



# Mag Layers USA, INC

## Specification Sheet

**P/N : GMLB-160808-L Series-RU**

### Products:

[Molded Power Chokes](#)

[Multilayer Chip Inductors](#)

[Lan Transformer](#)

[RF Passive / Antennas](#)

[Automotive](#)

### Certifications:

[ISO9001](#)

[IATF16949](#)

[ISO14001](#)

[QC080000](#)

### US Office

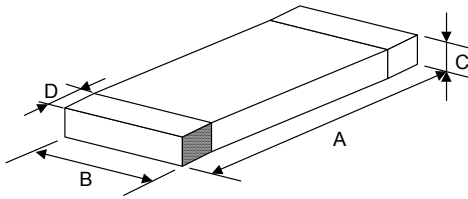
5406 Bolsa Ave.,  
Huntington Beach, CA 92649  
(714) 898-8377

### Contact Us

[www.maglayersusa.com](http://www.maglayersusa.com)  
[info@maglayersusa.com](mailto:info@maglayersusa.com)



## PRODUCT DIMENSION

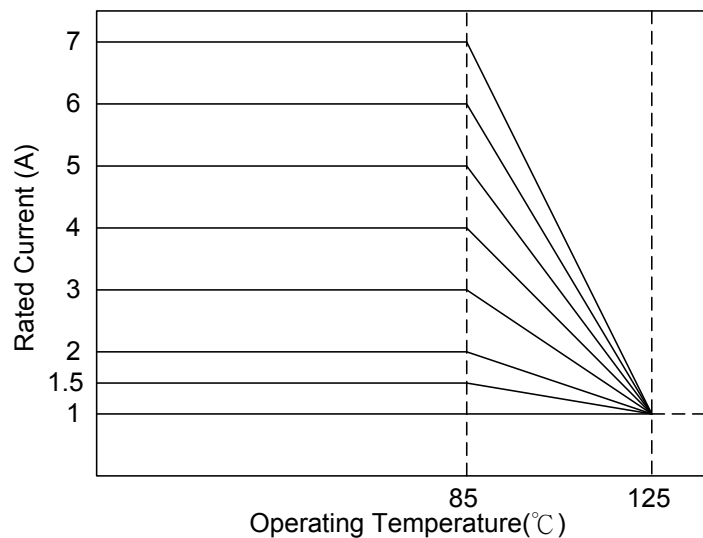


NOTE : Dimensions in mm

PRODUCT NO.	A	B	C	D
GMLB-321611 (1206)-RU	3.2±0.20 (0.126±0.008)	1.6±0.20 (0.063±0.008)	1.1±0.20 (0.043±0.008)	0.5±0.30 (0.020±0.012)
GMLB-201209 (0805)-RU	2.0±0.20 (0.079±0.008)	1.2±0.20 (0.047±0.008)	0.9±0.20 (0.035±0.008)	0.5±0.30 (0.020±0.012)
GMLB-160808 (0603)-RU	1.6±0.15 (0.063±0.006)	0.8±0.15 (0.031±0.006)	0.8±0.15 (0.031±0.006)	0.3±0.20 (0.012±0.008)
GMLB-100505 (0402)-RU	1.0±0.10 (0.039±0.004)	0.5±0.10 (0.019±0.004)	0.5±0.10 (0.019±0.004)	0.25±0.10 (0.0095±0.004)

## CURRENT DERATING

In operating temperatures exceeding +85°C, derating of current is necessary for chip ferrite beads for which rated current is 1.5A or over. Please apply the derating curve shown below according to the operating temperature.



## ■ ELECTRICAL REQUIREMENTS

Part Number	Impedance ( $\Omega$ ) at 100 MHz	R <sub>DC</sub> ( $\Omega$ ) Max.	I <sub>DC</sub> (mA) Max.	Operating Temp. Range ( $^{\circ}$ C)
GMLB-160808-0030L-N8-RU	30 $\pm$ 25%	0.05	750	-55 ~ +125
GMLB-160808-0060L-N8-RU	60 $\pm$ 25%	0.1	650	
GMLB-160808-0120L-N8-RU	120 $\pm$ 25%	0.15	550	
GMLB-160808-0150L-N8-RU	150 $\pm$ 25%	0.15	500	
GMLB-160808-0220L-N8-RU	220 $\pm$ 25%	0.2	550	
GMLB-160808-0300L-N8-RU	300 $\pm$ 25%	0.25	500	
GMLB-160808-0470L-N8-RU	470 $\pm$ 25%	0.3	450	
GMLB-160808-0600L-N8-RU	600 $\pm$ 25%	0.35	350	

- Temperature rise should be less than 40 $^{\circ}$ C for P-type and less than 25 $^{\circ}$ C for other types when rated current is applied.

## ■ MEASURING METHOD / CONDITION

- Test Instrument:

Z: Agilent 4291B Impedance Analyzer, Test Fixture: Agilent 16192  
Osc. Level: 500mV

R<sub>DC</sub>: Agilent 34401A

- Test Condition:

< Unless otherwise specified >

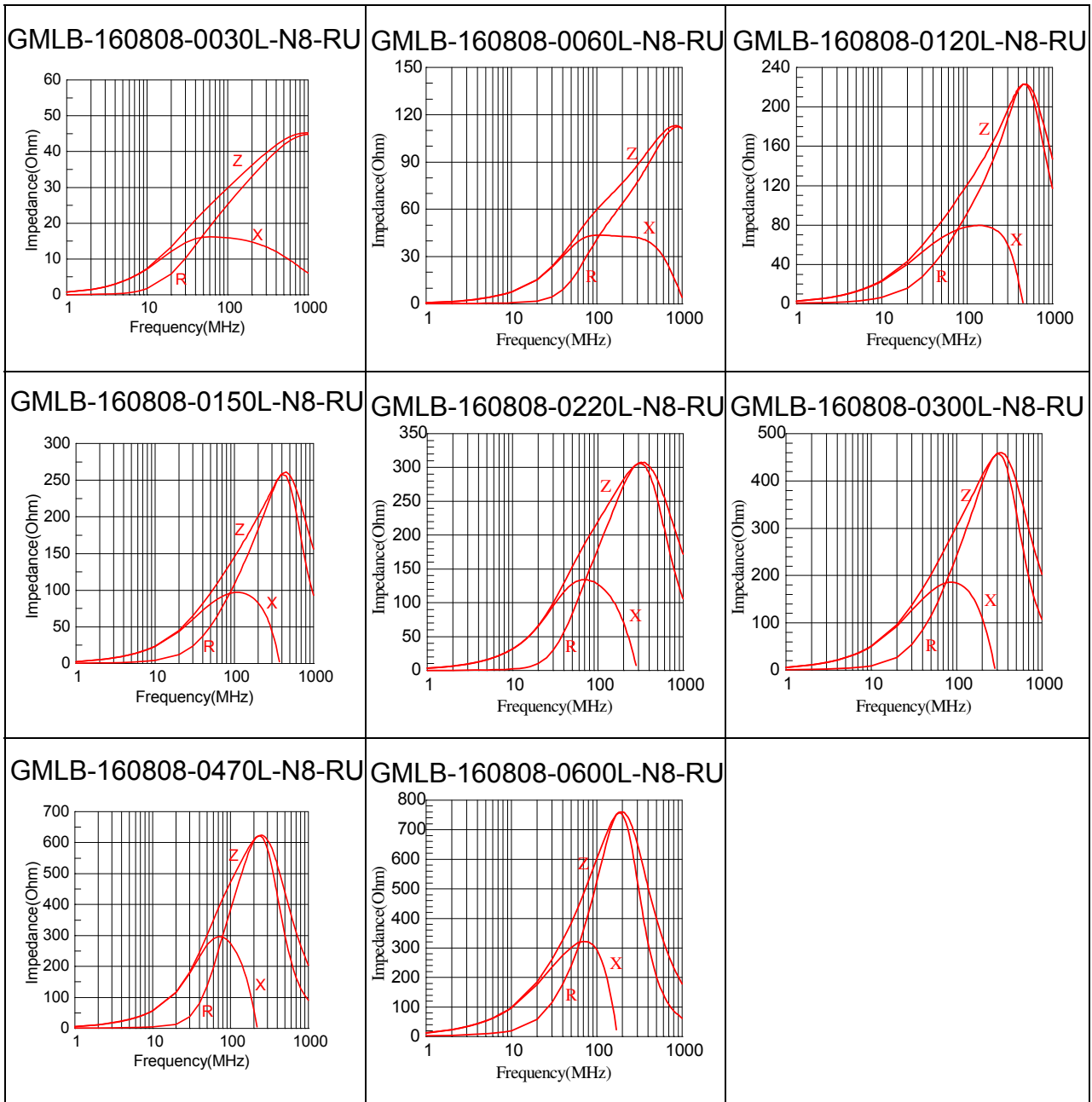
Temperature: 15 $^{\circ}$ C to 35 $^{\circ}$ C      Humidity: 25% to 85% RH

< In case of doubt >

Temperature: 25 $^{\circ}$ C  $\pm$  2 $^{\circ}$ C      Humidity: 60% to 70% RH

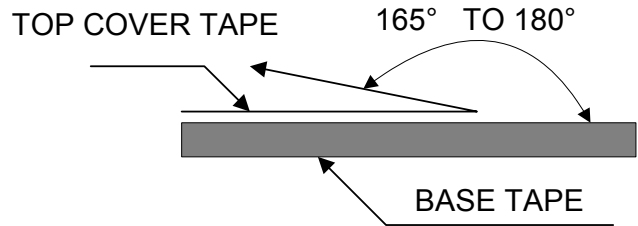
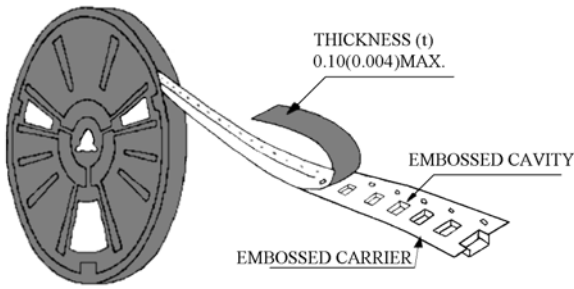


# TYPICAL ELECTRICAL CHARACTERISTICS ( T=25°C)



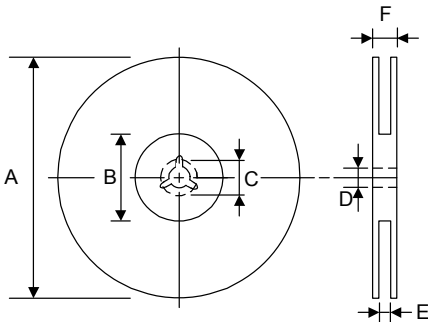
## PACKAGING

### ● Peel-off Force

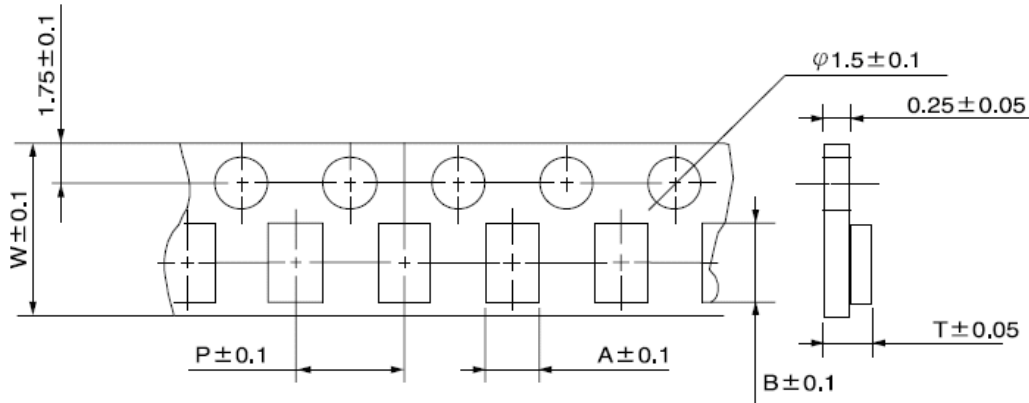


The force for peeling off cover tape is 10 grams in the arrow direction.

### ● Dimension (Unit: mm)

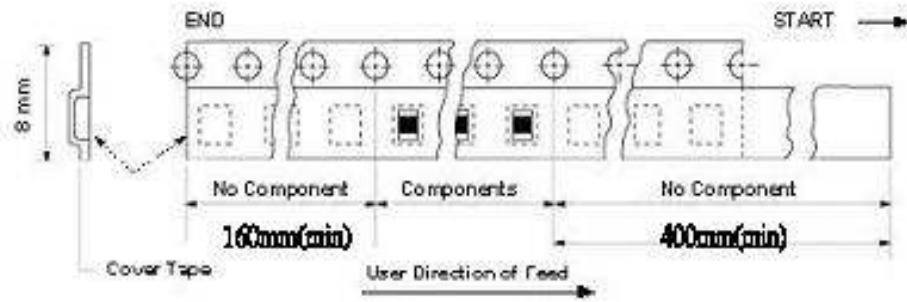


TYPE	A	B	C	D	E	F
8 mm	178±1	60 +0.5 -0	-	13 ±0.2	9 ±0.5	12 ±0.5
12 mm	178±0.3	60 ±0.2	19.3 ±0.1	13.5 ±0.1	13.6 ±0.1	-



TYPE	SIZE	A	B	W	P	T	CHIPS/REEL
GMLB	100505	0.6	1.1	8	2	1.0	10000
	160808	1.1	1.9	8	4	1.1, *0.95±0.05	4000
	201209	1.5	2.3	8	4	1.3, *0.95±0.10	4000
	321611	1.9	3.5	8	4	1.5	3000

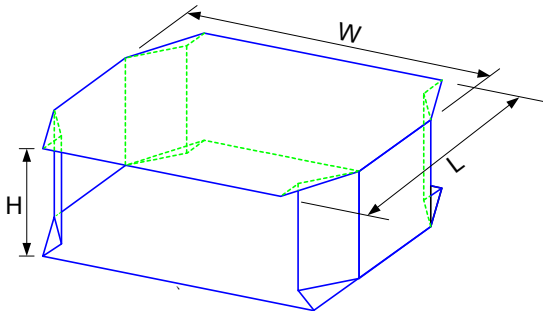
\*: For paper reels



● Taping Quantity

SERIES	3216	2012	1608	1005
PCS/Reel	3000	4000	4000	10000

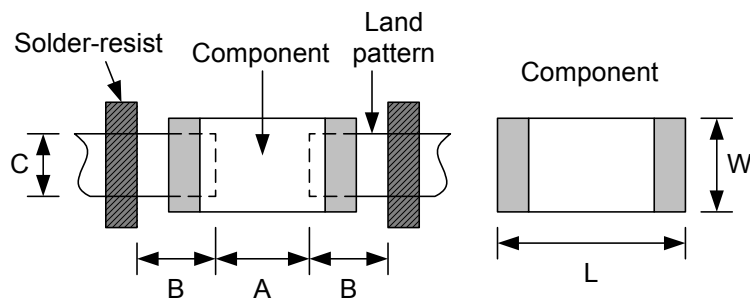
● Tape Packing Case



No. of Reels	W	L	H
2	18±0.5	18±0.5	2.4±0.2
3	18±0.5	18±0.5	3.6±0.2
4	18±0.5	18±0.5	4.8±0.2
5	18±0.5	18±0.5	6.0±0.2

Unit: cm

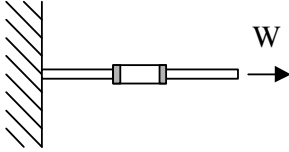
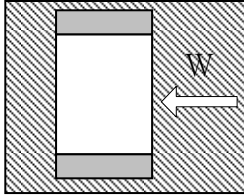
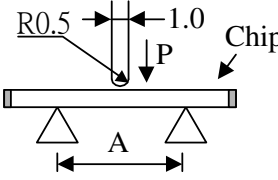
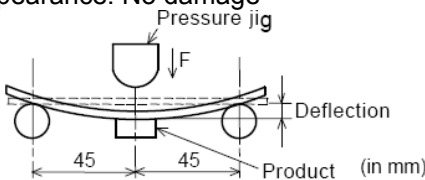
■ **RECOMMENDED PCB LAYOUT**



Unit: mm

Type		1005	1608	2012	3216
Size	L	1.0	1.6	2.0	3.2
	W	0.5	0.8	1.2	1.6
A		0.45~0.55	0.6~0.8	0.8~1.2	1.8~2.2
B		0.40~0.50	0.6~0.8	0.8~1.2	1.1~1.6
C		0.40~0.50	0.6~0.8	0.9~1.6	0.9~1.6

# RELIABILITY TEST

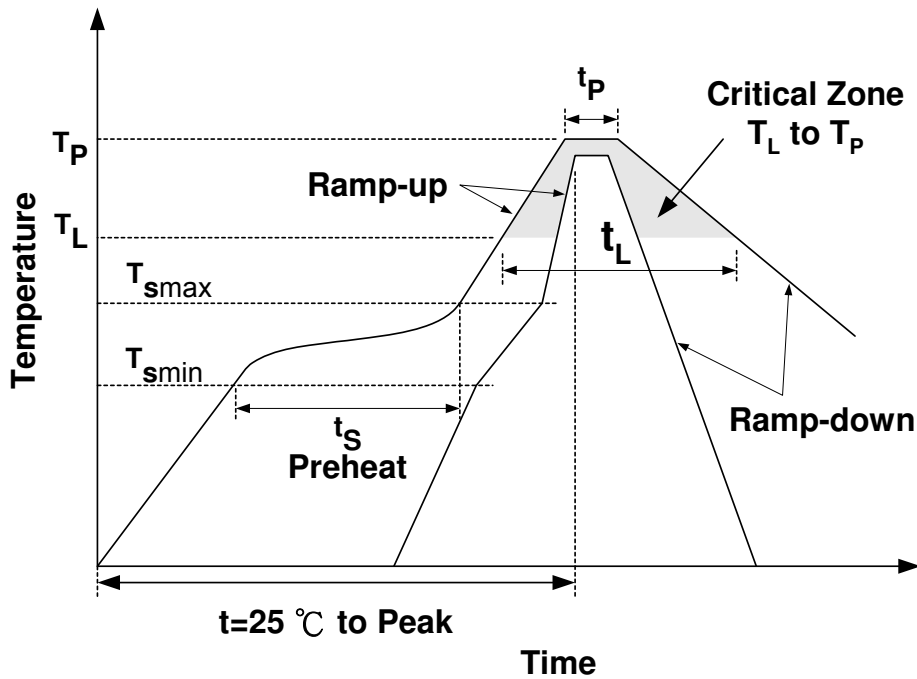
•Mechanical Performance Test				
ITEM	SPECIFICATION	TEST CONDITION		
Solderability	More than 90% of the terminal electrode shall be covered with fresh solder.	Solder: 96.5Sn-3.0Ag-0.5Cu Solder Temperature: 245 ± 5°C Flux: Rosin Dip Time: 3 ± 1 Seconds		
Soldering Heat Resistance	The chip shall not crack. More than 75% of the terminal electrode shall be covered with solder.	Solder: 96.5Sn-3.0Ag-0.5Cu Solder temperature : 260 ± 5°C Flux: Rosin Dip time: 10 ± 1 seconds		
Terminal Strength	The terminal electrode shall not be broken off nor the ferrite damaged. 	TYPE	W(KGF)	TIME (SEC)
		GMLB-160808	0.6	30 ± 5
		GMLB-201209		
		GMLB-321611	1.0	
		GMLB-453215	1.5	
Terminal Strength	The terminal electrode shall not be broken off nor the ferrite damaged. 	TYPE	W(KGF)	
GMLB-160808	1.0	10 ± 5		
GMLB-201209				
GMLB-321611	2.0			
GMLB-453215				
Bending Strength	No mechanical damage. The ferrite shall not be damaged. 		TYPE	A(MM)
		GMLB-160808	1.0	1.0
		GMLB-201209	1.4	
		GMLB-321611	2.0	2.0
		GMLB-453215	2.7	2.5
Bending Test	Appearance: No damage 	Substrate: PCB(100mm×40mm×1.6mm) Solder: Reflow Speed of Applying Force: 0.5mm / s Deflection: 2mm Hold Duration: 30 s		
Vibration	Impedance shall be within ± 20% of the initial value. There shall be no mechanical damage.	The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each.		
Drop shock	No apparent damage	Dropped onto printed circuit board from 100cm height three times in x, y, z directions. The terminals shall be protected.		



● Climatic test		
ITEM	SPECIFICATION	TEST CONDITION
Thermal Shock (Temperature Cycle)	Impedance shall be within $\pm 20\%$ of the initial value.	Temperature: $-55^{\circ}\text{C}\sim 125^{\circ}\text{C}$ for 30 minutes each, 100 cycles.
Humidity Resistance		Temperature : $60^{\circ}\text{C}$ Humidity: 95% RH Time: $1000 \pm 12$ Hours
High Temperature Resistance		Temperature : $85^{\circ}\text{C}\pm 2^{\circ}\text{C}$ Time: $1000 \pm 12$ Hours
Low Temperature Resistance		Temperature : $-40^{\circ}\text{C}\pm 2^{\circ}\text{C}$ Time: $1000 \pm 12$ Hours
1. Operating Temperature Range: $-55^{\circ}\text{C}$ TO $+125^{\circ}\text{C}$ 2. Storage Condition: The temperature should be within $-40^{\circ}\text{C}\sim 85^{\circ}\text{C}$ and humidity should be less than 75% RH. The product should be used within 6 months from the time of delivery.		



## RECOMMENDED REFLOW SOLDERING PROFILE



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.

## NOTES

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