APPLICATION

GMPI series is suitable for power line choke because of its excellent direct current characteristics

- PC/ Notebook
- PDA
- Digital camera
- DVD

FEATURES

- The GMPI series is magnetically shielded chip based on multilayer process.
- New magnetic material is developed to get excellent direct current characteristics. This series has larger rated current than conventional GMLI series.
- Low DC resistance is realized.
- The cross talk characteristics are excellent because of the magnetically shielded structure.

PRODUCT IDENTIFICATION

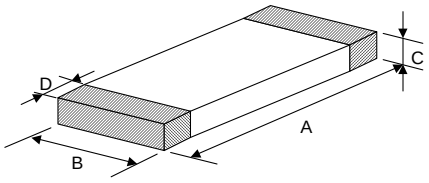
GMPI	-	252010	-	1R5	N	T
①		②		③	④	⑤

① Product Code ② Dimension Code

③ Inductance ④ Tolerance Code : N = ±30%,M = ±20%

⑤ Code for Special Specification

PRODUCT DIMENSION



NOTE：Dimensions in mm

PRODUCT NO.	A	B	C	D
GMPI-252010	2.5±0.20	2.0±0.20	1.0(MAX.)	0.5±0.30
GMPI-252012	2.5±0.20	2.0±0.20	1.2(MAX)	0.5±0.30
GMPI-201610	2.0±0.20	1.6±0.20	1.0(MAX.)	0.5±0.30
GMPI-201209	2.0±0.20	1.2±0.20	1.0(MAX.)	0.5±0.30

ELECTRICAL REQUIREMENTS

Part Number	Inductance (μH)	Test Freq. (MHz)	R_{DC} (Ω) ±30%	Rated Current (mA) Max.	
				IDC*1	IDC*2
GMPI-252012-1R0MF1	1.0±20%	5	0.06	1000	1600
GMPI-252012-1R5MF1	1.5±20%	5	0.1	800	1200
GMPI-252012-2R2MF1	2.2±20%	5	0.11	700	1100
GMPI-252012-3R3MF1	3.3±20%	5	0.12	500	1000
GMPI-252012-4R7MF1	4.7±20%	5	0.11	300	1000
GMPI-252012-6R8MF1	6.8±20%	5	0.22	300	800
GMPI-252012-100M	10±20%	5	0.19	150	500

- **IDC*1** Inductance change should be less than ±30% when rated current is applied.
- **IDC*2** Temperature rise should be less than 40℃

MEASURING METHOD / CONDITION

- Test Instrument:

  L/SRF: Agilent 4291B Impedance Analyzer, Test Fixture: Agilent 16192
  Osc. Level: 100mV

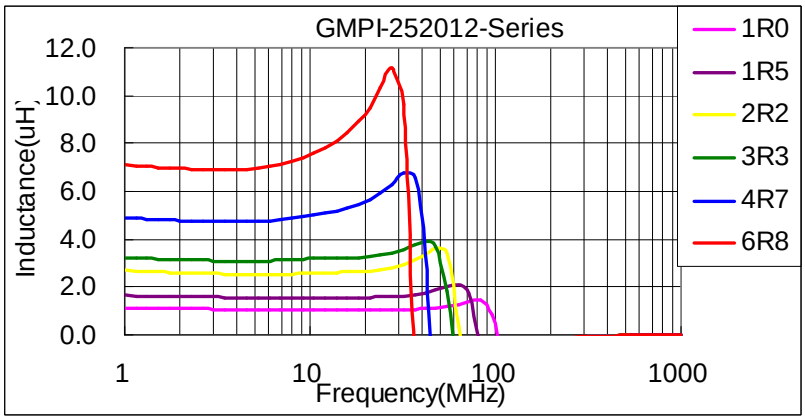
  R_{DC}: Agilent 34401A

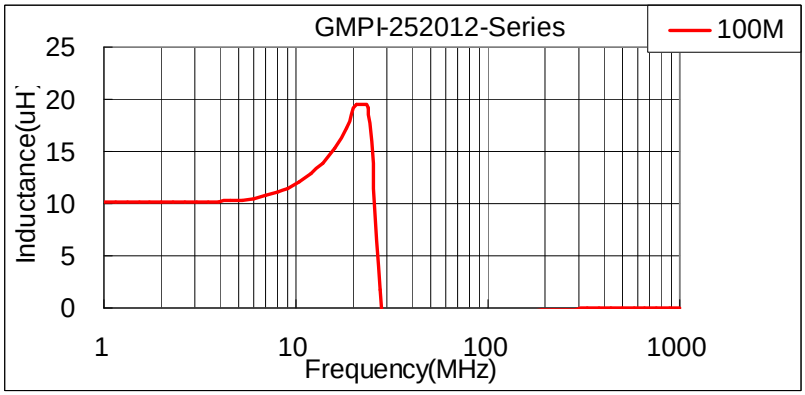
- Test Condition:

  < Unless otherwise specified >
  Temperature: 15℃ to 35℃ Humidity: 25% to 85% RH

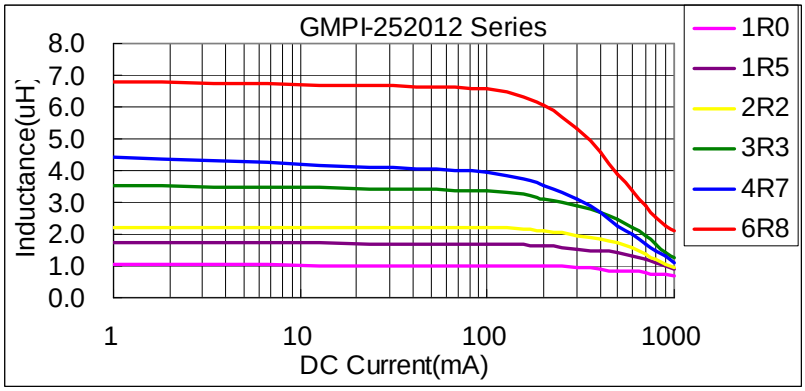
  < In case of doubt >
  Temperature: 25℃ ± 2℃ Humidity: 60% to 70% RH

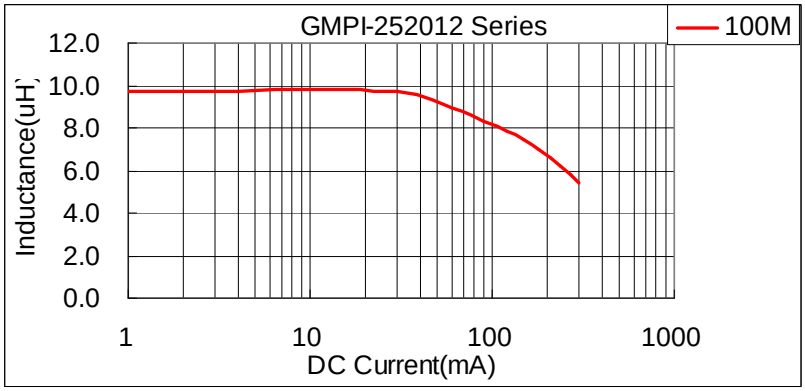
TYPICAL ELECTRICAL CHARACTERISTICS (T=25℃)





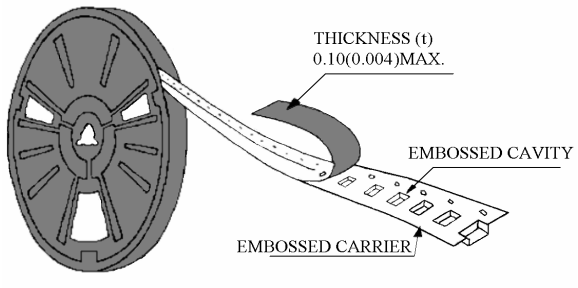
TYPICAL DC BIAS CHARACTERISTICS

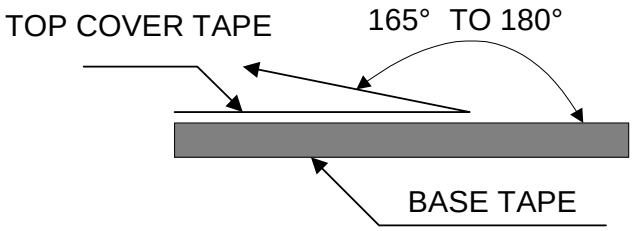




PACKAGING

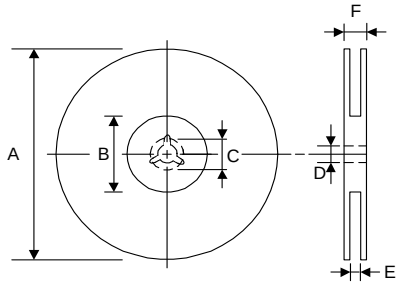
- **Peel-off Force**



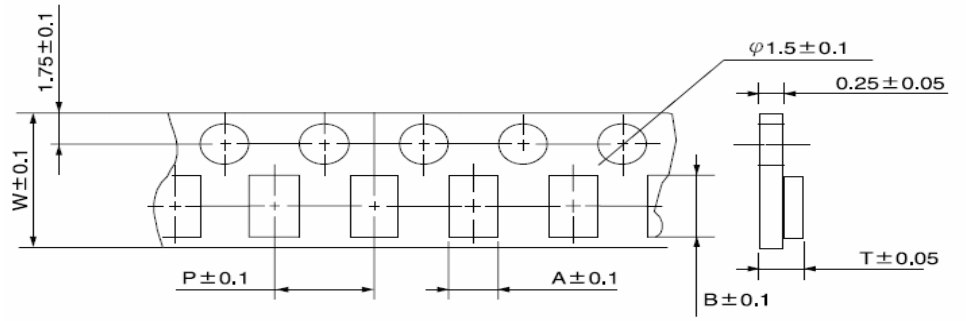


The force for peeling off cover tape is 10 grams in the arrow direction.

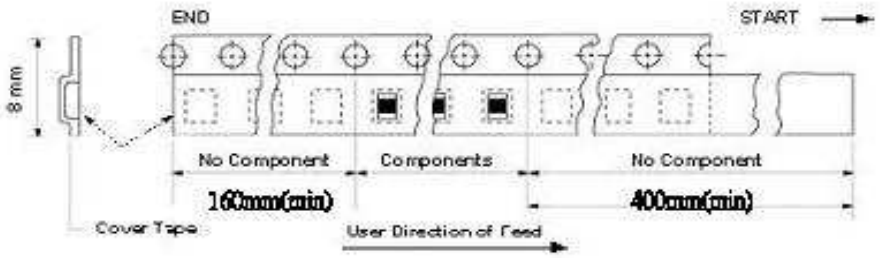
- **Dimension** (Unit: mm)



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	-



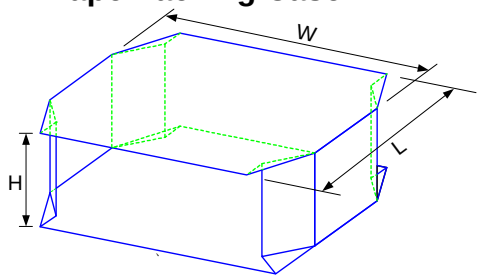
TYPE	SIZE	A	B	W	P	T	CHIPS/REEL
GMPI	252012	2.27	2.74	8	4	1.40	3000
GMPI	252010	2.20	2.90	8	4	1.20	3000
GMPI	201610	1.90	2.30	8	4	1.20	3000
GMPI	201209	1.42	2.25	8	4	1.00,	4000



- **Taping Quantity**

SERIES	PCS/Reel
252012	3000
252010	3000
201209	4000
201610	3000

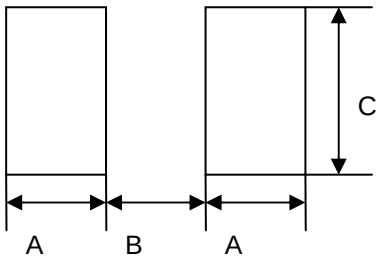
- **Tape Packing Case**



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 LAND PATTERNS

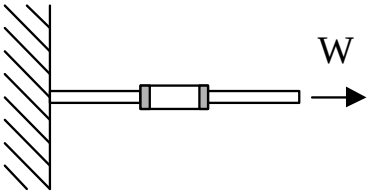
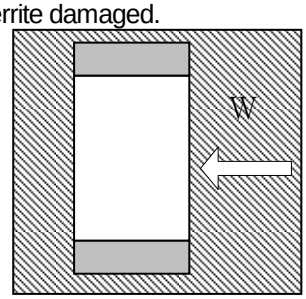
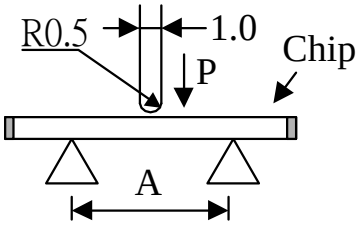
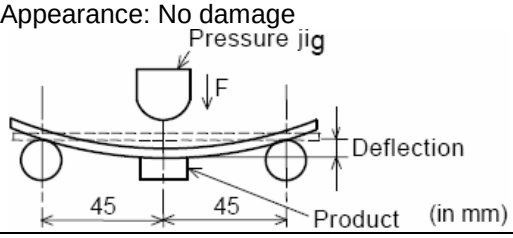


Unit: mm

Type	2520	2016	2012
A	0.8	0.7	0.7
B	1.2	0.8	0.8
C	2.2	1.8	1.45

RELIABILTY TEST

•MECHANICAL PERFORMANCE TEST

<table>
<tr><th>ITEM</th><th>SPECIFICATION</th><th colspan="3">TEST CONDITION</th></tr>
<tr><td>Solderability</td><td>More than 90% of the terminal electrode shall be covered with fresh solder.</td><td colspan="3">Solder:
Sn-3.0Ag-0.5Cu
Solder Temperature:
245 ± 5℃
Flux: Rosin
Dip Time: 3 ± 1 Seconds</td></tr>
<tr><td>Soldering Heat Resistance</td><td>The chip shall not crack.
More than 75% of the terminal electrode shall be covered with solder.</td><td colspan="3">Solder temperature : 260 ± 5℃
Flux: Rosin
Dip time: 10 ± 1 seconds</td></tr>
<tr><td>Terminal Strength</td><td>The terminal electrode shall not be broken off nor the ferrite damaged.
  </td><td colspan="3"><table><tr><th>TYPE</th><th>W(KGF)</th><th>Time (Sec)</th></tr><tr><td>GMPI-160808</td><td>0.6</td><td rowspan="10">30±5</td></tr><tr><td>GMPI-201205</td><td>0.8</td></tr><tr><td>GMPI-201209</td><td>0.6</td></tr><tr><td>GMPI-201610</td><td>1.0</td></tr><tr><td>GMPI-252005</td><td>1.5</td></tr><tr><td>GMPI-252010</td><td rowspan="6">1.0</td></tr><tr><td>GMPI-252012</td></tr><tr><td>GMPI-321608</td></tr><tr><td>GMPI-322510</td></tr><tr><td>GMPI-322512</td></tr></table></td></tr>
<tr><td>Terminal Strength</td><td>The terminal electrode shall not be broken off nor the ferrite damaged.
  </td><td colspan="3"><table><tr><th>TYPE</th><th>W(KGF)</th><th>Time (Sec)</th></tr><tr><td>GMPI-160808</td><td rowspan="4">1.0</td><td rowspan="12">10±5</td></tr><tr><td>GMPI-201205</td></tr><tr><td>GMPI-201209</td></tr><tr><td>GMPI-201610</td></tr><tr><td>GMPI-252005</td><td rowspan="6">2.0</td></tr><tr><td>GMPI-252010</td></tr><tr><td>GMPI-252012</td></tr><tr><td>GMPI-321608</td></tr><tr><td>GMPI-322510</td></tr><tr><td>GMPI-322512</td></tr></table></td></tr>
<tr><td>Bending Strength</td><td>No mechanical damage.
The ferrite shall not be damaged.
  </td><td colspan="3"><table><tr><th>TYPE</th><th>A(MM)</th><th>P(KGF)</th></tr><tr><td>GMPI-160808</td><td>1.0</td><td>0.6</td></tr><tr><td>GMPI-201205</td><td rowspan="2">1.4</td><td rowspan="2">1.0</td></tr><tr><td>GMPI-201209</td></tr><tr><td>GMPI-201610</td><td rowspan="8">2.0</td><td>2.0</td></tr><tr><td>GMPI-252005</td><td>1.0</td></tr><tr><td>GMPI-252010</td><td rowspan="6">2.0</td></tr><tr><td>GMPI-252012</td></tr><tr><td>GMPI-321608</td></tr><tr><td>GMPI-322510</td></tr><tr><td>GMPI-322512</td></tr></table></td></tr>
<tr><td>Bending Test</td><td>Appearance: No damage
  </td><td colspan="3">Substrate:PCB(100mm×40mm×1.6mm)
Solder: Reflow
Speed of Applying Force: 0.5mm / s
Deflection: 2mm
Hold Duration: 30 s</td></tr>
</table>

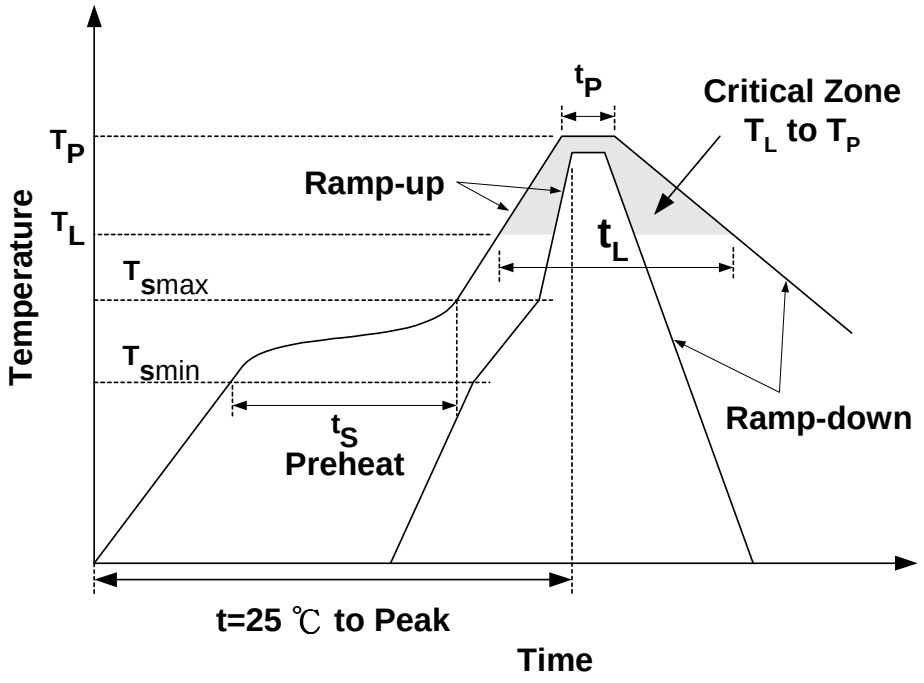
Vibration	△L/Lo≦±5% There shall be no mechanical damage.	The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each.
Drop shock	No apparent 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)	No mechanical damage. Inductance shall be within ± 5% of the initial value, and Q (shall be) within ± 30% of the initial value.	Temperature: -40℃,85℃ for 30 minutes each, 100 cycles.
Humidity Resistance		Temperature : 40℃ Humidity: 95% RH Time: 1000 ± 12 HOURS
High Temperature Resistance		Temperature: 85℃±2℃ Time: 1000 ± 12 hours
Low Temperature Resistance		Temperature : -40℃±2℃ Time: 1000 ± 12 hours

1. Operating Temperature Range: -55 ℃ TO +125℃
2. Storage Condition: The temperature should be within -40℃~85℃ 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℃	150℃
	T_{smax}	150℃	200℃
Average ramp-up rate (T_{smax} to T_P)		3℃/second max.	3℃/second max.
Time main above	Temperature (T_L)	183℃	217℃
	Time (t_L)	60~150 seconds	60~150 seconds
Peak temperature (T_P)		230℃	250~260℃
Time within 5℃ of actual peak temperature (t_P)		10 seconds	10 seconds
Ramp-down rate		6℃/sec max.	6℃/sec max.
Time 25℃ 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.