

# MULTILAYER CHIP BEADS

## - FB SERIES -

### FEATURES

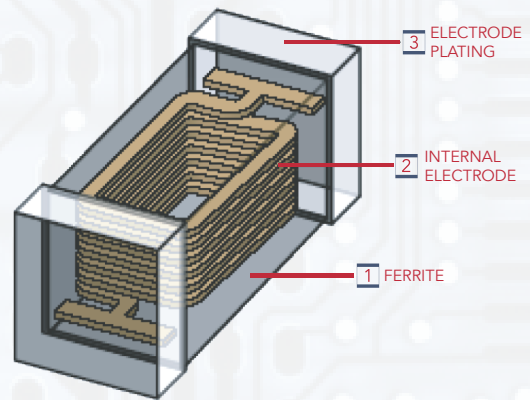
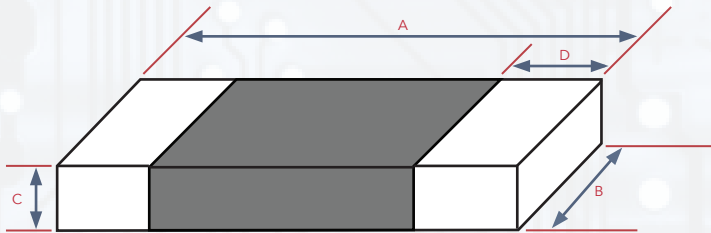
- Effective EMI protection
- Low DC resistance
- High soldering heat resistance
- Multiple size availability



### APPLICATIONS

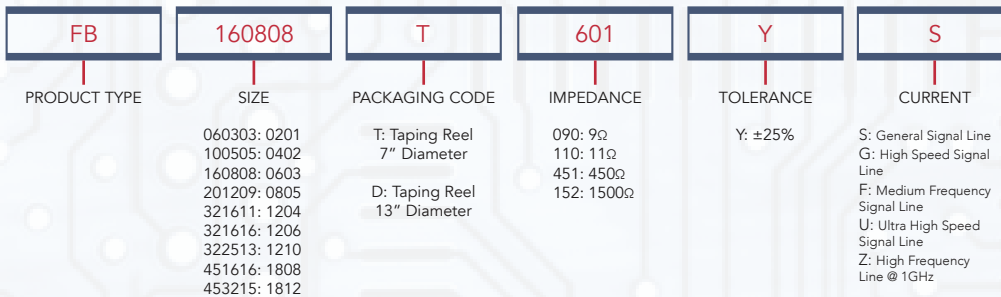
- Computers and Peripheral Equipment
- VCRS, Television, Pagers
- Cellular Phones
- Digital Communication Equipment
- Various Electronics Equipments
- Circuit Where a Stable Ground is Unavailable

### EXTERNAL DIMENSIONS & CONSTRUCTION



| TYPE     | SIZE (INCH) | A (MM)     | B (MM)      | C (MM)      | D (MM)     | WEIGHT (g) (1000pcs) |
|----------|-------------|------------|-------------|-------------|------------|----------------------|
| FB060303 | 0201        | 0.6 ± 0.3  | 0.30 ± 0.03 | 0.30 ± 0.03 | 0.1 ~ 0.2  | 1.1                  |
| FB100505 | 0402        | 1.0 ± 0.10 | 0.50 ± 0.10 | 0.5 ± 0.10  | 0.1 ~ 0.35 | 2.6                  |
| FB160808 | 0603        | 1.6 ± 0.20 | 0.80 ± 0.15 | 0.8 ± 0.15  | 0.1 ~ 0.6  | 6.2                  |
| FB201209 | 0805        | 2.0 ± 0.20 | 1.25 ± 0.20 | 0.9 ± 0.20  | 0.2 ~ 0.8  | 10                   |
| FB321611 | 1206        | 3.2 ± 0.20 | 1.60 ± 0.20 | 1.1 ± 0.20  | 0.2 ~ 1.0  | 30                   |
| FB321616 | 1206        | 3.2 ± 0.20 | 1.50 ± 0.20 | 1.6 ± 0.20  | 0.5 ~ 0.3  | 35                   |
| FB322513 | 1210        | 3.2 ± 0.20 | 2.50 ± 0.20 | 1.3 ± 0.20  | 0.2 ~ 1.0  | 54                   |
| FB451616 | 1806        | 4.5 ± 0.25 | 1.60 ± 0.20 | 1.6 ± 0.20  | 0.2 ~ 1.0  | 60                   |
| FB453215 | 1812        | 4.5 ± 0.25 | 3.20 ± 0.20 | 1.5 ± 0.20  | 0.2 ~ 1.0  | 62                   |

### PART NUMBERING





## STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

### FB060303 (0201)

| PART NUMBER      | IMPEDANCE (Ω) | TOLERANCE | TEST FREQUENCY (MHz) | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) at 85°C |
|------------------|---------------|-----------|----------------------|-----------------------|--------------------------------|
| FB060303T-100Y-S | 10            | ±25%      | 100                  | 0.10                  | 500                            |
| FB060303T-110Y-S | 11            | ±25%      | 100                  | 0.10                  | 500                            |
| FB060303T-220Y-S | 22            | ±25%      | 100                  | 0.065                 | 500                            |
| FB060303T-250Y-S | 25            | ±25%      | 100                  | 0.30                  | 300                            |
| FB060303T-300Y-S | 30            | ±25%      | 100                  | 0.30                  | 300                            |
| FB060303T-330Y-S | 33            | ±25%      | 100                  | 0.30                  | 300                            |
| FB060303T-400Y-S | 40            | ±25%      | 100                  | 0.30                  | 300                            |
| FB060303T-500Y-S | 50            | ±25%      | 100                  | 0.30                  | 300                            |
| FB060303T-600Y-S | 60            | ±25%      | 100                  | 0.35                  | 300                            |
| FB060303T-700Y-S | 70            | ±25%      | 100                  | 0.35                  | 300                            |
| FB060303T-800Y-S | 80            | ±25%      | 100                  | 0.35                  | 300                            |
| FB060303T-101Y-S | 100           | ±25%      | 100                  | 0.40                  | 200                            |
| FB060303T-121Y-S | 120           | ±25%      | 100                  | 0.45                  | 200                            |
| FB060303T-151Y-S | 150           | ±25%      | 100                  | 0.50                  | 200                            |
| FB060303T-221Y-S | 220           | ±25%      | 100                  | 0.75                  | 200                            |
| FB060303T-241Y-S | 240           | ±25%      | 100                  | 0.80                  | 200                            |
| FB060303T-301Y-S | 300           | ±25%      | 100                  | 0.90                  | 150                            |
| FB060303T-331Y-S | 330           | ±25%      | 100                  | 0.90                  | 150                            |
| FB060303T-471Y-S | 470           | ±25%      | 100                  | 1.50                  | 100                            |
| FB060303T-601Y-S | 600           | ±25%      | 100                  | 1.20                  | 100                            |
| FB060303T-102Y-S | 1000          | ±25%      | 100                  | 1.15                  | 200                            |

### FB100505 (0402)

| PART NUMBER        | IMPEDANCE (Ω) | TOLERANCE | TEST FREQUENCY (MHz) | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) at 85°C |
|--------------------|---------------|-----------|----------------------|-----------------------|--------------------------------|
| FB100505T-100Y-S   | 10            | ±25%      | 100                  | 0.05                  | 500                            |
| FB100505T-200Y-S   | 20            | ±25%      | 100                  | 0.10                  | 300                            |
| FB100505T-220Y-S   | 22            | ±25%      | 100                  | 0.35                  | 300                            |
| FB100505T-300Y-S   | 30            | ±25%      | 100                  | 0.20                  | 300                            |
| FB100505T-300Y-S-1 | 30            | ±25%      | 100                  | 0.20                  | 500                            |
| FB100505T-330Y-S   | 33            | ±25%      | 100                  | 0.40                  | 300                            |
| FB100505T-400Y-S   | 40            | ±25%      | 100                  | 0.20                  | 300                            |
| FB100505T-470Y-S   | 47            | ±25%      | 100                  | 0.40                  | 300                            |
| FB100505T-560Y-S   | 56            | ±25%      | 100                  | 0.30                  | 400                            |
| FB100505T-600Y-S   | 60            | ±25%      | 100                  | 0.40                  | 200                            |
| FB100505T-600Y-S-1 | 60            | ±25%      | 100                  | 0.40                  | 300                            |




**STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)**

FB100505 (0402) (CONT.)

| PART NUMBER        | IMPEDANCE<br>(Ω) | TOLERANCE | TEST<br>FREQUENCY<br>(MHz) | DC RESISTANCE<br>Ω (MAX) | RATED CURRENT<br>mA (MAX)<br>at 85°C |
|--------------------|------------------|-----------|----------------------------|--------------------------|--------------------------------------|
| FB100505T-680Y-S   | 68               | ±25%      | 100                        | 0.15                     | 500                                  |
| FB100505T-700Y-S   | 70               | ±25%      | 100                        | 0.40                     | 200                                  |
| FB100505T-700Y-S-1 | 70               | ±25%      | 100                        | 0.25                     | 500                                  |
| FB100505T-750Y-S   | 75               | ±25%      | 100                        | 0.40                     | 300                                  |
| FB100505T-800Y-S   | 80               | ±25%      | 100                        | 0.40                     | 200                                  |
| FB100505T-101Y-S   | 100              | ±25%      | 100                        | 0.45                     | 200                                  |
| FB100505T-121Y-S   | 120              | ±25%      | 100                        | 0.50                     | 200                                  |
| FB100505T-121Y-S-1 | 120              | ±25%      | 100                        | 0.20                     | 500                                  |
| FB100505T-121Y-S-2 | 120              | ±25%      | 100                        | 0.30                     | 800                                  |
| FB100505T-151Y-S   | 150              | ±25%      | 100                        | 0.60                     | 200                                  |
| FB100505T-181Y-S   | 180              | ±25%      | 100                        | 0.65                     | 100                                  |
| FB100505T-221Y-S   | 220              | ±25%      | 100                        | 0.70                     | 100                                  |
| FB100505T-221Y-S-1 | 220              | ±25%      | 100                        | 0.35                     | 300                                  |
| FB100505T-221Y-S-2 | 220              | ±25%      | 100                        | 0.30                     | 800                                  |
| FB100505T-241Y-S   | 240              | ±25%      | 100                        | 0.30                     | 500                                  |
| FB100505T-301Y-S   | 300              | ±25%      | 100                        | 0.75                     | 100                                  |
| FB100505T-301Y-S-1 | 300              | ±25%      | 100                        | 0.45                     | 400                                  |
| FB100505T-331Y-S   | 330              | ±25%      | 100                        | 0.75                     | 100                                  |
| FB100505T-331Y-S-1 | 330              | ±25%      | 100                        | 0.20                     | 800                                  |
| FB100505T-331Y-S-2 | 330              | ±25%      | 100                        | 0.28                     | 700                                  |
| FB100505T-431Y-S   | 430              | ±25%      | 100                        | 0.50                     | 350                                  |
| FB100505T-471Y-S   | 470              | ±25%      | 100                        | 0.90                     | 100                                  |
| FB100505T-471Y-S-1 | 470              | ±25%      | 100                        | 0.60                     | 300                                  |
| FB100505T-501Y-S   | 500              | ±25%      | 100                        | 1.00                     | 100                                  |
| FB100505T-601Y-S   | 600              | ±25%      | 100                        | 1.10                     | 50                                   |
| FB100505T-601Y-S-1 | 600              | ±25%      | 100                        | 0.60                     | 300                                  |
| FB100505T-601Y-S-2 | 600              | ±25%      | 100                        | 0.80                     | 600                                  |
| FB100505T-102Y-S   | 1000             | ±25%      | 100                        | 1.50                     | 50                                   |
| FB100505T-102Y-S-1 | 1000             | ±25%      | 100                        | 0.80                     | 250                                  |
| FB100505T-102Y-S-2 | 1000             | ±25%      | 100                        | 0.58                     | 300                                  |
| FB100505T-102Y-S-3 | 1000             | ±25%      | 100                        | 0.49                     | 350                                  |
| FB100505T-152Y-S   | 1500             | ±25%      | 100                        | 0.80                     | 250                                  |
| FB100505T-182Y-S   | 1800             | ±25%      | 100                        | 0.80                     | 250                                  |



## STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

FB160808 (0603)

| PART NUMBER        | IMPEDANCE<br>( $\Omega$ ) | TOLERANCE  | TEST<br>FREQUENCY<br>(MHz) | DC RESISTANCE<br>$\Omega$ (MAX) | RATED CURRENT<br>mA (MAX)<br>at 85°C |
|--------------------|---------------------------|------------|----------------------------|---------------------------------|--------------------------------------|
| FB160808T-050Y-S-1 | 5                         | $\pm 25\%$ | 100                        | 0.08                            | 700                                  |
| FB160808T-070Y-S-1 | 7                         | $\pm 25\%$ | 100                        | 0.10                            | 900                                  |
| FB160808T-100Y-S   | 10                        | $\pm 25\%$ | 100                        | 0.05                            | 600                                  |
| FB160808T-100Y-S-1 | 10                        | $\pm 25\%$ | 100                        | 0.10                            | 900                                  |
| FB160808T-190Y-S   | 19                        | $\pm 25\%$ | 100                        | 0.10                            | 400                                  |
| FB160808T-200Y-S   | 20                        | $\pm 25\%$ | 100                        | 0.25                            | 500                                  |
| FB160808T-300Y-S   | 30                        | $\pm 25\%$ | 100                        | 0.20                            | 500                                  |
| FB160808T-300Y-S-1 | 30                        | $\pm 25\%$ | 100                        | 0.08                            | 600                                  |
| FB160808T-300Y-S-2 | 30                        | $\pm 25\%$ | 100                        | 0.20                            | 700                                  |
| FB160808T-310Y-S   | 300                       | $\pm 25\%$ | 100                        | 0.10                            | 400                                  |
| FB160808T-520Y-S   | 52                        | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-600Y-S   | 60                        | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-600Y-S-1 | 60                        | $\pm 25\%$ | 100                        | 0.10                            | 500                                  |
| FB160808T-600Y-S-2 | 60                        | $\pm 25\%$ | 100                        | 0.10                            | 600                                  |
| FB160808T-680Y-S-1 | 68                        | $\pm 25\%$ | 100                        | 0.10                            | 700                                  |
| FB160808T-700Y-S   | 70                        | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-750Y-S   | 75                        | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-750Y-S-1 | 75                        | $\pm 25\%$ | 100                        | 0.35                            | 500                                  |
| FB160808T-800Y-S   | 80                        | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-800Y-S-1 | 80                        | $\pm 25\%$ | 100                        | 0.10                            | 600                                  |
| FB160808T-800Y-S-2 | 80                        | $\pm 25\%$ | 100                        | 0.20                            | 700                                  |
| FB160808T-101Y-S   | 100                       | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-121Y-S   | 120                       | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-121Y-S-1 | 120                       | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB160808T-151Y-S   | 150                       | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-181Y-S   | 180                       | $\pm 25\%$ | 100                        | 0.20                            | 400                                  |
| FB160808T-201Y-S   | 200                       | $\pm 25\%$ | 100                        | 0.20                            | 400                                  |





## STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

FB160808 (0603) (CONT.)

| PART NUMBER        | IMPEDANCE<br>( $\Omega$ ) | TOLERANCE  | TEST<br>FREQUENCY<br>(MHz) | DC RESISTANCE<br>$\Omega$ (MAX) | RATED CURRENT<br>mA (MAX)<br>at 85°C |
|--------------------|---------------------------|------------|----------------------------|---------------------------------|--------------------------------------|
| FB160808T-221Y-S   | 220                       | $\pm 25\%$ | 100                        | 0.20                            | 400                                  |
| FB160808T-221Y-S-1 | 220                       | $\pm 25\%$ | 100                        | 0.30                            | 550                                  |
| FB160808T-241Y-S   | 240                       | $\pm 25\%$ | 100                        | 0.17                            | 500                                  |
| FB160808T-301Y-S   | 300                       | $\pm 25\%$ | 100                        | 0.30                            | 400                                  |
| FB160808T-301Y-S-1 | 300                       | $\pm 25\%$ | 100                        | 0.35                            | 450                                  |
| FB160808T-301Y-S-2 | 300                       | $\pm 25\%$ | 100                        | 0.35                            | 500                                  |
| FB160808T-331Y-S   | 330                       | $\pm 25\%$ | 100                        | 0.30                            | 500                                  |
| FB160808T-401Y-S   | 400                       | $\pm 25\%$ | 100                        | 0.30                            | 400                                  |
| FB160808T-401Y-S-1 | 400                       | $\pm 25\%$ | 100                        | 0.20                            | 500                                  |
| FB160808T-421Y-S   | 420                       | $\pm 25\%$ | 100                        | 0.30                            | 400                                  |
| FB160808T-451Y-S   | 450                       | $\pm 25\%$ | 100                        | 0.30                            | 400                                  |
| FB160808T-471Y-S   | 470                       | $\pm 25\%$ | 100                        | 0.45                            | 400                                  |
| FB160808T-471Y-S-1 | 470                       | $\pm 25\%$ | 100                        | 0.45                            | 500                                  |
| FB160808T-501Y-S   | 500                       | $\pm 25\%$ | 100                        | 0.35                            | 400                                  |
| FB160808T-601Y-S   | 600                       | $\pm 25\%$ | 100                        | 0.40                            | 450                                  |
| FB160808T-601Y-S-1 | 600                       | $\pm 25\%$ | 100                        | 0.50                            | 500                                  |
| FB160808T-751Y-S   | 750                       | $\pm 25\%$ | 100                        | 0.15                            | 400                                  |
| FB160808T-102Y-S   | 1000                      | $\pm 25\%$ | 100                        | 0.55                            | 300                                  |
| FB160808T-102Y-S-1 | 1000                      | $\pm 25\%$ | 100                        | 0.25                            | 800                                  |
| FB160808T-102Y-S-2 | 1000                      | $\pm 25\%$ | 100                        | 0.70                            | 500                                  |
| FB160808T-152Y-S   | 1500                      | $\pm 25\%$ | 100                        | 0.60                            | 200                                  |
| FB160808T-152Y-S-1 | 1500                      | $\pm 25\%$ | 100                        | 1.00                            | 300                                  |
| FB160808T-182Y-S   | 1800                      | $\pm 25\%$ | 100                        | 0.70                            | 100                                  |
| FB160808T-182Y-S-1 | 1800                      | $\pm 25\%$ | 100                        | 1.00                            | 200                                  |
| FB160808T-202Y-S   | 2000                      | $\pm 25\%$ | 100                        | 1.00                            | 100                                  |
| FB160808T-252Y-S   | 2500                      | $\pm 25\%$ | 100                        | 0.70                            | 100                                  |
| FB160808T-252Y-S-1 | 2500                      | $\pm 25\%$ | 200                        | 0.70                            | 100                                  |
| FB160808T-202Y-S   | 2000                      | $\pm 25\%$ | 100                        | 1.00                            | 100                                  |
| FB160808T-252Y-S   | 2500                      | $\pm 25\%$ | 100                        | 0.70                            | 100                                  |
| FB160808T-252Y-S-1 | 2500                      | $\pm 25\%$ | 200                        | 0.70                            | 100                                  |



## STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

FB201209 (0805)

| PART NUMBER        | IMPEDANCE<br>(Ω) | TOLERANCE | TEST<br>FREQUENCY<br>(MHz) | DC RESISTANCE<br>Ω (MAX) | RATED CURRENT<br>mA (MAX)<br>at 85°C |
|--------------------|------------------|-----------|----------------------------|--------------------------|--------------------------------------|
| FB201209T-050Y-S   | 5                | ±25%      | 100                        | 0.07                     | 500                                  |
| FB201209T-070Y-S   | 7                | ±25%      | 100                        | 0.07                     | 500                                  |
| FB201209T-100Y-S   | 10               | ±25%      | 100                        | 0.07                     | 500                                  |
| FB201209T-110Y-S   | 11               | ±25%      | 100                        | 0.10                     | 500                                  |
| FB201209T-130Y-S   | 13               | ±25%      | 100                        | 0.08                     | 500                                  |
| FB201209T-170Y-S   | 17               | ±25%      | 100                        | 0.10                     | 300                                  |
| FB201209T-260Y-S   | 26               | ±25%      | 100                        | 0.10                     | 300                                  |
| FB201209T-300Y-S   | 30               | ±25%      | 100                        | 0.10                     | 300                                  |
| FB201209T-300Y-S-1 | 30               | ±25%      | 100                        | 0.05                     | 800                                  |
| FB201209T-310Y-S   | 31               | ±25%      | 100                        | 0.10                     | 300                                  |
| FB201209T-320Y-S   | 32               | ±25%      | 100                        | 0.15                     | 300                                  |
| FB201209T-330Y-S   | 33               | ±25%      | 100                        | 0.10                     | 300                                  |
| FB201209T-400Y-S   | 40               | ±25%      | 100                        | 0.05                     | 800                                  |
| FB201209T-520Y-S   | 52               | ±25%      | 100                        | 0.15                     | 300                                  |
| FB201209T-600Y-S   | 60               | ±25%      | 100                        | 0.15                     | 300                                  |
| FB201209T-600Y-S-1 | 60               | ±25%      | 100                        | 0.15                     | 800                                  |
| FB201209T-600Y-S-2 | 60               | ±25%      | 100                        | 0.10                     | 900                                  |
| FB201209T-700Y-S   | 70               | ±25%      | 100                        | 0.20                     | 300                                  |
| FB201209T-750Y-S   | 75               | ±25%      | 100                        | 0.20                     | 300                                  |
| FB201209T-800Y-S   | 80               | ±25%      | 100                        | 0.15                     | 300                                  |
| FB201209T-800Y-S-1 | 80               | ±25%      | 100                        | 0.15                     | 800                                  |
| FB201209T-101Y-S   | 100              | ±25%      | 100                        | 0.20                     | 300                                  |
| FB201209T-121Y-S   | 120              | ±25%      | 100                        | 0.20                     | 300                                  |
| FB201209T-121Y-S-1 | 120              | ±25%      | 100                        | 0.15                     | 800                                  |
| FB201209T-151Y-S   | 150              | ±25%      | 100                        | 0.20                     | 300                                  |





## STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

FB201209 (0805)

| PART NUMBER        | IMPEDANCE<br>( $\Omega$ ) | TOLERANCE  | TEST<br>FREQUENCY<br>(MHz) | DC RESISTANCE<br>$\Omega$ (MAX) | RATED CURRENT<br>mA (MAX)<br>at 85°C |
|--------------------|---------------------------|------------|----------------------------|---------------------------------|--------------------------------------|
| FB201209T-151Y-S-1 | 150                       | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB201209T-201Y-S   | 200                       | $\pm 25\%$ | 100                        | 0.25                            | 300                                  |
| FB201209T-221Y-S   | 220                       | $\pm 25\%$ | 100                        | 0.25                            | 300                                  |
| FB201209T-221Y-S-1 | 220                       | $\pm 25\%$ | 100                        | 0.20                            | 500                                  |
| FB201209T-221Y-S-2 | 220                       | $\pm 25\%$ | 100                        | 0.30                            | 750                                  |
| FB201209T-301Y-S   | 300                       | $\pm 25\%$ | 100                        | 0.25                            | 300                                  |
| FB201209T-301Y-S-1 | 300                       | $\pm 25\%$ | 100                        | 0.20                            | 500                                  |
| FB201209T-301Y-S-2 | 300                       | $\pm 25\%$ | 100                        | 0.30                            | 700                                  |
| FB201209T-331Y-S   | 330                       | $\pm 25\%$ | 100                        | 0.25                            | 300                                  |
| FB201209T-401Y-S   | 400                       | $\pm 25\%$ | 100                        | 0.30                            | 300                                  |
| FB201209T-471Y-S   | 470                       | $\pm 25\%$ | 100                        | 0.18                            | 700                                  |
| FB201209T-531Y-S   | 530                       | $\pm 25\%$ | 100                        | 0.35                            | 300                                  |
| FB201209T-601Y-S   | 600                       | $\pm 25\%$ | 100                        | 0.25                            | 200                                  |
| FB201209T-601Y-S-1 | 600                       | $\pm 25\%$ | 100                        | 0.30                            | 500                                  |
| FB201209T-751Y-S   | 750                       | $\pm 25\%$ | 100                        | 0.20                            | 300                                  |
| FB201209T-102Y-S   | 1000                      | $\pm 25\%$ | 100                        | 0.45                            | 300                                  |
| FB201209T-102Y-S-1 | 1000                      | $\pm 25\%$ | 100                        | 0.45                            | 400                                  |
| FB201209T-122Y-S   | 1200                      | $\pm 25\%$ | 100                        | 0.40                            | 200                                  |
| FB201209T-152Y-S   | 1500                      | $\pm 25\%$ | 100                        | 0.70                            | 300                                  |
| FB201209T-182Y-S   | 1800                      | $\pm 25\%$ | 100                        | 0.40                            | 200                                  |
| FB201209T-202Y-S   | 2000                      | $\pm 25\%$ | 100                        | 0.50                            | 500                                  |
| FB201209T-222Y-S   | 2200                      | $\pm 25\%$ | 100                        | 0.50                            | 200                                  |
| FB201209T-252Y-S   | 2500                      | $\pm 25\%$ | 100                        | 0.60                            | 200                                  |
| FB201209T-272Y-S   | 2700                      | $\pm 25\%$ | 100                        | 0.60                            | 200                                  |



## STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

FB321611 (1206)

| PART NUMBER        | IMPEDANCE<br>( $\Omega$ ) | TOLERANCE  | TEST<br>FREQUENCY<br>(MHz) | DC RESISTANCE<br>$\Omega$ (MAX) | RATED CURRENT<br>mA (MAX)<br>at 85°C |
|--------------------|---------------------------|------------|----------------------------|---------------------------------|--------------------------------------|
| FB321611T-050Y-S   | 5                         | $\pm 25\%$ | 100                        | 0.07                            | 500                                  |
| FB321611T-070Y-S   | 7                         | $\pm 25\%$ | 100                        | 0.07                            | 500                                  |
| FB321611T-190Y-S   | 19                        | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB321611T-260Y-S   | 26                        | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB321611T-310Y-S   | 31                        | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB321611T-320Y-S   | 32                        | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB321611T-500Y-S   | 50                        | $\pm 25\%$ | 100                        | 0.15                            | 800                                  |
| FB321611T-520Y-S   | 52                        | $\pm 25\%$ | 100                        | 0.15                            | 800                                  |
| FB321611T-550Y-S   | 55                        | $\pm 25\%$ | 100                        | 0.15                            | 500                                  |
| FB321611T-600Y-S   | 60                        | $\pm 25\%$ | 100                        | 0.15                            | 500                                  |
| FB321611T-700Y-S   | 70                        | $\pm 25\%$ | 100                        | 0.15                            | 500                                  |
| FB321611T-700Y-S-1 | 70                        | $\pm 25\%$ | 100                        | 0.10                            | 800                                  |
| FB321611T-900Y-S   | 90                        | $\pm 25\%$ | 100                        | 0.15                            | 500                                  |
| FB321611T-101Y-S   | 100                       | $\pm 25\%$ | 100                        | 0.20                            | 450                                  |
| FB321611T-121Y-S   | 120                       | $\pm 25\%$ | 100                        | 0.20                            | 450                                  |
| FB321611T-121Y-S-1 | 120                       | $\pm 25\%$ | 100                        | 0.15                            | 600                                  |
| FB321611T-121Y-S-2 | 120                       | $\pm 25\%$ | 100                        | 0.15                            | 900                                  |
| FB321611T-151Y-S   | 150                       | $\pm 25\%$ | 100                        | 0.20                            | 450                                  |
| FB321611T-181Y-S   | 180                       | $\pm 25\%$ | 100                        | 0.20                            | 350                                  |
| FB321611T-201Y-S   | 200                       | $\pm 25\%$ | 100                        | 0.25                            | 350                                  |
| FB321611T-221Y-S   | 220                       | $\pm 25\%$ | 100                        | 0.20                            | 350                                  |
| FB321611T-221Y-S-1 | 220                       | $\pm 25\%$ | 100                        | 0.35                            | 700                                  |
| FB321611T-301Y-S   | 300                       | $\pm 25\%$ | 100                        | 0.20                            | 350                                  |
| FB321611T-401Y-S   | 400                       | $\pm 25\%$ | 100                        | 0.25                            | 350                                  |
| FB321611T-501Y-S   | 500                       | $\pm 25\%$ | 100                        | 0.25                            | 350                                  |
| FB321611T-601Y-S   | 600                       | $\pm 25\%$ | 100                        | 0.25                            | 350                                  |
| FB321611T-601Y-S-1 | 600                       | $\pm 25\%$ | 100                        | 0.25                            | 500                                  |
| FB321611T-751Y-S   | 750                       | $\pm 25\%$ | 100                        | 0.30                            | 350                                  |
| FB321611T-801Y-S   | 800                       | $\pm 25\%$ | 100                        | 0.30                            | 350                                  |
| FB321611T-102Y-S   | 1000                      | $\pm 25\%$ | 100                        | 0.35                            | 350                                  |
| FB321611T-102Y-S-1 | 1000                      | $\pm 25\%$ | 100                        | 0.40                            | 500                                  |
| FB321611T-122Y-S   | 1200                      | $\pm 25\%$ | 100                        | 0.35                            | 350                                  |
| FB321611T-122Y-S-1 | 1200                      | $\pm 25\%$ | 100                        | 0.40                            | 500                                  |
| FB321611T-152Y-S   | 1500                      | $\pm 25\%$ | 100                        | 0.40                            | 350                                  |
| FB321611T-152Y-S-1 | 1500                      | $\pm 25\%$ | 100                        | 0.20                            | 800                                  |
| FB321611T-182Y-S   | 1800                      | $\pm 25\%$ | 100                        | 0.40                            | 350                                  |
| FB321611T-202Y-S   | 2000                      | $\pm 25\%$ | 100                        | 0.50                            | 200                                  |







# STANDARD ELECTRICAL SPECIFICATIONS (FOR GENERAL SIGNAL LINE)

## FB321616 (1206)

| PART NUMBER      | IMPEDANCE (Ω) | TOLERANCE | TEST FREQUENCY (MHz) | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) at 85°C |
|------------------|---------------|-----------|----------------------|-----------------------|--------------------------------|
| FB321616T-250Y-S | 25            | ±25%      | 100                  | 0.10                  | 500                            |
| FB321616T-600Y-S | 60            | ±25%      | 100                  | 0.20                  | 500                            |
| FB321616T-700Y-S | 70            | ±25%      | 100                  | 0.20                  | 500                            |

## FB322513 (1210)

| PART NUMBER        | IMPEDANCE (Ω) | TOLERANCE | TEST FREQUENCY (MHz) | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) at 85°C |
|--------------------|---------------|-----------|----------------------|-----------------------|--------------------------------|
| FB322513T-310Y-S   | 31            | ±25%      | 100                  | 0.10                  | 500                            |
| FB322513T-320Y-S   | 32            | ±25%      | 100                  | 0.10                  | 500                            |
| FB322513T-520Y-S   | 52            | ±25%      | 100                  | 0.30                  | 400                            |
| FB322513T-600Y-S   | 60            | ±25%      | 100                  | 0.30                  | 400                            |
| FB322513T-600Y-S-1 | 60            | ±25%      | 100                  | 0.30                  | 800                            |
| FB322513T-650Y-S   | 65            | ±25%      | 100                  | 0.30                  | 400                            |
| FB322513T-900Y-S   | 90            | ±25%      | 100                  | 0.30                  | 800                            |
| FB322513T-121Y-S   | 120           | ±25%      | 100                  | 0.30                  | 400                            |
| FB322513T-201Y-S   | 200           | ±25%      | 100                  | 0.45                  | 200                            |

## FB451616 (1806)

| PART NUMBER        | IMPEDANCE (Ω) | TOLERANCE | TEST FREQUENCY (MHz) | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) at 85°C |
|--------------------|---------------|-----------|----------------------|-----------------------|--------------------------------|
| FB451616T-600Y-S   | 60            | ±25%      | 100                  | 0.20                  | 500                            |
| FB451616T-800Y-S   | 80            | ±25%      | 100                  | 0.30                  | 400                            |
| FB451616T-800Y-S-1 | 80            | ±25%      | 100                  | 0.10                  | 800                            |
| FB451616T-101Y-S   | 100           | ±25%      | 100                  | 0.30                  | 400                            |
| FB451616T-151Y-S   | 150           | ±25%      | 100                  | 0.50                  | 200                            |
| FB451616T-151Y-S-1 | 150           | ±25%      | 100                  | 0.30                  | 800                            |
| FB451616T-601Y-S   | 600           | ±25%      | 100                  | 0.80                  | 200                            |

## FB453215 (1812)

| PART NUMBER        | IMPEDANCE (Ω) | TOLERANCE | TEST FREQUENCY (MHz) | DC RESISTANCE Ω (MAX) | RATED CURRENT mA (MAX) at 85°C |
|--------------------|---------------|-----------|----------------------|-----------------------|--------------------------------|
| FB453215T-310Y-S   | 31            | ±25%      | 100                  | 0.10                  | 500                            |
| FB453215T-600Y-S   | 60            | ±25%      | 100                  | 0.20                  | 500                            |
| FB453215T-700Y-S   | 70            | ±25%      | 100                  | 0.40                  | 800                            |
| FB453215T-800Y-S   | 80            | ±25%      | 100                  | 0.40                  | 800                            |
| FB453215T-950Y-S   | 95            | ±25%      | 100                  | 0.20                  | 500                            |
| FB453215T-121Y-S   | 120           | ±25%      | 100                  | 0.20                  | 500                            |
| FB453215T-121Y-S-1 | 120           | ±25%      | 100                  | 0.40                  | 800                            |
| FB453215T-151Y-S   | 150           | ±25%      | 100                  | 0.20                  | 500                            |
| FB453215T-151Y-S-1 | 150           | ±25%      | 100                  | 0.30                  | 800                            |
| FB453215T-471Y-S   | 470           | ±25%      | 100                  | 0.20                  | 500                            |



# 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

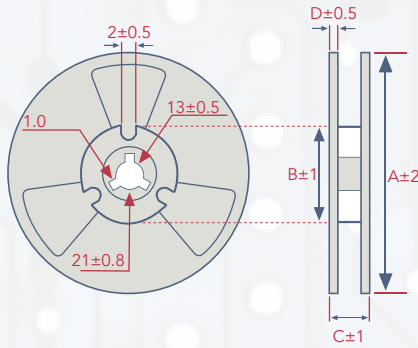
| ITEM                              | SPECIFICATION   | TEST METHODS  |
|-----------------------------------|---|---|
| Substrate Bending Test            | <ul style="list-style-type: none"> <li>- Without deformation cases</li> <li>- Impedance: within±30% of initial value</li> <li>- DC Resistance shall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

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

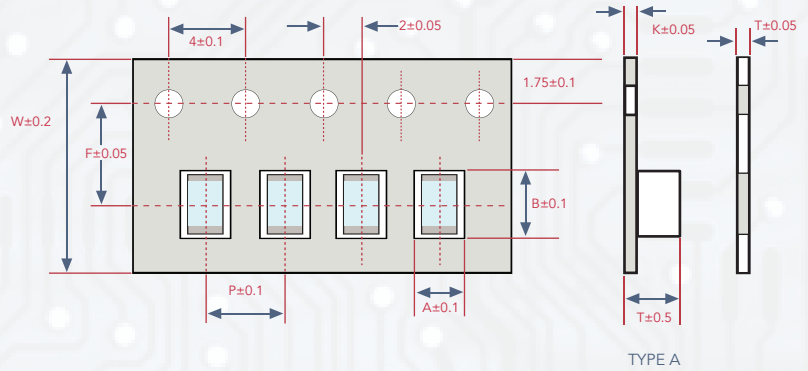


## PACKAGING

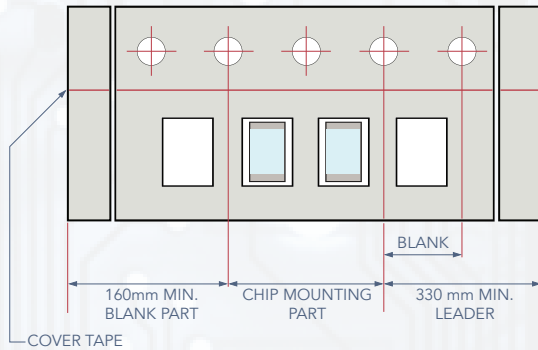
### - Reel Specifications



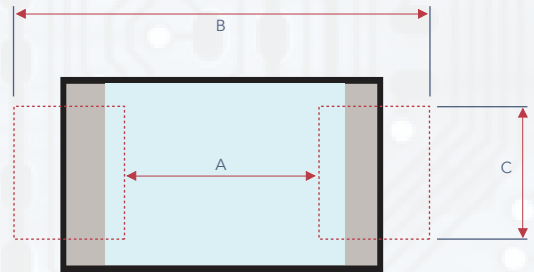
### - Tape Specifications



### - Tape Material



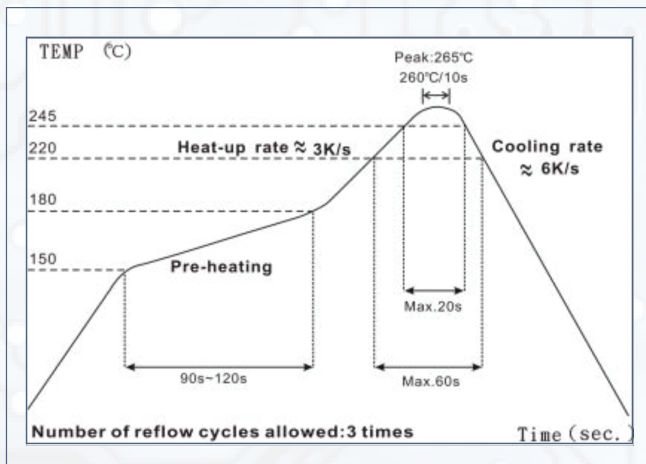
### - Recommended Pattern



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    |               |
| FB060303 | 0.38            | 0.68 | 1.10 | 8.0 | 2.0 | 3.5 | -   | B         | 178             | 60 | 10 | 2 | 0.25                | 0.69    | 0.32 | 15000         |
| FB100505 | 0.65            | 1.15 | 0.80 | 8.0 | 2.0 | 3.5 | -   | B         | 178             | 60 | 10 | 2 | 0.50                | 2.10    | 0.55 | 10000         |
| FB160808 | 1.10            | 1.90 | 1.10 | 8.0 | 4.0 | 3.5 | -   | B         | 178             | 60 | 10 | 2 | 0.60                | 2.60    | 0.80 | 4000          |
| FB201209 | 1.55            | 2.30 | 1.20 | 8.0 | 4.0 | 3.5 | -   | B         | 178             | 60 | 10 | 2 | 0.66                | 3.23    | 1.47 | 4000          |
| FB321611 | 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          |
| FB321616 | 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          |
| FB322513 | 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          |
| FB451616 | 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          |
| FB453215 | 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          |

## 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

