

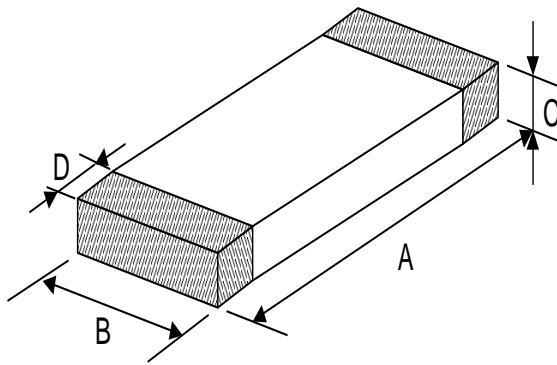
## Product Identification

**GMWI** - **201209** - **1R0** **M** **R**

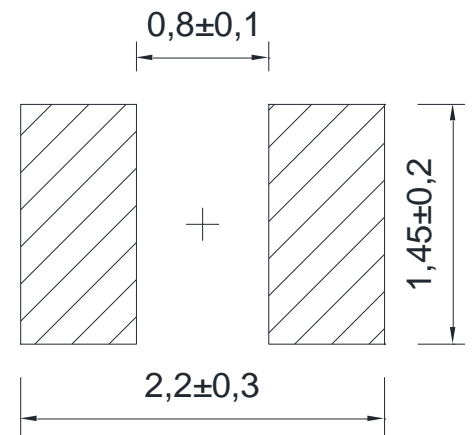
①                      ②                      ③                      ④                      ⑤

- ① : Product Code
- ② : Dimension Code (mm)
- ③ : Inductance
- ④ : Tolerance Code :N =  $\pm 30\%$ , M =  $\pm 20\%$
- ⑤ : Code for Special Specification

## Product Dimension



### Recommended Solder Pad



(Unit : mm)

A	B	C	D
$2.0 \pm 0.2$	$1.2 \pm 0.2$	1.0 MAX	$0.5 \pm 0.3$

## Electrical Characteristics

Part Number	Inductance @ 1MHz	DC Resistance	Rated Current* @typ.
GMWI-201209-1R0MR	1.0 $\mu$ H $\pm$ 20%	0.07 $\Omega$ $\pm$ 25%	2900mA
GMWI-201209-1R5MR	1.5 $\mu$ H $\pm$ 20%	0.08 $\Omega$ $\pm$ 25%	2500mA
GMWI-201209-2R2MR	2.2 $\mu$ H $\pm$ 20%	0.09 $\Omega$ $\pm$ 25%	2200mA
GMWI-201209-3R3MR	3.3 $\mu$ H $\pm$ 20%	0.16 $\Omega$ $\pm$ 25%	2100mA
GMWI-201209-4R7MR	4.7 $\mu$ H $\pm$ 20%	0.18 $\Omega$ $\pm$ 25%	2100mA

\*Temperature rise should be less than 40°C.

### Test Conditions

Unless otherwise specified, the measuring conditions temperature shall be 5~35°C, the relative humidity RH shall be 45~85%.

## Electrical Characteristics Measuring Condition

### Inductance

Equipment : Agilent 4291A + 16192A or equivalent system    OSC : 100mV @ 1MHz

### DC Resistance

Equipment : Chroma 16502 or equivalent system

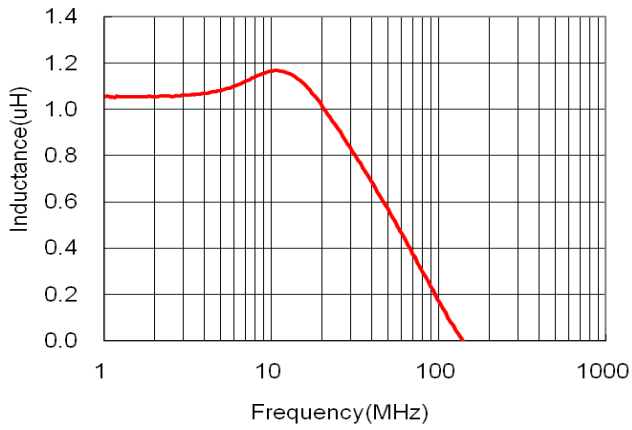
### Rated Current

Equipment : HP6543A or equivalent system

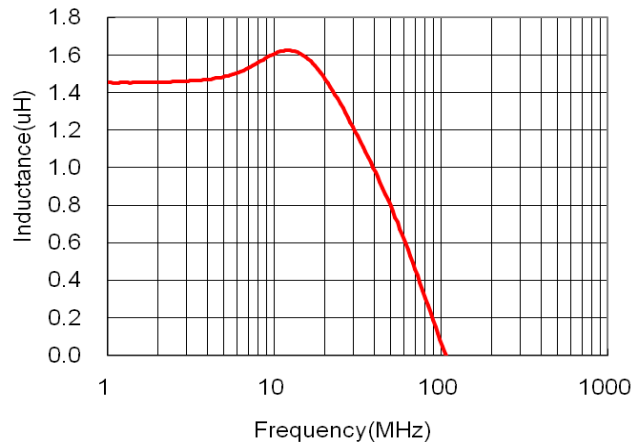


# Typical Electrical Characteristics (T=25°C)

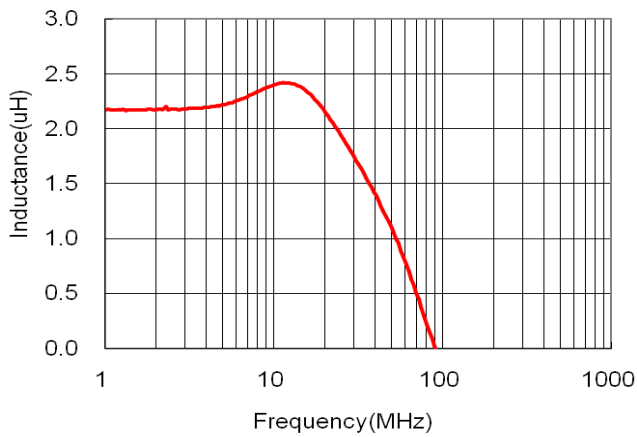
### GMWI-201209-1R0MR



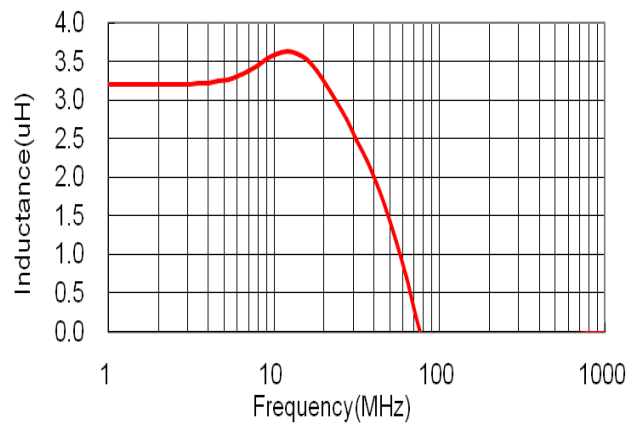
### GMWI-201209-1R5MR



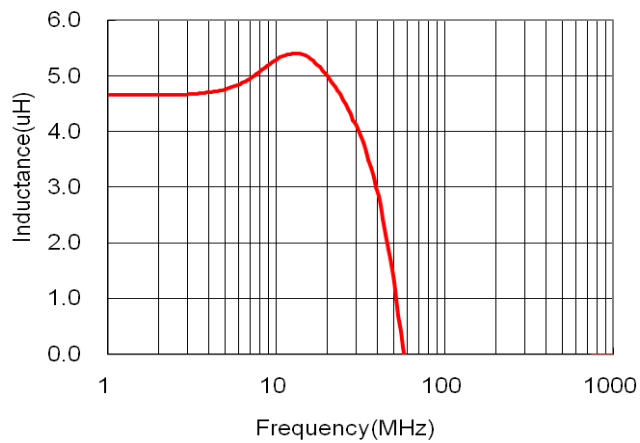
### GMWI-201209-2R2MR



### GMWI-201209-3R3MR

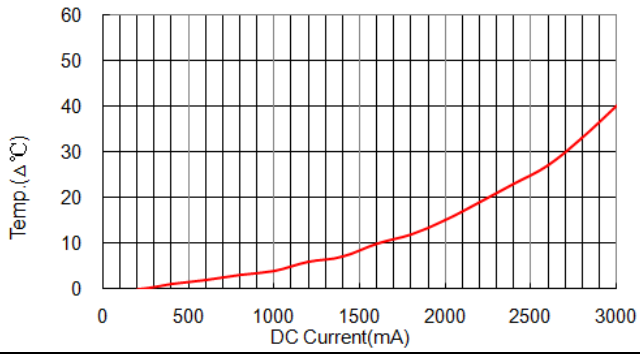


### GMWI-201209-4R7MR

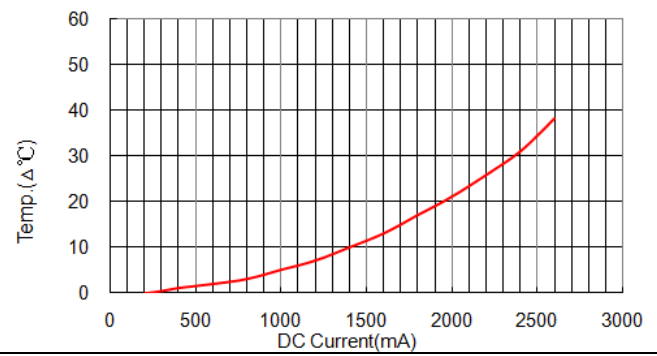


# Typical Temperature Characteristics

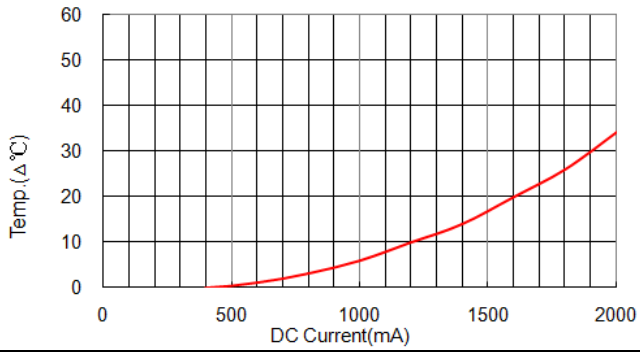
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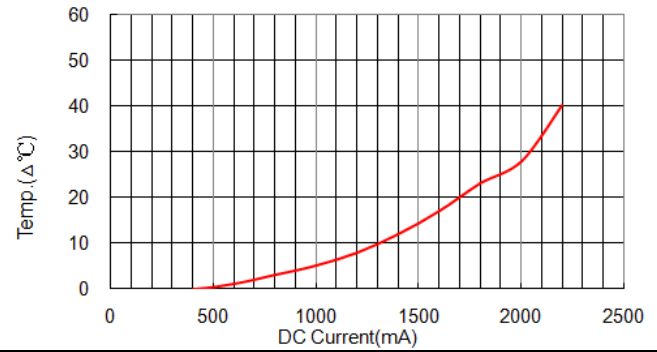
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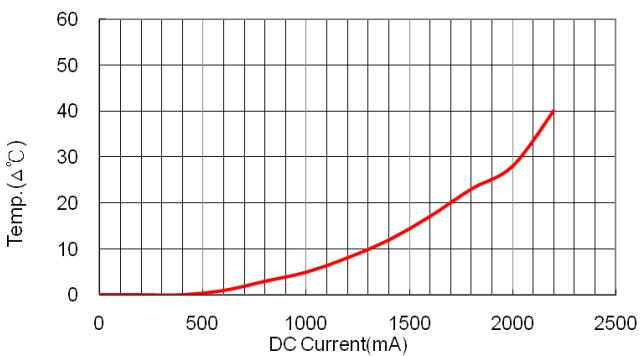
GMWI-201209-2R2MR



GMWI-201209-3R3MR



GMWI-201209-4R7MR



## Operating Temperature Range

-55°C to +125°C

## Storage Condition

To maintain good solder ability of chips, care must be taken to control temperature and humidity in the storage environment.

Recommend condition :

Ambient temperature shall be at or under 40°C and keeping the humidity RH at or below 70%.

The products shall be stored in a place isolated from harmful gas like sulfur or chlorine.

The products shall be used within 6 months from the time of delivery. If the period is exceeded, please check solder ability before using the chips.

## Green Products

This product meets green environmental protection rules on RoHS.

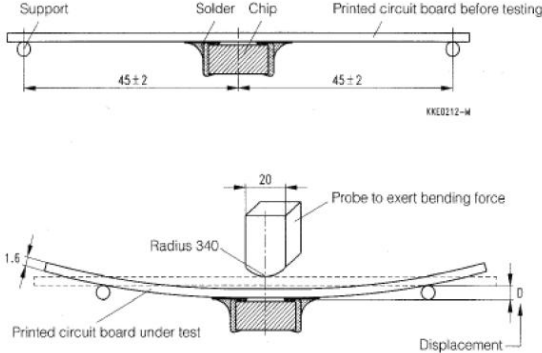
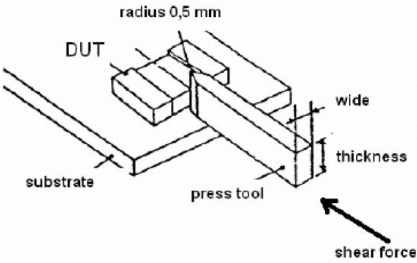
RoHS compliance/HF free and EU Directive 2011/65/EU

## Important Notice

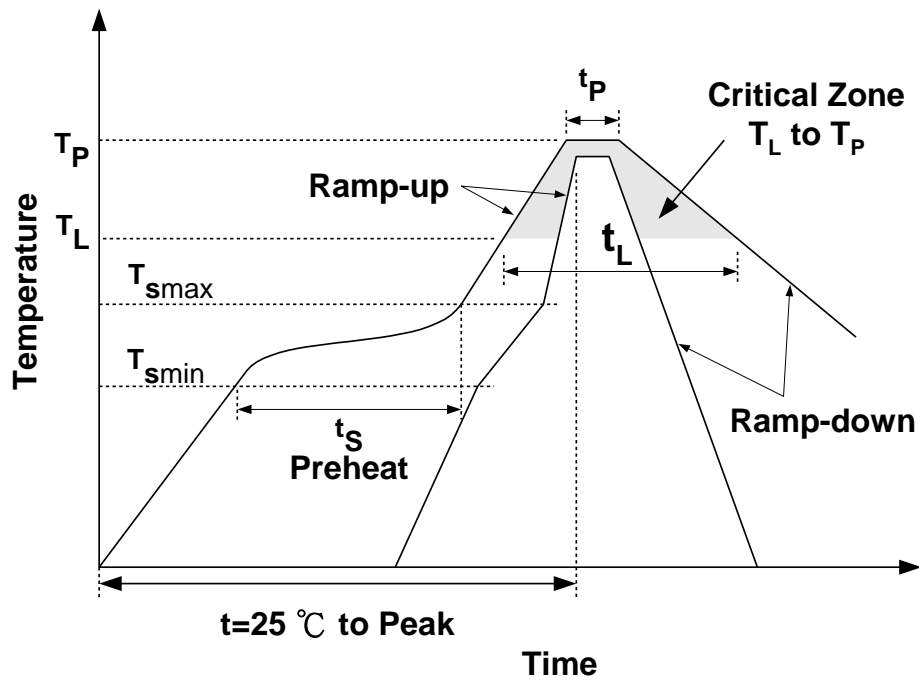
The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

# Reliability Test

Item	Specification	Test Condition
High Temperature Exposure(Storage)	Inductance change to be within 20% to the initial value.	1000 hrs@ 125°C. Unpowered. Measurement at 24±4 hours after test conclusion.
Temperature Cycling	Inductance change to be within 20% to the initial value.	1000 cycles (-40°C to +125°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time.
Biased Humidity	Inductance change to be within 20% to the initial value.	1000 hours 85°C/85%RH. Unpowered. Measurement at 24±4 hours after test conclusion.
Resistance to Solvents	No apparent damage	Note: It is applicable to marked and/or coated components. Add Aqueous wash chemical OKEMCLEAN (A 6% concentrated Oakite cleaner) or equivalent. Do not use banned solvents.
Mechanical Shock	Inductance change to be within 20% to the initial value.	peak acceleration : 100 g's Duration of pulse : 6 ms Waveform : Half-sine Velocity change : 12.3 ft/sec Direction : X , Y , Z ( 3axes/3 times )
Vibration	Inductance change to be within 20% to the initial value.	Frequency and Amplitude: 10-2000 Hz. 5g's for 20 minutes, 12 cycles each of 3 orientations.
Resistance to Soldering Heat	The chip shall not crack. More than 75% of the terminal electrode shall be covered with solder.	Solder : Sn-3.0Ag-0.5Cu Flux : Rosin After pre-heat for 2~3minutes at 150°C~180°C. Immerse the test sample into a methanol solvent of rosin. Dip the sample into a solder bath at 260±5°C for 10±1sec.
Solder Ability	More than 95% area of terminal electrode shall be covered with fresh solder	Solder : Sn-3.0Ag-0.5Cu Flux : Rosin After pre-heat for 2~3minutes at 150°C~180°C. Immerse the test sample into a methanol solvent of rosin. Dip the sample into a solder bath at 245±5°C for 3±1sec.

Item	Specification	Test Condition
Flammability		Burning stops within 10 seconds on a vertical specimen; Drips of particles allowed as long as they are not inflamed.
Bending Test	No apparent damage.	Substrate : PCB(100mm×40mm×1.6mm) Solder : Reflow Speed of Applying Force : 0.5mm / s Deflection : 2mm Hold Duration : 60 s 
Terminal Strength(SMD)	The terminal electrode shall not be broken off nor the ferrite damaged.	Force of 1.8 Kg for 60±1 seconds. 
Operational Life	Inductance change to be within 20% to the initial value.	1000 hrs. @ 105°C. Measurement at 24±4 hours after test conclusion.

# Recommended Soldering Profiles

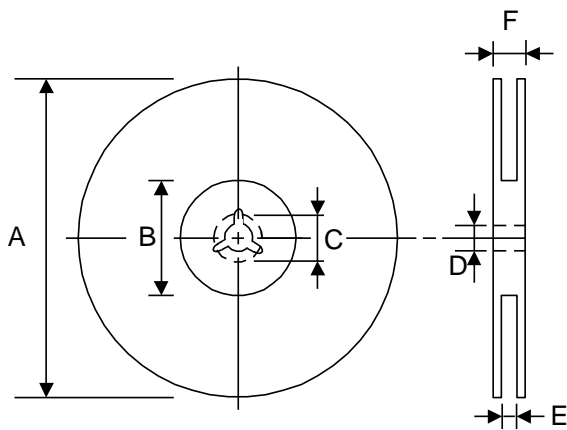
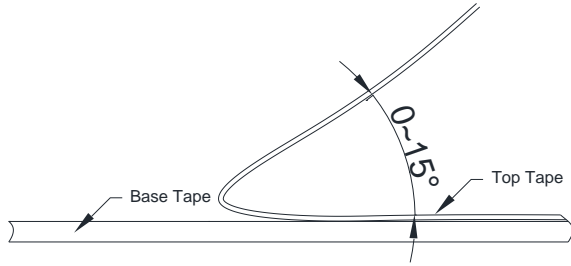


Profile Feature		Sn-Pb	Pb-Free
Preheat	$t_s$	60~120 seconds	60~180 seconds
	$T_{smin}$	100°C	150°C
	$T_{smax}$	150°C	200°C
Average ramp-up rate ( $T_{smax}$ to $T_P$ )		3°C/second max.	3°C/second max.
Time main above	Temperature ( $T_L$ )	183°C	217°C
	Time ( $t_L$ )	60~150 seconds	60~150 seconds
Peak temperature ( $T_P$ )		230°C	250~260°C
Time within 5°C of actual peak temperature ( $t_P$ )		10 seconds	10 seconds
Ramp-down rate		6°C/sec max.	6°C/sec max.
Time 25°C to peak temperature		6 minutes max.	8 minutes max.

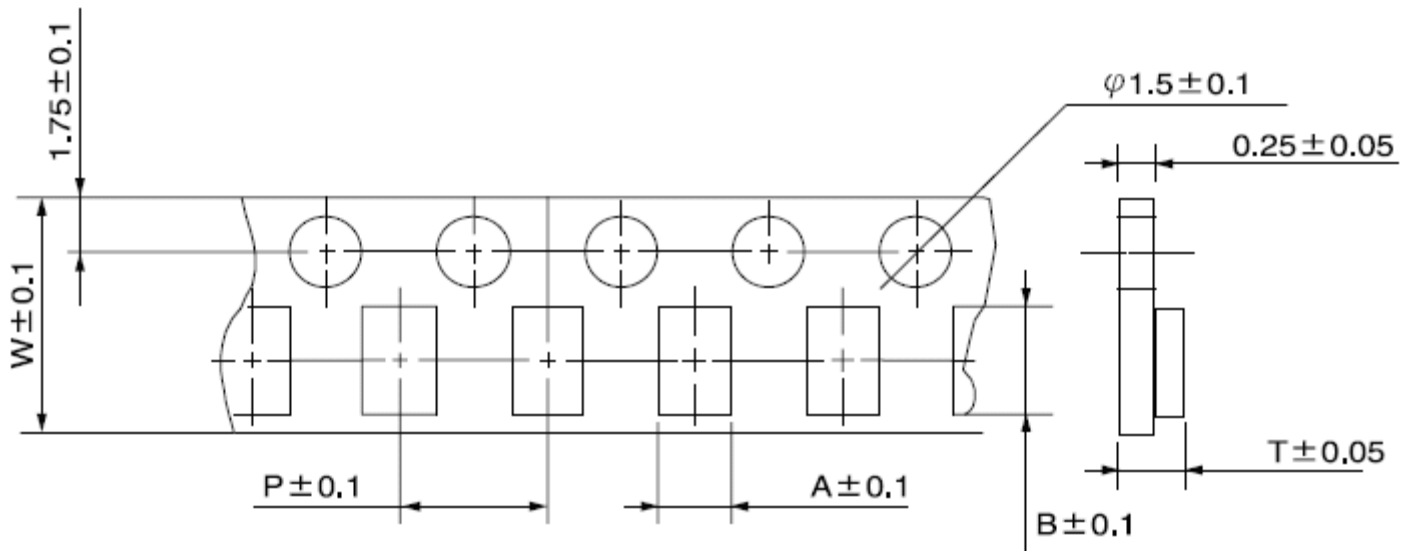


# Tap Specification

The force for peeling off cover tape is 10 grams in the arrow direction.



TYPE	A	B	C	D	E	F
8 mm	178±1	60 <sup>+0.5</sup> <sub>-0</sub>	21±0.8	13±0.2	9±0.5	12±0.5

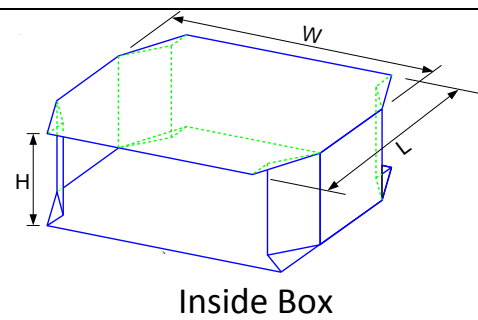
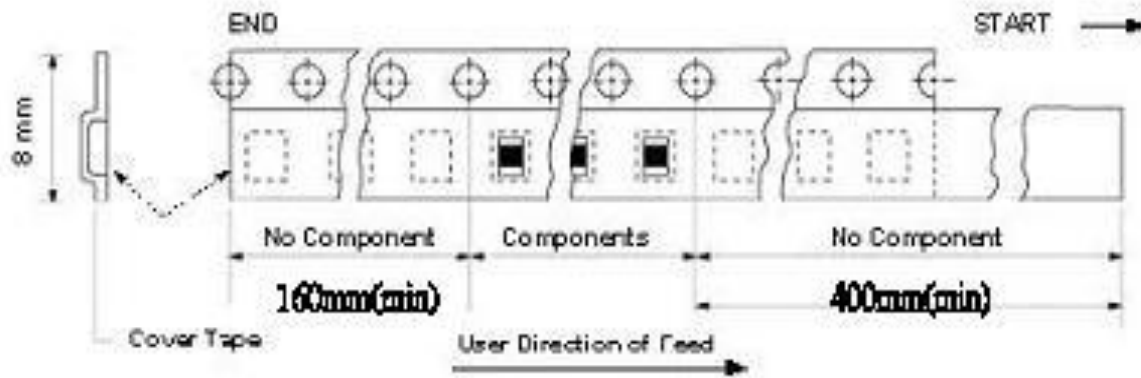


A	B	W	P	T	Chips/Reel
1.5±0.1	2.3±0.1	8.0±0.2	4±0.1	1.3±0.15	4000



MAG.LAYERS

# Packaging

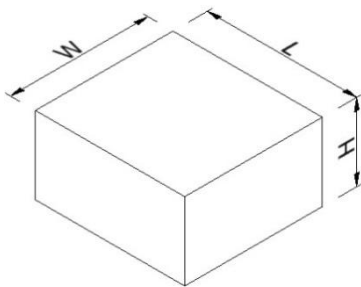


Inside Box

No. of Reels	W (cm)	L (cm)	H (cm)	Chips/Box
3	18	18	3.6	12,000
5	18	18	6.0	20,000

No. of Box	W (cm)	L (cm)	H (cm)	Chips/Carton
2	14.6	19.2	19.8	40,000
5	34.7	19.2	19.8	100,000
10	35.2	38.2	19.8	200,000



Carton

