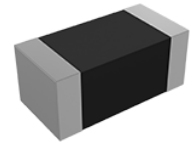


BLM31PG Series

Ultra-High Current Multilayer Chip Ferrite Beads

FEATURES

- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- Low DC resistance structure of electrode to prevent wasteful electric power consumption.
- Operate temperature range $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$ (Including self temp. rise)
- RoHS compliant



APPLICATIONS

- To remove noise from mobile devices and various components such as smartphones and tablet terminals, as well as from home appliances such as PCs, recorders, STBs, smart grids and industrial machinery.

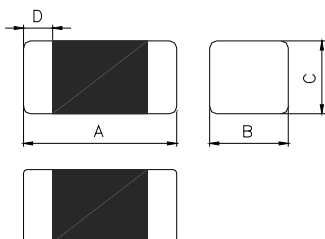
Explanation of Part Number

BLM 31 PG -121 T 65

1 2 3 4 5 6

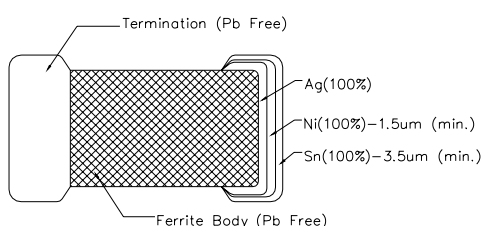
- ◆ 1:Product Series:Ultra-High Current Multilayer Chip Ferrite Beads
- ◆ 2:Dimensions:
- ◆ 3: Characteristics:
- ◆ 4:Nominal Impedance:121=120Ω
- ◆ 5:Packing:Tape Carrier Package
- ◆ 6:Rate Current: 65=6500mA

SHAPE AND DIMENSIONS(Units:mm)



Chip Size	
A	3.20±0.20
B	1.60±0.20
C	1.10±0.20
D	0.50±0.30

Product Structure

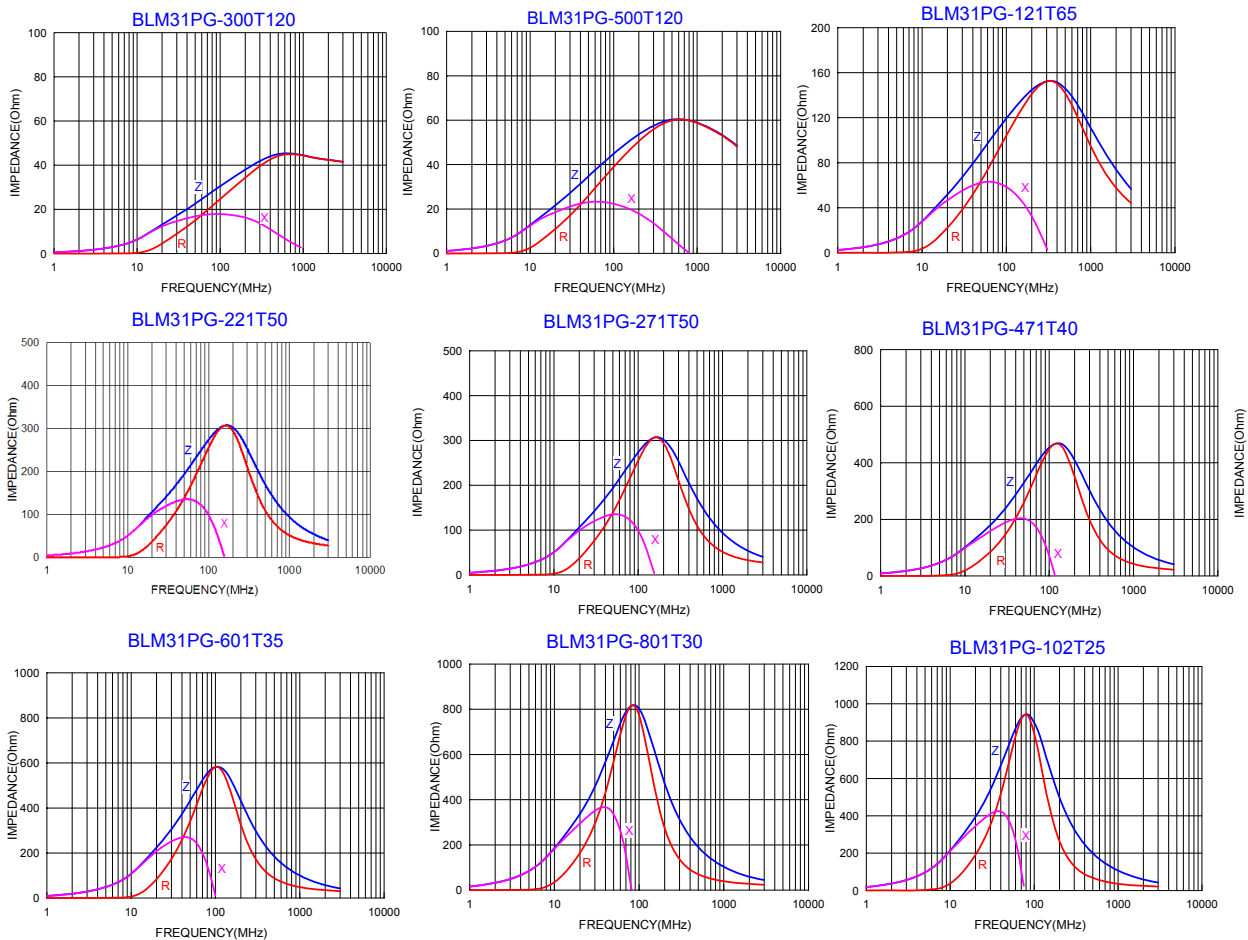


Electrical Properties:

Part Number	Impedance (Ω)	Test Frequency (Hz)	DC Resistance (Ω) max.	Rated Current (mA) max.
BLM31PG-300T120	30 $\pm$ 25%	60mV/100M	0.0025	12000
BLM31PG-500T120	50 $\pm$ 25%	60mV/100M	0.0025	12000
BLM31PG-121T65	120 $\pm$ 25%	60mV/100M	0.0090	6500
BLM31PG-221T50	220 $\pm$ 25%	60mV/100M	0.0160	5000
BLM31PG-271T50	270 $\pm$ 25%	60mV/100M	0.0160	5000
BLM31PG-301T40	300 $\pm$ 25%	60mV/100M	0.0200	4000
BLM31PG-471T40	470 $\pm$ 25%	60mV/100M	0.0200	4000
BLM31PG-601T35	600 $\pm$ 25%	60mV/100M	0.0380	3500
BLM31PG-801T30	800 $\pm$ 25%	60mV/100M	0.0500	3000
BLM31PG-102T25	1000 $\pm$ 25%	60mV/100M	0.0750	2500

- Rated current: based on temperature rise test
- In compliance with EIA 595

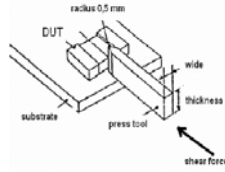
Impedance Frequency Characteristics(Typical)



Reliability and Test Condition

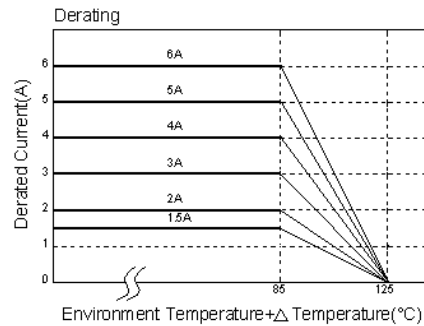
Item	Performance	Test Condition				
Series No.	BLM21PG	--				
Operating Temperature	-55~+125℃ (Including self-temperature rise)	--				
Transportation Storage Temperature	-55~+125℃ (on board)	For long storage conditions, please see the Application Notice				
Impedance (Z)	Refer to standard electrical characteristics list	Agilent4291 Agilent E4991 Agilent4287 Agilent16192				
DC Resistance		Agilent 4338				
Rated Current		DC Power Supply Over Rated Current requirements, there will be some risk				
Temperature Rise Test	Rated Current < 1A ΔT 20℃Max Rated Current ≧ 1A ΔT 40℃Max	1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.				
Life test	Appearance: no damage. Impedance: within±15%of initial value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature: 125±2℃ Applied current: rated current. Duration: 1000±12hrs. Measured at room temperature after placing for 24±2 hrs.				
Load Humidity		Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Humidity: 85±2%R.H. Temperature: 85±2℃. Duration:1000hrsMin. Bead:with100%ratedcurrent Inductance: with 10% rated current Measured at room temperature after placing for 24±2 hrs.				
Thermal shock	Appearance: no damage. Impedance: within±15%of initial value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Condition for 1 cycle Step1: -55±2℃ 30±5 min. Step2: 125±2℃ ≒ 0.5min Step3: 125±2℃ 30±5min. Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs.				
Vibration	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Oscillation Frequency:10Hz~2KHz~10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:10g Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) °				
Bending	Appearance : No damage. Impedance : within±10% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Shall be mounted on a FR4 substrate of the following dimensions: ≥0805inch(2012mm):40x100x1.2mm <0805inch(2012mm):40x100x0.8mm Bending depth: ≥0805inch(2012mm):1.2mm <0805inch(2012mm):0.8mm Duration of 10 sec for a min.				
Shock	Appearance : No damage. Impedance : within±10% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Test condition:				
		Type	Peak Value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vj)/ft/sec
		SMD	50	11	Half-sine	11.3
		Lead	50	11	Half-sine	11.3

Item	Performance	Test Condition						
Solderability	More than 95% of the terminal electrode should be covered with solder.	a.Method B, 4 hrs @155°C dry heat @235°C±5°C Test time:5 +0/-0.5 seconds. b. Method D category 3. (steam aging 8hours ± 15 min)@ 260°C±5°C Test time: 30 +0/-0.5 seconds.						
Resistance to Soldering Heat	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Number of heat cycles: 1 <table border="1"> <thead> <tr> <th>Temperature (°C)</th><th>Time (s)</th><th>Temperature ramp/immersion and emersion rate</th></tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</td></tr> </tbody> </table> Depth: completely cover the termination	Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s
Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate						
260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s						
Terminal strength	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Component mounted on a PCB apply a force >0805inch(2012mm):1kg <=0805inch(2012mm):0.5kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.						



**Derating Curve

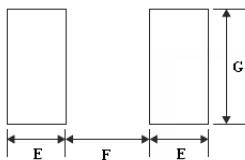
For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85°C, the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



Soldering and Mounting

1. Recommended PC Board Pattern

Chip Size						Land Patterns For Reflow Soldering		
Series	Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
BLM31PG	3216	3.2±0.20	1.60±0.20	1.10±0.20	0.50±0.30	1.05	2.20	1.80



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

2. Soldering

Mildly activated rosin fluxes are preferred. Metal-lions terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

2.1 Soldering Reflow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)

2.2 Soldering Iron:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. (Figure 2.)

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.

Fig.1 Soldering Reflow

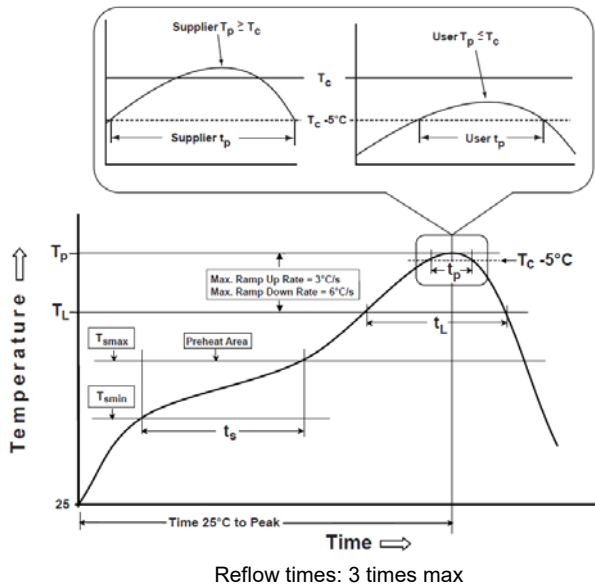


Fig.2 Iron soldering temperature profiles

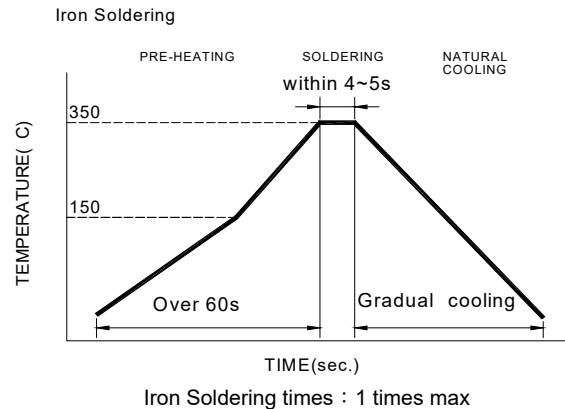


Table (1.1): Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(t_s)from(T_{smin} to T_{smax})	150°C 200°C 60-120seconds
Ramp-up rate(T_L to T_p)	3°C/second max.
Liquidus temperature(T_L) Time(t_L)maintained above T_L	217°C 60-150 seconds
Classification temperature(T_c)	See Table (1.2)
Time(t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	< 30 seconds
Ramp-down rate(T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

T_p : maximum peak package body temperature, T_c : the classification temperature.

For user (customer) T_p should be equal to or less than T_c .

Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly	<1.6mm	°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E .

2.3 Solder Volume:

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceed as shown in right side:

Minimum fillet height = soldering thickness + 25% product height

