

### ■ Features

- Molding Inductor, low noise.
- Low Profile, Low Temp.
- Large Current (Over 15A).
- Customize For Different Need.
- Operating temperature:  $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (Including self-temperature rise).

### ■ Applications

- General Electronic.
- Video Device, TV, TFT.
- Power Module for PC.
- NB/Lap Top Computer.
- Server, VGA Card/Module.
- DC/DC converter.

### ■ Product Identification

$\frac{\text{YSPI}}{(1)}$ 
 $\frac{\square\square\square\square\square}{(2)}$ 
 $-\frac{\square\square\square}{(3)}$ 
 $\frac{\square}{(4)}$

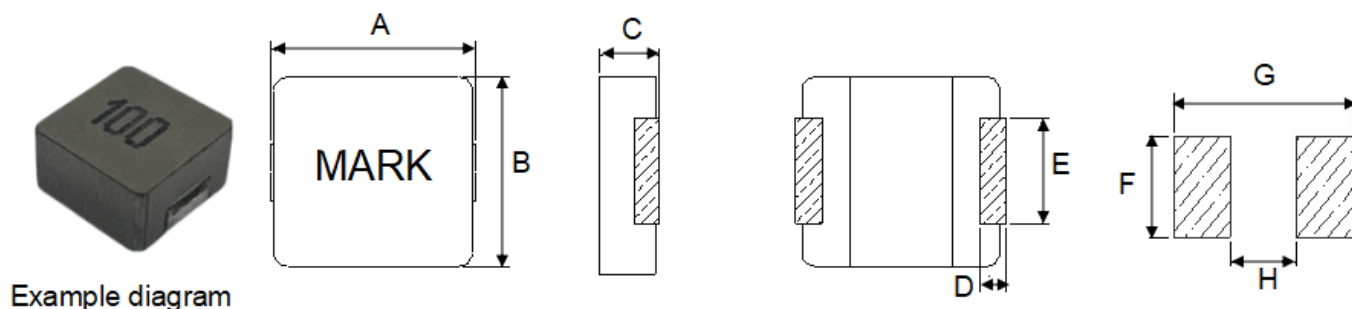
(1) : Type

(2) : Dimensions

(3) : Inductance value

(4) : Inductance Tolerance: N=±30%, M=±20%

### ■ Shapes and Dimensions (Unit: mm)



| TYPE      | A       | B       | C       | D       | E       | F Typ. | G Typ. | H Typ. |
|-----------|---------|---------|---------|---------|---------|--------|--------|--------|
| YSPI0724S | 7.0±0.3 | 6.6±0.2 | 2.2±0.2 | 1.6±0.3 | 3.0±0.3 | 3.5    | 8.4    | 3.7    |

### ■ YSPI0724S Series

| Part Number    | Inductance<br>(uH) @100KHz/1V | DCR Max.<br>(mΩ) | Saturation Current<br>Isat(A) Typ. | Heat Rating Current<br>Irms(A) Typ. |
|----------------|-------------------------------|------------------|------------------------------------|-------------------------------------|
| YSPI0724S-R22M | 0.22±20%                      | 3.0              | 34.0                               | 21.0                                |
| YSPI0724S-R33M | 0.33±20%                      | 4.1              | 24.5                               | 18.0                                |
| YSPI0724S-R47M | 0.47±20%                      | 5.1              | 22.0                               | 15.0                                |
| YSPI0724S-R56M | 0.56±20%                      | 6.5              | 17.0                               | 13.0                                |
| YSPI0724S-R68M | 0.68±20%                      | 7.0              | 16.0                               | 12.0                                |
| YSPI0724S-1R0M | 1.0±20%                       | 13.5             | 15.0                               | 9.0                                 |
| YSPI0724S-1R5M | 1.5±20%                       | 20.0             | 13.5                               | 8.2                                 |
| YSPI0724S-2R2M | 2.2±20%                       | 28.0             | 10.0                               | 7.0                                 |
| YSPI0724S-3R3M | 3.3±20%                       | 39.0             | 8.0                                | 5.5                                 |
| YSPI0724S-4R7M | 4.7±20%                       | 50.0             | 6.5                                | 5.0                                 |
| YSPI0724S-6R8M | 6.8±20%                       | 70.0             | 6.0                                | 4.0                                 |
| YSPI0724S-100M | 10±20%                        | 101              | 4.0                                | 3.1                                 |
| YSPI0724S-150M | 15±20%                        | 160              | 3.3                                | 2.2                                 |
| YSPI0724S-220M | 22±20%                        | 230              | 2.5                                | 2.0                                 |

- ※ All test data is referenced to 25 °C ambient
- ※ Irms (A):DC current (A) that will cause an approximate  $\Delta T$  of 40 °C(reference ambient temperature is 25 °C)
- ※ Isat(A):DC current (A) that will cause L0 to drop approximately 30 %.(Internal control standards at 40% MAX)
- ※ The part temperature (ambient + temp rise) should not exceed 125 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

### ■ Mechanical Reliability

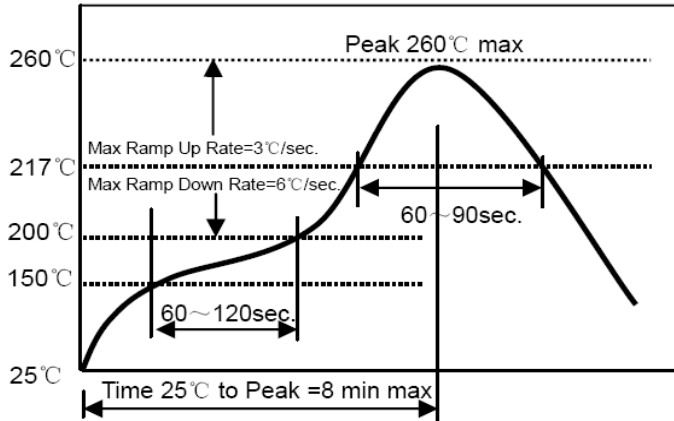
| Item                 | Specification and Requirement                                                      | Test Method                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solderability        | 1. No case deformation or change in visual<br>2. New solder coverage More than 95% | 1.Preheat: 155℃±5℃ , 60S±2S<br>2.Tin: lead-free.<br>3.Temperature:240℃±5℃, flux 3.0S±0.5S.                                                                 |
| Mechanical shock     | 1. No case deformation or change in visual<br>2. $\Delta L/L_0 \leq \pm 10\%$      | 1. Acceleration: 100G<br>2. Pulse time: 6ms<br>3. 3 times in each positive and negative direction of 3 mutual perpendicular directions                     |
| Mechanical vibration | 1. No case deformation or change in visual<br>2. $\Delta L/L_0 \leq \pm 10\%$      | 1. Reflow: 2times<br>2. Frequency: 10HZ ~ 55HZ ~ 10HZ, 20 Min/Cycles<br>3. Amplitude: 1.52 mm±10%<br>4. Directions: X,Y,Z<br>5. Time: 12 cycle / direction |

### ■ Endurance Reliability

| Item                     | Specification and Requirement                                             | Test Method                                                                                                                                                                                      |
|--------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Shock            | Inductance change:<br>Within $\pm 10\%$ Without distinct damage in visual | 1. First -55℃ for 30 minutes, last 125℃ for 30 minutes as 1 cycle. Go through 1000 cycles.<br>2. Max transfer time is 3 minutes.<br>3. Measured at room temperature after placing for 24±2 hours |
| Biased Humidity          | Inductance change:<br>Within $\pm 10\%$ Without distinct damage in visual | 1.Reflow 2 times,<br>2.85℃,85%RH,1000 hours<br>3.Measured at room temperature after placing for 24±2 hours                                                                                       |
| Low temperature storage  | Inductance change:<br>Within $\pm 10\%$ Without distinct damage in visual | 1. Temperature: -55 $\pm 2^\circ\text{C}$<br>2. Time: 1000 hours<br>3. Measured at room temperature after placing for 24±2 hours                                                                 |
| High temperature storage | Inductance change:<br>Within $\pm 10\%$ Without distinct damage in visual | 1. Temperature: +125 $\pm 2^\circ\text{C}$<br>2. Time: 1000 hours<br>3. Measured at room temperature after placing for 24±2 hours                                                                |

## ■ Recommended Soldering Technologies

### Re-flowing Profile



Preheat condition: 150 ~200°C/60~120sec.

Allowed time above 217°C: 60~90sec.

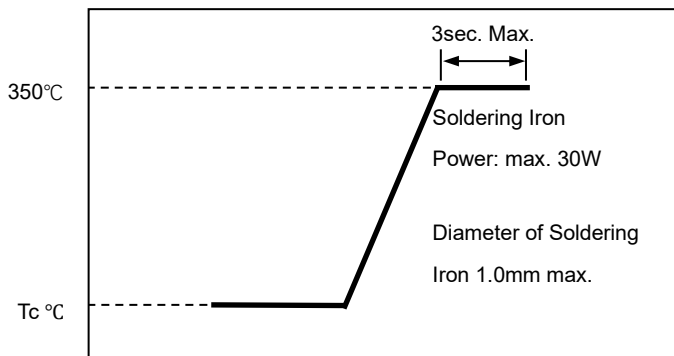
Peak temp: 260°C

Max time at Peak temp: 10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2x max

### Iron Soldering Profile



Iron soldering power: Max. 30W

Pre-heating: 150°C/60sec.

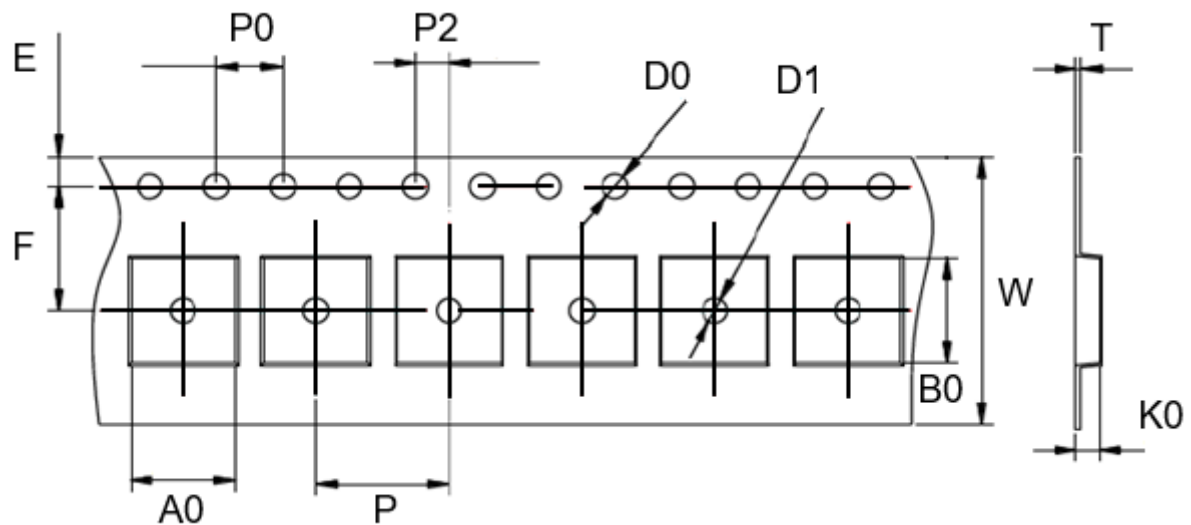
Soldering Tip temperature: 350°C Max.

Soldering time: 3sec. Max.

Solder paste: Sn/3.0Ag/0.5Cu

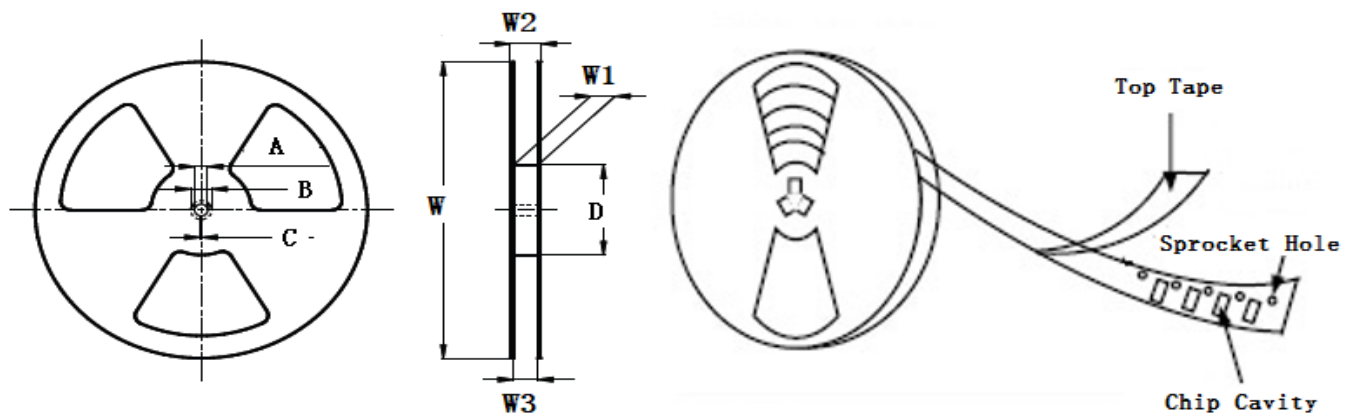
Max.1 times for iron soldering

**■ Taping Dimensions(Unit:mm)**



| TYPE      | W            | P            | P0          | P2          | D0          | D1          | T             | A0          | B0          | K0          | E            | F           | MPQ  |
|-----------|--------------|--------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|--------------|-------------|------|
| YSPI0724S | 16.0<br>±0.3 | 12.0<br>±0.1 | 4.0<br>±0.1 | 2.0<br>±0.1 | 1.5<br>±0.1 | 1.5<br>±0.1 | 0.35<br>±0.05 | 6.9<br>±0.1 | 7.5<br>±0.1 | 2.7<br>±0.1 | 1.75<br>±0.1 | 7.5<br>±0.1 | 1500 |

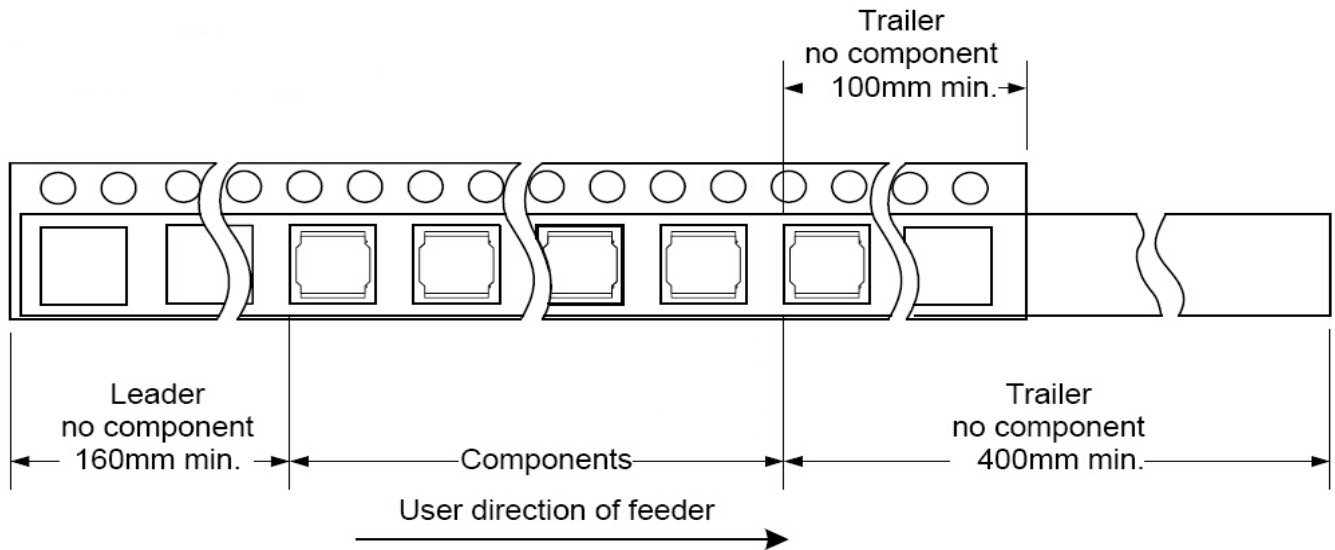
**■ Reel Dimensions(Unit:mm)**



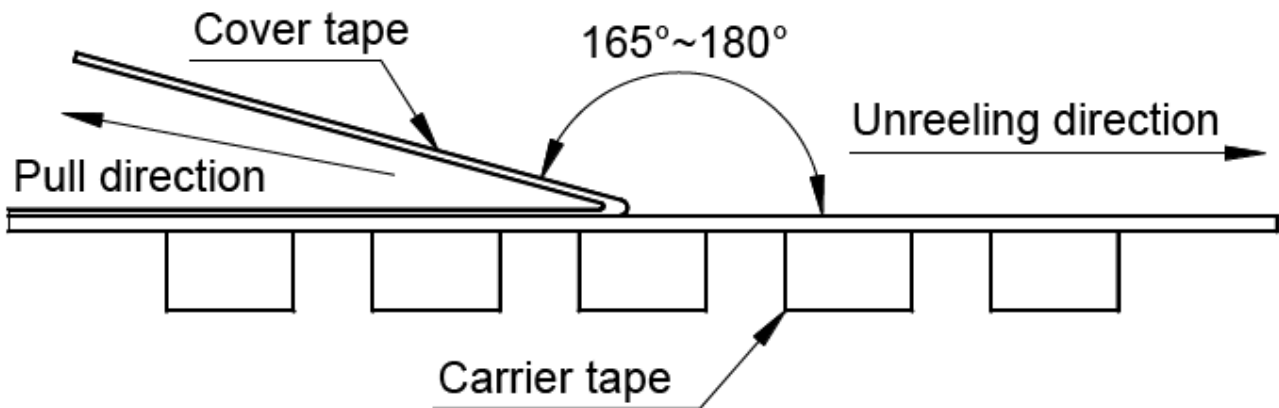
**■ Reel Dimensions(Unit:mm)**

| TYPE      | W       | W1       | W2      | W3       | A        | B        | C       | D        |
|-----------|---------|----------|---------|----------|----------|----------|---------|----------|
| YSPI0724S | 330±2.0 | 16.4±2.0 | 22.4MAX | 15.9 Min | 13.0±0.5 | 21.0±0.8 | 2.0±0.5 | 97.0±0.5 |

## ■ Direction of rolling



## ■ Cover tape peel off condition



Cover tape peel force shall be 0.1N to 1.3N.

Reference peel speed 300±10mm/min.