



INPAQ

PRODUCT SPECIFICATION

DOCUMENT NO.00031XXXXXXX

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
MHC-S Series	陳曉慧 Sharon Chen	賴柏志 Kidd Lai	賴柏志 Kidd Lai	吳維政 Albert Wu

Chip Ferrite Bead for High Current (MHC-S Series) Engineering Spec.

RoHS



This product belongs to the 3C and industrial grade standard, not for automotive application. If customer privately uses to automotive parts and results in any consequences, INPAQ is not responsible for after-sales service, thank you!

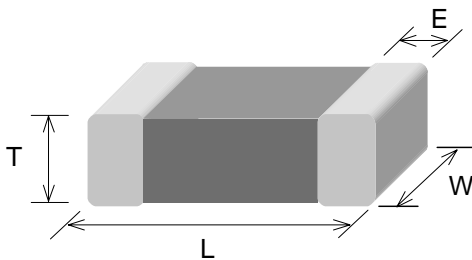
■ FEATURES

- Combination of high frequency noise suppression with capability of handing high current
- The current rating up to 6 Amps with low DCR

■ APPLICATIONS

- High current DC power lines
- Circuits where a stable ground in unavailable

■ SHAPES AND DIMENSIONS



TYPE	1608 (EIA 0603)
L	1.60±0.15
W	0.80±0.15
T	0.80±0.15
E	0.30±0.20
Unit	mm

■ PART NUMBER CODE

MHC 1608 S 22 1 N B P DG
 1 2 3 4 5 6 7 8 9

- 1 Series Name
- 2 Size Code: the first two digitals : length(mm), the last two digitals : width(mm)
- 3 Material Code
- 4 Impedance(Ω) \pm 25% } (ex : 121 = 120 Ω ; 600 = 60 Ω)
- 5 Fixed Decimal Point
- 6 Rated Current Code

L=1000mA	M=1500mA	N=2000mA	P=2500mA
Q=3000mA	R=4000mA	U=5000mA	W=6000mA

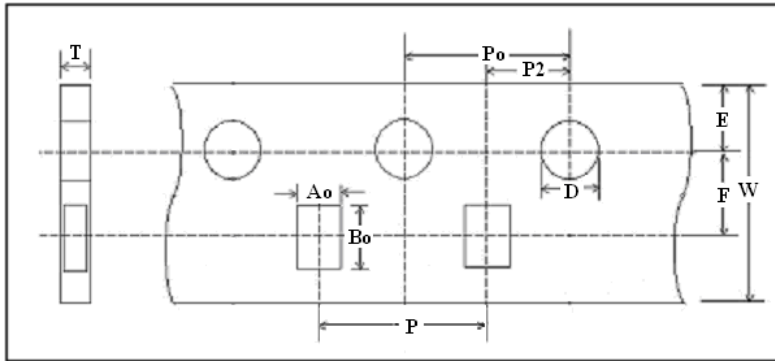
- 7 Soldering: Green Parts: A— Soldering Lead-Free B— Lead-Free for whole chip
- 8 Packaging: P - Paper tape, 7" reel.
- 9 INPAQ internal code

■ PRODUCT DETAIL

Part No.	Impedance (Ω) +/-25%	Test Freq. (MHz)	DCR(Ω) (Max.)	Rated Current (mA)
MHC1608S221NBPDG	220	100	0.09	2000
	•Test Level : 250 mV			
Test Instruments :	<ul style="list-style-type: none"> •HP4291B RF IMPEDANCE / MATERIAL ANALYZER or EQUIVALENT •HP4338A/B MILLIOHMMETER •Agilent E5071C ENA SERIES NETWORK ANALYZER •HP6632B SYSTEM DC POWER SUPPLY 			

■ TAPE AND REEL SPECIFICATIONS

PAPER CARRIER

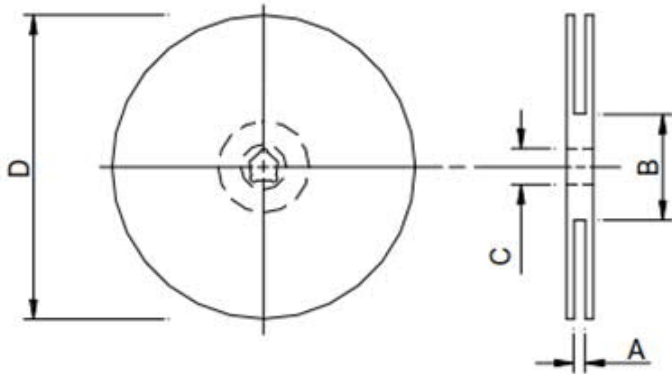


■ TAPING DIMENSIONS

Unit: mm

Size	1608
Symbol	PAPER
W	8.00±0.10
P	4.00±0.10
E	1.75±0.10
F	3.50±0.10
D	1.56±0.10
D1	NA
P ₀	4.00±0.10
P ₀₁₀	NA
P ₂	2.00±0.10
A ₀	1.05±0.05
B ₀	1.85±0.05
K ₀ (T)	0.95±0.05
t	NA

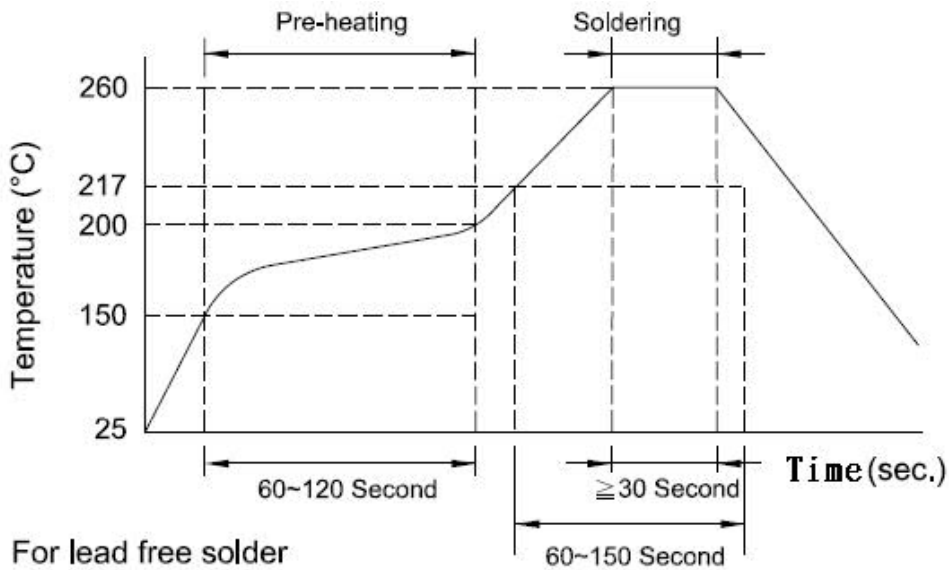
■ REEL DIMENSIONS



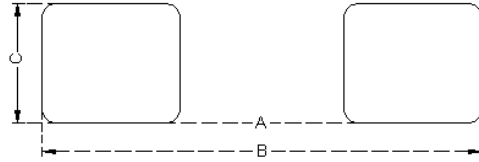
Type	7"
A(mm)	10±1.5
B(mm)	50 or more
C(mm)	13.2±1.0
D(mm)	178±2.0

7" Reel Packaging Quantity	
PART SIZE (EIA SIZE)	1608 (0603)
Qty.(pcs)	4,000
BOX	5 reels / inner box

■ RECOMMENDED SOLDERING CONDITIONS



■ LAND PATTERNS FOR REFLOW SOLDERING



■ SOLDER LAND INFORMATION

Unit: mm (inches)

Size	A	B	C
1608	0.7 (0.028)	1.8 ~ 2.0 (0.071 ~ 0.079)	0.7 (0.028)

■ RELIABILITY AND TEST CONDITION

Test item	Test condition	Criteria
Thermal Shock	a. Temperature : -40 ~ +85°C b. Cycle : 100 cycles c. Dwell time : 30minutes d. Measurement : at ambient temperature 24 hrs after test completion	a. No mechanical damage b. Impedance value should be within ± 20 % of the initial value
Operational Life	a. Temperature : 125°C ± 5°C b. Test time : 1000 hrs c. Apply current : full rated current d. Measurement : at ambient temperature 24 hrs after test completion	a. No mechanical damage b. Impedance value should be within ± 20 % of the initial value
Rated Current Test	a. Apply current : full rated current / 5min	Temperature rise should be less than 40°C

Test item	Test condition	Criteria
Biased Humidity	a. Temperature : $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ b. Humidity : 90 ~ 95 % RH c. Test time : 1000 hrs d. Apply current : full rated current e. Measurement : at ambient temperature 24 hrs after test completion	a. No mechanical damage b. Impedance value should be within $\pm 20\%$ of the initial value
Resistance to Solder Heat	a. Solder temperature : $260 \pm 5^{\circ}\text{C}$ b. Flux : Rosin c. DIP time : 10 ± 1 sec	a. More than 95 % of terminal electrode should be covered with new solder b. No mechanical damage c. Impedance value should be within $\pm 20\%$ of the initial value
Adhesive Test	a. Reflow temperature : 245°C It shall be Soldered on the substrate applying direction parallel to the substrate b. Apply force(F) : 5 N Test time : 10 sec	a. No mechanical damage b. Soldering the products on PCB after the pulling test force > 5 N
Steam Aging Test	a. Temperature : 93°C b. Test time : 8 hrs c. Solder temperature : $235 \pm 5^{\circ}\text{C}$ d. Flux : Rosin e. DIP time : 5 ± 1 sec	More than 95 % of terminal electrode should be covered with new solder

■ **GENERAL TECHNICAL DATA**

Operating temperature range : $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$
 Storage Condition : Less than 40°C and 70% RH
 Storage Time : 12 months Max.
 Soldering method : Reflow

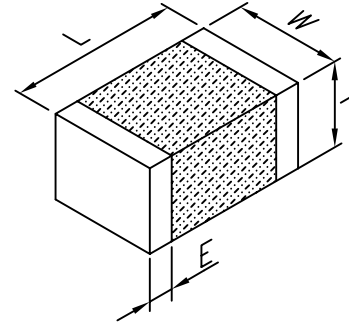
MHC 1608S 221NBP

ELECTRICAL CHARACTERISTICS:

	Z @ 100MHz (Ohms)	DCR (Ohms)	Rated Current
Nominal	220		
Minimum	165		
Maximum	275	0.09	2000mA

PHYSICAL DIMENSIONS:

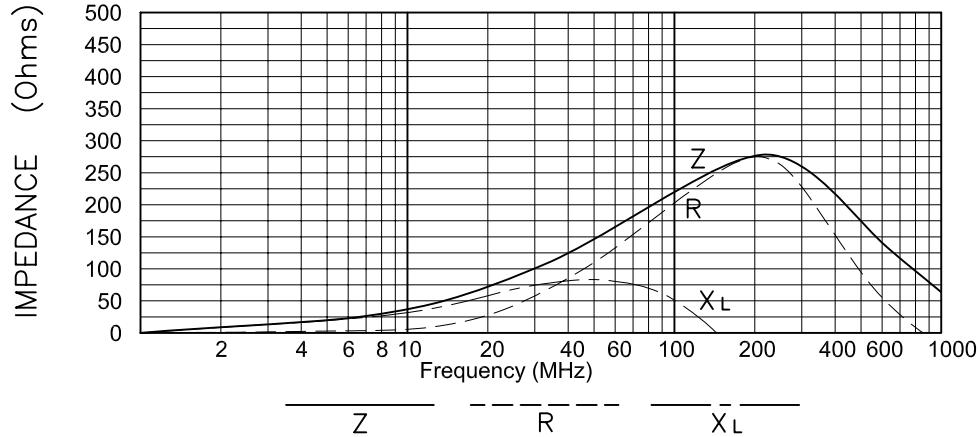
L	1.60(0.063) ±0.150(0.006)
W	0.80(0.031) ±0.150(0.006)
T	0.80(0.031) ±0.150(0.006)
E	0.30(0.012) ±0.200(0.008)



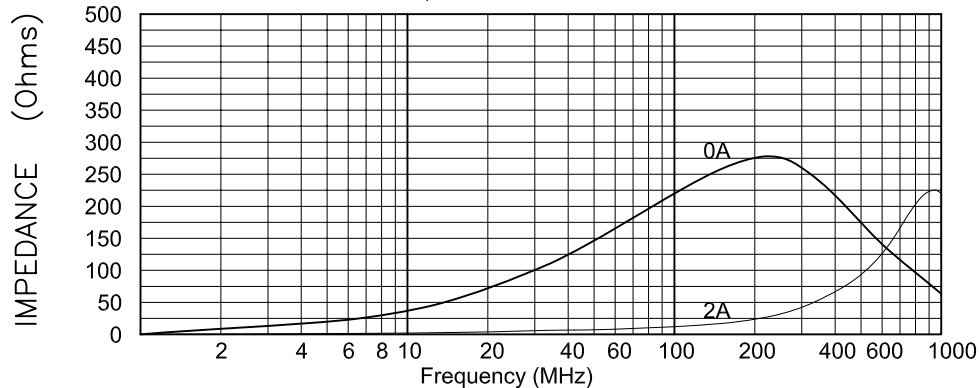
NOTES: UNLESS OTHERWISE SPECIFIED

- 1.-All edges and corners must be rounded.
- 2.-Dimensions are in millimeters (inches)
- 3.-Taped and Reeled per current EIA specification.

|Z| , R, AND X_L vs. FREQUENCY

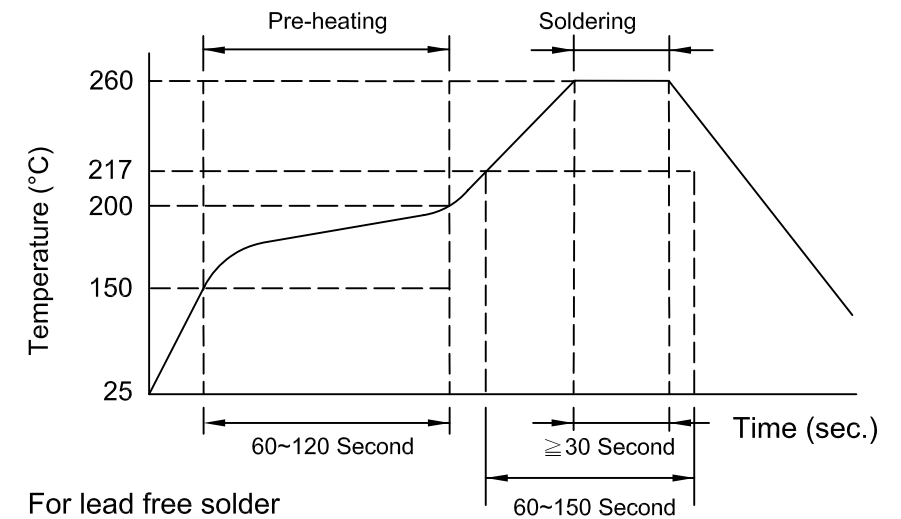


Z vs. FREQUENCY
Impedance Under DC Bias



RECOMMENDED SOLDERING CONDITIONS

Reflow Soldering



APPROVER	DATE	2010/03/12
Sharon	CFM.	