

SOLID TANTALUM ELECTROLYTIC CAPACITORS

F95

Conformal coated
Chip

FRAMELESS™



For SMD



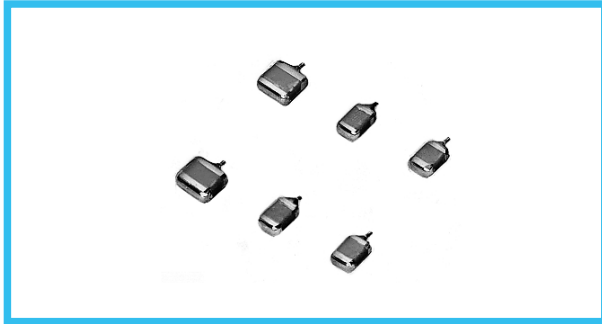
Smaller



For High
Frequency



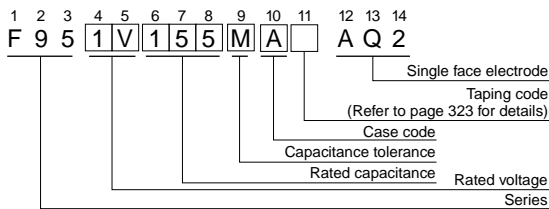
- Compliant to the RoHS directive (2002/95/EC).



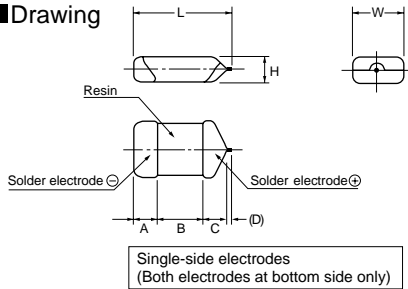
Applications

- Smartphone
- Wireless module
- Tablet PC
- e-book

Type numbering system (Example : 35V 1.5μF)



Drawing



Dimensions

| Case code | L | W | H | A | B | C | (D) |
|-----------|-----------|------------|-----------|-----------|-----------|-----------|-------|
| R | 2.2 ± 0.3 | 1.25 ± 0.3 | 0.65MAX. | 0.6 ± 0.3 | 0.8 ± 0.3 | 0.5MIN | (0.2) |
| P | 2.2 ± 0.3 | 1.25 ± 0.3 | 1.0 ± 0.2 | 0.6 ± 0.3 | 0.8 ± 0.3 | 0.8 ± 0.3 | (0.2) |
| Q | 3.2 ± 0.2 | 1.6 ± 0.2 | 0.8 ± 0.2 | 0.8 ± 0.2 | 1.2 ± 0.2 | 0.8 ± 0.2 | (0.2) |
| S | 3.2 ± 0.3 | 1.6 ± 0.3 | 1.0 ± 0.2 | 0.8 ± 0.3 | 1.2 ± 0.3 | 0.8 ± 0.3 | (0.2) |
| A | 3.2 ± 0.3 | 1.7 ± 0.3 | 1.4 ± 0.2 | 0.8 ± 0.3 | 1.2 ± 0.3 | 0.8 ± 0.3 | (0.2) |
| T | 3.5 ± 0.2 | 2.7 ± 0.2 | 1.0 ± 0.2 | 0.8 ± 0.2 | 1.2 ± 0.2 | 1.1 ± 0.2 | (0.2) |
| B | 3.5 ± 0.2 | 2.8 ± 0.2 | 1.8 ± 0.2 | 0.8 ± 0.3 | 1.2 ± 0.3 | 1.1 ± 0.3 | (0.2) |

D dimension only for reference

Standard Ratings

| Cap. (μF) | V | 4 | 6.3 | 10 | 16 | 20 | 25 | 35 |
|-----------|------|-------------------------|-----------------------|---------------------------|-------------------|-----------|---------------|---------------|
| 1 | Code | 0G | 0J | 1A | 1C | 1D | 1E | 1V |
| 1.5 | 105 | | | | P | | R · P · S | P · S · A |
| 2.2 | 155 | | | | P | | S | A |
| 3.3 | 225 | | | | P | P · S | R · P · S · A | (S) · A |
| 4.7 | 335 | | | P | P | A | A | (S) · (A) · B |
| 6.8 | 475 | | | P | R · P | S · A | P · Q · S · A | (T) · B |
| 10 | 685 | | | P | | Q · A | (Q) · (S) | |
| 10 | 106 | | P | R · P | P · Q · S · A | S · A · B | A · (T) · B | |
| 15 | 156 | P | P | P | S · A | | | |
| 22 | 226 | P | R · P | P · Q · S · A | Q · S · A · T · B | B | | |
| 33 | 336 | P | (R) · P · Q · S · A | P · Q · S · A | (A) · T · B | | | |
| 47 | 476 | (R) · P · Q · S · A | P · Q · S · A | (P) · (Q) · S · A · T · B | B | | | |
| 68 | 686 | S · A | P · S · A | B | | | | |
| 100 | 107 | P · Q · S · A | P · Q · S · A · T · B | (S) · A · T · B | | | | |
| 150 | 157 | P · B | B | | | | | |
| 220 | 227 | (P) · Q · S · A · T · B | (S) · (A) · (T) · B | | | | | |
| 330 | 337 | (P) · (S) · A · T · B | B | | | | | |
| 470 | 477 | (P) · (A) · (T) · B | (B) | | | | | |
| 680 | 687 | (T) | | | | | | |

() The series in parentheses are being developed.
Please contact to your local Nichicon sales office when these series are being designed in your application.

Specifications

| Item | Performance Characteristics |
|-----------------------------------|--|
| Category | |
| Temperature Range | -55 to +125°C (Rated temperature : 85°C) |
| Capacitance Tolerance | ±20%, ±10% (at 120Hz) (However P Case ±20%) |
| Dissipation Factor (at 120Hz) | Refer to next page |
| ESR(100kHz) | Refer to next page |
| Leakage Current | Refer to next page Provided that ● After 1 minute's application of rated voltage, leakage current at 85°C, 10 times or less than 20°C specified value. ● After 1 minute's application of rated voltage, leakage current at 125°C, 12.5 times or less than 20°C specified value. |
| Capacitance Change by Temperature | +15% Max. (at +125°C) +10% Max. (at +85°C) -10% Max. (at -55°C) |
| Damp Heat (Steady State) | At 40°C, 90 to 95% R.H., For 500 hours (No voltage applied) Capacitance Change Refer to next page (* 1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less |
| Temperature Cycles | At -55°C / +125°C, 30 minutes each, For 5 cycles, Capacitance Change Refer to next page (* 1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less |
| Resistance to Soldering Heat | 10 seconds reflow at 260°C, 10 seconds immersion at 260°C Capacitance Change Refer to next page (* 1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less |
| Surge* | After application of surge voltage in series with a 33Ω resistor at the rate of 30 seconds ON, 30 seconds OFF, for 1000 successive test cycles at 85°C, capacitors meet the characteristics requirements listed below. Capacitance Change Refer to next page (* 1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less |
| Endurance* | After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristic requirements listed below. Capacitance Change Refer to next page (* 1) Dissipation Factor Initial specified value or less Leakage Current Initial specified value or less |
| Shear Test | After applying the pressure load of 5N for 10 ± 1 seconds horizontally to the center of capacitor side body which has no electrode and has been soldered beforehand on a substrate, there shall be found neither exfoliation nor its sign at the terminal electrode. 5N (0.51kg · f) For 10 ± 1 seconds |
| Terminal Strength | Keeping a capacitor surface-mounted on a substrate upside down and supporting the substrate at both of the opposite bottom points 45mm apart from the center of the capacitor, the pressure strength is applied with a specified jig at the center of the substrate so that the substrate may bend by 1mm as illustrated. Then, there shall be found no remarkable abnormality on the capacitor terminals. R230 20 45 45 1mm |

* As for the surge voltage, refer to page 322 for details.

F95

Standard Ratings

| Rated Volt | Rated Capacitance (μF) | Case code | Part Number | *2 Leakage Current (μA) | Dissipation Factor (%@120Hz) | ESR (Ω@100kHz) | *1 ΔC/C (%) |
|------------|------------------------|-----------|----------------|-------------------------|------------------------------|----------------|-------------|
| 4V | 15 | P | F950G156MPAAQ2 | 0.6 | 10 | 1.8 | * |
| | 22 | P | F950G226MPAAQ2 | 0.9 | 14 | 1.1 | * |
| | 33 | P | F950G336MPAAQ2 | 1.3 | 14 | 1.1 | * |
| | 47 | P | F950G476MPAAQ2 | 1.9 | 14 | 1.1 | * |
| | 47 | Q | F950G476MQAAQ2 | 1.9 | 10 | 1.1 | * |
| | 47 | S | F950G476MSAAQ2 | 1.9 | 10 | 0.8 | * |
| | 47 | A | F950G476MAAAQ2 | 1.9 | 8 | 0.6 | * |
| | 68 | S | F950G686MSAAQ2 | 2.7 | 10 | 0.8 | * |
| | 68 | A | F950G686MAAAQ2 | 2.7 | 10 | 0.5 | * |
| | 100 | P | F950G107MPAAQ2 | 4.0 | 30 | 1.2 | ±15 |
| | 100 | Q | F950G107MQAAQ2 | 4.0 | 25 | 1.0 | ±15 |
| | 100 | S | F950G107MSAAQ2 | 4.0 | 14 | 0.8 | * |
| | 100 | A | F950G107MAAAQ2 | 4.0 | 12 | 0.5 | * |
| | 150 | P | F950G157MPAAQ2 | 12.0 | 31 | 1.1 | ±20 |
| | 150 | B | F950G157MBAAQ2 | 6.0 | 14 | 0.4 | * |
| | 220 | Q | F950G227MQAAQ2 | 8.8 | 30 | 1.5 | ±20 |
| | 220 | S | F950G227MSAAQ2 | 8.8 | 30 | 0.8 | ±15 |
| | 220 | A | F950G227MAAAQ2 | 8.8 | 25 | 0.8 | ±15 |
| | 220 | T | F950G227MTAAQ2 | 8.8 | 25 | 0.6 | * |
| | 220 | B | F950G227MBAAQ2 | 8.8 | 16 | 0.4 | * |
| | 330 | A | F950G337MAAAQ2 | 13.2 | 40 | 0.8 | ±20 |
| | 330 | T | F950G337MTAAQ2 | 13.2 | 40 | 0.8 | ±20 |
| | 330 | B | F950G337MBAAQ2 | 13.2 | 30 | 0.6 | ±15 |
| | 470 | B | F950G477MBAAQ2 | 18.8 | 40 | 0.4 | ±20 |
| 6.3V | 10 | P | F950J106MPAAQ2 | 0.6 | 8 | 2.0 | * |
| | 15 | P | F950J156MPAAQ2 | 0.9 | 10 | 1.8 | * |
| | 22 | R | F950J226MRAAQ2 | 1.4 | 20 | 2.0 | ±20 |
| | 22 | P | F950J226MPAAQ2 | 1.4 | 14 | 1.1 | * |
| | 33 | P | F950J336MPAAQ2 | 2.1 | 14 | 1.1 | * |
| | 33 | Q | F950J336MQAAQ2 | 2.1 | 10 | 2.0 | * |
| | 33 | S | F950J336MSAAQ2 | 2.1 | 10 | 1.0 | * |
| | 33 | A | F950J336MAAAQ2 | 2.1 | 8 | 0.8 | * |
| | 47 | P | F950J476MPAAQ2 | 3.0 | 20 | 1.1 | ±15 |
| | 47 | Q | F950J476MQAAQ2 | 3.0 | 10 | 1.1 | * |
| | 47 | S | F950J476MSAAQ2 | 3.0 | 10 | 0.9 | * |
| | 47 | A | F950J476MAAAQ2 | 3.0 | 10 | 0.6 | * |
| | 68 | P | F950J686MPAAQ2 | 4.3 | 25 | 1.2 | ±15 |
| | 68 | S | F950J686MSAAQ2 | 4.3 | 14 | 0.9 | * |
| | 68 | A | F950J686MAAAQ2 | 4.3 | 12 | 0.5 | * |
| | 100 | P | F950J107MPAAQ2 | 12.6 | 35 | 1.2 | ±20 |
| | 100 | Q | F950J107MQAAQ2 | 6.3 | 30 | 1.1 | ±20 |
| | 100 | S | F950J107MSAAQ2 | 6.3 | 20 | 0.9 | ±15 |
| | 100 | A | F950J107MAAAQ2 | 6.3 | 14 | 0.5 | * |
| | 100 | T | F950J107MTAAQ2 | 6.3 | 14 | 0.6 | * |
| | 100 | B | F950J107MBAAQ2 | 6.3 | 14 | 0.4 | * |
| | 150 | B | F950J157MBAAQ2 | 9.5 | 18 | 0.4 | * |
| | 220 | B | F950J227MBAAQ2 | 13.9 | 30 | 0.4 | * |
| | 330 | B | F950J337MBAAQ2 | 20.8 | 35 | 0.6 | ±20 |
| 10V | 3.3 | P | F951A335MPAAQ2 | 0.5 | 8 | 5.0 | * |
| | 4.7 | P | F951A475MPAAQ2 | 0.5 | 8 | 4.0 | * |
| | 6.8 | P | F951A685MPAAQ2 | 0.7 | 8 | 4.0 | * |
| | 10 | R | F951A106MRAAQ2 | 1.0 | 18 | 3.0 | ±20 |
| | 10 | P | F951A106MPAAQ2 | 1.0 | 8 | 3.0 | * |
| | 15 | P | F951A156MPAAQ2 | 1.5 | 10 | 3.0 | * |
| | 22 | P | F951A226MPAAQ2 | 2.2 | 14 | 3.0 | * |
| | 22 | Q | F951A226MQAAQ2 | 2.2 | 10 | 2.0 | * |
| | 22 | S | F951A226MSAAQ2 | 2.2 | 10 | 1.1 | * |
| | 22 | A | F951A226MAAAQ2 | 2.2 | 6 | 0.9 | * |
| | 33 | P | F951A336MPAAQ2 | 3.3 | 20 | 3.0 | ±15 |
| | 33 | Q | F951A336MQAAQ2 | 3.3 | 18 | 3.0 | ±15 |
| | 33 | S | F951A336MSAAQ2 | 3.3 | 10 | 1.1 | * |
| | 33 | A | F951A336MAAAQ2 | 3.3 | 10 | 0.8 | * |
| | 47 | S | F951A476MSAAQ2 | 4.7 | 14 | 1.1 | ±15 |
| | 47 | A | F951A476MAAAQ2 | 4.7 | 10 | 0.8 | * |
| | 47 | T | F951A476MTAAQ2 | 4.7 | 12 | 0.8 | * |
| | 47 | B | F951A476MBAAQ2 | 4.7 | 8 | 0.4 | * |

| Rated Volt | Rated Capacitance (μF) | Case code | Part Number | *2 Leakage Current (μA) | Dissipation Factor (%@120Hz) | ESR (Ω@100kHz) | *1 ΔC/C (%) |
|------------|------------------------|----------------|----------------|-------------------------|------------------------------|----------------|-------------|
| 10V | 68 | B | F951A686MBAAQ2 | 6.8 | 12 | 0.4 | * |
| | 100 | A | F951A107MAAAQ2 | 10.0 | 35 | 1.0 | ±15 |
| | 100 | T | F951A107MTAAQ2 | 10.0 | 20 | 0.6 | ±15 |
| | 100 | B | F951A107MBAAQ2 | 10.0 | 14 | 0.4 | * |
| 16V | 1 | P | F951C105MPAAQ2 | 0.5 | 8 | 8.0 | * |
| | 1.5 | P | F951C155MPAAQ2 | 0.5 | 8 | 8.0 | * |
| | 2.2 | P | F951C225MPAAQ2 | 0.5 | 8 | 6.0 | * |
| | 3.3 | P | F951C335MPAAQ2 | 0.5 | 8 | 6.0 | * |
| | 4.7 | R | F951C475MRAAQ2 | 0.8 | 12 | 6.0 | ±20 |
| | 4.7 | P | F951C475MPAAQ2 | 0.8 | 10 | 4.0 | * |
| | 10 | P | F951C106MPAAQ2 | 1.6 | 10 | 4.0 | * |
| | 10 | Q | F951C106MQAAQ2 | 1.6 | 8 | 3.0 | * |
| | 10 | S | F951C106MSAAQ2 | 1.6 | 8 | 2.0 | * |
| | 10 | A | F951C106MAAAQ2 | 1.6 | 6 | 1.4 | * |
| | 15 | S | F951C156MSAAQ2 | 2.4 | 8 | 2.0 | * |
| | 15 | A | F951C156MAAAQ2 | 2.4 | 8 | 1.4 | * |
| | 22 | Q | F951C226MQAAQ2 | 3.5 | 12 | 3.0 | * |
| | 22 | S | F951C226MSAAQ2 | 3.5 | 10 | 2.0 | ±15 |
| | 22 | A | F951C226MAAAQ2 | 3.5 | 8 | 1.4 | * |
| | 22 | T | F951C226MTAAQ2 | 3.5 | 8 | 1.4 | * |
| 22 | B | F951C226MBAAQ2 | 3.5 | 6 | 0.5 | * | |
| 33 | T | F951C336MTAAQ2 | 5.3 | 11 | 1.5 | ±10 | |
| 33 | B | F951C336MBAAQ2 | 5.3 | 8 | 0.5 | * | |
| 47 | B | F951C476MBAAQ2 | 7.5 | 10 | 0.6 | * | |
| 20V | 2.2 | P | F951D225MPAAQ2 | 0.5 | 6 | 6.0 | * |
| | 2.2 | S | F951D225MSAAQ2 | 0.5 | 6 | 5.0 | * |
| | 3.3 | A | F951D335MAAAQ2 | 0.7 | 6 | 2.0 | * |
| | 4.7 | S | F951D475MSAAQ2 | 0.9 | 8 | 4.0 | * |
| | 4.7 | A | F951D475MAAAQ2 | 0.9 | 6 | 1.5 | * |
| | 6.8 | Q | F951D685MQAAQ2 | 1.4 | 10 | 4.0 | * |
| | 6.8 | A | F951D685MAAAQ2 | 1.4 | 8 | 1.5 | * |
| | 10 | S | F951D106MSAAQ2 | 2.0 | 10 | 4.0 | ±10 |
| | 10 | A | F951D106MAAAQ2 | 2.0 | 8 | 1.5 | * |
| | 10 | B | F951D106MBAAQ2 | 2.0 | 6 | 0.8 | * |
| 22 | B | F951D226MBAAQ2 | 4.4 | 8 | 0.8 | * | |
| 25V | 1 | R | F951E105MRAAQ2 | 0.5 | 10 | 10.0 | ±10 |
| | 1 | P | F951E105MPAAQ2 | 0.5 | 6 | 8.0 | * |
| | 1 | S | F951E105MSAAQ2 | 0.5 | 6 | 8.0 | * |
| | 1.5 | S | F951E155MSAAQ2 | 0.5 | 6 | 7.0 | * |
| | 2.2 | R | F951E225MRAAQ2 | 0.6 | 15 | 15.0 | ±20 |
| | 2.2 | P | F951E225MPAAQ2 | 0.6 | 8 | 6.0 | ±15 |
| | 2.2 | S | F951E225MSAAQ2 | 0.6 | 6 | 7.0 | * |
| | 2.2 | A | F951E225MAAAQ2 | 0.6 | 6 | 3.2 | * |
| | 3.3 | A | F951E335MAAAQ2 | 0.8 | 6 | 2.8 | * |
| | 4.7 | P | F951E475MPAAQ2 | 1.2 | 10 | 8.0 | ±15 |
| | 4.7 | Q | F951E475MQAAQ2 | 1.2 | 10 | 4.0 | ±15 |
| | 4.7 | S | F951E475MSAAQ2 | 1.2 | 8 | 4.0 | * |
| | 4.7 | A | F951E475MAAAQ2 | 1.2 | 8 | 2.0 | * |
| | 10 | A | F951E106MAAAQ2 | 2.5 | 12 | 2.0 | ±15 |
| 10 | B | F951E106MBAAQ2 | 2.5 | 6 | 0.9 | * | |
| 35V | 1 | P | F951V105MPAAQ2 | 0.5 | 8 | 10.0 | ±10 |
| | 1 | S | F951V105MSAAQ2 | 0.5 | 6 | 8.0 | * |
| | 1 | A | F951V105MAAAQ2 | 0.5 | 4 | 4.4 | * |
| | 1.5 | A | F951V155MAAAQ2 | 0.5 | 6 | 4.4 | * |
| | 2.2 | A | F951V225MAAAQ2 | 0.8 | 6 | 4.4 | * |
| | 3.3 | B | F951V335MBAAQ2 | 1.2 | 6 | 1.6 | * |
| | 4.7 | B | F951V475MBAAQ2 | 1.7 | 6 | 1.6 | * |

* In case of capacitance tolerance ±10% type, \square will be put at 9th digit of type numbering system.

1 : ΔC/C Marked ""*

| Item | P·Q·S·A·T·B Case (%) |
|---------------------------|----------------------|
| Damp Heat | ±10 |
| Temperature cycles | ±5 |
| Resistance soldering heat | ±5 |
| Surge | ±5 |
| Endurance | ±10 |

*2 : Leakage Current After 1 minute's application of rated voltage, leakage current at 20°C.