

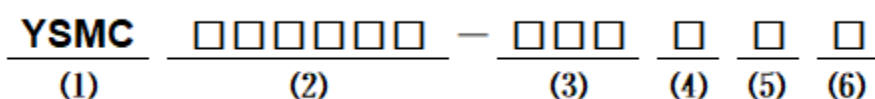
## ■ Features

- Molding Inductor, Closed magnetic circuit design reduces leakage flux.
- Low loss realized with low Rdc.
- Large Current and low loss.
- Customize For Different Need.
- Operating temperature:  $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$  (Including self-temperature rise) .

## ■ Applications

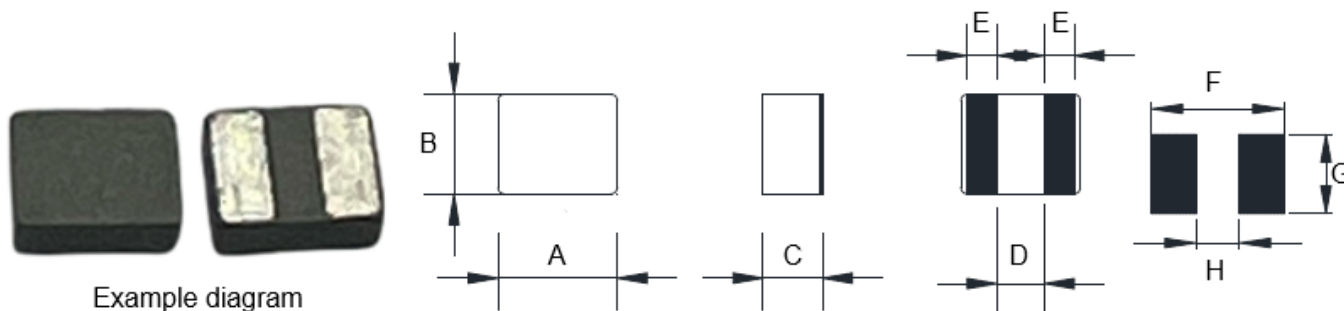
- General Electronic.
- Video Device, TV, TFT.
- Power Module for PC.
- NB/Lap Top Computer, VR, AR.
- Server, VGA Card/Module.

## ■ Product Identification



- (1) : Type
- (2) : Dimensions
- (3) : Inductance value
- (4) : Inductance Tolerance: N=±30%, M=±20%, K=±10%
- (5) : Coating color: B=Black, G=Gray
- (6) : Identification code: If none, default.

## ■ Shapes and Dimensions (Unit: mm)



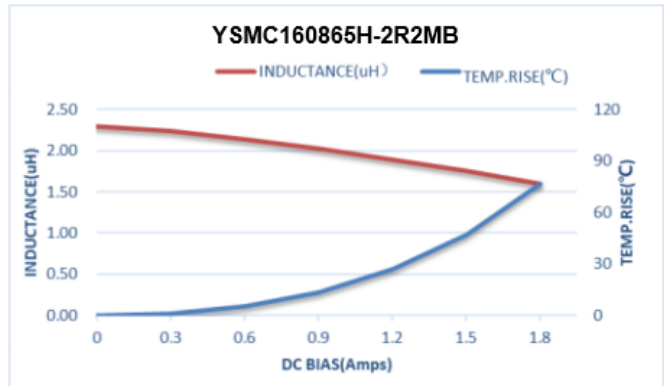
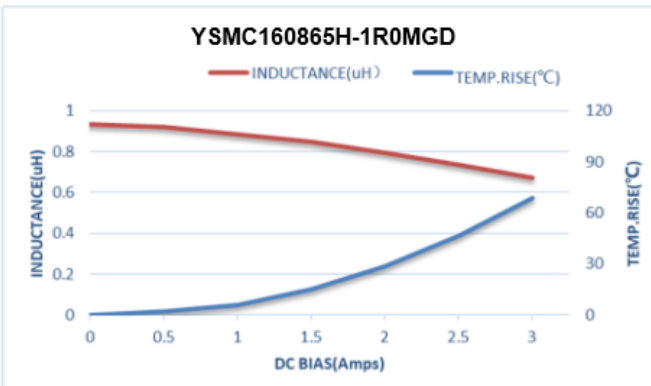
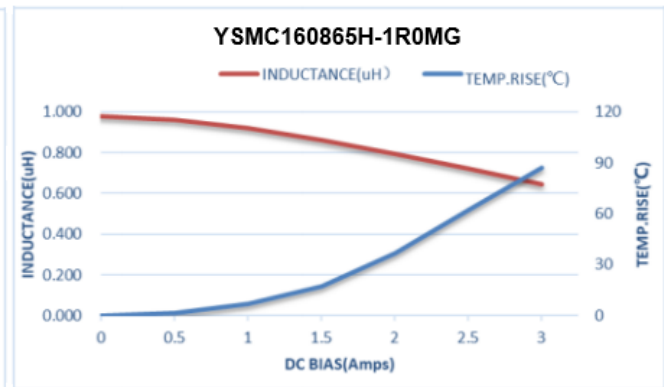
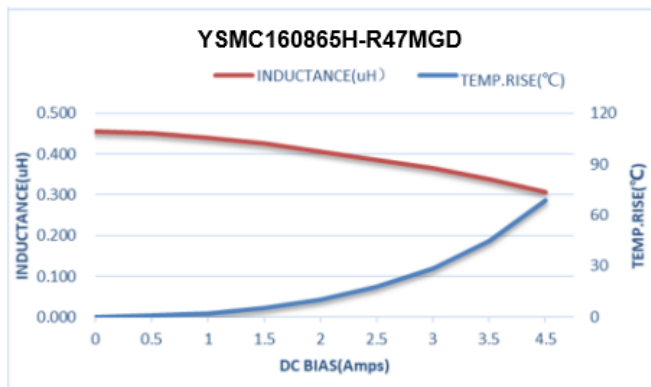
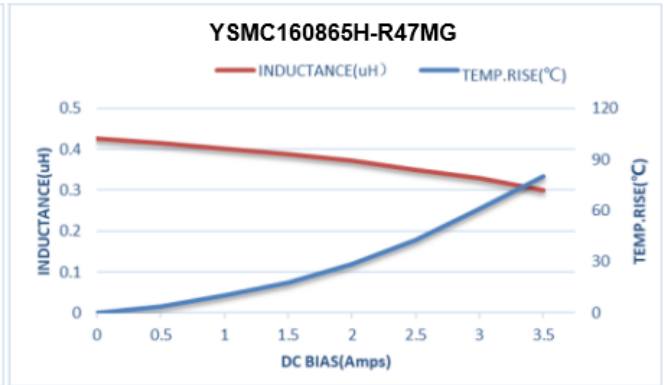
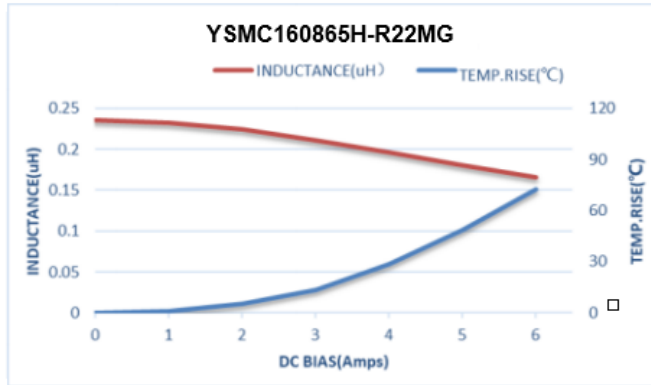
| TYPE        | A         | B         | C Max. | D         | E       | F Ref. | G Ref. | H Ref. |
|-------------|-----------|-----------|--------|-----------|---------|--------|--------|--------|
| YSMC160865H | 1.60±0.20 | 0.80±0.20 | 0.65   | 0.60±0.20 | 0.5±0.2 | 1.70   | 0.90   | 0.50   |

## ■ YSMC160865H Series

| Part Number        | Inductance<br>(uH)<br>@1MHz | DC Resistance<br>(mΩ) |      | Heat Rating<br>current(A) |      | Saturation<br>current(A) |      |
|--------------------|-----------------------------|-----------------------|------|---------------------------|------|--------------------------|------|
|                    |                             | Typ.                  | Max. | Typ.                      | Max. | Typ.                     | Max. |
| YSMC160865H-R22MG  | 0.22±20%                    | 35                    | 43   | 4.0                       | 3.5  | 5.0                      | 4.5  |
| YSMC160865H-R47MG  | 0.47±20%                    | 66                    | 82   | 2.3                       | 2.0  | 3.3                      | 3.0  |
| YSMC160865H-R47MGD | 0.47±20%                    | 65                    | 78   | 3.0                       | 2.5  | 3.5                      | 3.2  |
| YSMC160865H-1R0MG  | 1.0±20%                     | 180                   | 200  | 1.8                       | 1.5  | 2.4                      | 2.0  |
| YSMC160865H-1R0MGD | 1.0±20%                     | 140                   | 160  | 2.2                       | 1.8  | 2.2                      | 2.0  |
| YSMC160865H-2R2MB  | 2.2±20%                     | 390                   | 430  | 1.3                       | 1.1  | 1.6                      | 1.3  |

- ※ All test data is referenced to 25 °C ambient.
- ※ Saturation current: indicates the current when the inductance decrease to approximately 70% of initial value.
- ※ The temperature rise current value is the DC current value having temperature increase up to approximately 40°C.
- ※ The rated current as listed is either the saturation current or the heating current depending on which value is lower.
- ※ The part temperature (ambient + temp rise) should not exceed 125 under °C the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.
- ※ YJYCOIN recommend products store in warehouse with temperature between 15 to 35°C under humidity between 25 to 75%RH.

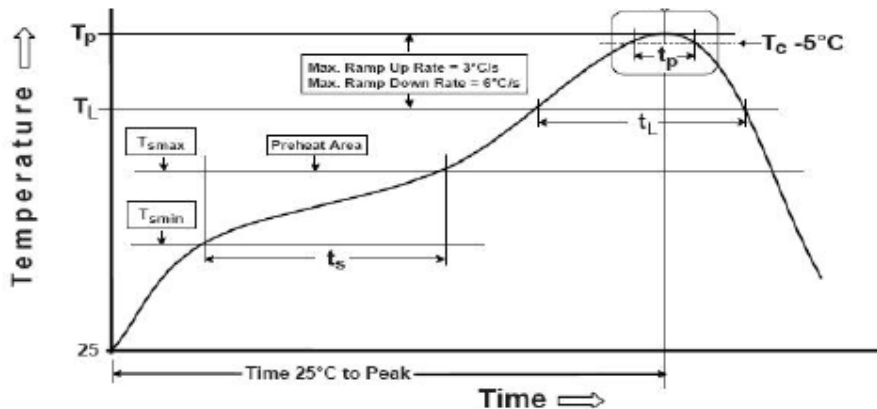
**■ Current Characteristic(YSMC160865 Series)**



## ■ Reliability Test

| NO.       | Items                        | Requirements                                                                    | Test Methods and Remarks                                                                                                                                                                                                                                                                                                          |        |       |      |   |           |   |      |    |
|-----------|------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|------|---|-----------|---|------|----|
| 1         | Insulation Resistance        | ≥100MΩ                                                                          | 100 VDC between inductor coil and The middle of the top surface of the body for 60seconds.                                                                                                                                                                                                                                        |        |       |      |   |           |   |      |    |
| 2         | Solderability                | 90% or more of electrode area shall be coated by new solde.                     | Dip pads in flux .<br>Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free).<br>Solder Temperature: 245±5°C.<br>Immersion Time: (5±1) s.                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 3         | Resistance to Soldering Heat | No visible mechanical damage.<br>Inductance change: Within ±10%.                | Dip pads in flux.<br>Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free).<br>Solder Temperature: 260±5°C.<br>Immersion Time: 10±1sec.                                                                                                                                                                                                     |        |       |      |   |           |   |      |    |
| 4         | Adhesion of teral electrode  | Strong bond between the pad and the core, without come off PCB.                 | Inductors shall be subjected to (260±5)°C for (20±5)s<br>Soldering in the base with 0.3mm solder.<br>And then aplombelectrode way plus tax X N for (10±1) seconds.<br><table><tr><td>series</td><td>"X" N</td></tr><tr><td>1008</td><td>6</td></tr><tr><td>1210~1608</td><td>8</td></tr><tr><td>2012</td><td>12</td></tr></table> | series | "X" N | 1008 | 6 | 1210~1608 | 8 | 2012 | 12 |
| series    | "X" N                        |                                                                                 |                                                                                                                                                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 1008      | 6                            |                                                                                 |                                                                                                                                                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 1210~1608 | 8                            |                                                                                 |                                                                                                                                                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 2012      | 12                           |                                                                                 |                                                                                                                                                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 5         | High temperature             | No case deformation or change in appearance.<br>Inductance change: Within ±10%. | Temperature: 125±2°C.<br>Time : 1000 hours.<br>Measurement at 24±4 hours after test conclusion.                                                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 6         | Low temperature              | No visible mechanical damage.<br>Inductance change: Within ±10%.                | Temperature: -55±2°C.<br>Time : 1000 hours.<br>Measurement at 24±4 hours after test conclusion.                                                                                                                                                                                                                                   |        |       |      |   |           |   |      |    |
| 7         | Thermal shock                | No visible mechanical damage.<br>Inductance change: Within ±10%.                | The test sample shall be placed at (-55±3)°C and (125±3)°C for (30±3) , different temperature conversion time is 2~3 utes.<br>The temperature cycle shall be repeated 32 cycles. Placed at room temperature for 2 hours, within 48±4 hours of testing.                                                                            |        |       |      |   |           |   |      |    |
| 8         | Temperature characteristic   | Inductance change Pc-b,Pc-d: Within ±10%.                                       | a: +20 °C （30~45） →<br>b: -40 °C （30~45） →<br>c: +20 °C （30~45） →<br>d: +125 °C （30~45） →<br>$P_{c-b} = \frac{L_b - L_c}{L_c} \times 100\%$ ; $P_{c-d} = \frac{L_d - L_c}{L_c} \times 100\%$                                                                                                                                      |        |       |      |   |           |   |      |    |
| 9         | Static Humidity              | No visible mechanical damage.<br>Inductance change: Within ±10%.                | Inductors shall be subjected to (95±3)%RH .<br>at (60±2)°C for (1000±4) h.<br>Placed at room temperature for 2 hours, within 48 hours of testing.                                                                                                                                                                                 |        |       |      |   |           |   |      |    |
| 10        | Life                         | No visible mechanical damage.<br>Inductance change: Within ±10%.                | Inductors shall be store at (85±2)°C for (1000±4) hours with Irms applied.<br>Placed at room temperature for 2 hours, within 48 hours of testing                                                                                                                                                                                  |        |       |      |   |           |   |      |    |

## ■ Reflow profile for SMT components



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

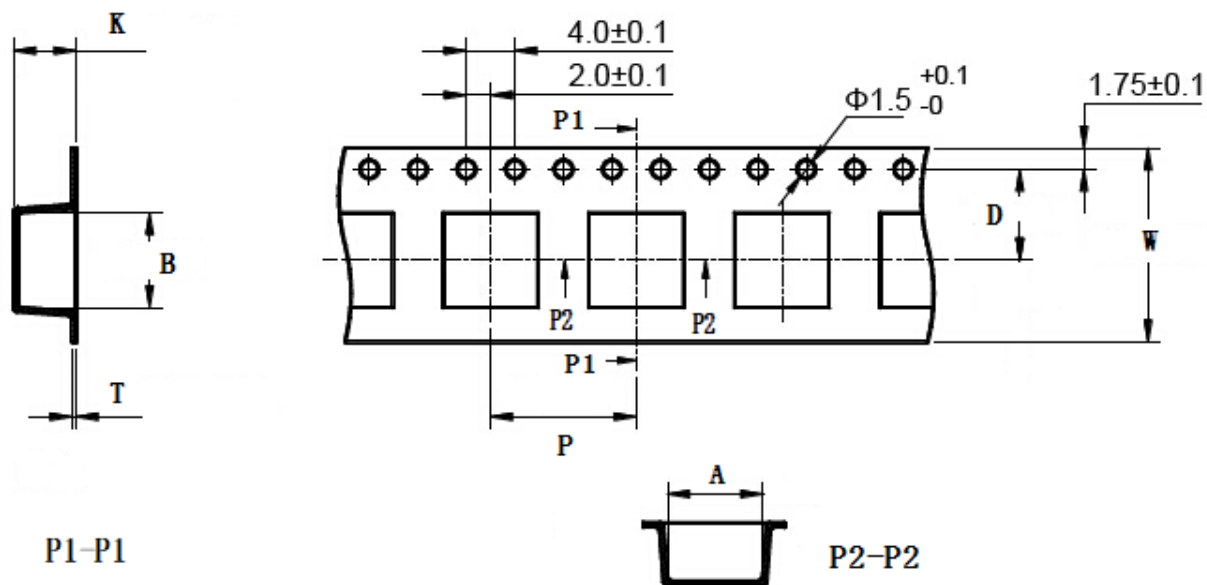
| Profile Feature                                                                                  |                                                                | Lead(Pb) Free solder |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------|
| Preheat and Soak                                                                                 | Temperature Min.(T <sub>smin</sub> )                           | 150°C                |
|                                                                                                  | Temperature Max.(T <sub>smax</sub> )                           | 200°C                |
|                                                                                                  | time(T <sub>smin</sub> to T <sub>smax</sub> )(t <sub>s</sub> ) | 60-120 Seconds       |
| Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>                                         |                                                                | 3°C/Second Max.      |
| Liquidous temperature(T <sub>L</sub> )                                                           |                                                                | 217°C                |
| Time(T <sub>L</sub> )maintained above T <sub>L</sub>                                             |                                                                | 60-150 Seconds       |
| Peak package body temperature(T <sub>p</sub> )                                                   |                                                                | Table2               |
| Time(t <sub>p</sub> )*within 5°C of the specified classification<br>Temperature(T <sub>c</sub> ) |                                                                | 30*seconds           |
| Average Ramp-down rate(T <sub>p</sub> to T <sub>L</sub> )                                        |                                                                | 6°C/second max       |
| Time 25°C to peak temperature                                                                    |                                                                | 8 minutes max.       |

| Table2.Pb-Free Process-Classification Temperatures(T <sub>c</sub> ) |                             |                                 |                              |
|---------------------------------------------------------------------|-----------------------------|---------------------------------|------------------------------|
| Package Thickness                                                   | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350~2000 | Volume mm <sup>3</sup> >2000 |
| <1.6mm                                                              | 260°C                       | 260°C                           | 260°C                        |
| 1.6mm – 2.5mm                                                       | 260°C                       | 250°C                           | 245°C                        |
| >2.5mm                                                              | 250°C                       | 245°C                           | 245°C                        |

※ Allowed Re-flow times : 2 times

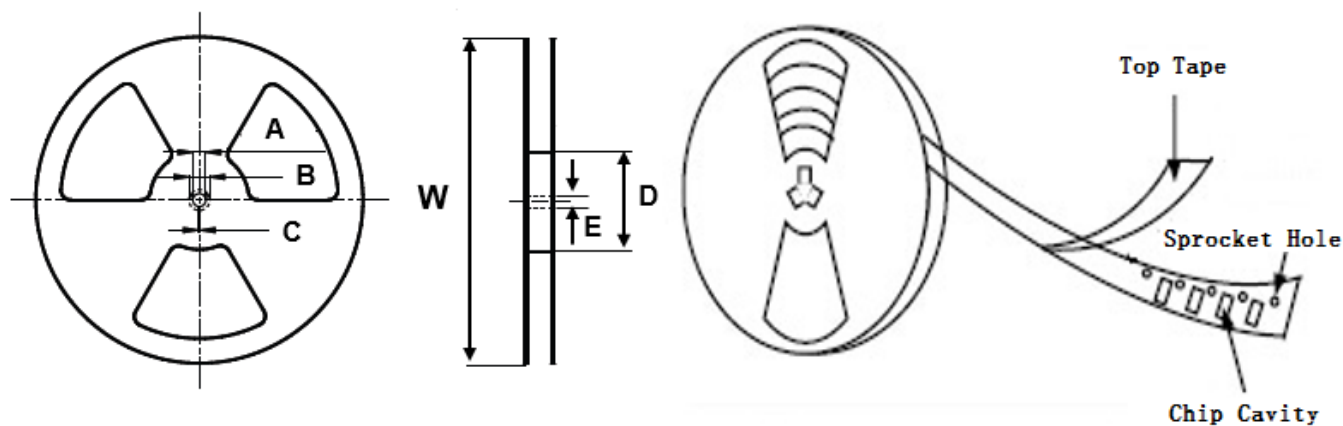
※ To avoid discoloration phenomena of chip on terminal electrodes, please use N2 Re-flow furnace .

**■ Taping Dimensions(Unit:mm)**



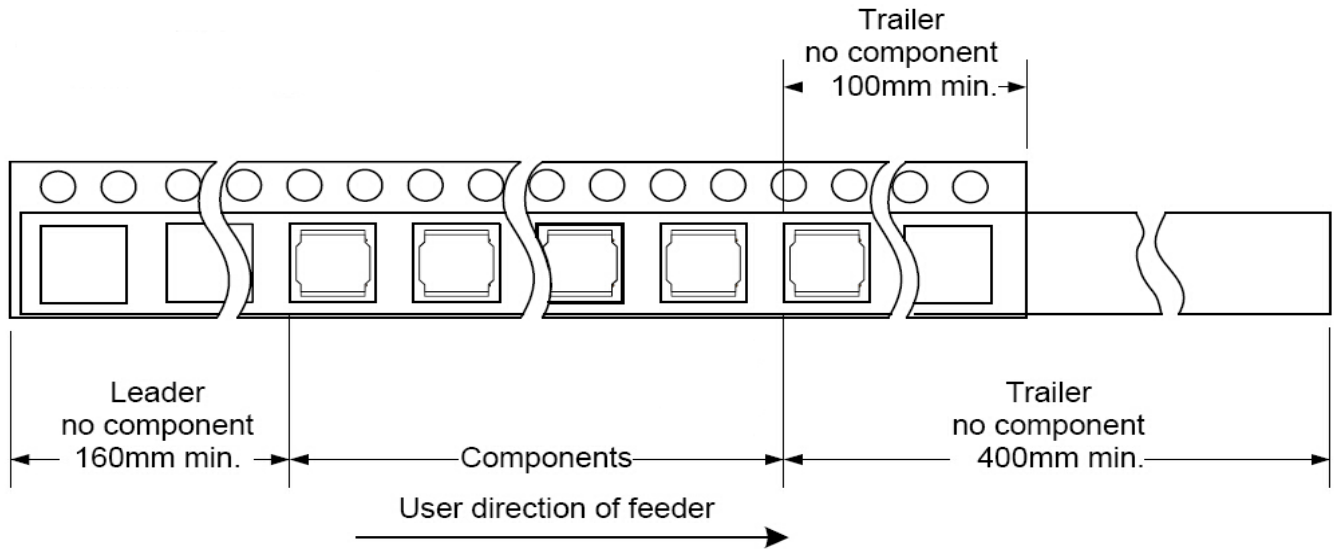
| TYPE        | W        | A         | B         | D        | P        | K         | T         | MPQ  |
|-------------|----------|-----------|-----------|----------|----------|-----------|-----------|------|
| YSMC160865H | 8.0±0.10 | 1.00±0.05 | 1.82±0.05 | 3.5±0.10 | 4.0±0.10 | 0.80±0.10 | 0.22±0.05 | 3000 |

**■ Reel Dimensions(Unit:mm)**

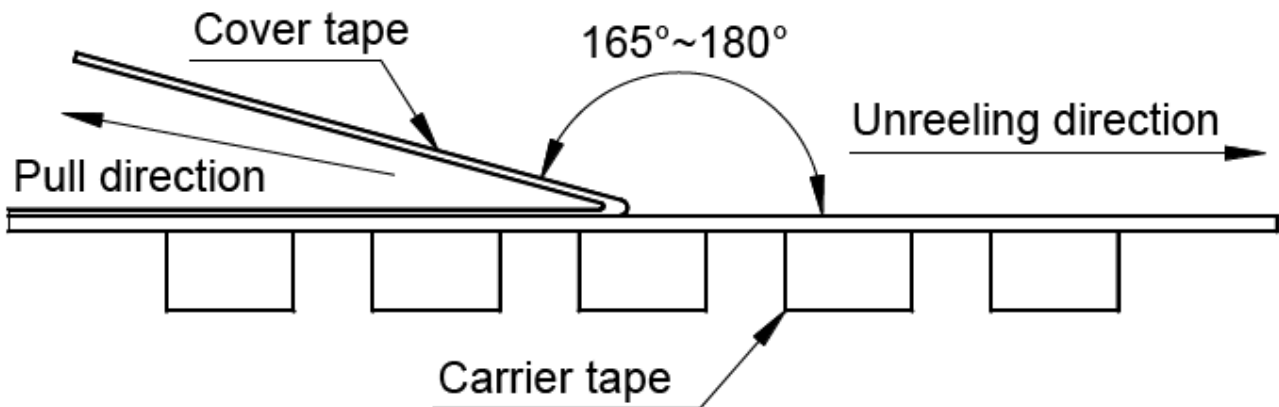


| TYPE        | W       | A        | B        | C       | D      | E       |
|-------------|---------|----------|----------|---------|--------|---------|
| YSMC160865H | 178±2.0 | 13.0±0.5 | 21.0±0.8 | 2.0±0.5 | 60±2.0 | 9.0±2.0 |

## ■ 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.