| CWR11J225*0+□                  | TBJB 225 * 020 C □ # @ 0 ° ++ | TBJB 225 * 020 C □ L @ 9 ° ++ | B    | 2.2                                                     | 20                                  | 5                                  | 0.5           | 5             | 6              | 6            | 8                  | 9            | 0.085                         | 0.13                            | 0.12                            | 0.05                             | 0.65                            | 0.59                            | 0.26                             |
| CWR11J335*0+□                  | TBJB 335 * 020 C □ # @ 0 ° ++ | TBJB 335 * 020 C □ L @ 9 ° ++ | B    | 3.3                                                     | 20                                  | 4                                  | 0.7           | 7             | 8.4            | 6            | 9                  | 9            | 0.085                         | 0.15                            | 0.13                            | 0.06                             | 0.58                            | 0.52                            | 0.23                             |
| CWR11J475*0+□                  | TBJC 475 * 020 C □ # @ 0 ° ++ | TBJC 475 * 020 C □ L @ 9 ° ++ | C    | 4.7                                                     | 20                                  | 3                                  | 1             | 10            | 12             | 6            | 8                  | 9            | 0.110                         | 0.19                            | 0.17                            | 0.08                             | 0.57                            | 0.52                            | 0.23                             |
| CWR11J685*0+□                  | TBJC 685 * 020 C □ # @ 0 ° ++ | TBJC 685 * 020 C □ L @ 9 ° ++ | C    | 6.8                                                     | 20                                  | 2.4                                | 1.4           | 14            | 16.8           | 6            | 9                  | 9            | 0.110                         | 0.21                            | 0.19                            | 0.09                             | 0.51                            | 0.46                            | 0.21                             |
| CWR11J156*0+□                  | TBJD 156 * 020 C □ # @ 0 ° ++ | TBJD 156 * 020 C □ L @ 9 ° ++ | D    | 15                                                      | 20                                  | 1.1                                | 3             | 30            | 36             | 6            | 8                  | 9            | 0.150                         | 0.37                            | 0.33                            | 0.15                             | 0.41                            | 0.37                            | 0.16                             |
| CWR11J226*0+□                  | TBJD 226 * 020 C □ # @ 0 ° ++ | TBJD 226 * 020 C □ L @ 9 ° ++ | D    | 22                                                      | 20                                  | 0.9                                | 4.4           | 44            | 52.8           | 6            | 9                  | 9            | 0.150                         | 0.41                            | 0.37                            | 0.16                             | 0.37                            | 0.33                            | 0.15                             |
| CWR11K334*0+□                  | TBJA 334 * 025 C □ # @ 0 ° ++ | TBJA 334 * 025 C □ L @ 9 ° ++ | A    | 0.33                                                    | 25                                  | 15                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.07                            | 0.06                            | 0.03                             | 1.06                            | 0.95                            | 0.42                             |
| CWR11K474*0+□                  | TBJA 474 * 025 C □ # @ 0 ° ++ | TBJA 474 * 025 C □ L @ 9 ° ++ | A    | 0.47                                                    | 25                                  | 14                                 | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.075                         | 0.07                            | 0.07                            | 0.03                             | 1.02                            | 0.92                            | 0.41                             |
| CWR11K684*0+□                  | TBJB 684 * 025 C □ # @ 0 ° ++ | TBJB 684 * 025 C □ L @ 9 ° ++ | B    | 0.68                                                    | 25                                  | 7.5                                | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.085                         | 0.11                            | 0.10                            | 0.04                             | 0.80                            | 0.72                            | 0.32                             |
| CWR11K105*0+□                  | TBJB 105 * 025 C □ # @ 0 ° ++ | TBJB 105 * 025 C □ L @ 9 ° ++ | B    | 1                                                       | 25                                  | 6.5                                | 0.5           | 5             | 6              | 4            | 6                  | 6            | 0.085                         | 0.11                            | 0.10                            | 0.05                             | 0.74                            | 0.67                            | 0.30                             |
| CWR11K155*0+□                  | TBJB 155 * 025 C □ # @ 0 ° ++ | TBJB 155 * 025 C □ L @ 9 ° ++ | B    | 1.5                                                     | 25                                  | 6.5                                | 0.5           | 5             | 6              | 6            | 8                  | 9            | 0.085                         | 0.11                            | 0.10                            | 0.05                             | 0.74                            | 0.67                            | 0.30                             |
| CWR11K225*0+□                  | TBJC 225 * 025 C □ # @ 0 ° ++ | TBJC 225 * 025 C □ L @ 9 ° ++ | C    | 2.2                                                     | 25                                  | 3.5                                | 0.6           | 6             | 7.2            | 6            | 9                  | 9            | 0.110                         | 0.18                            | 0.16                            | 0.07                             | 0.62                            | 0.56                            | 0.25                             |
| CWR11K335*0+□                  | TBJC 335 * 025 C □ # @ 0 ° ++ | TBJC 335 * 025 C □ L @ 9 ° ++ | C    | 3.3                                                     | 25                                  | 3.5                                | 0.9           | 9             | 10.8           | 6            | 8                  | 9            | 0.110                         | 0.18                            | 0.16                            | 0.07</                           |                                 |                                 |                                  |

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



# TBJ Series



## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level

| RATING & PART NUMBER REFERENCE |                                |                                |      | Parametric Specifications by Rating per MIL-PRF-55365/8 |                     |                 |         |       |        |        |             |       | Typical Ripple Data by Rating |                |                |                 |                |                |                 |
|--------------------------------|--------------------------------|--------------------------------|------|---------------------------------------------------------|---------------------|-----------------|---------|-------|--------|--------|-------------|-------|-------------------------------|----------------|----------------|-----------------|----------------|----------------|-----------------|
| CWR11 P/N                      | AVX COTS-Plus P/N              | AVX SRC9000 P/N                | Case | Cap<br>@ 120Hz                                          | DC Rated<br>Voltage | ESR<br>@ 100kHz | DCL max |       |        | DF Max |             |       | Power<br>Dissipation          | 25°C<br>Ripple | 85°C<br>Ripple | 125°C<br>Ripple | 25°C<br>Ripple | 85°C<br>Ripple | 125°C<br>Ripple |
|                                |                                |                                |      | μF<br>@ 25°C                                            | V<br>@ +85°C        | Ohms<br>@ +25°C | +25°C   | +85°C | +125°C | +25°C  | +(85/125)°C | -55°C | W                             | A<br>(100kHz)  | A<br>(100kHz)  | A<br>(100kHz)   | V<br>(100kHz)  | V<br>(100kHz)  | V<br>(100kHz)   |
| CWR11K^106^@+□                 | TBJ D 106 * 025 C □ # @ 0 ^ ++ | TBJ D 106 * 025 C □ L @ 9 ^ ++ | D    | 10                                                      | 25                  | 1.2             | 2.5     | 25    | 30     | 6      | 8           | 9     | 0.150                         | 0.35           | 0.32           | 0.14            | 0.42           | 0.38           | 0.17            |
| CWR11K^156^@+□                 | TBJ D 156 * 025 C □ # @ 0 ^ ++ | TBJ D 156 * 025 C □ L @ 9 ^ ++ | D    | 15                                                      | 25                  | 1               | 3.8     | 38    | 45.6   | 6      | 9           | 9     | 0.150                         | 0.39           | 0.35           | 0.15            | 0.39           | 0.35           | 0.15            |
| CWR11M^104^@+□                 | TBJ A 104 * 035 C □ # @ 0 ^ ++ | TBJ A 104 * 035 C □ L @ 9 ^ ++ | A    | 0.1                                                     | 35                  | 24              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.075                         | 0.06           | 0.05           | 0.02            | 1.34           | 1.21           | 0.54            |
| CWR11M^154^@+□                 | TBJ A 154 * 035 C □ # @ 0 ^ ++ | TBJ A 154 * 035 C □ L @ 9 ^ ++ | A    | 0.15                                                    | 35                  | 21              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.075                         | 0.06           | 0.05           | 0.02            | 1.25           | 1.13           | 0.50            |
| CWR11M^224^@+□                 | TBJ A 224 * 035 C □ # @ 0 ^ ++ | TBJ A 224 * 035 C □ L @ 9 ^ ++ | A    | 0.22                                                    | 35                  | 18              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.075                         | 0.06           | 0.06           | 0.03            | 1.16           | 1.05           | 0.46            |
| CWR11M^334^@+□                 | TBJ A 334 * 035 C □ # @ 0 ^ ++ | TBJ A 334 * 035 C □ L @ 9 ^ ++ | A    | 0.33                                                    | 35                  | 15              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.075                         | 0.07           | 0.06           | 0.03            | 1.06           | 0.95           | 0.42            |
| CWR11M^474^@+□                 | TBJ B 474 * 035 C □ # @ 0 ^ ++ | TBJ B 474 * 035 C □ L @ 9 ^ ++ | B    | 0.47                                                    | 35                  | 10              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.085                         | 0.09           | 0.08           | 0.04            | 0.92           | 0.83           | 0.37            |
| CWR11M^684^@+□                 | TBJ B 684 * 035 C □ # @ 0 ^ ++ | TBJ B 684 * 035 C □ L @ 9 ^ ++ | B    | 0.68                                                    | 35                  | 8               | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.085                         | 0.10           | 0.09           | 0.04            | 0.82           | 0.74           | 0.33            |
| CWR11M^105^@+□                 | TBJ B 105 * 035 C □ # @ 0 ^ ++ | TBJ B 105 * 035 C □ L @ 9 ^ ++ | B    | 1                                                       | 35                  | 6.5             | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.085                         | 0.11           | 0.10           | 0.05            | 0.74           | 0.67           | 0.30            |
| CWR11M^155^@+□                 | TBJ C 155 * 035 C □ # @ 0 ^ ++ | TBJ C 155 * 035 C □ L @ 9 ^ ++ | C    | 1.5                                                     | 35                  | 4.5             | 0.5     | 5     | 6      | 6      | 8           | 9     | 0.110                         | 0.16           | 0.14           | 0.06            | 0.70           | 0.63           | 0.28            |
| CWR11M^225^@+□                 | TBJ C 225 * 035 C □ # @ 0 ^ ++ | TBJ C 225 * 035 C □ L @ 9 ^ ++ | C    | 2.2                                                     | 35                  | 3.5             | 0.8     | 8     | 9.6    | 6      | 8           | 9     | 0.110                         | 0.18           | 0.16           | 0.07            | 0.62           | 0.56           | 0.25            |
| CWR11M^335^@+□                 | TBJ C 335 * 035 C □ # @ 0 ^ ++ | TBJ C 335 * 035 C □ L @ 9 ^ ++ | C    | 3.3                                                     | 35                  | 2.5             | 1.2     | 12    | 14.4   | 6      | 8           | 9     | 0.110                         | 0.21           | 0.19           | 0.08            | 0.52           | 0.47           | 0.21            |
| CWR11M^475^@+□                 | TBJ D 475 * 035 C □ # @ 0 ^ ++ | TBJ D 475 * 035 C □ L @ 9 ^ ++ | D    | 4.7                                                     | 35                  | 1.5             | 1.7     | 17    | 20.4   | 6      | 8           | 9     | 0.150                         | 0.32           | 0.28           | 0.13            | 0.47           | 0.43           | 0.19            |
| CWR11M^685^@+□                 | TBJ D 685 * 035 C □ # @ 0 ^ ++ | TBJ D 685 * 035 C □ L @ 9 ^ ++ | D    | 6.8                                                     | 35                  | 1.3             | 2.4     | 24    | 28.8   | 6      | 9           | 9     | 0.150                         | 0.34           | 0.31           | 0.14            | 0.44           | 0.40           | 0.18            |
| CWR11N^104^@+□                 | TBJ A 104 * 050 C □ # @ 0 ^ ++ | TBJ A 104 * 050 C □ L @ 9 ^ ++ | A    | 0.1                                                     | 50                  | 22              | 0.5     | 5     | 12     | 6      | 8           | 8     | 0.075                         | 0.06           | 0.05           | 0.02            | 1.28           | 1.16           | 0.51            |
| CWR11N^154^@+□                 | TBJ B 154 * 050 C □ # @ 0 ^ ++ | TBJ B 154 * 050 C □ L @ 9 ^ ++ | B    | 0.15                                                    | 50                  | 17              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.085                         | 0.07           | 0.06           | 0.03            | 1.20           | 1.08           | 0.48            |
| CWR11N^224^@+□                 | TBJ B 224 * 050 C □ # @ 0 ^ ++ | TBJ B 224 * 050 C □ L @ 9 ^ ++ | B    | 0.22                                                    | 50                  | 14              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.085                         | 0.08           | 0.07           | 0.03            | 1.09           | 0.98           | 0.44            |
| CWR11N^334^@+□                 | TBJ B 334 * 050 C □ # @ 0 ^ ++ | TBJ B 334 * 050 C □ L @ 9 ^ ++ | B    | 0.33                                                    | 50                  | 12              | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.085                         | 0.08           | 0.08           | 0.03            | 1.01           | 0.91           | 0.40            |
| CWR11N^474^@+□                 | TBJ C 474 * 050 C □ # @ 0 ^ ++ | TBJ C 474 * 050 C □ L @ 9 ^ ++ | C    | 0.47                                                    | 50                  | 8               | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.110                         | 0.12           | 0.11           | 0.05            | 0.94           | 0.84           | 0.38            |
| CWR11N^684^@+□                 | TBJ C 684 * 050 C □ # @ 0 ^ ++ | TBJ C 684 * 050 C □ L @ 9 ^ ++ | C    | 0.68                                                    | 50                  | 7               | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.110                         | 0.13           | 0.11           | 0.05            | 0.88           | 0.79           | 0.35            |
| CWR11N^105^@+□                 | TBJ C 105 * 050 C □ # @ 0 ^ ++ | TBJ C 105 * 050 C □ L @ 9 ^ ++ | C    | 1                                                       | 50                  | 6               | 0.5     | 5     | 6      | 4      | 6           | 6     | 0.110                         | 0.14           | 0.12           | 0.05            | 0.81           | 0.73           | 0.32            |
| CWR11N^155^@+□                 | TBJ D 155 * 050 C □ # @ 0 ^ ++ | TBJ D 155 * 050 C □ L @ 9 ^ ++ | D    | 1.5                                                     | 50                  | 4               | 0.8     | 8     | 9.6    | 6      | 8           | 9     | 0.150                         | 0.19           | 0.17           | 0.08            | 0.77           | 0.70           | 0.31            |
| CWR11N^225^@+□                 | TBJ D 225 * 050 C □ # @ 0 ^ ++ | TBJ D 225 * 050 C □ L @ 9 ^ ++ | D    | 2.2                                                     | 50                  | 2.5             | 1.1     | 11    | 13.2   | 6      | 8           | 9     | 0.150                         | 0.24           | 0.22           | 0.10            | 0.61           | 0.55           | 0.24            |
| CWR11N^335^@+□                 | TBJ D 335 * 050 C □ # @ 0 ^ ++ | TBJ D 335 * 050 C □ L @ 9 ^ ++ | D    | 3.3                                                     | 50                  | 2               | 1.7     | 17    | 20.4   | 6      | 9           | 9     | 0.150                         | 0.27           | 0.25           | 0.11            | 0.55           | 0.49           | 0.22            |
| CWR11N^475^@+□                 | TBJ D 475 * 050 C □ # @ 0 ^ ++ | TBJ D 475 * 050 C □ L @ 9 ^ ++ | D    | 4.7                                                     | 50                  | 1.5             | 2.4     | 24    | 28.8   | 6      | 9           | 9     | 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:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.

