

MULTILAYER CHIP SUPPRESSORS (CHIP BEADS)

- FBU SERIES -

FEATURES

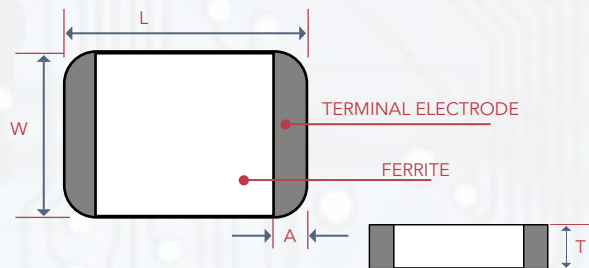
- FBU Series for DC Power Line
- Rated Current: 4-9 A
- Operating Temp -55 - 125°C
- The FBU series can be used on high current circuits due to its low DC resistance. It can match power lines to a maximum of 9 A DC.



APPLICATIONS

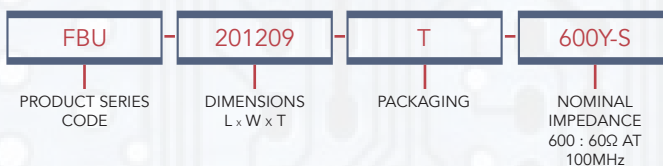
- High current DC Power Line EMI suppress. Examples:
 - CD-ROM'S
 - Hard Drives
 - Modems
 - Monitors
 - Motherboards
 - Printers

SHAPES AND DIMENSIONS



| SHAPE | L (MM) | W (MM) | T (MM) | A (MM) |
|---------------|-------------|-------------|---------------|-----------|
| 160808 (0603) | 1.6 ± 0.2 | 0.8 ± 0.2 | 0.8 ± 0.15 | 0.1~0.3 |
| 201209 (0805) | 2.0 ± 0.2 | 1.25 ± 0.2 | 0.9+0.15/-0.2 | 0.2~0.8 |
| 321611 (1206) | 3.2 ± 0.2 | 1.6 ± 0.2 | 1.1 ± 0.2 | 0.4~1.0 |
| 322513 (1210) | 3.2 ± 0.2 | 2.5 ± 0.2 | 1.3 ± 0.2 | 0.6~1.0 |
| 451616 (1806) | 4.5 ± 0.2 | 1.6 ± 0.2 | 1.6 ± 0.2 | 0.6~1.0 |
| 453215 (1812) | 4.5 ± 0.2 | 3.2 ± 0.2 | 1.5 ± 0.2 | 0.6~1.0 |
| 565015 (2220) | 5.59 ± 0.51 | 5.08 ± 0.25 | 1.5 ± 0.25 | 0.51~1.01 |
| 565018 (2220) | 5.59 ± 0.51 | 5.08 ± 0.25 | 1.8 ± 0.25 | 0.51~1.01 |
| 565030 (2220) | 5.59 ± 0.51 | 5.08 ± 0.25 | 3.05 ± 0.25 | 0.51~1.01 |
| 565032 (2220) | 5.59 ± 0.51 | 5.08 ± 0.25 | 3.2 ± 0.25 | 0.51~1.01 |
| 565036 (2220) | 5.59 ± 0.51 | 5.08 ± 0.25 | 3.6 ± 0.25 | 0.51~1.01 |

ORDERING INFORMATION



PACKAGING GUIDE

| SERIES | PART NUMBER | PCS PER REEL |
|--------|---------------|--------------|
| FBU | 100505 (0402) | 10000 /R |
| FBU | 160808 (0603) | 4000 /R |
| FBU | 201209 (0805) | 4000 /R |
| FBU | 321611 (1206) | 3000 /R |
| FBU | 322513 (1210) | 2000 /R |
| FBU | 451616 (1806) | 2000 /R |
| FBU | 453223 (2220) | 2500 /R |
| FBU | 565015 (2220) | 2000 /R |
| FBU | 565018 (2220) | 2000 /R |
| FBU | 565030 (2220) | 2000 /R |
| FBU | 565032 (2220) | 2000 /R |
| FBU | 565036 (2220) | 2000 /R |

ELECTRICAL CHARACTERISTICS - 160808

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|---------------------|---|---------------------------------|---------------------------|
| FBU160808T-070Y-S | 7 | 0.025 | 4000 |
| FBU160808T-100Y-S | 10 | 0.01 | 6000 |
| FBU160808T-220Y-S | 22 | 0.008 | 6000 |
| FBU160808T-260Y-S | 26 | 0.007 | 6000 |
| FBU160808T-300Y-S | 30 | 0.01 | 5000 |
| FBU160808T-300Y-S-H | 30 | 0.008 | 6000 |
| FBU160808T-330Y-S | 33 | 0.008 | 6000 |
| FBU160808T-600Y-S | 60 | 0.03 | 4000 |

ELECTRICAL CHARACTERISTICS - 201209

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|---------------------|---|---------------------------------|---------------------------|
| FBU201209T-070Y-S | 7 | 0.008 | 6000 |
| FBU201209T-100Y-S | 10 | 0.01 | 6000 |
| FBU201209T-110Y-S | 11 | 0.008 | 6000 |
| FBU201209T-170Y-S | 17 | 0.008 | 6000 |
| FBU201209T-190Y-S | 19 | 0.008 | 6000 |
| FBU201209T-220Y-S | 22 | 0.008 | 6000 |
| FBU201209T-260Y-S | 26 | 0.008 | 6000 |
| FBU201209T-300Y-S | 30 | 0.008 | 6000 |
| FBU201209T-310Y-S | 31 | 0.015 | 6000 |
| FBU201209T-400Y-S | 40 | 0.03 | 4000 |
| FBU201209T-600Y-S | 60 | 0.01 | 5000 |
| FBU201209T-800Y-S | 80 | 0.02 | 5000 |
| FBU201209T-121Y-S | 120 | 0.02 | 4000 |
| FBU201209T-121Y-S-H | 120 | 0.015 | 5000 |
| FBU201209T-181Y-S | 180 | 0.03 | 4000 |

ELECTRICAL CHARACTERISTICS - 321611

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|---------------------|---|---------------------------------|---------------------------|
| FBU321611T-190Y-S | 19 | 0.006 | 6000 |
| FBU321611T-260Y-S | 26 | 0.006 | 6000 |
| FBU321611T-300Y-S | 30 | 0.006 | 6000 |
| FBU321611T-310Y-S | 31 | 0.006 | 6000 |
| FBU321611T-330Y-S | 33 | 0.006 | 6000 |
| FBU321611T-380Y-S | 38 | 0.020 | 5000 |
| FBU321611T-400Y-S | 40 | 0.040 | 4000 |
| FBU321611T-500Y-S | 50 | 0.015 | 6000 |
| FBU321611T-520Y-S | 52 | 0.008 | 6000 |
| FBU321611T-600Y-S | 60 | 0.010 | 6000 |
| FBU321611T-800Y-S | 80 | 0.020 | 4000 |
| FBU321611T-121Y-S | 120 | 0.020 | 4000 |
| FBU321611T-121Y-S-H | 120 | 0.010 | 6000 |



■ ELECTRICAL CHARACTERISTICS - 322513

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|-------------------|---|---------------------------------|---------------------------|
| FBU322513T-520Y-S | 52 | 0.008 | 6000 |
| FBU322513T-600Y-S | 60 | 0.008 | 6000 |

■ ELECTRICAL CHARACTERISTICS - 451616

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|-------------------|---|---------------------------------|---------------------------|
| FBU451616T-600Y-S | 60 | 0.008 | 6000 |
| FBU451616T-720Y-S | 72 | 0.01 | 6000 |
| FBU451616T-750Y-S | 75 | 0.008 | 6000 |

■ ELECTRICAL CHARACTERISTICS - 453215

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|---------------------|---|---------------------------------|---------------------------|
| FBU453215T-600Y-S | 60 | 0.008 | 6000 |
| FBU453215T-800Y-S | 80 | 0.004 | 9000 |
| FBU453215T-101Y-S | 101 | 0.007 | 8000 |
| FBU453215T-121Y-S | 120 | 0.02 | 4000 |
| FBU453215T-121Y-S-H | 120 | 0.015 | 6000 |
| FBU453215T-151Y-S | 150 | 0.02 | 4000 |
| FBU453215T-681Y-S | 680 | 0.03 | 4000 |

■ ELECTRICAL CHARACTERISTICS - 565015

| PART NUMBER | IMPEDANCE (Ω) $\pm 25\%$ [100MHz] | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) |
|-------------------|---|---------------------------------|---------------------------|
| FBU565015T-171Y-S | 170 | 0.03 | 4000 |
| FBU565018T-101Y-S | 100 | 0.006 | 6000 |
| FBU565018T-151Y-S | 150 | 0.015 | 5000 |
| FBU565018T-181Y-S | 180 | 0.02 | 5000 |
| FBU565018T-251Y-S | 250 | 0.015 | 4000 |
| FBU565032T-271Y-S | 270 | 0.035 | 4000 |
| FBU565032T-401Y-S | 400 | 0.03 | 4500 |
| FBU565030T-801Y-S | 800 | 0.01 | 8000 |
| FBU565036T-801Y-S | 800 | 0.01 | 8000 |

ENVIRONMENTAL CHARACTERISTICS

ELECTRICAL PERFORMANCE TEST

| ITEM | SPECIFICATION | TEST METHODS |
|-----------|------------------------------------|----------------------------------|
| Impedance | Refer to standard electrical spec. | - HP4286A |
| DCR | | - HP 4338 digital mili-ohm meter |

MECHANICAL PERFORMANCE TEST

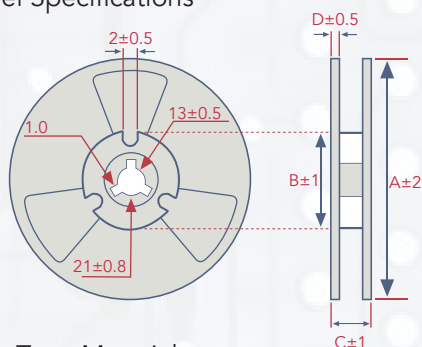
| ITEM | SPECIFICATION | TEST METHODS |
|-----------------------------------|---|--|
| Substrate Bending Test | <ul style="list-style-type: none"> - Without deformation cases - Impedance: within±30% of initial value - DC Resistance shall be satisfied | <ul style="list-style-type: none"> - Test device shall be soldered on the substrate - Substrate Dimension:100x40x0.8mm - Deflection: 3.0mm - Keeping Time: 10sec and then return |
| Vibration | <ul style="list-style-type: none"> - Appearance: No damage - Impedance: within±30% of initial value - DC Resistance shall be satisfied | <ul style="list-style-type: none"> - Test device shall be soldered on the substrate - Oscillation Frequency : 10 to 55 to 10Hz for 1min - Amplitude : 1.5mm(peak-peak) - Time : 2hrs for each axis (X,Y&Z), total 6hrs |
| Resistance to Soldering Heat | <ul style="list-style-type: none"> - No visible damage - Electrical characteristics and mechanical characteristics shall be satisfied | <ul style="list-style-type: none"> - Solder temp: 265±5°C - Immersion time: 6±1sec - Preheating: 100°C to 150°C, 1 minute - Measured after exposure in the room condition for 24hrs - Solder: Sn-3Ag-0.5Cu |
| Solderability | <ul style="list-style-type: none"> - 95% min. coverage of all metallized area | <ul style="list-style-type: none"> - Solder Temperature: 240±5°C - Immersion Time: 3±1sec - Solder: Sn-3Ag-0.5Cu |
| Terminal Strength | <ul style="list-style-type: none"> - Without deformation cases - Impedance: within±30% of initial value - DC Resistance shall be satisfied | <ul style="list-style-type: none"> - Solder chip on PCB and applied 10N (1.02KgF) for 10 sec |
| Temperature Cycle | | <ul style="list-style-type: none"> - One cycle: - One cycle/step1: -55±3°C for 30±3min step2: standard atmospheric conditions 5s or less step3:125±2°C for 30±3min step4: standard atmospheric conditions 5s or less - Total: 100cycles - Measured after exposure in the room condition for 24hrs |
| Humidity Resistance | <ul style="list-style-type: none"> - Appearance: No damage - Impedance: within±30% of initial value DC Resistance shall be satisfied | <ul style="list-style-type: none"> - Temperature: 60±2°C - Relative Humidity: 90 ~ 95% - Applied Current: Rated Current(maximum value) - Time: 1008±12hrs - Measured after exposure in the room condition for 24hrs |
| High Temperature Resistance | | <ul style="list-style-type: none"> - Temperature: 125±2°C - Applied Current: Rated Current(maximum value) - Time: 1008±12hrs - Measured after exposure in the room condition for 24hrs |
| Low Temperature Storage Life Test | | <ul style="list-style-type: none"> - Temperature: -55±2°C - Time: 1008±12hrs - Measured after exposure in the room condition for 24hrs |
| Thermal Shock | | <ul style="list-style-type: none"> - -55°C~125°C kept stabilized for 30 minutes each for 100 cycles - Measured after exposure in the room condition for 24hrs |

- Operating Temperature: -55°C ~ 125°C
- Storage Temperature: 15~28°C ; Humidity < 80%RH

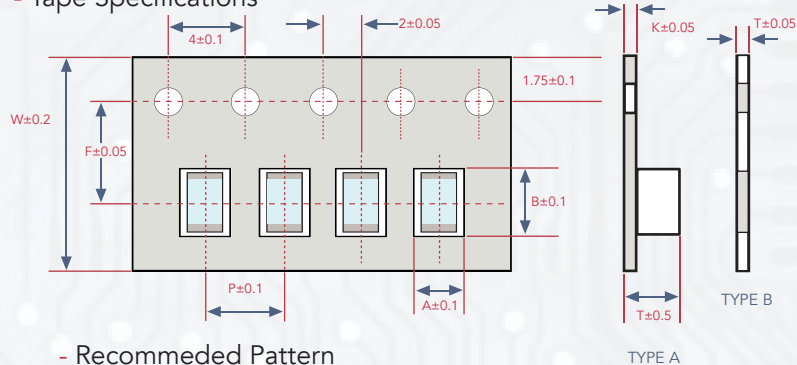


PACKAGING

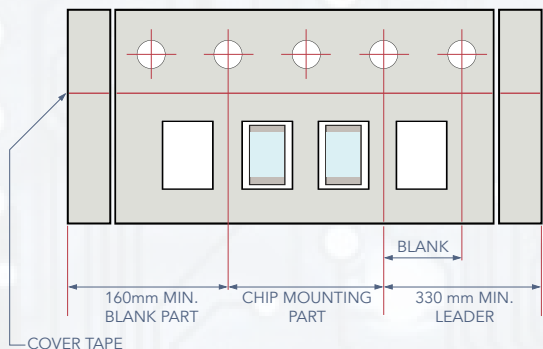
- Reel Specifications



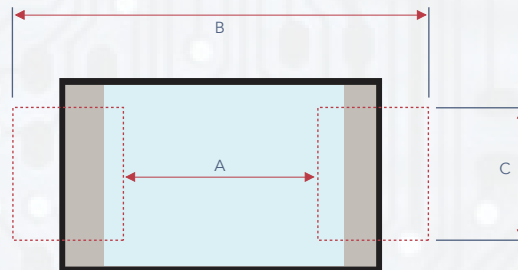
- Tape Specifications



- Tape Material



- Recommended Pattern



Unit : mm

| TYPE | TAPE DIMENSIONS | | | | | | | | REEL DIMENSIONS | | | | RECOMMENDED PATTERN | | | QUANTITY (EA) |
|-----------|-----------------|------|------|-----|-----|-----|------|-----------|-----------------|----|------|-----|---------------------|---------|------|---------------|
| | A | B | T | W | P | F | K | TAPE TYPE | A | B | C | D | A | B | C | |
| FBU160808 | 1.10 | 1.90 | 1.10 | 8.0 | 4.0 | 3.5 | - | B | 178 | 60 | 10 | 2 | 0.60 | 2.60 | 0.80 | 4000 |
| FBU201209 | 1.55 | 2.30 | 1.20 | 8.0 | 4.0 | 3.5 | - | B | 178 | 60 | 10 | 2 | 0.66 | 3.23 | 1.47 | 4000 |
| FBU321611 | 1.90 | 3.50 | 1.40 | 8.0 | 4.0 | 3.5 | 0.2 | A | 178 | 60 | 10 | 2 | 2.20 | 4.40 | 2.06 | 3000 |
| FBU321616 | 1.88 | 3.64 | 1.90 | 8.0 | 4.0 | 3.5 | 0.2 | A | 178 | 60 | 10 | 2 | 2.20 | 4.2-5.2 | 1.2 | 2000 |
| FBU322513 | 2.90 | 3.60 | 1.70 | 8.0 | 4.0 | 3.5 | 0.2 | A | 178 | 60 | 10 | 2 | 2.13 | 4.06 | 2.74 | 2000 |
| FBU451616 | 2.90 | 4.90 | 1.40 | 12 | 4.0 | 5.5 | 0.3 | A | 178 | 60 | 14 | 2 | 2.70 | 5.70 | 2.24 | 2000 |
| FBU453215 | 3.60 | 4.90 | 2.05 | 12 | 8.0 | 5.5 | 0.3 | A | 178 | 60 | 14 | 2 | 2.57 | 5.90 | 4.22 | 1000 |
| FBU565015 | 5.4 | 5.95 | 2.28 | 12 | 8 | 5.5 | 0.33 | A | 330 | 60 | 12 | 2 | 3.05 | 9.19 | 6.1 | 2000 |
| FBU565018 | 5.4 | 5.95 | 2.28 | 12 | 8 | 5.5 | 0.33 | A | 330 | 60 | 12 | 2 | 3.05 | 9.19 | 6.1 | 2000 |
| FBU565030 | 5.25 | 6.15 | 3.2 | 12 | 8 | 5.5 | 0.3 | A | 330 | 99 | 12.7 | 6.1 | 4.07 | 8.10 | 5.30 | 2000 |
| FBU565032 | 5.4 | 5.95 | 3.32 | 12 | 8 | 5.5 | 0.33 | A | 330 | 60 | 12 | 2 | 3.05 | 9.19 | 6.1 | 2000 |
| FBU565036 | 5.36 | 5.77 | 3.73 | 12 | 8 | 5.5 | 0.31 | A | 330 | 60 | 12 | 2 | 3.05 | 9.19 | 6.1 | 2000 |

*NOTE: Tape Type B denotes cardboard | Tape Type A denotes embossed plastic type

SOLDERING CONDITION

IR Reflow Soldering

(1) Time of IR reflow soldering at maximum temperature point 260°C zzz: 10s

(2) Time of soldering iron at maximum temperature point 280°C : 3s

