

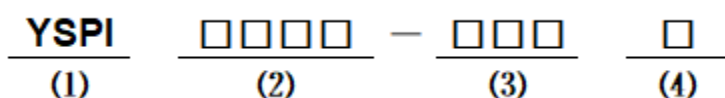
### ■ Features

- Molding Inductor.
- Low Profile, Low Temp.
- Large Current.
- Customize For Different Need.
- Operating temperature:  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (Including self-temperature rise) .

### ■ Applications

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

### ■ Product Identification



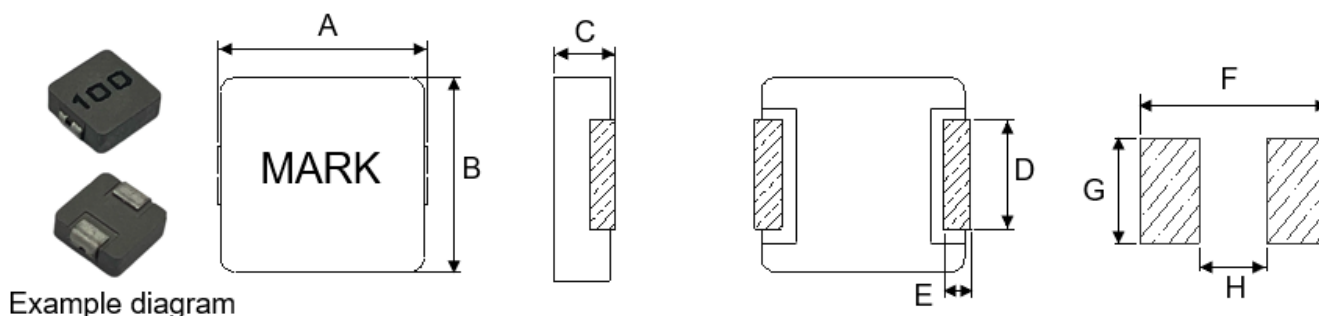
(1) : Type

(2) : Dimensions

(3) : Inductance value

(4) : Inductance Tolerance: N= $\pm 30\%$ , M= $\pm 20\%$ , K= $\pm 10\%$

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



| TYPE     | A              | B              | C Max. | D             | E             | F Ref. | G Ref. | H Ref. |
|----------|----------------|----------------|--------|---------------|---------------|--------|--------|--------|
| YSPI1040 | $11.0 \pm 0.6$ | $10.1 \pm 0.3$ | 4.0    | $3.0 \pm 0.5$ | $2.5 \pm 0.5$ | 13.0   | 4.0    | 6.0    |

### ■ YSPI1040 Series

| Part Number   | Inductance<br>( $\mu$ H) @100KHz/1V | DCR Max.<br>(m $\Omega$ ) | Saturation Current<br>Isat Typ.(A) | Heat Rating Current<br>Irms Typ.(A) |
|---------------|-------------------------------------|---------------------------|------------------------------------|-------------------------------------|
| YSPI1040-R22M | 0.22 $\pm$ 20%                      | 0.8                       | 45.0                               | 30.0                                |
| YSPI1040-R36M | 0.36 $\pm$ 20%                      | 1.2                       | 42.0                               | 27.0                                |
| YSPI1040-R47M | 0.47 $\pm$ 20%                      | 1.5                       | 32.0                               | 25.0                                |
| YSPI1040-R56M | 0.56 $\pm$ 20%                      | 1.8                       | 31.0                               | 24.0                                |
| YSPI1040-R68M | 0.68 $\pm$ 20%                      | 2.0                       | 30.0                               | 23.0                                |
| YSPI1040-1R0M | 1.0 $\pm$ 20%                       | 3.1                       | 26.0                               | 20.0                                |
| YSPI1040-1R5M | 1.5 $\pm$ 20%                       | 4.2                       | 22.0                               | 16.0                                |
| YSPI1040-2R2M | 2.2 $\pm$ 20%                       | 7.0                       | 16.0                               | 14.0                                |
| YSPI1040-3R3M | 3.3 $\pm$ 20%                       | 13.2                      | 12.0                               | 11.0                                |
| YSPI1040-4R7M | 4.7 $\pm$ 20%                       | 16.5                      | 12.0                               | 9.0                                 |
| YSPI1040-5R6M | 5.6 $\pm$ 20%                       | 20                        | 11.0                               | 7.0                                 |
| YSPI1040-6R8M | 6.8 $\pm$ 20%                       | 25                        | 10.0                               | 6.0                                 |
| YSPI1040-8R2M | 8.2 $\pm$ 20%                       | 30                        | 9.0                                | 6.0                                 |
| YSPI1040-100M | 10 $\pm$ 20%                        | 30                        | 7.0                                | 5.5                                 |
| YSPI1040-150M | 15 $\pm$ 20%                        | 45                        | 6.0                                | 5.2                                 |
| YSPI1040-220M | 22 $\pm$ 20%                        | 72                        | 5.5                                | 5.0                                 |
| YSPI1040-330M | 33 $\pm$ 20%                        | 110                       | 5.0                                | 3.2                                 |
| YSPI1040-470M | 47 $\pm$ 20%                        | 158                       | 3.7                                | 2.8                                 |
| YSPI1040-560M | 56 $\pm$ 20%                        | 180                       | 3.5                                | 2.6                                 |
| YSPI1040-680M | 68 $\pm$ 20%                        | 195                       | 2.6                                | 2.5                                 |
| YSPI1040-820M | 82 $\pm$ 20%                        | 250                       | 2.3                                | 2.2                                 |
| YSPI1040-101M | 100 $\pm$ 20%                       | 300                       | 2.0                                | 1.5                                 |

※ All test data is referenced to 25 °C ambient.

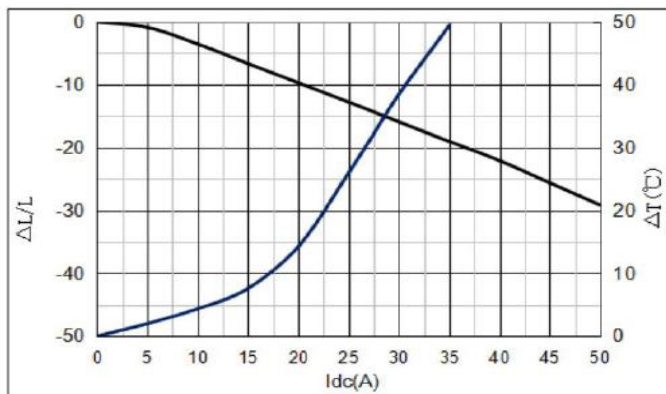
※ Irms (A):DC current (A) that will cause an approximate  $\Delta T$  of 40 °C(reference ambient temperature is 25 °C)

※ Isat(A):DC current (A) that will cause L0 to drop approximately 30%.(Internal control standards at 40% MAX)

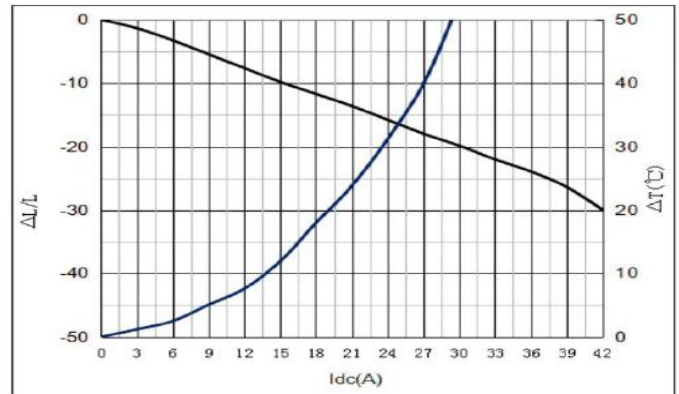
※ Absolute maximum voltage 30VDC.

**■ Current Characteristic**

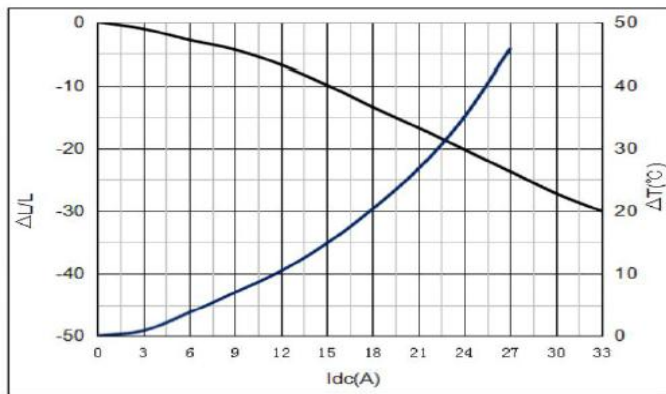
YSPI1040-R22M



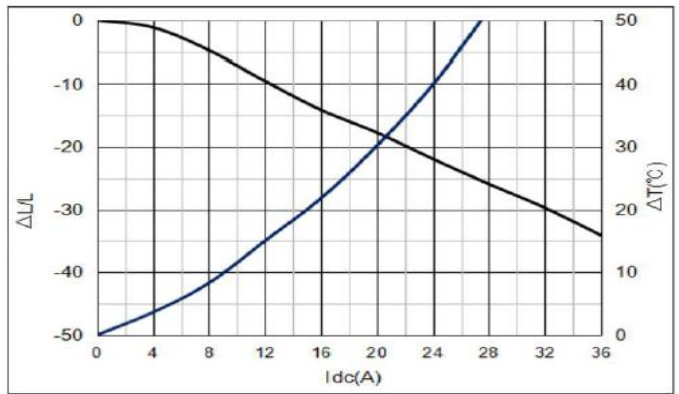
YSPI1040-R36M



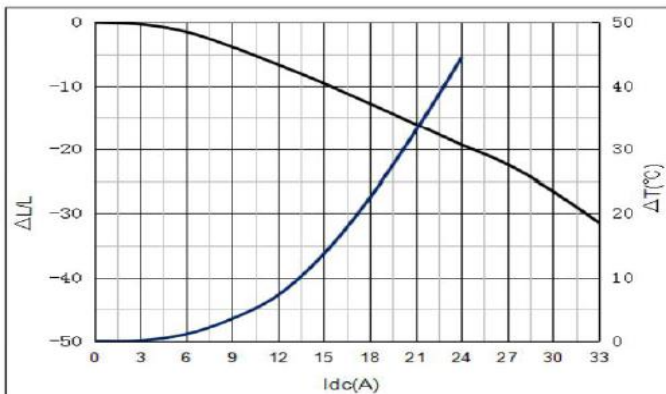
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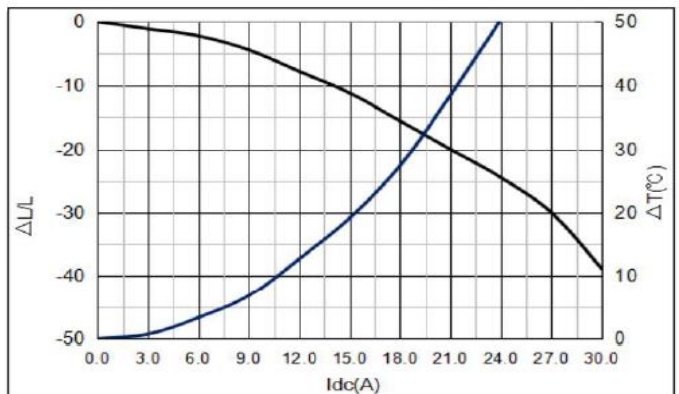
YSPI1040-R56M



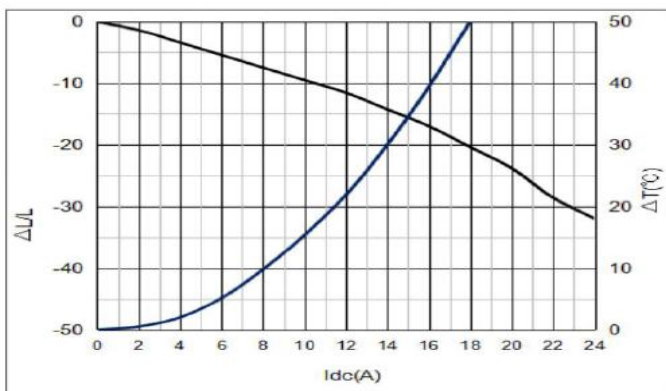
YSPI1040-R68M



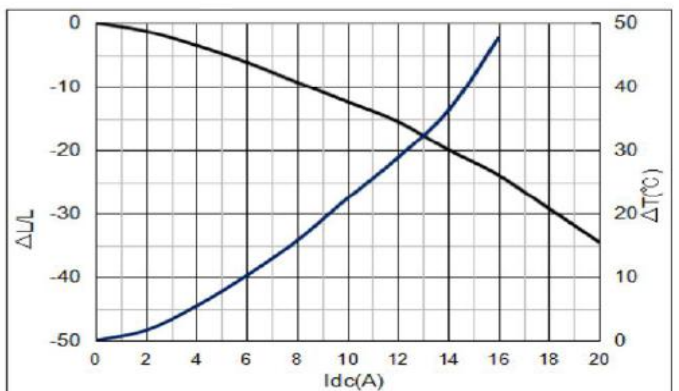
YSPI1040-1R0M



YSPI1040-1R5M

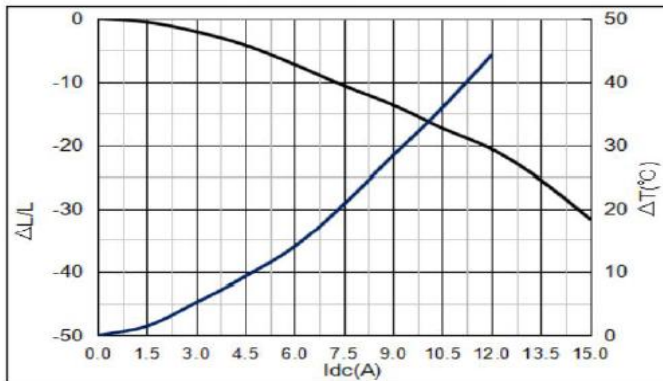


YSPI1040-2R2M

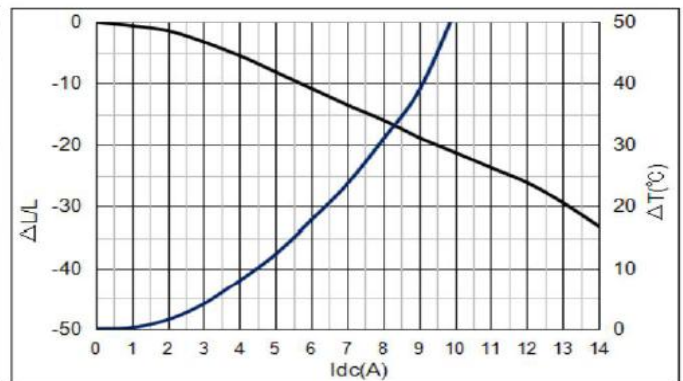


## ■ Current Characteristic

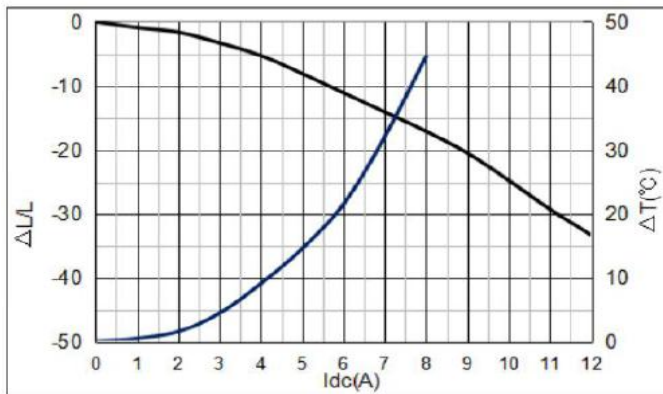
YSPI1040-3R3M



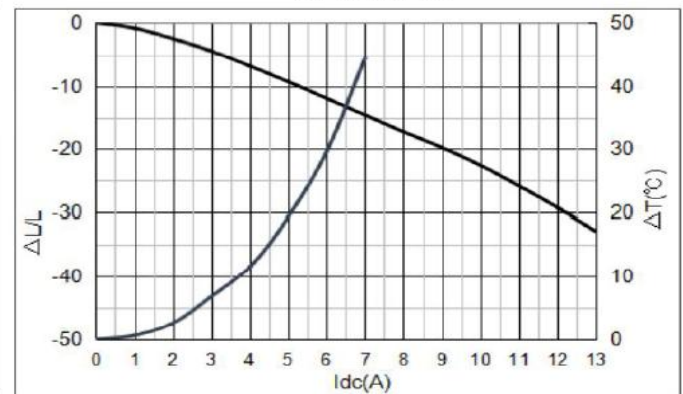
YSPI1040-4R7M



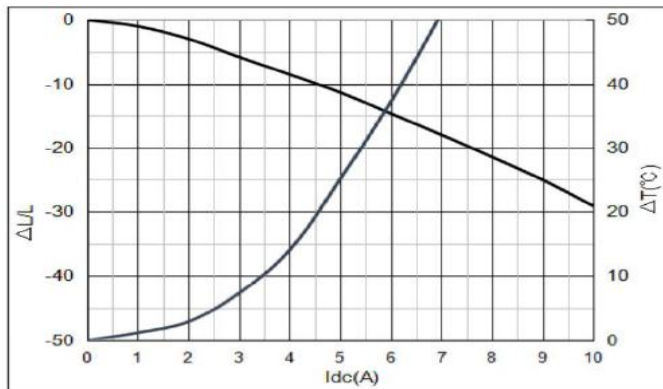
YSPI1040-5R6M



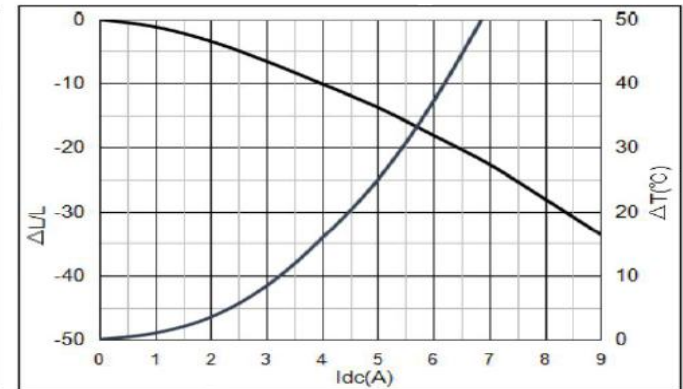
YSPI1040-6R8M



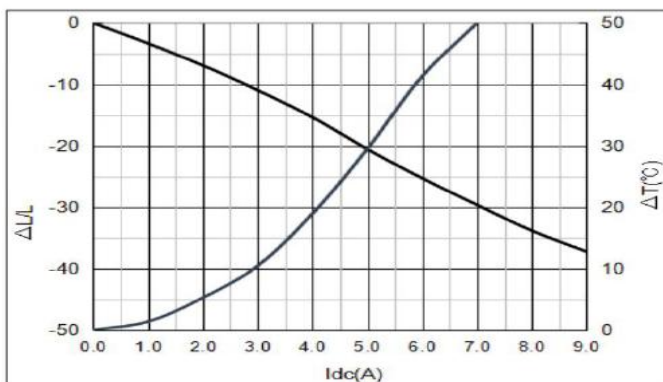
YSPI1040-8R2M



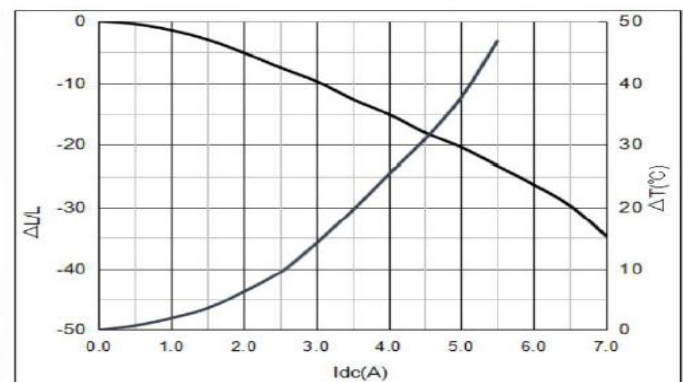
YSPI1040-100M



YSPI1040-150M

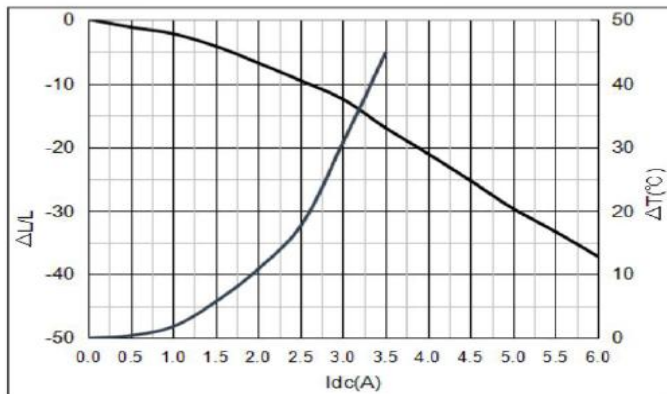


YSPI1040-220M

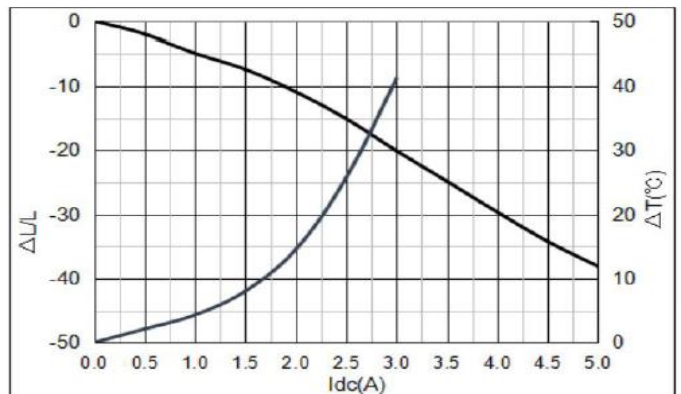


**■ Current Characteristic**

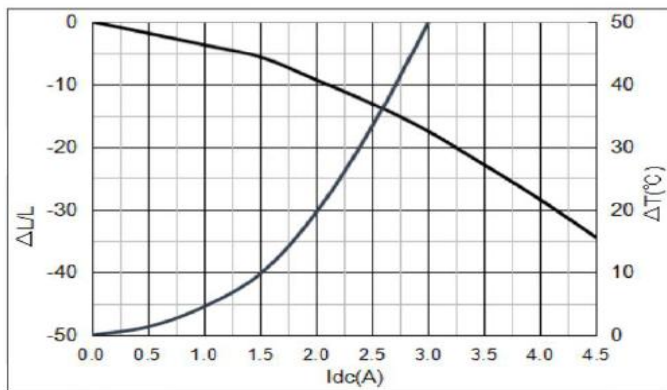
YSPI1040-330M



YSPI1040-470M



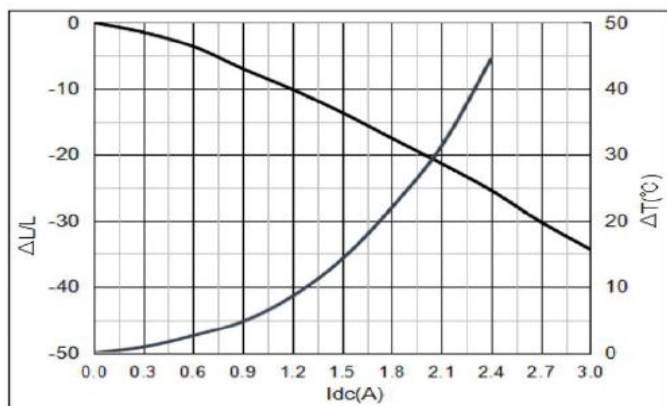
YSPI1040-560M



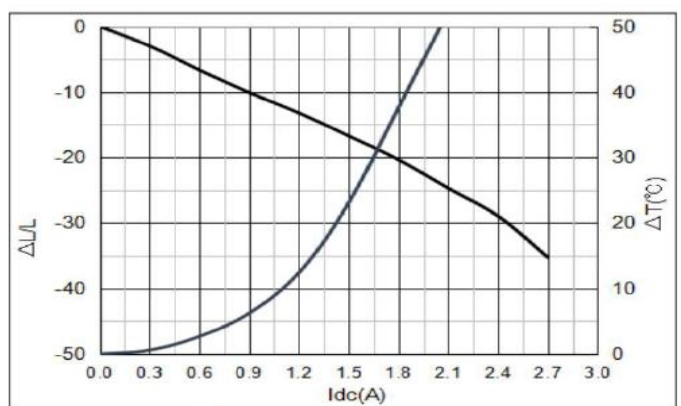
YSPI1040-680M



YSPI1040-820M



YSPI1040-101M



### General Characteristics

| NO. | ITEMS                                        | CONDITIONS                                                                                                                                   | SPECIFICATION                                                                      |
|-----|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 1   | OPERATION TEMPERATURE<br>STORAGE TEMPERATURE |                                                                                                                                              | -40 ~ +125 °C (INCLUDING COIL TEMPERATURE RISE)<br>-40 ~ +125 °C                   |
| 2   | TEMPERATURE COEFFICIENT                      | -30 ~ +105 °C                                                                                                                                | 0 ~ 2000ppm/°C                                                                     |
| 3   | FIXING STRENGTH                              | SAMPLE IS PUSHED IN THREE DIRECTIONS OF X, Y AND Z WITH FORCE OF 5.0N FOR 10±5 SECONDS. AFTER SOLDERING BETWEEN COPPER PLATE AND ELECTRODES. | NO ELECTRODE DETACHMENT.                                                           |
| 4   | RESISTANCE TO SOLDERING HEAT TEST            | REFER TO THE SPEC "STD-001NP".                                                                                                               | NO MECHANICAL BREAKAGE.<br>DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%  |
| 5   | SOLDERABILITY TEST                           | IMMERSE THE ELECTRODE IN FLUX FOR 5 SECONDS. THEN DIP THE ELECTRODE INTO A SOLDERING BATH OF 245±5 °C FOR 2±0.5 SECONDS.                     | OVER 95% OF THE SURFACE BEING IMMersed SHALL BE COVERED WITH NEW SOLDER UNIFORMLY. |
| 6   | VIBRATION TEST                               | AMPLITUDE: 1.5mm P-P<br>FREQUENCY: 10~55~10Hz (1 MINUTE PER CYCLE)<br>DURATION: 1 HOUR IN EACH OF X, Y, Z AXIS.                              | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%                             |
| 7   | HUMIDITY TEST                                | TEMPERATURE: 40 °C ± 2 °C<br>HUMIDITY: 90%~95%RH<br>DURATION: 96±4 HOURS.                                                                    | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%                             |
| 8   | THERMAL SHOCK TEST                           | 20 CYCLES OF +105 °C FOR 30 MINUTES, -40 °C FOR 30 MINUTES.<br>CHARACTERISTICS ARE MEASURED AFTER THE AMBIENT AIR EXPOSURE OF 1 HOUR         | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%                             |
| 9   | HIGH TEMPERATURE STORAGE TEST                | TEMPERATURE: 125 °C ± 2 °C<br>DURATION: 96±4 HOURS                                                                                           |                                                                                    |
| 10  | LOW TEMPERATURE STORAGE TEST                 | TEMPERATURE: -40 °C ± 3 °C<br>DURATION: 96±4 HOURS.                                                                                          |                                                                                    |

※ Standard testing conditions:

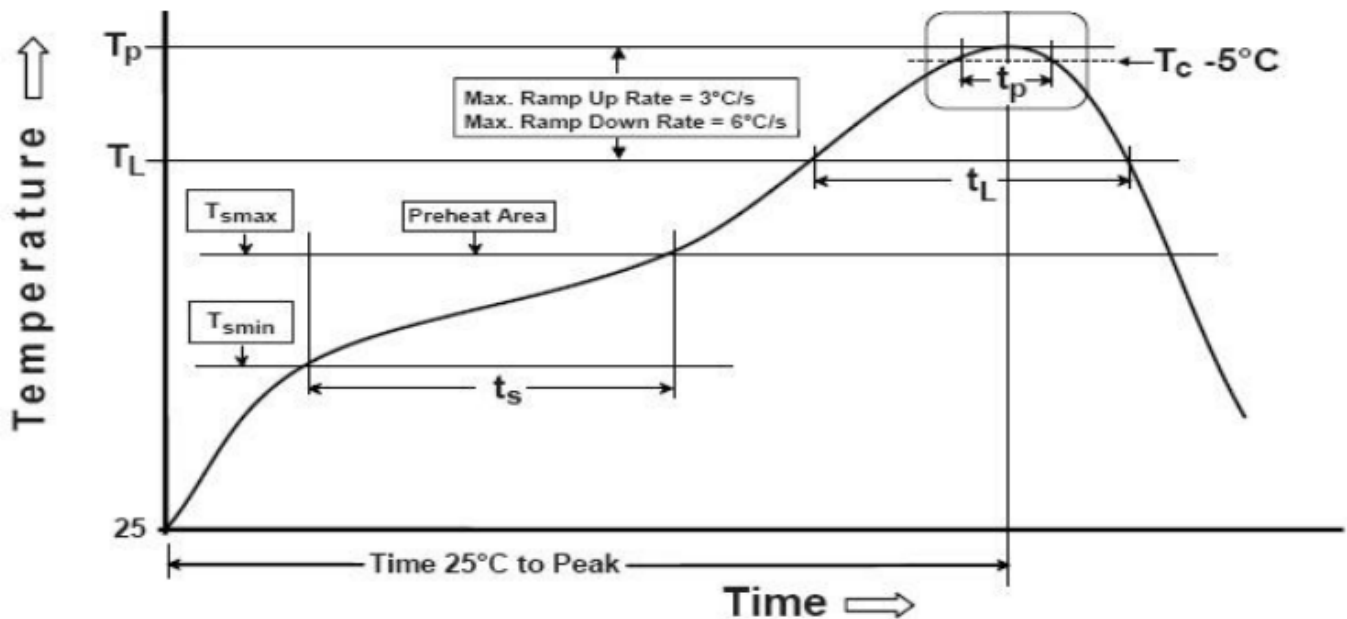
Unless otherwise specified, the standard range of atmospheric conditions for measurements and tests are as follows:

Ambient temperature: 15 °C ~ 35 °C. Relative humidity : 25% ~ 85%. Air pressure: 86kPa ~ 106kPa.

If there is doubt about the results, measurement shall be made within the following limits:

Ambient temperature: 20 °C ± 1 °C. Relative humidity: 63% ~ 67%. Air pressure: 86kPa ~ 106kPa.

**Reflow profile for SMT components**



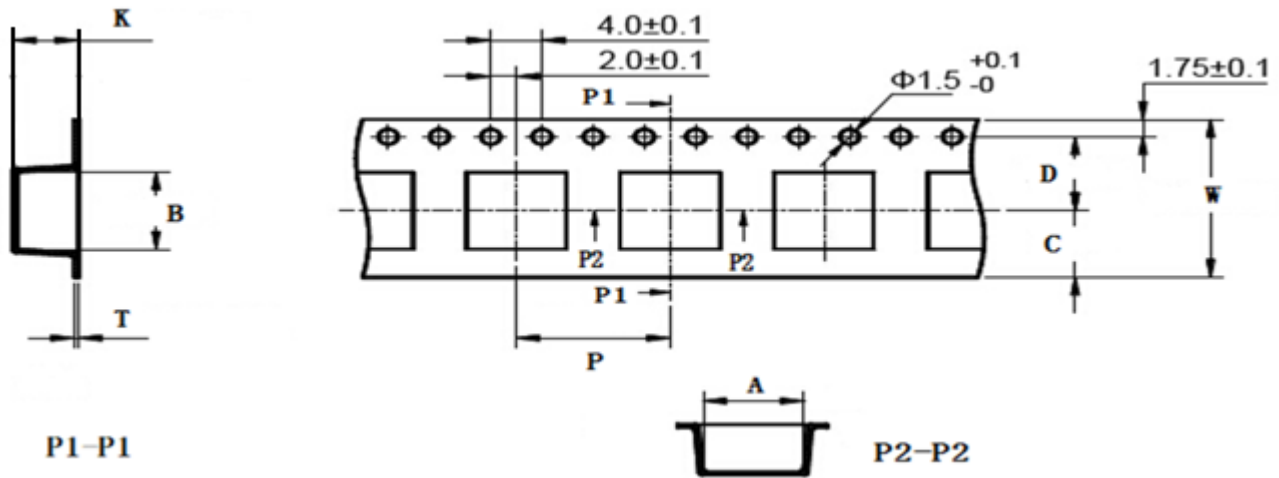
Reflow is referred to standard IPC/ JEDEC J-STD-020D

| Profile Feature                                                         |                             | Lead(Pb) Free solder |
|-------------------------------------------------------------------------|-----------------------------|----------------------|
| Preheat and soak                                                        | • temperature Min.(Ts min)  | 150°C                |
|                                                                         | • temperature Max.(Ts max)  | 200°C                |
|                                                                         | • time(Tsmin to Ts max)(ts) | 60-120 Seconds       |
| Average ramp up rate Tsmax to Tp                                        |                             | 3°C/Second Max.      |
| Liquidous temperature (TL)                                              |                             | 217 °C               |
| Time (TL) maintained above TL                                           |                             | 60-150 seconds       |
| Peak package body temperature (Tp)                                      |                             | <b>Table2</b>        |
| Time (tp)* within 5 °C of the specified classification temperature (Tc) |                             | 30* seconds          |
| Average Ramp-down rate (Tp to TL)                                       |                             | 6 °C/second max      |
| Time 25 °C to peak temperature                                          |                             | 8 minutes max.       |

**Table2. Pb-Free Process - Classification Temperatures (Tc)**

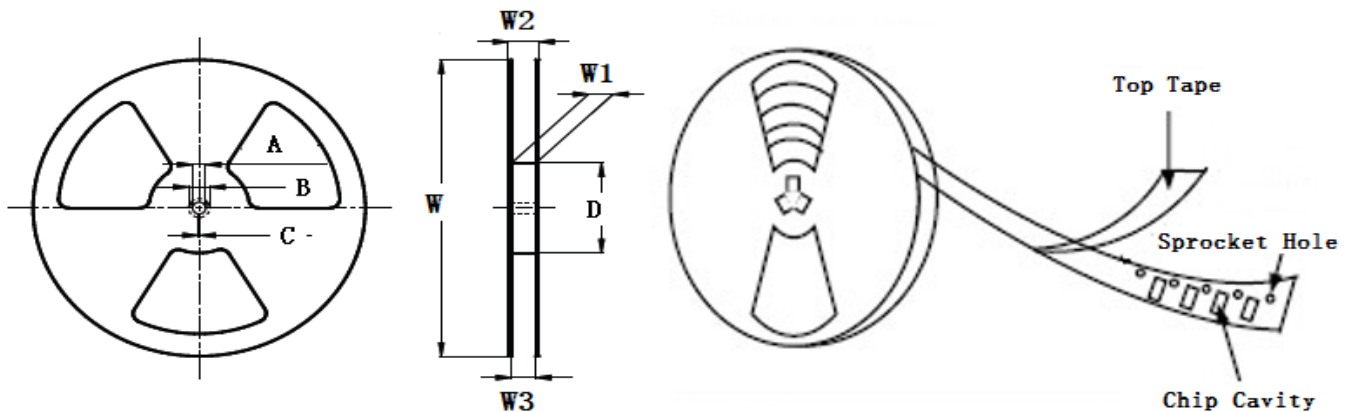
| Package Thickness | Volume mm3<br><350 | Volume mm3<br>350~2000 | Volume mm3<br>>2000 |
|-------------------|--------------------|------------------------|---------------------|
| <1.6 mm           | 260°C              | 260°C                  | 260°C               |
| 1.6mm- 2.5mm      | 260°C              | 250°C                  | 245°C               |
| >2.5 mm           | 250°C              | 245°C                  | 245°C               |

**■ Taping Dimensions(Unit:mm)**



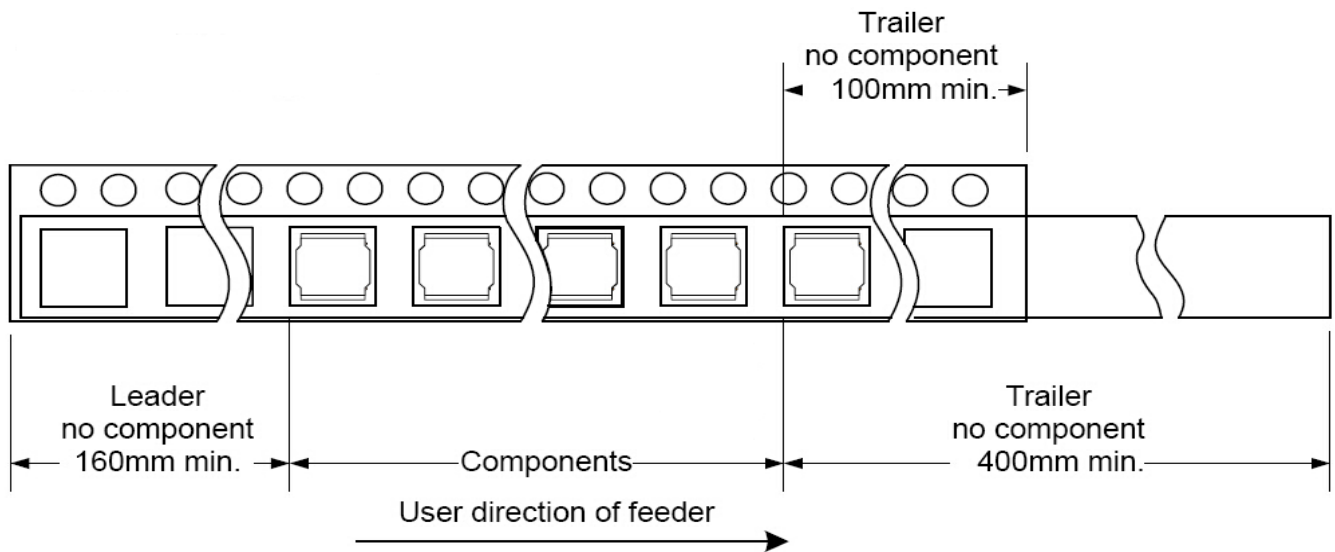
| TYPE     | W              | A               | B               | C     | D              | P              | K             | T               | MPQ |
|----------|----------------|-----------------|-----------------|-------|----------------|----------------|---------------|-----------------|-----|
| YSPI1040 | $24.0 \pm 0.2$ | $10.55 \pm 0.1$ | $11.95 \pm 0.1$ | 10.75 | $11.5 \pm 0.1$ | $16.0 \pm 0.1$ | $4.1 \pm 0.1$ | $0.40 \pm 0.10$ | 500 |

**■ Reel Dimensions(Unit:mm)**

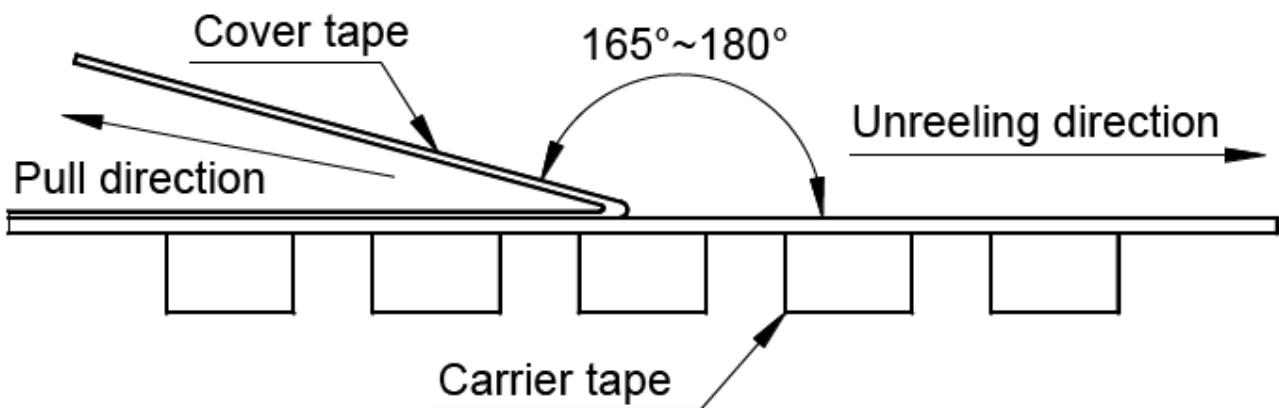


| TYPE     | W             | W1              | W2      | W3       | A               | B               | C              | D       |
|----------|---------------|-----------------|---------|----------|-----------------|-----------------|----------------|---------|
| YSPI1040 | $330 \pm 2.0$ | $24.4 \pm 2.00$ | 30.4MAX | 23.9 Min | $13.0 \pm 0.50$ | $21.0 \pm 0.80$ | $2.0 \pm 0.50$ | 100 Min |

## ■ 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.