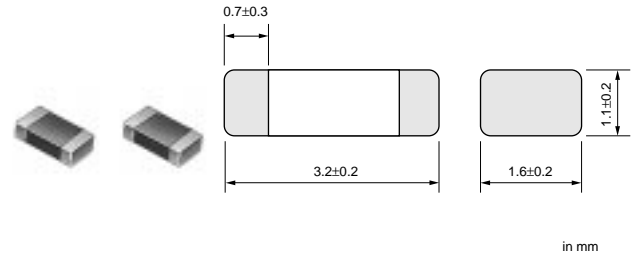


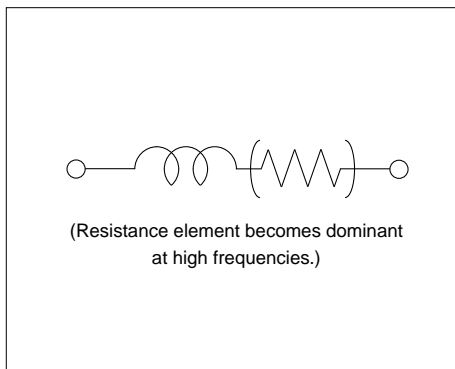
**BLM31 Series(3216 Size)**



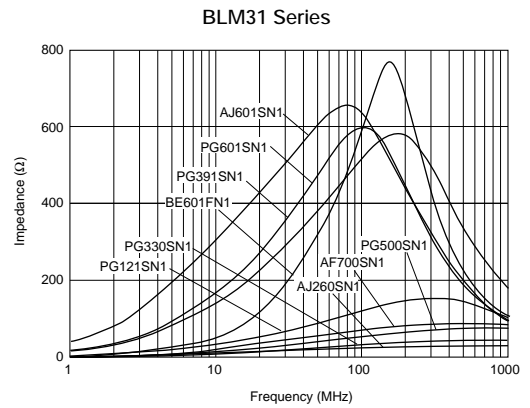
Part Number	Impedance (at 100MHz) (ohm)	Rated Current (mA)	DC Resistance(max.) (ohm)	Operating Temperature Range (°C)
<b>BLM31AF700SN1</b>	70 ±25%	200	0.15	-55 to 125
<b>BLM31AJ260SN1</b>	26 ±25%	500	0.05	-55 to 125
<b>BLM31AJ601SN1</b>	600 ±25%	200	0.90	-55 to 125
<b>BLM31BE601FN1</b>	600 ±25%	300	0.35	-55 to 125
<b>BLM31PG330SN1</b>	33 (Typ.)	6000	0.01	-55 to 125
<b>BLM31PG500SN1</b>	50 (Typ.)	3000	0.025	-55 to 125
<b>BLM31PG121SN1</b>	120 (Typ.)	3000	0.025	-55 to 125
<b>BLM31PG391SN1</b>	390 (Typ.)	2000	0.05	-55 to 125
<b>BLM31PG601SN1</b>	600 (Typ.)	1500	0.09	-55 to 125

BLM31P series require derating above 85°C ambient. Please contact us for details.

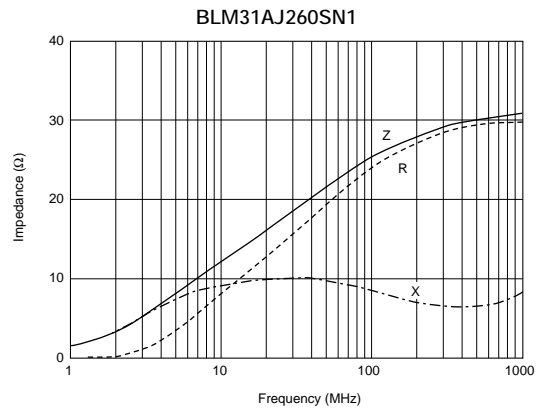
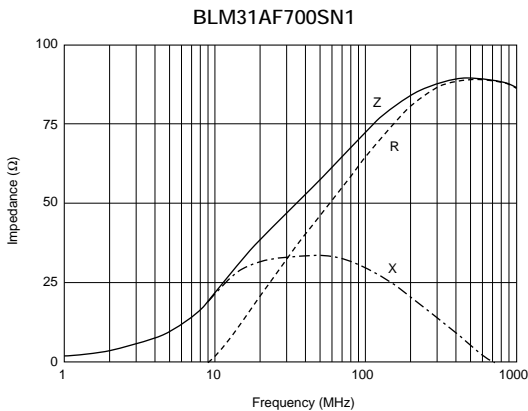
■ Equivalent Circuit



■ Impedance-Frequency (Typical)



■ Impedance-Frequency Characteristics



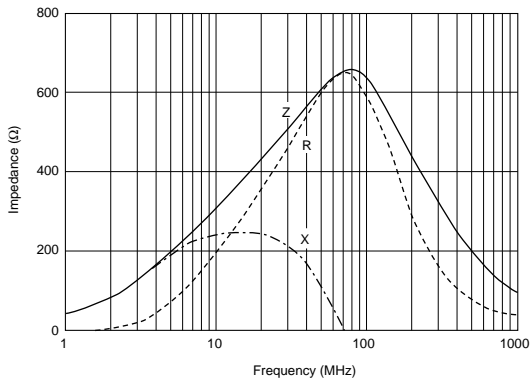
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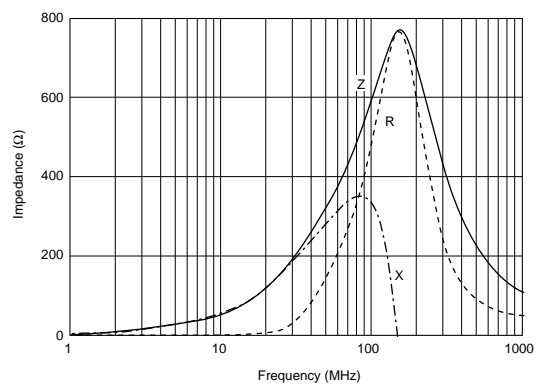
1

**Impedance-Frequency Characteristics**

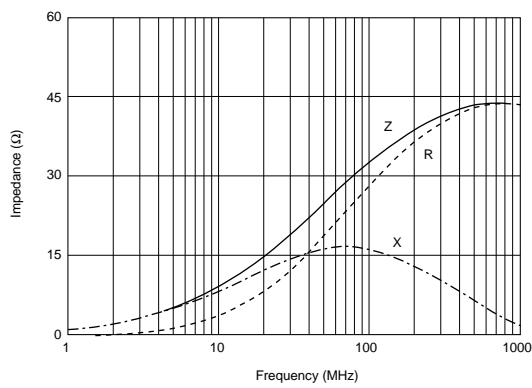
**BLM31AJ601SN1**



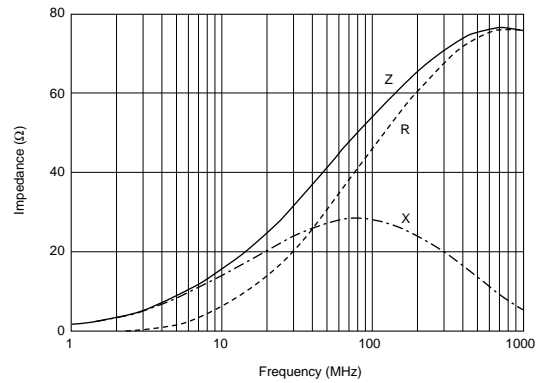
**BLM31BE601SN1**



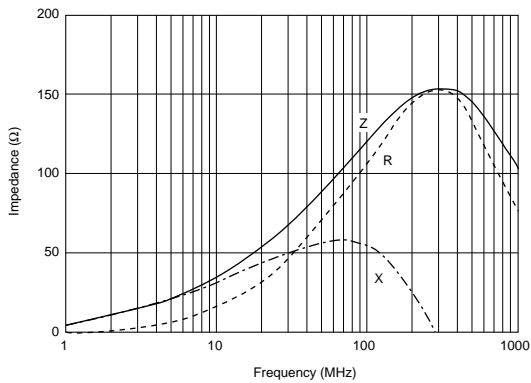
**BLM31PG330SN1**



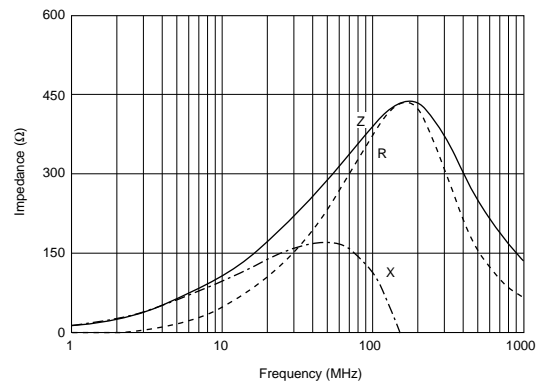
**BLM31PG500SN1**



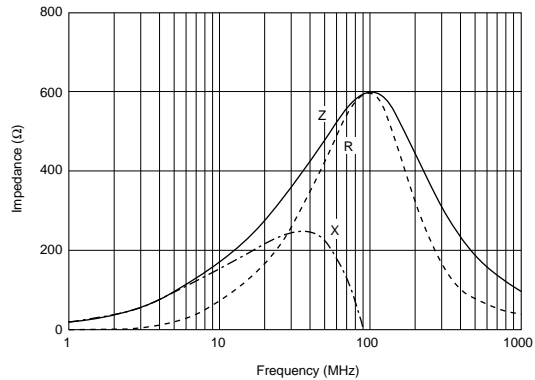
**BLM31PG121SN1**



**BLM31PG391SN1**

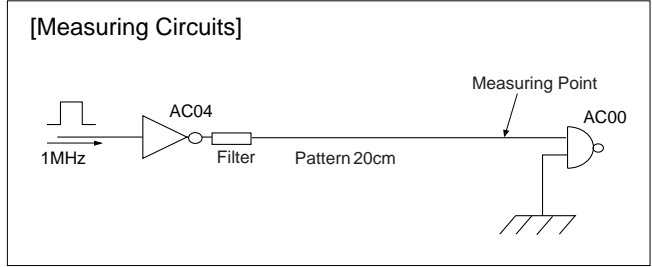


**BLM31PG601SN1**



# Noise Suppression Effect of BLM\_R Series

## Waveform Distortion Suppressing Performance of BLM□□R Series



Type of Filter	EMI Suppression Effect / Description		
<p>Initial (No filter)</p>	<p>Signal waveform (100nsec/div, 2V/div)</p>	<p>Expand (10nsec/div, 2V/div)</p>	<p>Spectrum</p>
<p>Resister (47Ω) is used</p>	<p>Signal waveform (100nsec/div, 2V/div)</p>	<p>Expand (10nsec/div, 2V/div)</p>	<p>Spectrum</p>
<p><b>BLM18RK221SN1</b> (220Ω at 100MHz) is used</p>	<p>Signal waveform (100nsec/div, 2V/div)</p>	<p>Expand (10nsec/div, 2V/div)</p>	<p>Spectrum</p>

Ringing is caused on the signal waveform  
Such ringing contains several hundred MHz harmonic components and generates noise.

Comparing initial waveform, ringing is suppressed a little.  
However there still remains high level waveform distortion.

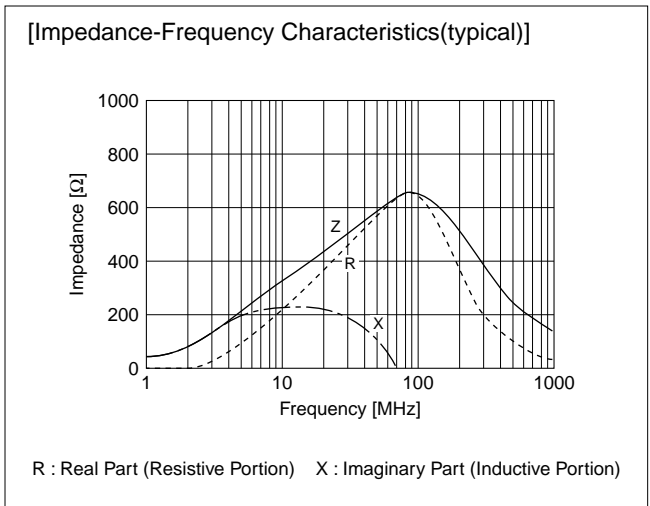
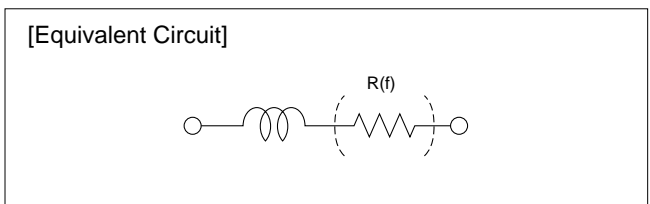
BLM18R has excellent performance for noise suppression and waveform distortion suppression.  
BLM18R suppresses drastically not only spectrum level in more than 100MHz range but waveform distortion.

## Outlines of EMI Suppression Filter (EMIFIL<sup>®</sup>) for DC Line

- Chip Ferrite Bead
- Ferrite Bead Inductor

<p>Chip Ferrite Bead .....P.24-65</p> <div style="text-align: center; margin-top: 20px;"> <p>BLM15    BLM18    BLM21</p> <p>BLM31    BLM41</p> <p>BLA31</p> </div>	<p>Ferrite Bead Inductor .....P.129-130</p> <div style="text-align: center; margin-top: 20px;"> <p>BL01    BL02RN1R3J2B    BL02RN2R3J2B</p> <p>BL02RN1    BL02RN2R1M2B    BL03RN2R1M1B</p> </div>
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- Inductor type EMI suppression filters are effective for frequencies ranging from a few MHz to a few GHz. Inductor type filters are widely used as a low noise countermeasure, as well as a universal noise suppression component.
- The inductor type EMIFIL<sup>®</sup> produce a micro inductance in the low frequency range. At high frequencies, however, the resistive component of the inductor produces the primary impedance. When inserted in series in the noise producing circuit, the resistive impedance of the inductor prevents noise propagation.



● **Part Numbering** (The structure of the "Global Part Numbers" that have been adopted since June 2001 and the meaning of each code are described herein.)  
 (If you have any questions about details, inquire at your usual Murata sales office or distributor.)

**Chip EMIFIL® Inductor Type**

(Global Part Number) 

BL	M	18	AG	102	S	N	1	D
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Product ID

Product ID	
<b>BL</b>	Chip Ferrite Beads

② Type

Code	Type
<b>A</b>	Array Type
<b>M</b>	Monolithic Type
<b>D</b>	Monoblock Type

③ Dimension (L×W)

Code	Dimension (L×W)	EIA
<b>15</b>	1.00×0.50mm	0402
<b>18</b>	1.60×0.80mm	0603
<b>21</b>	2.00×1.25mm	0805
<b>31</b>	3.20×1.60mm	1206
<b>32</b>	3.20×2.50mm	1210
<b>41</b>	4.50×1.60mm	1806

④ Characteristics

Code	Characteristics
<b>A</b> □ *1	for General Use
<b>B</b> □ *2	for High-speed Signal Lines
<b>P</b> □ *3	for Power Supplies
<b>RK</b>	for Digital Interface
<b>HG</b>	for GHz Band General Use
<b>HD</b>	for GHz Band High-speed Signal Line

\*1 For standard type, □ is expressed by "G".

\*2 □ is expressed by "A", "B" or "D".

\*3 □ is expressed by "G", "M", "B", "F".

⑤ Impedance

Expressed by three figures. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

⑥ Performance

Expressed by an alphabet.

Ex.)

Code	Performance
<b>S</b>	Sn Plating

⑦ Category

Code	Category
<b>N</b>	Standard Type
<b>H</b>	for Automotive Electronics

⑧ Numbers of Circuit

Code	Numbers of Circuit
<b>1</b>	1Circuit
<b>4</b>	4Circuit
<b>6</b>	6Circuit
<b>8</b>	8Circuit

⑨ Packaging

Code	Packaging
<b>K</b>	Plastic Taping (ø330mm Reel)
<b>L</b>	Plastic Taping (ø180mm Reel)
<b>B</b>	Bulk
<b>J</b>	Paper Taping (ø330mm Reel)
<b>D</b>	Paper Taping (ø180mm Reel)
<b>C</b>	Bulk Case

# BLM Series Notice (Soldering and Mounting)

## 1. Standard Land Pattern Dimensions

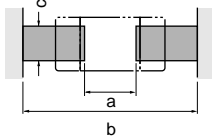
Do not apply narrower pattern than listed above to BLM\_P.

Narrow pattern can cause excessive heat or open circuit.

### BLM Series

(Except BLM21P/31P/41P)

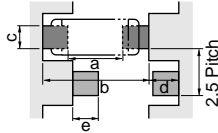
■ Land Pattern  
□ Solder Resist



Type	Size (mm)				
	L	W	a	b	c
*BLM15 (Reflow)	1.0	0.5	0.4	1.2-1.4	0.5
BLM18 (Flow)	1.6	0.8	0.7	2.2-2.6	0.7
BLM18 (Reflow)	1.6	0.8	0.7	1.8-2.0	0.7
BLM21	2.0	1.25	1.2	3.0-4.0	1.0
BLM31	3.2	1.6	2.0	4.2-5.2	1.2
BLM41	4.5	1.6	3.0	5.5-6.5	1.2

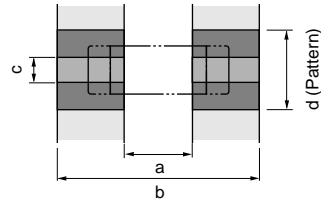
\*BLM15 is specially adapted for reflow soldering.

### Flow Mounting in High Density for BLM31/41



Type	Size (mm)				
	a	b	c	d	e
BLM31	2.0	4.2-5.2	1.2	1.3	1.35
BLM41	3.0	5.5-6.5	1.2	1.8	1.5

### BLM21P/31P/41P



Type	Rated Current (A)	Size (mm)			Land pad thickness and Dimension d		
		a	b	c	18μm	35μm	70μm
BLM21PG331SN1	1.5				1.0	1.0	1.00
BLM21PG221SN1	2				1.2	1.0	1.00
BLM21PG300SN1	3	1.2	3.0-4.0	1.0	2.4	1.2	1.00
BLM21PG600SN1							
BLM21PG220SN1	6				6.4	3.3	1.65
BLM31PG330SN1	6						
BLM31PG500SN1	3	2.0	4.5-5.2	1.2	2.4	1.2	1.20
BLM31PG121SN1							
BLM31PG391SN1	2						
BLM31PG601SN1	1.5						
BLM41PF800SN1	1				1.2	1.2	1.20
BLM41PG102SN1	1.5						
BLM41PG471SN1	2						
BLM41PG750SN1	3	3.0	5.5-6.5	1.2	2.4	1.2	1.20
BLM41PG181SN1							
BLM41PG600SN1	6				6.4	3.3	1.65

## 2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip EMI suppression filter, the printing must be conducted in accordance with the following cream solder printing conditions. If too much solder is applied, the chip will prone to be damaged by mechanical and thermal stress from the PCB and may crack. In contrast, if too little solder is applied, there is the potential that the termination strength will be insufficient, creating the potential for detachment. Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the EMI suppression filter, apply the adhesive in accordance with the following conditions. If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

Continued on the following page.

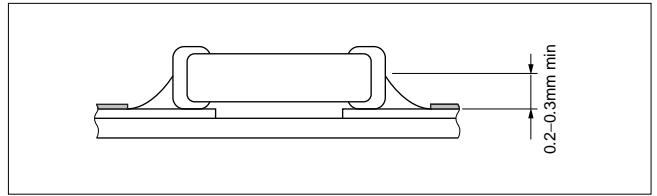
## BLM Series Notice (Soldering and Mounting)

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### (1) Solder Paste Printing

BLM Series

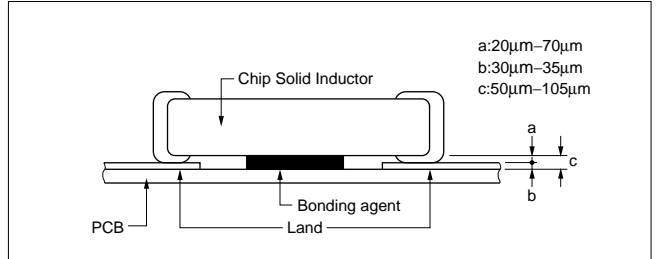
- Ensure that solder is applied smoothly to a minimum height of 0.2mm to 0.3mm at the end surface of the part.
- Coat the solder paste a thickness of 100μm to 200μm.



### (2) Adhesive Application

BLM Series

- Coating amount is illustrated in the following diagram.



## 3. Standard Soldering Conditions

### (1) SOLDERING METHODS

- Use flow and reflow soldering methods only.  
 Use standard soldering conditions when soldering chip EMI suppression filters.  
 In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.
- Ensure that solder is applied smoothly to a minimum height of 0.2mm to 0.3mm at the end surface of the part.
  - Coat the solder paste a thickness of 100μm to 200μm.

### (2) SOLDERING TEMPERATURE AND TIME

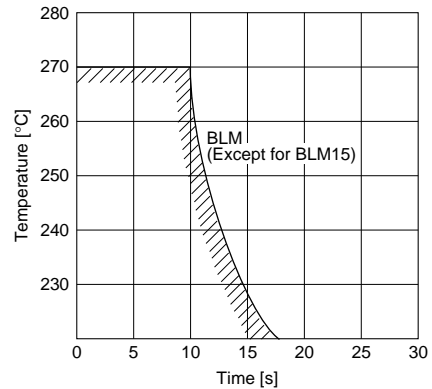
To prevent external electrode solder leaching and performance deterioration, solder within the temperature and time combinations illustrated by the slanted lines in the following graphs. If soldering is repeated, please note that the allowed time is the accumulated time.

Solder : H60A H63A solder(JIS Z 3238)

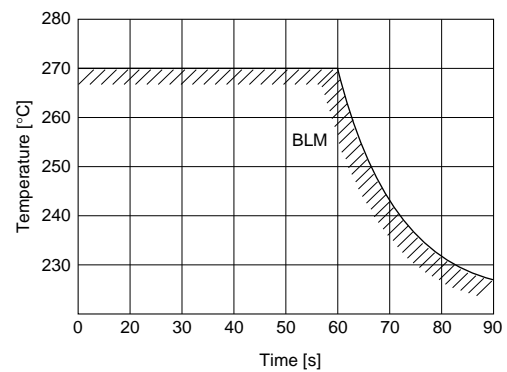
Flux :

- Use Rosin-based fulx(when using RA type solder, clean products sufficiently to avoid residual fulx.
- Do not use strong acidic fulx(with chlorine content exceeding 0.20wt%)
- Do not use water-soluble fulx.

Allowable Flow Soldering Temperature and Time




Allowable Reflow Soldering Temperature and Time



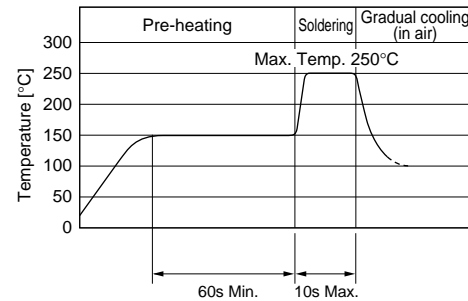
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## BLM Series Notice (Soldering and Mounting)

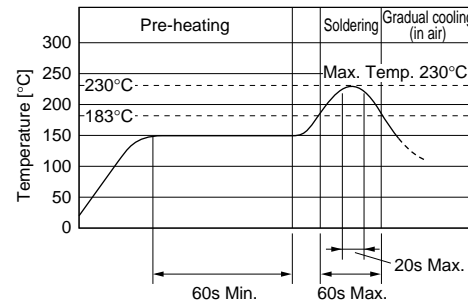
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### (3) SOLDERING CONDITIONS

#### Flow Solder



#### Reflow Solder



### (4) REWORKING WITH SOLDER IRON

The following conditions must be strictly followed when using a soldering iron.

Pre-heating	: 150°C 60 second Min.
Soldering iron power output	: 30W Max.
Temperature of soldering iron tip	: 280°C Max.
Soldering time	: 10 second Max.

Do not allow the tip of the soldering iron directly to contact the chip.

For additional methods of reworking with soldering iron, please contact Murata engineering.

### 4. Cleaning

Following conditions should be observed when cleaning chip EMI filter.

- (1) Cleaning Temperature : 60degree C max. (40degree C max. for CFC alternatives and alcohol cleaning agents)
- (2) Ultrasonic
  - Output : 20W/liter max.
  - Duration : 5 minutes max.
  - Frequency : 28kHz to 40kHz
- (3) Cleaning agent

The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

- a) CFC alternatives and alcohol cleaning agents
  - Isopropyl alcohol (IPA)
  - HCFC-225

- b) Aqueous cleaning agent

Surface active agent (Clean Thru 750H)

Hydrocarbon (Techno Cleaner 335)

High grade alcohol (Pine Alpha ST-100S)

Alkaline saponifier ( Aqua Cleaner 240 -cleaner should be diluted within 20% using deionized water.)

- (4) Ensure that flux residue is completely removed.

Component should be thoroughly dried after aqueous agent has been removed with deionized water.

- (5) Some products may become slightly whitened.

However, product performance or usage is not affected.

For additional cleaning methods, please contact Murata engineering.