

CHIP LC FILTERS

Features

1. Newly developed for prominent EMI attenuation at high speed signal line.
2. Terminal electrode has excellent solder heat resistance.

Applications

1. High resolution video signal lines,
2. EMI countermeasure for clock signal lines.

Ordering Information

LC - 2012 - 300 J T
 (1) (2) (3) (4) (5)

(1) Series

LC : Chip LC filter

(2) Diminsions

The first two digits : length(mm)
 The last two digits : width(mm)

(3) Cut-off frequency

The first two digit are significant.
 The last digits is the number of zeros followin

(4) Termination

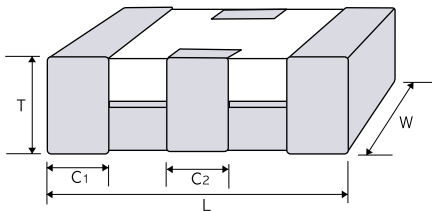
J : Nickel barrier

(5) Packing

B : Bulk Pack
 T : Tape & Reel (' " 178mm [7 inches])
 L : Tape & Reel (' " 254mm [10 inches])

Shape and Dimensions

unit ; mm[inches]



Type	L	W	T	C' (max.)	C' (max.)
LC-2012-	2.0±0.2 [.079±.008]	1.25±0.2 [.049±.008]	0.8±0.2 [.031±.008]	0.4 [.016]	0.5 [.020]

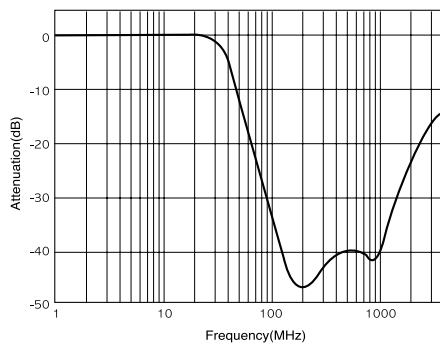
Specifications

Part No.	Cut-off Frequency	20dB Attenuation Frequency range	DC Resistance	Rated Current	Rated Voltage
LC-2012-300	30MHz	65-2500MHz	800 m max.	300 mA max.	10 Vdc max.
LC-2012-500	50MHz	90-2500MHz			
LC-2012-101	100MHz	210-2500MHz			
LC-2012-151	150MHz	350-2500MHz			

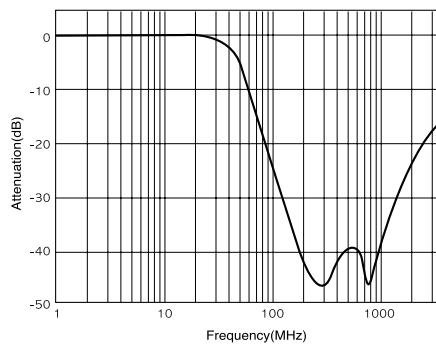
¡ /PATENT PENDING

Attenuation vs Frequency Characteristics

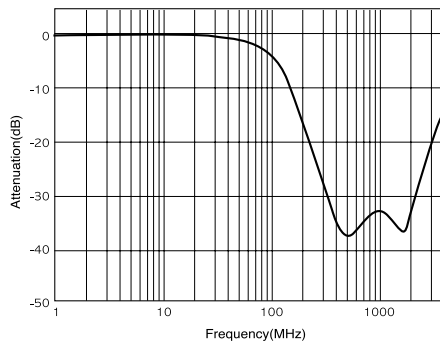
LC-2012-300



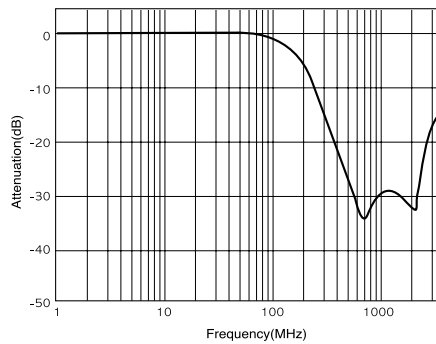
LC-2012-500



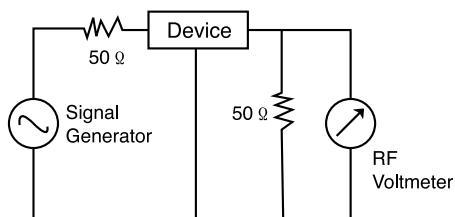
LC-2012-101



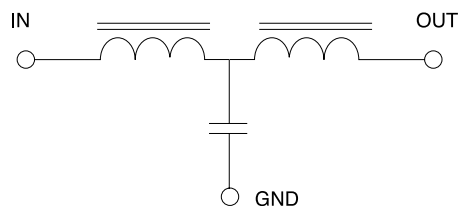
LC-2012-151



Attenuation Measuring Circuit



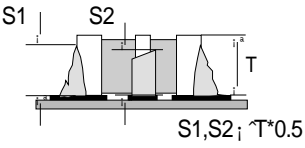
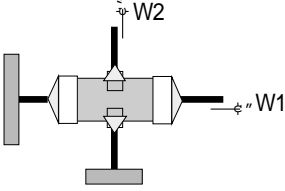
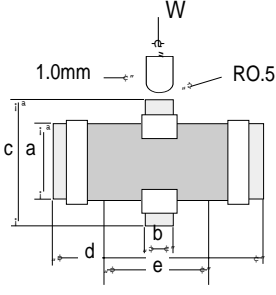
Equivalent circuit



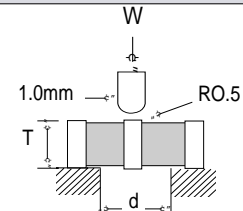
The LC series has no polarity

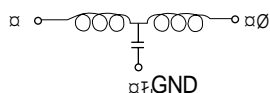
RELIABILITY AND TEST CONDITIONS

CHIP EMI SUPPRESSION FILTERS AND CHIP LC FILTERS

ITEM	REQUIREMENTS				TEST CONDITION	
	2012	3216				
Operating temp. range	-55 ; ~+125 ;				—	
Storage temp. & humidity range	40 ; max. , 70% RH max.				at packing condition	
Resistance to solder heat	1. No damage such as cracks should be caused in chip element. 2. More than 75% of the terminal electrode shall be covered with new solder. 3. Inductance change : ; within 5% 4. Capacitance change ; ; within 30%				Preheat temperature : 100 to 150 ; Preheat time : 1min. Solder temperature : 260 ; 10 ; Dipping time : 10 ; 0.5sec.	
Solderability	1. More than 90% of the terminal electrode shall be covered with new solder. 2. Inductance change : ; within 5% 3. Capacitance change ; ; within 30%				Preheat temperature : 100 to 150 ; Preheat time : 1min. Solder temperature : 230 ; 10 ; Dipping time : 3 ; 1sec.	
Reflow soldering	1. More than 50% of the terminal electrode shall be covered with new solder. <div style="text-align: center;">  </div>				Preheat temperature : 150 ; Preheat time : 1min. Solder temperature : 230 ; Soldering time: 10 sec. max. (Reflow soldering profile)	
Tensile strength (Terminal strength)	1. No mechanical damage					
				unit:Kgf (W1,W2)		
	W1	2.0	2.5	-		-
W2	0.8	0.8	-	-		
Adhesion of terminal electrode (Flexure strength)	1. No mechanical damage					
				unit: mm (a,b,c,d,e) , Kgf (W)		
	a	1.0	1.4	-		-
	b	0.4	0.6	-		-
	c	2.0	2.0	-		-
	d	3.0	5.0	-		-
	e	1.4	2.4	-		-
W	4.0	5.0	-	-		

CHIP EMI SUPPRESSION FILTERS AND CHIP LC FILTERS

ITEM	REQUIREMENTS				TEST CONDITION
	2012	3216			
Body strength (Bending strength)	1. The body shall not be damaged by forces applied on the right.				
	unit: mm (d) , Kgf (W)				
	d	1.3	2.0	-	
W	3.0	4.0	-	-	
Drop	1. No mechanical damage				Drop 10 times on a concrete floor from a height of 91cm.
Vibration	1. No mechanical damage				Frequency : 10~55~10Hz Amplitude : 1.52 mm Direction and time : X,Y,Z directions for 1 hours
Thermal shock (Temperature cycle)	1. No mechanical damage 2. Inductance change : ; within 5% 3. Capacitance change : ; within 30% 4. Insulation resistance(between 1 and 2) : 30§ min.				Step1. -40 ; 3 ; 30 ; 3min. Step2. 85 ; 3 ; 30 ; 3min. Number of cycle : 100 times
Heat load resistance	1. No mechanical damage 2. Inductance change : ; within 5% 3. Capacitance change : ; within 30% 4. Insulation resistance(between 1 and 2) : 30§ min.				Temperature : 85 ; 2 ; Applied voltage : rated voltage (between □ and □) Applied current : rated current (between □ and □) Time : 1,000 hours Measured at room ambient temperature after placing for 24 hours
Low temp. resistance	1. No mechanical damage 2. Inductance change : ; within 5% 3. Capacitance change : ; within 30% 4. Insulation resistance(between 1 and 2) : 30§ min.				Temperature : -40 ; 5 ; Time : 1,000 hours Measured at room ambient temperature after placing for 24 hours
Humidity resistance	1. No mechanical damage 2. Inductance change : ; within 5% 3. Capacitance change : ; within 30% 4. Insulation resistance(between 1 and 2) : 30§ min.				Temperature : 40 ; 2 ; Humidity : 90~95% RH Time : 500 hours Measured at room ambient temperature after placing for 24 hours
Humidity load resistance	1. No mechanical damage 2. Inductance change : ; within 5% 3. Capacitance change : ; within 30% 4. Insulation resistance(between 1 and 2) : 30§ min.				Temperature : 85 ; 2 ; Applied voltage : rated voltage (between □ and □) Applied current : rated current (between □ and □) Time : 1,000 hours Measured at room ambient temperature after placing for 24 hours

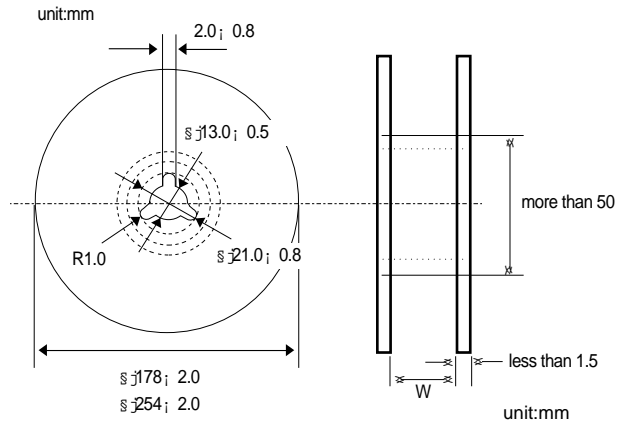


PACKING

STANDARD QUANTITY

Type	Q _i (PCS)	REMARKS
0603	15,000	
	10,000	
1005	50,000	BULK CASSETTE
	10,000	
1608	4,000	4mm pitch
	8,000	
2012	3,000	
	7,000	254mm
3216	3,000	
	7,000	254mm
4516	3,000	
4532	1,500	
5750	1,000	

REEL DIMENSION

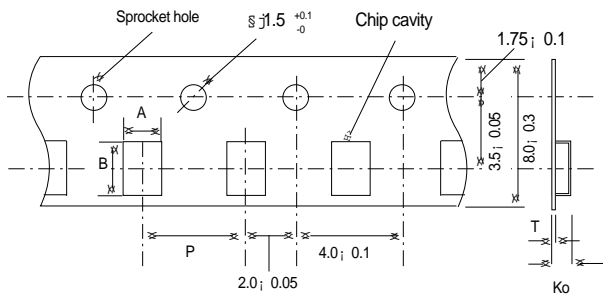


Type	W[mm]
0603, 1005, 1608, 2012, 3216 Array	9.0 ± 0.3
4516, 4532, 5750	13.0 ± 0.3

TAPING DIMENSION / 8mm wide

Embossing Tape

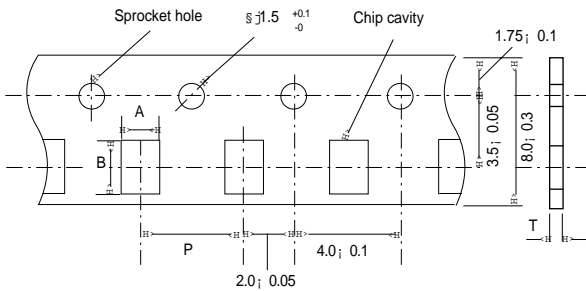
unit:mm



PRODUCT	Type	A _i 0.1	B _i 0.1	P _i 0.1	Ko _i 0.1	T(max.)
CHIP BEADS	1608	1.00	1.80	4.0	0.95	0.3
CHIP BEADS ARRAY						
CHIP FERRITE INDUCTOR	2012	1.45	2.25	4.0	0.08	0.3
CHIP EMI SUPPRESSION FILTER					1.00	
CHIP EMI FILTER ARRAY	2012	1.90	2.25	4.0	1.35	0.3
CHIP LC FILTER						
CHIP COMMON MODE FILTER	3216	1.90	3.60	4.0	1.00	0.3
CHIP FEEDTHRU						
CHIP VARISTOR	3216	1.90	3.60	4.0	1.35	0.3
CHIP VARISTOR ARRAY						
CHIP SURGE ABSORBER						

; Paper Tape

unit:mm

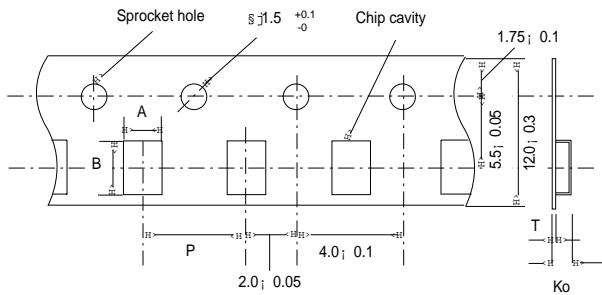


PRODUCT	Type	A_i 0.1	B_i 0.1	P_i 0.1	T(max.)
MICRO INDUCTOR CHIP BEADS CHIP INDUCTOR CHIP VARISTOR CHIP SURGE ARRAY	0603	0.37 ± 0.02	0.67 ± 0.02	4.0 ± 0.1	0.45
	1005	0.65 ± 0.1	1.15 ± 0.1	2.0 ± 0.1	0.8
	1608	1.00 ± 0.1	1.8 ± 0.1	2.0 ± 0.1	1.1

TAPING DIMENSION / 12mm wide

; Embossing Tape

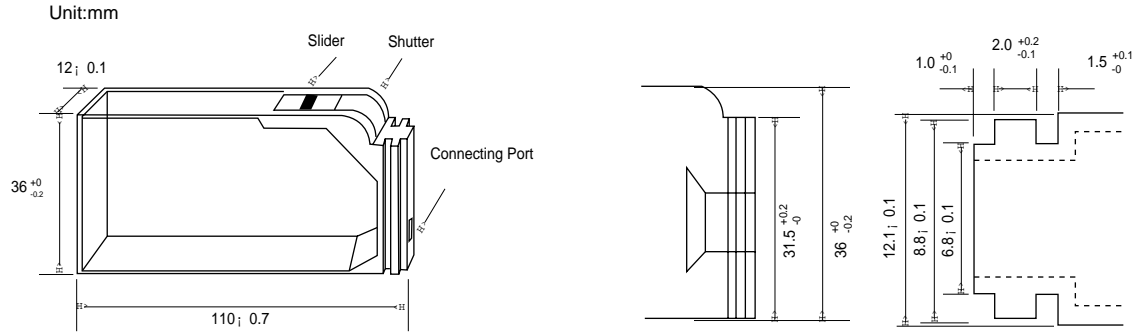
unit:mm



unit ; mm

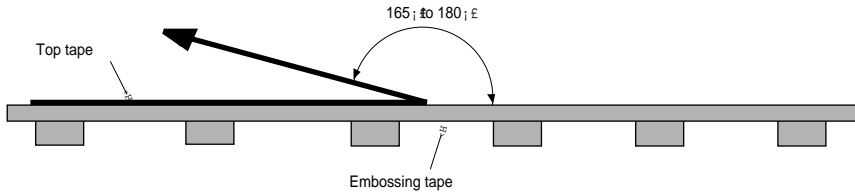
PRODUCT	Type	A_i 0.1	B_i 0.1	P_i 0.1	Ko_i 0.1	T(max.)
CHIP BEADS CHIP FEEDTHRU	4516	1.90	4.90	4.0	1.00	0.3
	4516	1.90	4.90	4.0	1.35	0.3
	4532	3.60	4.90	8.0	1.40	0.3
	5750	5.20	6.10	8.0	2.05	0.3

§ 1005 BULK CASSETTE DIMENSION



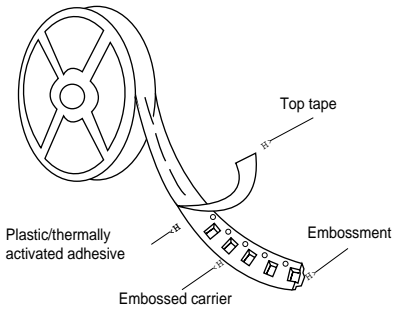
§ TOP TAPE STRENGTH

⌋ The force for tearing off top tape is 20 to 70 grams in the arrow direction.

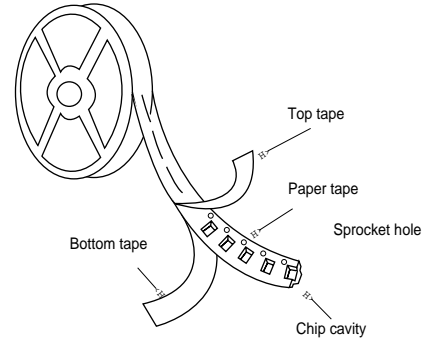


§ TAPING MATERIAL

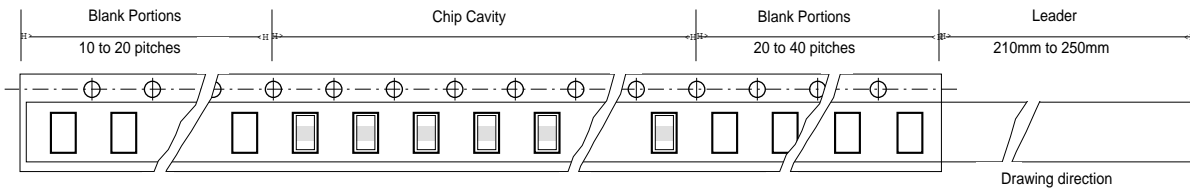
⌋ Embossed Tape



⌋ Paper Tape



§ LEADER AND BLANK PORTION

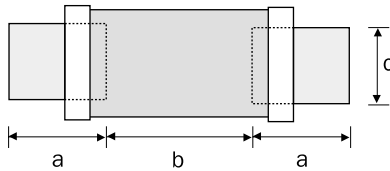


⌋ The pitch holes shift within ⌋ 0.3mm for cumulative 10 pitches.

LAND PATTERN DESIGN

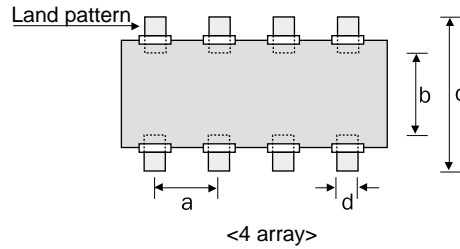
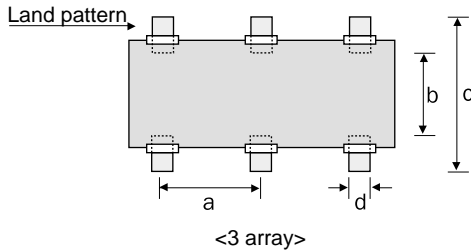
BEAD, INDUCTOR, VARISTOR, SURGE ABSORBER

unit ; mm



SIZE	a	b	c
0603	0.22	0.25	0.32
1005	0.7	0.4	0.5
1608	1.0	0.6	0.8
2012	1.0	1.0	1.0
3216	1.1	2.2	1.4
4516	1.5	3.0	1.4
4532	1.8	3.0	3.0
5750	2.0	4.0	5.8

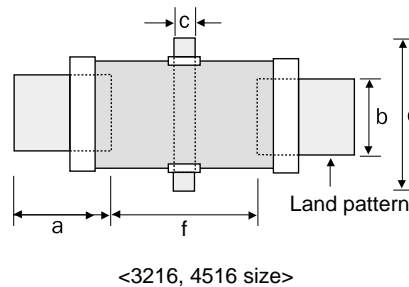
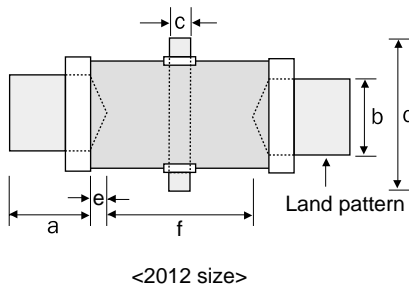
ARRAY



unit ; mm

SIZE	array	a	b	c	d
3216	3 array	1.0	0.8	3.0	0.5
3216	4 array	0.8	0.8	3.0	0.4

EMI SUPPRESSION FILTER, LC FILTER, FEEDTHRU CAPACITOR

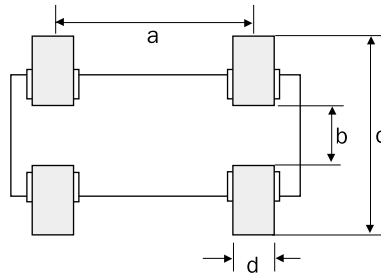


unit ; mm

SIZE	a	b	c	d	e	f
2012	1.0	1.0	0.4	2.0	0.1	1.4
3216	1.1	1.4	0.6	2.4	-	2.4
4516	1.5	1.4	0.8	2.4	-	3.4

LAND PATTERN DESIGN

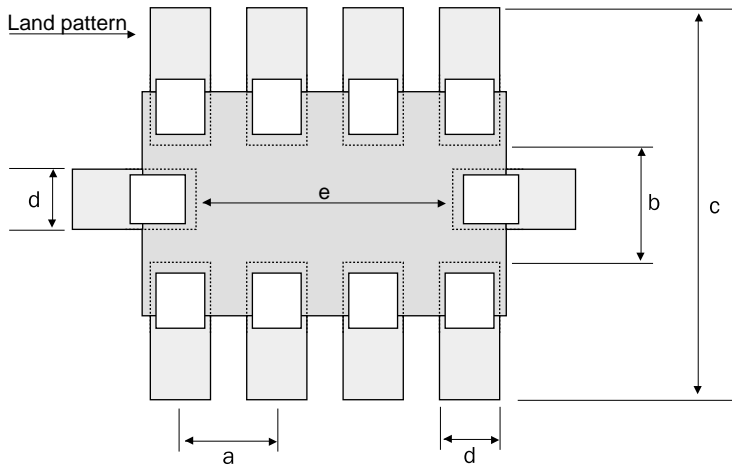
COMMON MODE FILTER, VARISTOR ARRAY



unit ; mm

SIZE	POLE(Array)	a	b	c	d
2012	2 POLE	1.20	0.60	2.60	0.40
2012	2 Array	0.76	0.38	2.16	0.46
3216	2 POLE	2.10	0.80	3.00	0.60
3216	2 Array	1.96	0.76	2.54	0.90

EMI FILTER ARRAY

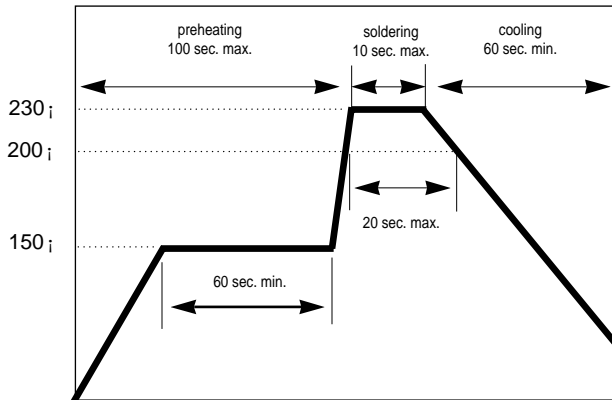


unit ; mm

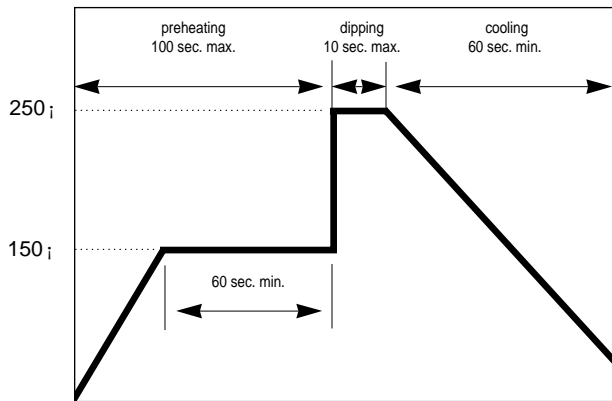
SIZE	POLE(Array)	a	b	c	d	e
3216	4 Array	0.8	0.8	3.0	0.4	2.4

SOLDERING PROFILE

REFLOW SOLERING PROFILE



FLOW SOLDERING PROFILE



MANUAL SOLDERING

