

F92

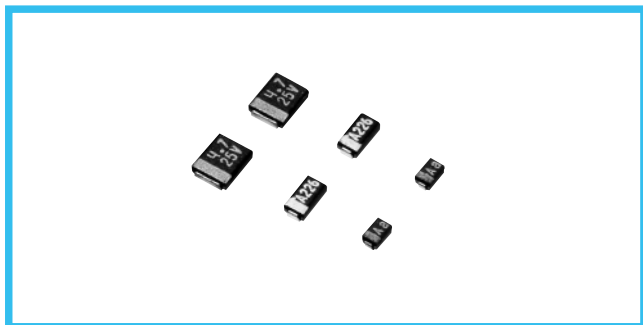
Resin-molded Chip,  
Compact Series

For SMD

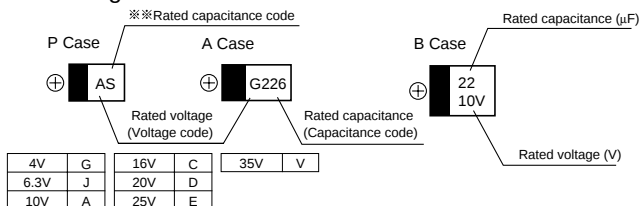


Smaller

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



## Marking



\*\* Capacitance code of "P" case products are as shown below.

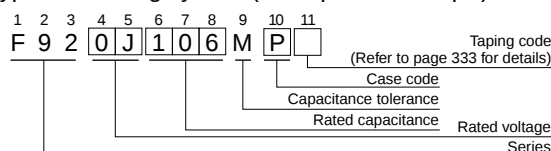
## Specifications

| Item                              | Performance Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|                                   | P Case                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | A • B Case                                                                                    |
| Category                          | -55 to +125°C (Rated temperature : +85°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                               |
| Temperature Range                 | -55 to +125°C (Rated temperature : +85°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                               |
| Capacitance Tolerance             | ±20% (at 120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                               |
| Dissipation Factor (120Hz)        | Refer to Next Page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                               |
| ESR (100kHz)                      | Refer to Next Page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                               |
| Leakage Current                   | <ul style="list-style-type: none"> <li>After 1 minute's application of rated voltage, leakage current at 20°C is not more than 0.01CV or 0.5<math>\mu\text{A}</math>, whichever is greater.</li> <li>After 1 minute's application of rated voltage, leakage current at 85°C is not more than 0.1CV or 5<math>\mu\text{A}</math>, whichever is greater.</li> <li>After 1 minute's application of derated voltage, leakage current at 125°C is not more than 0.125CV or 6.3<math>\mu\text{A}</math>, whichever is greater.</li> </ul> |                                                                                               |
| Capacitance Change by Temperature | +20% Max. (at +125°C)<br>+15% Max. (at +85°C)<br>-15% Max. (at -55°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                               | +15% Max. (at +125°C)<br>+10% Max. (at +85°C)<br>-10% Max. (at -55°C)                         |
| Damp Heat (Steady State)          | At 40°C 90 to 95% R.H. 500 hours (No voltage applied)<br>Capacitance Change... Refer to next page (*1)<br>Dissipation Factor...150% or less than the initial specified value<br>Leakage Current... Initial specified value or less                                                                                                                                                                                                                                                                                                  | Refer to next page (*1)<br>Initial specified value or less<br>Initial specified value or less |
| Temperature Cycles                | -55°C / +125°C 30 minutes each 5 cycles<br>Capacitance Change... Refer to next page (*1)<br>Dissipation Factor...150% or less than the initial specified value<br>Leakage Current... Initial specified value or less                                                                                                                                                                                                                                                                                                                | Refer to next page (*1)<br>Initial specified value or less<br>Initial specified value or less |

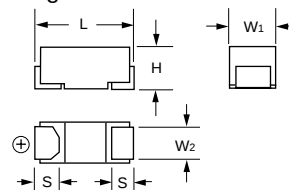
## Standard Ratings

| Cap. ( $\mu\text{F}$ ) | V    | 4           | 6.3     | 10    | 16          | 20      | 25    | 35 | ** Capacitance code |
|------------------------|------|-------------|---------|-------|-------------|---------|-------|----|---------------------|
|                        | Code | 0G          | 0J      | 1A    | 1C          | 1D      | 1E    | 1V |                     |
| 0.22                   | 224  |             |         |       |             |         |       | A  | J                   |
| 0.33                   | 334  |             |         |       |             |         |       | A  | N                   |
| 0.47                   | 474  |             |         |       | P           | P • A   |       | A  | S                   |
| 0.68                   | 684  |             |         |       | P           | A       |       |    | W                   |
| 1                      | 105  |             |         | P     | P           | P • A   | P • A | A  | A                   |
| 1.5                    | 155  |             |         | P     | P           | A       |       |    | E                   |
| 2.2                    | 225  |             | P       | P     | P • A       | (P) • A | A • B | B  | J                   |
| 3.3                    | 335  | P           | P       | P • A | A           |         |       | B  | N                   |
| 4.7                    | 475  | P           | P       | P • A | (P) • A • B | A • B   | A • B |    | S                   |
| 6.8                    | 685  | P           | P       | P • A | B           |         |       |    | w                   |
| 10                     | 106  | P • A       | P • A   | P • A | A • B       |         |       |    | a                   |
| 15                     | 156  | P           | P • A   | A     |             |         |       |    | e                   |
| 22                     | 226  | P • A       | P • A   | A • B | B           |         |       |    | J                   |
| 33                     | 336  | P • A       | A • B   | B     |             |         |       |    | n                   |
| 47                     | 476  | (P) • A • B | A • B   | B     |             |         |       |    | s                   |
| 68                     | 686  | A • B       |         |       |             |         |       |    |                     |
| 100                    | 107  | A • B       | (A) • B |       |             |         |       |    |                     |
| 150                    | 157  | B           |         |       |             |         |       |    |                     |
| 220                    | 227  | (B)         |         |       |             |         |       |    |                     |

## Type numbering system (Example: 6.3V 10 $\mu\text{F}$ )



## Drawing



## Dimensions

| Case code | L         | W <sub>1</sub> | W <sub>2</sub> | H         | S         |
|-----------|-----------|----------------|----------------|-----------|-----------|
| P         | 2.0 ± 0.2 | 1.25 ± 0.1     | 0.9 ± 0.1      | 1.1 ± 0.1 | 0.5 ± 0.2 |
| A         | 3.2 ± 0.2 | 1.6 ± 0.2      | 1.2 ± 0.1      | 1.1 ± 0.1 | 0.8 ± 0.2 |
| B         | 3.4 ± 0.2 | 2.8 ± 0.2      | 2.3 ± 0.1      | 1.1 ± 0.1 | 0.8 ± 0.2 |

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resistance to Soldering Heat | 10 seconds reflow at 260°C, 5 seconds immersion at 260°C<br>Capacitance Change... Refer to next page (*1)<br>Dissipation Factor...150% of less than the initial specified value<br>Leakage Current... Initial specified value or less                                                                                                                                                                           | Refer to next page (*1)<br>Initial specified value or less<br>Initial specified value or less                                                                                                                                                                                                                                                                                                      |
| Surge*                       | After application of surge voltage in series with a 33 $\Omega$ resistor at the rate of 30 seconds ON, 30 seconds OFF, for 1000 successive test cycles at 85°C, capacitors shall meet the characteristic requirements table below.<br>Capacitance Change... Refer to next page (*1)<br>Dissipation Factor...150% or less than the initial specified value<br>Leakage Current... Initial specified value or less | Refer to next page (*1)<br>Initial specified value or less<br>Initial specified value or less                                                                                                                                                                                                                                                                                                      |
| Endurance*                   | After 2000hours' application of rated voltage in series with a 33 $\Omega$ resistor at 85°C, or derated voltage in series with a 33 $\Omega$ resistor at 125°C, capacitors shall meet the characteristic requirements table below.<br>Capacitance Change... Refer to next page (*1)<br>Dissipation Factor...150% or less than the initial specified value<br>Leakage Current... Initial specified value or less | After 2000hours' application of rated voltage in series with a 33 $\Omega$ resistor at 85°C, or derated voltage in series with a 33 $\Omega$ resistor at 125°C, capacitors shall meet the characteristic requirements table below.<br>Capacitance Change... Refer to next page (*1)<br>Dissipation Factor... Initial specified value or less<br>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.                                                                                                                                              | <br>5N (0.51kg • f)<br>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 capacitor, the pressure strength is applied with a specified jig at the center of substrate so that the substrate may bend by 1mm as illustrated.<br>Then, there shall be found no remarkable abnormality on the capacitor terminals.           | <br>R230<br>45 45 1mm                                                                                                                                                                                                                                                                                                                                                                              |

\* As for the surge and derated voltage at 125°C, refer to page 332 for details.

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

CAT.8100B

## F92

## ■ Standard Ratings

| Rated Volt | Rated Capacitance (μF) | Case code | Part Number | Leakage Current (μA) | Dissipation Factor (%@120Hz) | ESR (Ω@100kHz) | *1 ΔC/C (%) |
|------------|------------------------|-----------|-------------|----------------------|------------------------------|----------------|-------------|
| 4V         | 3.3                    | P         | F920G335MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 4.7                    | P         | F920G475MPA | 0.5                  | 8                            | 6.0            | *           |
|            | 6.8                    | P         | F920G685MPA | 0.5                  | 10                           | 6.0            | *           |
|            | 10                     | P         | F920G106MPA | 0.5                  | 10                           | 6.0            | *           |
|            | 10                     | A         | F920G106MAA | 0.5                  | 8                            | 4.0            | *           |
|            | 15                     | P         | F920G156MPA | 0.6                  | 10                           | 5.0            | *           |
|            | 22                     | P         | F920G226MPA | 0.9                  | 20                           | 5.0            | *           |
|            | 22                     | A         | F920G226MAA | 0.9                  | 12                           | 2.8            | *           |
|            | 33                     | P         | F920G336MPA | 1.3                  | 20                           | 4.0            | *           |
|            | 33                     | A         | F920G336MAA | 1.3                  | 12                           | 2.8            | *           |
|            | 47                     | A         | F920G476MAA | 1.9                  | 18                           | 2.8            | *           |
|            | 47                     | B         | F920G476MBA | 1.9                  | 12                           | 1.7            | *           |
|            | 68                     | A         | F920G686MAA | 2.7                  | 25                           | 2.8            | ±15         |
|            | 68                     | B         | F920G686MBA | 2.7                  | 18                           | 1.5            | *           |
|            | 100                    | A         | F920G107MAA | 4.0                  | 30                           | 2.8            | ±15         |
|            | 100                    | B         | F920G107MBA | 4.0                  | 18                           | 1.3            | *           |
|            | 150                    | B         | F920G157MBA | 6.0                  | 25                           | 1.3            | ±15         |
| 6.3V       | 2.2                    | P         | F920J225MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 3.3                    | P         | F920J335MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 4.7                    | P         | F920J475MPA | 0.5                  | 8                            | 6.0            | *           |
|            | 6.8                    | P         | F920J685MPA | 0.5                  | 10                           | 6.0            | *           |
|            | 10                     | P         | F920J106MPA | 0.6                  | 10                           | 6.0            | *           |
|            | 10                     | A         | F920J106MAA | 0.6                  | 8                            | 4.0            | *           |
|            | 15                     | P         | F920J156MPA | 0.9                  | 10                           | 6.0            | *           |
|            | 15                     | A         | F920J156MAA | 0.9                  | 8                            | 4.0            | *           |
|            | 22                     | P         | F920J226MPA | 1.4                  | 20                           | 5.0            | *           |
|            | 22                     | A         | F920J226MAA | 1.4                  | 12                           | 2.8            | *           |
|            | 33                     | A         | F920J336MAA | 2.1                  | 12                           | 2.8            | *           |
|            | 33                     | B         | F920J336MBA | 2.1                  | 12                           | 1.7            | *           |
|            | 47                     | A         | F920J476MAA | 3.0                  | 18                           | 2.8            | ±15         |
|            | 47                     | B         | F920J476MBA | 3.0                  | 12                           | 1.7            | *           |
|            | 100                    | B         | F920J107MBA | 6.3                  | 20                           | 1.3            | ±15         |
| 10V        | 1                      | P         | F921A105MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 1.5                    | P         | F921A155MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 2.2                    | P         | F921A225MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 3.3                    | P         | F921A335MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 3.3                    | A         | F921A335MAA | 0.5                  | 6                            | 7.0            | *           |
|            | 4.7                    | P         | F921A475MPA | 0.5                  | 8                            | 6.0            | *           |
|            | 4.7                    | A         | F921A475MAA | 0.5                  | 6                            | 4.0            | *           |
|            | 6.8                    | P         | F921A685MPA | 0.7                  | 8                            | 6.0            | *           |
|            | 6.8                    | A         | F921A685MAA | 0.7                  | 6                            | 4.0            | *           |
|            | 10                     | P         | F921A106MPA | 1.0                  | 14                           | 6.0            | *           |
|            | 10                     | A         | F921A106MAA | 1.0                  | 8                            | 4.0            | *           |
|            | 15                     | A         | F921A156MAA | 1.5                  | 8                            | 4.0            | *           |
|            | 22                     | A         | F921A226MAA | 2.2                  | 14                           | 4.0            | ±15         |
|            | 22                     | B         | F921A226MBA | 2.2                  | 8                            | 1.9            | *           |
|            | 33                     | B         | F921A336MBA | 3.3                  | 12                           | 1.9            | *           |
|            | 47                     | B         | F921A476MBA | 4.7                  | 18                           | 1.9            | ±15         |
| 16V        | 0.47                   | P         | F921C474MPA | 0.5                  | 8                            | 20.0           | *           |
|            | 0.68                   | P         | F921C684MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 1                      | P         | F921C105MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 1.5                    | P         | F921C155MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 2.2                    | P         | F921C225MPA | 0.5                  | 8                            | 12.0           | *           |
|            | 2.2                    | A         | F921C225MAA | 0.5                  | 6                            | 7.0            | *           |
|            | 3.3                    | A         | F921C335MAA | 0.5                  | 6                            | 7.0            | *           |
|            | 4.7                    | A         | F921C475MAA | 0.8                  | 6                            | 7.0            | *           |
|            | 4.7                    | B         | F921C475MBA | 0.8                  | 6                            | 3.0            | *           |
|            | 6.8                    | B         | F921C685MBA | 1.1                  | 6                            | 3.0            | *           |
|            | 10                     | A         | F921C106MAA | 1.6                  | 8                            | 7.0            | ±15         |
|            | 10                     | B         | F921C106MBA | 1.6                  | 6                            | 2.0            | *           |
|            | 22                     | B         | F921C226MBA | 3.5                  | 12                           | 2.0            | ±15         |

| Rated Volt | Rated Capacitance (μF) | Case code | Part Number | Leakage Current (μA) | Dissipation Factor (%@120Hz) | ESR (Ω@100kHz) | *1 ΔC/C (%) |
|------------|------------------------|-----------|-------------|----------------------|------------------------------|----------------|-------------|
| 20V        | 0.47                   | P         | F921D474MPA | 0.5                  | 8                            | 20.0           | *           |
|            | 0.47                   | A         | F921D474MAA | 0.5                  | 4                            | 10.0           | *           |
|            | 0.68                   | A         | F921D684MAA | 0.5                  | 4                            | 10.0           | *           |
|            | 1                      | P         | F921D105MPA | 0.5                  | 8                            | 20.0           | *           |
|            | 1                      | A         | F921D105MAA | 0.5                  | 4                            | 10.0           | *           |
|            | 1.5                    | A         | F921D155MAA | 0.5                  | 6                            | 7.4            | *           |
|            | 2.2                    | A         | F921D225MAA | 0.5                  | 6                            | 7.0            | *           |
|            | 4.7                    | A         | F921D475MAA | 0.9                  | 10                           | 7.0            | ±10         |
|            | 4.7                    | B         | F921D475MBA | 0.9                  | 6                            | 3.0            | *           |
|            | 10                     | B         | F921D106MBA | 2.0                  | 8                            | 3.0            | ±10         |
| 25V        | 1                      | P         | F921E105MPA | 0.5                  | 8                            | 20.0           | *           |
|            | 1                      | A         | F921E105MAA | 0.5                  | 6                            | 10.0           | *           |
|            | 2.2                    | A         | F921E225MAA | 0.6                  | 8                            | 10.0           | ±15         |
|            | 2.2                    | B         | F921E225MBA | 0.6                  | 6                            | 4.0            | *           |
|            | 4.7                    | A         | F921E475MAA | 1.2                  | 10                           | 7.0            | ±10         |
|            | 4.7                    | B         | F921E475MBA | 1.2                  | 6                            | 3.0            | *           |
| 35V        | 0.22                   | A         | F921V224MAA | 0.5                  | 4                            | 10.0           | *           |
|            | 0.33                   | A         | F921V334MAA | 0.5                  | 4                            | 10.0           | *           |
|            | 0.47                   | A         | F921V474MAA | 0.5                  | 4                            | 10.0           | *           |
|            | 1                      | A         | F921V105MAA | 0.5                  | 6                            | 10.0           | *           |
|            | 2.2                    | B         | F921V225MBA | 0.8                  | 6                            | 4.0            | ±10         |
|            | 3.3                    | B         | F921V335MBA | 1.2                  | 10                           | 4.0            | ±10         |

\*1 : ΔC/C Marked "\*"

| Item                      | P Case (%) | A , B Case(%) |
|---------------------------|------------|---------------|
| Damp Heat                 | ±20        | ±10           |
| Temperature cycles        | ±10        | ± 5           |
| Resistance soldering heat | ±10        | ± 5           |
| Surge                     | ±10        | ± 5           |
| Endurance                 | ±10        | ±10           |

We can consider the type of compliance to AEC-Q200.  
Please contact to your local Nichicon sales office  
when these series are being designed in your application.

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