F93-BE Series
Low Leakage Current, Standard Tantalum J-Lead

FEATURES
• Lower DCL 0.005 x CV
• Optional DCL sorting conditions
• Improved Failure Rate: 0.5%/1000 hours, 85°C, RV
• Low ESR options available
• 100% surge test for power supply circuit

APPLICATIONS
• IoT devices
• wearable devices
• Industrial sensors

CASE DIMENSIONS:

<table>
<thead>
<tr>
<th>Code</th>
<th>EIA Code</th>
<th>EIA Metric</th>
<th>L (mm)</th>
<th>W₁ (mm)</th>
<th>W₂ (mm)</th>
<th>H (mm)</th>
<th>S (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1206</td>
<td>3216-18</td>
<td>3.20 ± 0.20 (0.126 ± 0.008)</td>
<td>1.60 ± 0.20 (0.063 ± 0.008)</td>
<td>1.20 ± 0.10 (0.047 ± 0.004)</td>
<td>1.60 ± 0.20 (0.063 ± 0.008)</td>
<td>0.80 ± 0.20 (0.031 ± 0.008)</td>
</tr>
<tr>
<td>B</td>
<td>1210</td>
<td>3528-21</td>
<td>3.50 ± 0.20 (0.138 ± 0.008)</td>
<td>2.80 ± 0.20 (0.110 ± 0.008)</td>
<td>2.20 ± 0.10 (0.087 ± 0.004)</td>
<td>1.90 ± 0.20 (0.075 ± 0.008)</td>
<td>0.80 ± 0.20 (0.031 ± 0.008)</td>
</tr>
</tbody>
</table>

A, B CASE

MARKING

HOW TO ORDER

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated Voltage</th>
<th>Capacitance Code</th>
<th>Tolerance</th>
<th>Case Size</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>F93</td>
<td>0J</td>
<td>476</td>
<td>M</td>
<td>A</td>
<td>BE</td>
</tr>
</tbody>
</table>

TECHNICAL SPECIFICATIONS

- Category Temperature Range: -55 to +125°C
- Rated Temperature: +85°C
- Capacitance Tolerance: ±20%, ±10% at 120Hz
- Dissipation Factor: Refer to next page
- ESR 100kHz: Refer to next page
- Leakage Current: After 5 minutes application of rated voltage, leakage current at 20°C is not more than 0.005 x CV (BE1 suffix).
- Capacitance Change By Temperature:
  +15% Max. at +125°C
  +10% Max. at +85°C
  -10% Max. at -55°C
## F93-BE Series

### Low Leakage Current, Standard Tantalum J-Lead

**CAPACITANCE AND RATED VOLTAGE RANGE**  
(LETTER DENOTES CASE SIZE)

<table>
<thead>
<tr>
<th>Capacitance</th>
<th>Rated Voltage</th>
<th>6.3V (0J)</th>
<th>10V (1A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>μF</td>
<td>Code</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>47</td>
<td>476</td>
<td>A/B</td>
<td>A/B</td>
</tr>
<tr>
<td>68</td>
<td>666</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>107</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Released ratings  
Please contact to your local AVX sales office when these series are being designed in your application.

### RATINGS & PART NUMBER REFERENCE

<table>
<thead>
<tr>
<th>AVX Part No.</th>
<th>Case Size</th>
<th>Capacitance (μF)</th>
<th>Rated Voltage (V)</th>
<th>SCL (μA)</th>
<th>DF @ 120hz (%)</th>
<th>ESR *1</th>
<th>100kHz RMS Current (mA)</th>
<th>*2</th>
<th>MSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>F930J476#AABE1</td>
<td>A</td>
<td>47</td>
<td>6.3</td>
<td>1.5</td>
<td>19</td>
<td>2.5</td>
<td>173</td>
<td>156</td>
<td>69</td>
</tr>
<tr>
<td>F930J476#BABE1</td>
<td>B</td>
<td>47</td>
<td>6.3</td>
<td>1.5</td>
<td>6</td>
<td>1.0</td>
<td>292</td>
<td>262</td>
<td>117</td>
</tr>
<tr>
<td>F930J107#AABE1</td>
<td>A</td>
<td>100</td>
<td>6.3</td>
<td>3.2</td>
<td>35</td>
<td>2.0</td>
<td>194</td>
<td>174</td>
<td>77</td>
</tr>
<tr>
<td>F930J107#BABE1</td>
<td>B</td>
<td>100</td>
<td>6.3</td>
<td>3.2</td>
<td>14</td>
<td>0.9</td>
<td>307</td>
<td>277</td>
<td>123</td>
</tr>
<tr>
<td>F931A476#AABE1</td>
<td>A</td>
<td>47</td>
<td>10</td>
<td>2.4</td>
<td>40</td>
<td>2.0</td>
<td>194</td>
<td>174</td>
<td>77</td>
</tr>
<tr>
<td>F931A476#BABE1</td>
<td>B</td>
<td>47</td>
<td>10</td>
<td>2.4</td>
<td>8</td>
<td>1.0</td>
<td>292</td>
<td>262</td>
<td>117</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>All Case (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damp Heat</td>
<td>±10</td>
</tr>
<tr>
<td>Temperature cycles</td>
<td>±5</td>
</tr>
<tr>
<td>Resistance soldering heat</td>
<td>±5</td>
</tr>
<tr>
<td>Surge</td>
<td>±5</td>
</tr>
<tr>
<td>Endurance</td>
<td>±10</td>
</tr>
</tbody>
</table>

*1 Low ESR options are available. Please contact to your local AVX sales office.

*2: ΔC/C Marked “*”

#: “M” for ±20% tolerance, “K” for ±10% tolerance.
## F93-BE Series

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### QUALIFICATION TABLE

<table>
<thead>
<tr>
<th>TEST</th>
<th>F93-BE series (Temperature range -55°C to +125°C)</th>
<th>Condition</th>
</tr>
</thead>
</table>
| Damp Heat (Steady State) | At 40°C, 90 to 95% R.H., 500 hours (No voltage applied) | Capacitance Change ........... Refer to page 37 (*1)  
Dissipation Factor ................ Initial specified value or less  
Leakage Current .................. Initial specified value or less |
| Temperature Cycles | -55°C / +125°C, 30 minutes each, 1000 cycles | Capacitance Change ........... Refer to page 37 (*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, 5 seconds immersion at 260°C. | Capacitance Change ........... Refer to page 37 (*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 shall meet the characteristic requirements in the table above. | Capacitance Change ........... Refer to page 37 (*1)  
Dissipation Factor ................ Initial specified value or less  
Leakage Current .................. Initial specified value or less |
| Endurance | After 2000 hours application of rated voltage in series with a 3Ω resistor at 85°C, or derated voltage in series with a 3Ω resistor at 125°C, capacitors shall meet the characteristic requirements in the table above. | Capacitance Change ........... Refer to page 37 (*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. | |
| 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. Then, there shall be found no remarkable abnormality on the capacitor terminals. | |
| Failure Rate | 0.5% per 1000 hours at 85°C, VR with 0.1Ω/V series impedance, 60% confidence level. | |
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AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP

CONDUCTIVE POLYMER
TC Series
T C x
F Series
F3 x

CONVENTIONAL TANTALUM
T series
T x x
F Series
F x x

NIIOBIUM OXIDE
N Series
N x x

CATHODE
DIELECTRIC
Ta2O5
Tantalum

Five Capacitor Construction Styles

SERIES LINE UP: CONVENTIONAL SMD MnO2

Industrial
THJ 200°C
THJ professional low DCL

THH 230°C Hermetic

TRM low DCL multianode

TPS auto **T / **U

TPM multianode

F97-HT3 135°C auto

F9H 135°C auto

Automotive
THJ 175°C auto

TRJ professional

TAJ auto **T / **U

F91-AJ6 auto

F97 professional

F93-AJ6 auto

Standard
TAJ

TPS

F91

Standard Low Profile
TAJ Low profile

TAC microchip

TPC microchip

Low ESR

High CV
TLN undertab

TLJ microchip

TLC microchip

F98-AS1 undertab.fused

F98 undertab