### APPLICATION

GMLB chip beads can be used in a variety of electronic applications including:

- Computers and Computer Peripherals
- Cellular Communication Equipment
- Digital Cameras
- Digital Televisions
- Audio Equipment

### **FEATURES**

The GMLB Series is Mag.Layers' line of high quality ferrite chip beads. Using the latest in multilayer technology, we have developed chip beads that are able to resolve all EMI/EMC issues. High quality, reliability, and versatility make the GMLB series chip beads suitable for all your design needs.

- High Reliability
  - The monolithic inorganic materials used to construct GMLB chips restrain magnetic flux leakage thereby minimizing EMI concerns. GMLB chips are also extremely effective with unstable grounding.
- Small Chip-Shaped Design
   The chip-shaped design makes GMLB chip beads ideal for automatic mounting.
- High Soldering Heat Resistance
   High quality termination allows both flow and re-flow soldering methods to be applied.
- Sharp High Frequency Characteristics
   The GMLB high frequency chip series has sharp impedance characteristics, which make it suitable for high-speed signal lines.

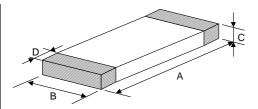
## PRODUCT IDENTIFICATION

© Code for Special Specification

GMLB -	201209 -	0030	<u>A</u> -	<u>N 8</u>	
①	2	3	4	(5)	6
① Product Co	ode				
② Dimension	Code				
③ Impedance (at 100 MHz)					
Series Type	е				
© Design Code					



## PRODUCT DIMENSION

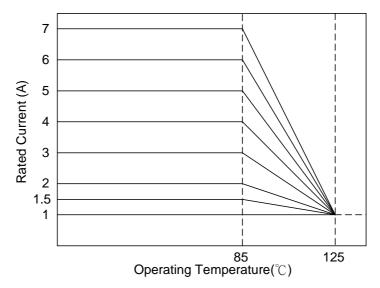


NOTE: Dimensions in mm

PRODUCT NO.	А	В	С	D
GMLB-201209	2.0±0.20	1.2±0.20	0.9±0.20	0.5±0.30
(0805)	(0.079±0.008)	(0.047±0.008)	(0.035±0.008)	(0.020±0.012)

## CURRENT DERATING

In operating temperatures exceeding +85 $^{\circ}$ 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 (Ω) at 100 MHz	R <sub>DC</sub> (Ω) Max.	I <sub>DC</sub> (mA) Max.	Operating Temp. Range (°ℂ)
GMLB-201209-0010P-N8	10±25%	0.01	6000	
GMLB-201209-0020P-N8	20±25%	0.03	4000	
GMLB-201209-0030P-N8	30±25%	0.015	3000	
GMLB-201209-0060P-N8	60±25%	0.025	3000	
GMLB-201209-0080P-N8	80±25%		5000	
GMLB-201209-0120P-N8	120±25%	0.04		-55 ~ +125
GMLB-201209-0150P-N8	150±25%	0.04	3000	
GMLB-201209-0220P-N8	220±25%			
GMLB-201209-0300P-N8	300±25%	0.07		
GMLB-201209-0470P-N8	470±25%	0.1	2000	
GMLB-201209-0600P-N8	600±25%	0.1		

Temperature rise should be less than 40<sup>°</sup>C for P-type and less than 25<sup>°</sup>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 >

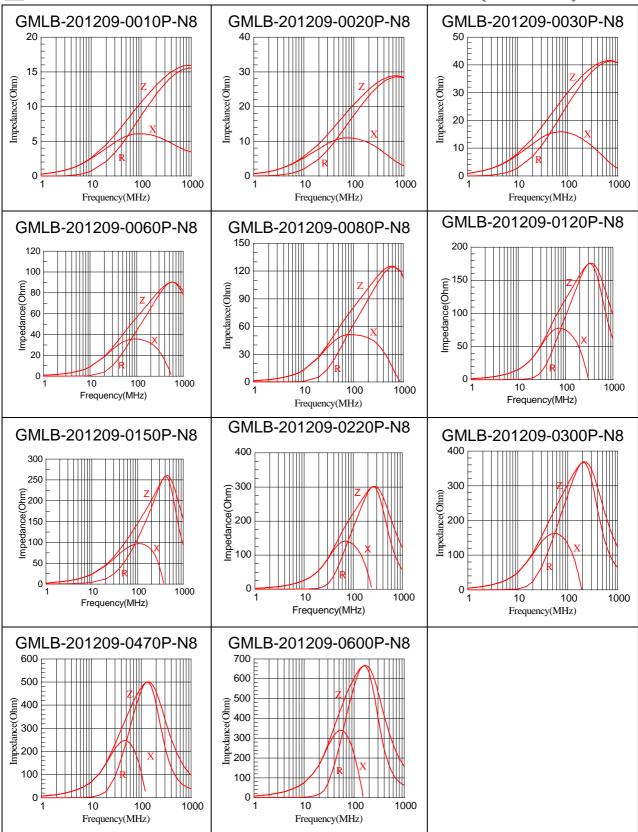
Temperature: 15℃ to 35℃ Humidity: 25% to 85% RH

< In case of doubt >

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



# $\blacksquare$ TYPICAL ELECTRICAL CHARACTERISTICS ( T=25 $^{\circ}$ C)





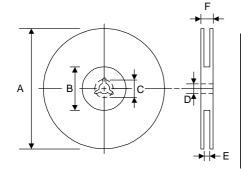
## PACKAGING

#### Peel-off Force

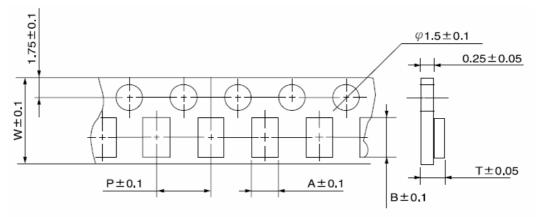


The force for peeling off cover tape is 10 grams in the arrow direction.

### Dimension (Unit: mm)



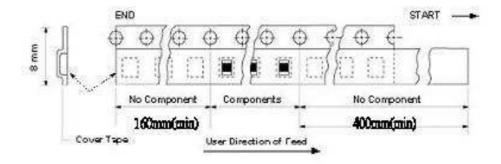
TYPE	Α	В	С	D	E	F
8 mm	178±1	60 +0.5 -0	-	13 ±0.2	9 ±0.5	12 ±0.5
12 mm	178±0.3	60 ±0.2	19.3 ±0.1	13.5 ±0.1	13.6 ±0.1	-



TYPE	SIZE	А	В	W	Р		Т	CHIPS/REEL
GMLB	201209	1.5	2.3	8	4	1.3,	*0.95±0.10	4000

<sup>\*:</sup> For paper reels

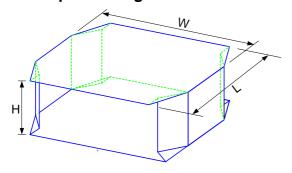




## Taping Quantity

SERIES	2012
PCS/Reel	4000

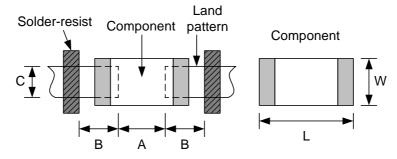
## Tape Packing Case



No. of Reels	w	L	Н
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

Туре		2012
Size	L	2.0
	W	1.2
A		0.8~1.2
В		0.8~1.2
С		0.9~1.6



# RELIABILTY TEST

-Machanical Parfa				
●Mechanical Perfo	SPECIFICATION	TEQT	CONDITIC	nNI
Solderability	More than 90% of the terminal electrode shall be covered with fresh solder.		Ag-0.5Cu e: 245 ± 5°C	
Soldering Heat Resistance	The chip shall not crack.  More than 75% of the terminal electrode shall be covered with solder.	Solder: 96.5Sn-3.0 Solder temperature Flux: Rosin Dip time: 10 ± 1 se	e: 260 ± 5°C	
	The terminal electrode shall not be broken off nor the ferrite damaged.	TYPE	W(KGF)	TIME (SEC)
	nior the remite damaged.	GMLB-160808	0.0	
Terminal Strength	w	GMLB-201209	0.6	30 ± 5
	<b>→</b>	GMLB-321611	1.0	30 ± 5
	N N	GMLB-453215	1.5	
	The terminal electrode shall not be broken off nor the ferrite damaged.	TYPE	W(KGF)	TIME (SEC)
	Tiol die lettie damaged:	GMLB-160808	1.0	10±5
Terminal Strength	W	GMLB-201209	1.0	
		GMLB-321611	2.0	
		GMLB-453215	2.0	
	No mechanical damage. The ferrite shall not be damaged.	TYPE	A(MM)	P(KGF)
	DO 5 -1-10	GMLB-160808	1.0	1.0
Bending Strength	P Chip	GMLB-201209	1.4	1.0
		GMLB-321611	2.0	2.0
	→ A →	GMLB-453215	2.7	2.5
Bending Test	Appearance: No damage Pressure jig  Deflection  45  Product (in mm)	Substrate: PCB(1 Solder: Reflow Speed of Applying Deflection: 2mm Hold Duration: 30	g Force: 0.5	,
Vibration	Impedance shall be within $\pm$ 20% of the initial value. There shall be no mechanical damage.	The sample shall be circuit board and wamplitude of 1.52m 10 to 55Hz/1 mill applied to the 3 direct.	when a vibra nm and a fre inute repea	ation having an equency of from ted should be
Drop shock	No apparent damage	Dropped onto pi 100cm height three The terminals shall	e times in x,	y, z directions.



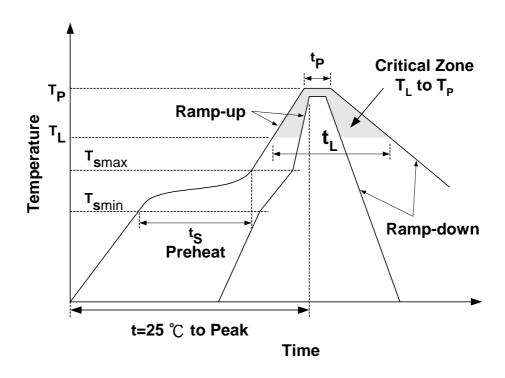
Climatic test		
ITEM	SPECIFICATION	TEST CONDITION
Thermal Shock	Impedance shall be within $\pm$ 20% of the initial	Temperature: -55°C~125°C for 30 minutes
(Temperature Cycle)	value.	each, 100 cycles.
		Temperature : $60^{\circ}$ C
Humidity Resistance		Humidity: 95% RH
		Time: 1000 ± 12 Hours
High Temperature		Temperature : 85°C±2°C
Resistance		Time: 1000 ± 12 Hours
Low Temperature		Temperature : -40°C±2°C
Resistance		Time: 1000 ± 12 Hours

<sup>1.</sup> Operating Temperature Range: -55 °C TO +125°C



<sup>2.</sup> Storage Condition: The temperature should be within -40 $^{\circ}$ C ~85 $^{\circ}$ 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
	t <sub>s</sub>	60~120 seconds	60~180 seconds
Preheat	T <sub>smin</sub>	100℃	150℃
	$T_{smax}$	150℃	200℃
Average ramp-up rate (T <sub>smax</sub> to T <sub>P</sub> )		3°C/second max.	3°C/second max.
Time main above	Temperature (T <sub>L</sub> )	183℃	<b>217</b> ℃
	Time (t <sub>L</sub> )	60~150 seconds	60~150 seconds
Peak temperature	(T <sub>P</sub> )	<b>230</b> ℃	<b>250~260</b> °ℂ
Time within 5°C of actual peak temperature (t <sub>P</sub> )		10 seconds	10 seconds
Ramp-down rate		6°C/sec max.	6°C/sec max.
Time 25°C to peal	k 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.

