

## TZSS Series (3010FC • 3012FC • 4012FC • 4018FC • 5040FC 6012FC • 6020FC • 6028FC • 6045FC • 8040FC)

### Features/特徴

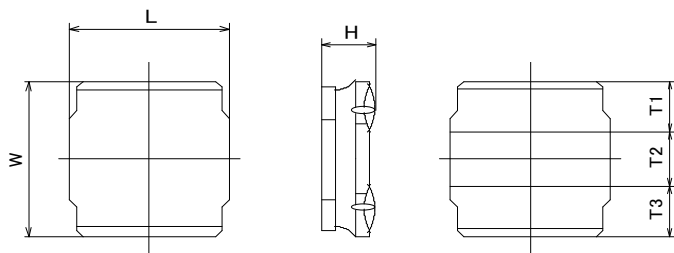
- Small size and low profile.  
小型・低背タイプ。
- Magnetically shielded construction and low DC resistance.  
磁性レジンを用いた磁気シールド構造
- Closed magnetic circuit results in low DC resistance and low leakage flux.  
閉磁路により直流抵抗が小さく漏れ磁束が少ない。
- High reliability for mechanical strength.  
高信頼で機械的強度が高い。



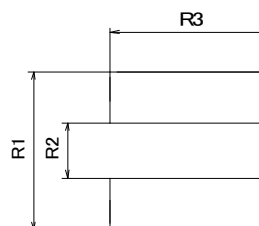
### Applications/用途

- Variety of DC-DC converter inductor applications.  
種々のDC-DC コンバータに応用出来ます。

### Dimensions



### Recommended Pattern



| Series Name | Dimensions |         |         |       |      |       |     |     |     |
|-------------|------------|---------|---------|-------|------|-------|-----|-----|-----|
|             | L          | W       | H       | T1    | T2   | T3    | R1  | R2  | R3  |
| TZSS3010FC  | 3.0±0.2    | 3.0±0.2 | 1.0±0.2 | 1.0   | 1.0  | 1.0   | 3.4 | 1.0 | 3.2 |
| TZSS3012FC  | 3.0±0.2    | 3.0±0.2 | 1.2±0.2 | 1.0   | 1.0  | 1.0   | 3.4 | 1.0 | 3.2 |
| TZSS4012FC  | 4.0±0.2    | 4.0±0.2 | 1.2±0.2 | 1.275 | 1.45 | 1.275 | 4.3 | 1.6 | 3.7 |
| TZSS4018FC  | 4.0±0.2    | 4.0±0.2 | 1.8±0.2 | 1.275 | 1.45 | 1.275 | 4.3 | 1.6 | 3.7 |
| TZSS5040FC  | 4.9±0.2    | 4.9±0.2 | 4.0±0.2 | 1.2   | 2.5  | 1.2   | 5.3 | 2.3 | 4.7 |
| TZSS6012FC  | 6.0±0.2    | 6.0±0.2 | 1.2±0.2 | 1.7   | 2.6  | 1.7   | 6.3 | 3.1 | 5.7 |
| TZSS6020FC  | 6.0±0.2    | 6.0±0.2 | 2.0±0.2 | 1.7   | 2.6  | 1.7   | 6.3 | 3.1 | 5.7 |
| TZSS6028FC  | 6.0±0.2    | 6.0±0.2 | 2.8±0.2 | 1.7   | 2.6  | 1.7   | 6.3 | 3.1 | 5.7 |
| TZSS6045FC  | 6.0±0.2    | 6.0±0.2 | 4.5±0.2 | 1.7   | 2.6  | 1.7   | 6.3 | 3.1 | 5.7 |
| TZSS8040FC  | 8.0±0.3    | 8.0±0.3 | 4.0±0.2 | 2.0   | 2.9  | 2.0   | 8.7 | 4.7 | 7.5 |

## Electrical Characteristics

### • TZSS3010FC Series (3.0x3.0mm, 1.0mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS3010FC-2R2 | 2.2        | ±20        | 100           | 1,180              | 1,300                    |
| TZSS3010FC-3R3 | 3.3        | ±20        | 140           | 940                | 1,150                    |
| TZSS3010FC-4R7 | 4.7        | ±20        | 240           | 800                | 900                      |
| TZSS3010FC-6R8 | 6.8        | ±20        | 360           | 650                | 700                      |
| TZSS3010FC-100 | 10         | ±20        | 450           | 530                | 600                      |
| TZSS3010FC-150 | 15         | ±20        | 730           | 520                | 500                      |
| TZSS3010FC-220 | 22         | ±20        | 910           | 370                | 400                      |
| TZSS3010FC-330 | 33         | ±20        | 1,600         | 320                | 350                      |
| TZSS3010FC-470 | 47         | ±20        | 1,900         | 260                | 300                      |

### • TZSS3012FC Series (3.0x3.0mm, 1.2mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS3012FC-2R2 | 2.2        | ±20        | 72            | 1,250              | 1,650                    |
| TZSS3012FC-3R3 | 3.3        | ±20        | 90            | 1,020              | 1,500                    |
| TZSS3012FC-4R7 | 4.7        | ±20        | 125           | 850                | 1,250                    |
| TZSS3012FC-6R8 | 6.8        | ±20        | 180           | 760                | 950                      |
| TZSS3012FC-100 | 10         | ±20        | 260           | 550                | 800                      |
| TZSS3012FC-150 | 15         | ±20        | 400           | 520                | 700                      |
| TZSS3012FC-220 | 22         | ±20        | 600           | 430                | 550                      |
| TZSS3012FC-330 | 33         | ±20        | 930           | 340                | 450                      |
| TZSS3010FC-470 | 47         | ±20        | 1,400         | 310                | 400                      |

### • TZSS4012FC Series (4.0x4.0mm, 1.2mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS4012FC-1R0 | 1.0        | ±20        | 55            | 4,800              | 2,400                    |
| TZSS4012FC-2R2 | 2.2        | ±20        | 140           | 2,400              | 1,400                    |
| TZSS4012FC-3R3 | 3.3        | ±20        | 160           | 2,000              | 1,200                    |
| TZSS4012FC-4R7 | 4.7        | ±20        | 215           | 1,900              | 1,000                    |
| TZSS4012FC-6R8 | 6.8        | ±20        | 260           | 1,600              | 900                      |
| TZSS4012FC-100 | 10         | ±20        | 445           | 1,100              | 700                      |
| TZSS4012FC-150 | 15         | ±20        | 1,110         | 800                | 500                      |
| TZSS4018FC-220 | 22         | ±20        | 1,225         | 700                | 450                      |
| TZSS4018FC-470 | 47         | ±20        | 2,080         | 600                | 350                      |

### • TZSS4018FC Series (4.0x4.0mm, 1.8mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS4018FC-1R0 | 1.0        | ±20        | 20            | 3,700              | 3,200                    |
| TZSS4018FC-2R2 | 2.2        | ±20        | 39            | 2,850              | 2,400                    |
| TZSS4018FC-3R3 | 3.3        | ±20        | 52            | 2,300              | 2,100                    |
| TZSS4018FC-4R7 | 4.7        | ±20        | 70            | 1,950              | 1,720                    |
| TZSS4018FC-6R8 | 6.8        | ±20        | 98            | 1,600              | 1,500                    |
| TZSS4018FC-100 | 10         | ±20        | 145           | 1,380              | 1,300                    |
| TZSS4018FC-150 | 15         | ±20        | 230           | 1,120              | 1,050                    |
| TZSS4018FC-220 | 22         | ±20        | 290           | 900                | 720                      |
| TZSS4018FC-330 | 33         | ±20        | 510           | 730                | 700                      |
| TZSS4018FC-470 | 47         | ±20        | 650           | 620                | 640                      |

## Electrical Characteristics

### • TZSS5040FC Series (4.9x4.9mm, 4.0mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS5040FC-1R0 | 1.0        | ±20        | 22            | 6,000              | 4,000                    |
| TZSS5040FC-2R2 | 2.2        | ±20        | 28            | 4,500              | 3,500                    |
| TZSS5040FC-3R3 | 3.3        | ±20        | 33            | 4,000              | 3,200                    |
| TZSS5040FC-4R7 | 4.7        | ±20        | 38            | 3,000              | 3,000                    |
| TZSS5040FC-6R8 | 6.8        | ±20        | 48            | 2,400              | 2,700                    |
| TZSS5040FC-100 | 10         | ±20        | 73            | 2,200              | 2,200                    |
| TZSS5040FC-150 | 15         | ±20        | 125           | 1,600              | 1,600                    |
| TZSS5040FC-220 | 22         | ±20        | 220           | 1,400              | 1,200                    |
| TZSS5040FC-470 | 47         | ±20        | 500           | 900                | 800                      |

### • TZSS6012FC Series (6.0x6.0mm,1.2mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS6012FC-2R2 | 2.2        | ±20        | 75            | 2,150              | 2,000                    |
| TZSS6012FC-3R3 | 3.3        | ±20        | 90            | 1,800              | 1,800                    |
| TZSS6012FC-4R7 | 4.7        | ±20        | 110           | 1,450              | 1,650                    |
| TZSS6012FC-6R8 | 6.8        | ±20        | 160           | 1,180              | 1,350                    |
| TZSS6012FC-100 | 10         | ±20        | 235           | 900                | 1,100                    |
| TZSS6012FC-150 | 15         | ±20        | 340           | 840                | 900                      |
| TZSS6012FC-220 | 22         | ±20        | 470           | 760                | 800                      |
| TZSS6012FC-330 | 33         | ±20        | 650           | 550                | 650                      |
| TZSS6012FC-470 | 47         | ±20        | 930           | 450                | 560                      |

### • TZSS6020FC Series (6.0x6.0mm,2.0mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS6020FC-2R2 | 2.2        | ±30        | 27            | 3,400              | 3,800                    |
| TZSS6020FC-3R3 | 3.3        | ±30        | 36            | 3,100              | 3,300                    |
| TZSS6020FC-4R7 | 4.7        | ±20        | 47            | 2,400              | 2,800                    |
| TZSS6020FC-6R8 | 6.8        | ±20        | 66            | 2,100              | 2,400                    |
| TZSS6020FC-100 | 10         | ±20        | 95            | 1,750              | 2,000                    |
| TZSS6020FC-150 | 15         | ±20        | 140           | 1,450              | 1,600                    |
| TZSS6020FC-220 | 22         | ±20        | 210           | 1,220              | 1,350                    |
| TZSS6020FC-330 | 33         | ±20        | 320           | 970                | 1,100                    |
| TZSS6020FC-470 | 47         | ±20        | 450           | 770                | 850                      |

### • TZSS6028FC Series (6.0x6.0mm,2.8mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance | Rated current      |                          |
|----------------|------------|------------|---------------|--------------------|--------------------------|
|                |            | Tolerance  |               | Saturation current | Temperature Rise Current |
|                | (μH)       | (%)        | (mΩ) ±20%     | (mA) Max.          | (mA) Max.                |
| TZSS6028FC-1R0 | 1.0        | ±30        | 8             | 5,600              | 5,200                    |
| TZSS6028FC-2R2 | 2.2        | ±30        | 17            | 5,000              | 4,200                    |
| TZSS6028FC-3R3 | 3.3        | ±30        | 27            | 3,600              | 3,400                    |
| TZSS6028FC-4R7 | 4.7        | ±20        | 34            | 3,200              | 3,000                    |
| TZSS6028FC-6R8 | 6.8        | ±20        | 45            | 2,800              | 2,700                    |
| TZSS6028FC-100 | 10         | ±20        | 64            | 2,450              | 2,300                    |
| TZSS6028FC-150 | 15         | ±20        | 90            | 1,850              | 1,950                    |
| TZSS6028FC-220 | 22         | ±20        | 133           | 1,500              | 1,600                    |
| TZSS6028FC-330 | 33         | ±20        | 200           | 1,200              | 1,200                    |
| TZSS6028FC-470 | 47         | ±20        | 305           | 1,000              | 1,000                    |

## Electrical Characteristics

### • TZSS6045FC Series (6.0x6.0mm,4.5mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance           | Rated current      |                          |
|----------------|------------|------------|-------------------------|--------------------|--------------------------|
|                |            | Tolerance  |                         | Saturation current | Temperature Rise Current |
|                | ( $\mu$ H) | (%)        | (m $\Omega$ ) $\pm$ 20% | (mA) Max.          | (mA) Max.                |
| TZSS6045FC-2R2 | 2.2        | $\pm$ 30   | 15                      | 5,100              | 4,850                    |
| TZSS6045FC-2R7 | 2.7        | $\pm$ 30   | 18                      | 4,850              | 4,400                    |
| TZSS6045FC-4R7 | 4.7        | $\pm$ 30   | 27                      | 4,150              | 3,800                    |
| TZSS6045FC-6R2 | 6.2        | $\pm$ 20   | 30                      | 3,600              | 3,300                    |
| TZSS6045FC-100 | 10         | $\pm$ 20   | 48                      | 2,850              | 2,750                    |
| TZSS6045FC-150 | 15         | $\pm$ 20   | 66                      | 2,350              | 2,300                    |
| TZSS6045FC-220 | 22         | $\pm$ 20   | 100                     | 1,950              | 1,900                    |
| TZSS6045FC-330 | 33         | $\pm$ 20   | 150                     | 1,550              | 1,500                    |
| TZSS6045FC-470 | 47         | $\pm$ 20   | 210                     | 1,400              | 1,300                    |

### • TZSS8040FC Series (8.0x8.0mm,4.0mm Height, Magnetic Regin Shielded)

| Series Name    | Inductance | Inductance | DC Resistance           | Rated current      |                          |
|----------------|------------|------------|-------------------------|--------------------|--------------------------|
|                |            | Tolerance  |                         | Saturation current | Temperature Rise Current |
|                | ( $\mu$ H) | (%)        | (m $\Omega$ ) $\pm$ 20% | (mA) Max.          | (mA) Max.                |
| TZSS8040FC-2R2 | 2.2        | $\pm$ 30   | 8                       | 7,200              | 7,400                    |
| TZSS8040FC-3R3 | 3.3        | $\pm$ 30   | 12                      | 6,300              | 6,300                    |
| TZSS8040FC-4R7 | 4.7        | $\pm$ 30   | 16                      | 4,700              | 5,300                    |
| TZSS8040FC-6R8 | 6.8        | $\pm$ 30   | 22                      | 4,200              | 4,600                    |
| TZSS8040FC-100 | 10         | $\pm$ 20   | 30                      | 3,200              | 3,600                    |
| TZSS8040FC-150 | 15         | $\pm$ 20   | 45                      | 2,700              | 3,000                    |
| TZSS8040FC-220 | 22         | $\pm$ 20   | 60                      | 2,300              | 2,600                    |
| TZSS8040FC-330 | 33         | $\pm$ 20   | 90                      | 1,900              | 2,100                    |
| TZSS8040FC-470 | 47         | $\pm$ 20   | 120                     | 1,700              | 1,800                    |

## Conditions/測定条件

- (1)The saturation current is the current value which causes 30% inductance reduction from the initial value.  
直流重畳許容電流は直流重畳された電流によりインダクタンスの値が低下し、30%以内となる直流電流の値です。
- (2)The temperature rise current is the DC current value having temperature increase up to 40°C.  
温度上昇許容電流は直流重畳された電流により温度上昇の値が40°Cとなる直流電流の値です。
- (3)The measuring frequency and surroundngs temperature are 100 kHz and 23°C, respectively.  
測定周波数：100 k Hz。測定周囲温度：23°C。