

PRODUCT UPDATE

PRODUCTS: SMT CERAMIC CHIP CAPACITORS

SERIES: NMC, NMC-E AND NMC-H

Sub: Packaging and Component Marking

For many years we've had customers who would not use ceramic chip capacitors on paper carrier tape. Then changes in attitude, due to environmental issues over the disposal of plastic or a perceived problem of plastic generating static on their production line, and the requirement changes to "paper tape" only. The same holds true for marked parts. We have customers who insist on having their 1206 and 0805 ceramic chip capacitors marked, while they accept the fact that the 0603 and 0402 parts they are placing on the same boards are not marked. These are issues we have all been involved with for years, but we have reached a turning point.

Worldwide industry standard for ceramic chip capacitors is paper tape unmarked.

The reasoning behind this is simple:

- ❖ Plastic tape and component marking adds significant cost to the parts.
- ❖ Pricing has eroded to the point that there is little or no profit left for the factories. Our competitors have complained of losses over the past few years.
- ❖ The equipment used for component marking is very expensive and the factories (both ours and our competitors) are not including this feature on new production lines.
- ❖ Plastic tape is supplied and stocked by the factory preformed (multiple pocket sizes = \$\$\$) to each match case size and thickness. Paper tape is punched on-the-line for 0402 through 1206.

What does this mean to MLCC users?

Plastic Tape:

- ❖ Effective immediately, we will be phasing out plastic tape.

Marked Parts:

- ❖ An adder for marked parts. Over time marking will be eliminated as an option.

Recommendations:

1. Be aware of the above issues.
2. Switch items to paper carrier tape.

This is an industry trend, not just an NIC policy.

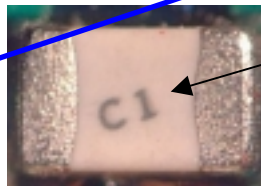


COMPONENT MARKING

PRODUCTS: SMT CERAMIC CHIP CAPACITORS SERIES: NMC, NMC-E AND NMC-H

Sub: Component Marking of NMC Series Ceramic Chip Capacitors

Please be advised due to the small size of the NMC series components (0402 ~ 2225) only the EIA-198D (Table IX) two digit capacitor marking code can be marked on 0805 and larger sizes products (see page 2). Please be advise component marking is special operation with potential impact on unit cost and lead time.



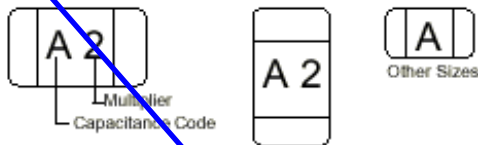
"C1" = 12pF

The NIC part number, lot number, date code, reel quantity, customer part number, purchase order number, etc. is printed (and bar coded if requested) on the reel label(s) for each reel of product.

NIC COMPONENTS CORPORATION		
Part: CERAMIC CHIP CAPACITOR (SMD)		
P/N	NMC1206X7R124K50TRPLPM	NIC
Date Code:	9708	QTY
	Qty: 2000	Date
Lot No.	2045580003	Lot
Carton# 09/24/98 - 0425 Item# 178434		
NMC		



E.I.A. MARKING OPTION



Examples:

- A1 = 10 pfd
- A2 = 100 pfd
- A3 = .001 μ fd
- A4 = .01 μ fd
- A5 = .1 μ fd
- SO = 4.7 μ fd
- S1 = 47 pfd
- S2 = 470 pfd
- S3 = .0047 μ fd
- S4 = .047 μ fd
- S5 = .47 μ fd

Note: Marking is in black ink or laser-marked in contrast to ceramic body color. Marking is an option that must be specified on ordering with "M" at the end of part number. Marking is not available for 0603 size.

STORAGE AND HANDLING

Chip component terminations should be protected from excessive moisture. NIC stores all surface mount components in a low humidity, stable temperature environment (RH between 40 ~ 75%, temp. range between 45° and 95°F). Certain materials containing chlorine, sulfur compounds or harmful gases can cause degradation of the termination. Aging parameters **differ based on dielectric properties** (data available on request). In general, shelf life is a minimum of 3 years when stored properly. Product subject to adverse conditions should be tested for solderability and cover tape strength before mass production begins.

E.I.A. CODE

1st Letter	2nd Character (Significant Figures)							
	0	1	2	3	4	5	6	7
A	1.0	10	100	1,000	10,000	100,000	1,000,000	10,000,000
B	1.1	11	110	1,100	11,000	110,000	1,100,000	11,000,000
C	1.2	12	120	1,200	12,000	120,000	1,200,000	12,000,000
D	1.3	13	130	1,300	13,000	130,000	1,300,000	13,000,000
E	1.5	15	150	1,500	15,000	150,000	1,500,000	15,000,000
F	1.6	16	160	1,600	16,000	160,000	1,600,000	—
G	1.8	18	180	1,800	18,000	180,000	1,800,000	—
H	2.0	20	200	2,000	20,000	200,000	2,000,000	—
J	2.2	22	220	2,200	22,000	220,000	2,200,000	—
K	2.4	24	240	2,400	24,000	240,000	2,400,000	—
L	2.7	27	270	2,700	27,000	270,000	2,700,000	—
M	3.0	30	300	3,000	30,000	300,000	3,000,000	—
N	3.3	33	330	3,300	33,000	330,000	3,300,000	—
P	3.6	36	360	3,600	36,000	360,000	3,600,000	—
Q	3.9	39	390	3,900	39,000	390,000	3,900,000	—
R	4.3	43	430	4,300	43,000	430,000	4,300,000	—
S	4.7	47	470	4,700	47,000	470,000	4,700,000	—
T	5.1	51	510	5,100	51,000	510,000	5,100,000	—
U	5.6	56	560	5,600	56,000	560,000	5,600,000	—
V	6.2	62	620	6,200	62,000	620,000	6,200,000	—
W	6.8	68	680	6,800	68,000	680,000	6,800,000	—
X	7.5	75	750	7,500	75,000	750,000	7,500,000	—
Y	8.2	82	820	8,200	82,000	820,000	8,200,000	—
Z	9	91	910	9,100	91,000	910,000	9,100,000	—
a	2.5	25	250	2,500	25,000	250,000	2,500,000	—
b	3.5	35	350	3,500	35,000	350,000	3,500,000	—
d	4.0	40	400	4,000	40,000	400,000	4,000,000	—
e	4.5	45	450	4,500	45,000	450,000	4,500,000	—
f	5.0	50	500	5,000	50,000	500,000	5,000,000	—
m	6.0	60	600	6,000	60,000	600,000	6,000,000	—
n	7.0	70	700	7,000	70,000	700,000	7,000,000	—
t	8.0	80	800	8,000	80,000	800,000	8,000,000	—
g	9.0	90	900	9,000	90,000	900,000	9,000,000	—

NOTE: CAPACITANCE VALUES EXPRESS IN pfd

EIA CODE

CAPACITANCE VALUE

- A3 1000 pfd = 1 nfd = .001 μ fd
- A4 10,000 pfd = 10 nfd = .01 μ fd
- A5 100,000 pfd = 100 nfd = .1 μ fd
- A6 1,000,000 pfd = 1000 nfd = 1.0 μ fd
- A7 10,000,000 pfd = 10,000 nfd = 10 μ fd

Note: Values less than 1.0 pf use 2nd character "9" (Divided By 10).

Examples:

EIA CODE

CAPACITANCE VALUE

- f9 0.5 pfd
- n9 0.7 pfd