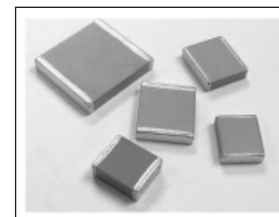


FEATURES

- **HIGH CAPACITANCE (UP TO 33 μ F) AND VOLTAGE (UP TO 8KV)**
- **X7R & NPO DIELECTRIC**
- **IDEAL FOR HIGH CAPACITY SMPS AND DC-DC CONVERTERS**
- **DESIGN FOR REFLOW SOLDERING**
- **CASE SIZES 1515 TO 7565**

RoHS Compliant

Includes all homogeneous materials



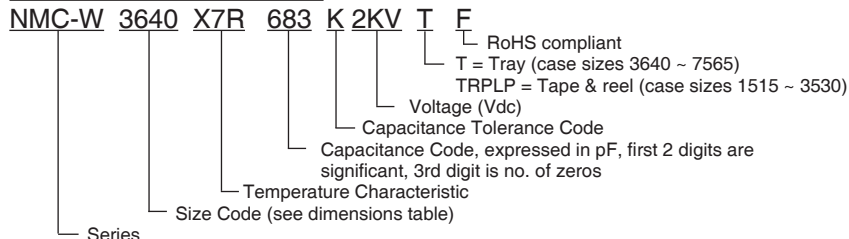
Temperature Coefficient	NPO	X7R
Capacitance Range	560pF ~ 0.82 μ F	1000pF ~ 33 μ F
Capacitance Tolerance	± 0.25 pF (C), ± 0.5 pF (D) & $\pm 5\%$ (J)	10% (K) & 20% (M)
Operating Temperature Range	-55°C ~ +125°C	-55°C ~ +125°C
Temperature Characteristics	± 30 ppm Δ Cap.	$\pm 15\%$ Δ Cap.
Rated Voltages	50Vdc ~ 8KVdc	50Vdc ~ 8KVdc
Dissipation or Q Factor	$Q \geq 1000$	$DF \leq 2.5\%$
Aging Rate	N/A	2.5% per decade
Insulation Resistance	10Gigohm or 500Megohm/ μ F whichever is less @ +25°C ≤ 500 V - measured after rated voltage is applied for 1 minute, 50mA max. > 500 V - measured after 500V is applied for 1 minute, 50mA max.	
Dielectric Withstanding Voltage	1. Rated Voltage 50V ~ 500V: 200% of Rated Voltage for 5 $\pm$ 1 sec., 50mA max. 2. Rated Voltage 1KV ~ 8KV: 120% of Rated Voltage for 5 $\pm$ 1 sec., 50mA max.	
Test Conditions	1KHz $\pm 10\%$, 1.0 ± 0.2 Vrms	$C \leq 10\mu$ F = 1KHz $\pm 10\%$, 1.0 ± 0.2 Vrms $C > 10\mu$ F = 120Hz $\pm 10\%$, 0.5 ± 0.2 Vrms

NPO DIELECTRIC - STANDARD CASE SIZES AND VALUES

EIA Case Size	1515	2520	3530	3640	4540	5550	6560	7565
Working Voltage (VDC)	Maximum Capacitance Value per Case Size							
50V	0.047 μ F (473)	0.082 μ F (823)	0.22 μ F (224)	0.22 μ F (224)	0.27 μ F (274)	0.33 μ F (334)	0.68 μ F (684)	0.82 μ F (824)
100V	0.039 μ F (393)	0.068 μ F (683)	0.18 μ F (184)	0.18 μ F (184)	0.22 μ F (224)	0.27 μ F (274)	0.56 μ F (564)	0.68 μ F (684)
200V	0.036 μ F (363)	0.056 μ F (563)	0.1 μ F (104)	0.1 μ F (104)	0.12 μ F (124)	0.15 μ F (154)	0.47 μ F (474)	0.56 μ F (564)
500V	0.01 μ F (103)	0.047 μ F (473)	0.082 μ F (823)	0.082 μ F (823)	0.082 μ F (823)	0.1 μ F (104)	0.33 μ F (334)	0.47 μ F (474)
1KV	0.0022 μ F (222)	0.01 μ F (103)	0.047 μ F (473)	0.047 μ F (473)	0.056 μ F (563)	0.068 μ F (683)	0.033 μ F (333)	0.047 μ F (473)
2KV	560pF (821)	0.0039 μ F (392)	0.01 μ F (103)	0.012 μ F (123)	0.022 (223)	0.033 μ F (333)	0.027 μ F (273)	0.033 μ F (333)
3KV	-	0.0022 μ F (222)	0.0047 μ F (472)	0.0056 μ F (562)	0.01 μ F (103)	0.022 μ F (223)	0.01 μ F (103)	0.022 μ F (223)
4KV	-	0.001 μ F (102)	0.0033 μ F (332)	0.0036 μ F (362)	0.0047 μ F (472)	0.0056 μ F (562)	0.0068 μ F (682)	0.01 μ F (103)
5KV	-	470pF (471)	0.001 μ F (102)	0.0012 μ F (122)	0.0015 μ F (152)	0.0018 μ F (182)	0.0033 μ F (332)	0.0047 μ F (472)
8KV	-	-	820pF (821)	560pF (561)	620pF (621)	680pF (681)	820pF (821)	0.001 μ F (102)

*Note: Contact NIC regarding other case sizes and values not shown.

PART NUMBER SYSTEM



X7R DIELECTRIC - STANDARD CASE SIZES AND VALUES

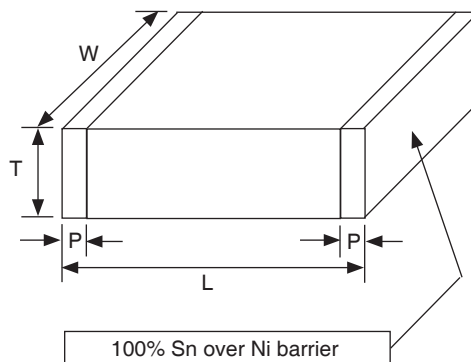
EIA Case Size	1515	2520	3530	3640	4540	5550	6560	7565
Working Voltage (VDC)	Maximum Capacitance Value per Case Size							
50V	2.2μF (225)	4.7μF (475)	10μF (106)	12μF (126)	15μF (156)	18μF (186)	22μF (226)	33μF (336)
100V	1.0μF (105)	2.2μF (225)	4.7μF (475)	5.6μF (565)	6.8μF (685)	8.2μF (825)	18μF (186)	22μF (226)
200V	0.47μF (474)	0.47μF (474)	2.2μF (225)	2.2μF (225)	2.2μF (225)	2.7μF (275)	10μF (106)	18μF (186)
500V	0.12μF (124)	0.22μF (224)	0.47μF (474)	0.56μF (564)	1.0μF (105)	1.2μF (125)	4.7μF (475)	10μF (106)
1KV	0.047μF (473)	0.047μF (473)	0.22μF (224)	0.27μF (274)	0.33μF (334)	0.36μF (364)	1.0μF (105)	2.2μF (225)
2KV	0.01μF (103)	0.015μF (153)	0.047μF (473)	0.068μF (683)	0.1μF (104)	0.12μF (124)	0.33μF (334)	0.36μF (364)
3KV	-	0.0047μF (472)	0.015μF (153)	0.022μF (223)	0.068μF (683)	0.082μF (823)	0.22μF (224)	0.27μF (274)
4KV	-	0.0022μF (222)	0.0056μF (562)	0.015μF (153)	0.027μF (273)	0.033μF (333)	0.1μF (104)	0.12μF (124)
5KV	-	0.001μF (102)	0.0022μF (222)	0.01μF (103)	0.022μF (223)	0.027μF (273)	0.047μF (473)	0.056μF (563)
8KV	-	-	0.001μF (102)	0.0012μF (122)	0.0015μF (152)	0.0018μF (182)	0.0022μF (222)	0.0027μF (227)

*Note: Contact NIC regarding other case sizes and values not shown.

DIMENSIONS (mm)

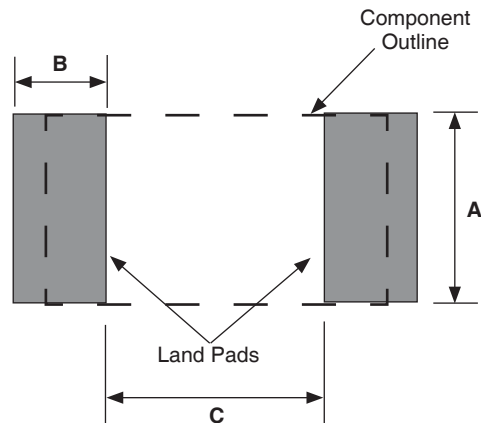
EIA Case Size	1515	2520	3530	3640	4540	5550	6560	7565
Length (L)	3.8±0.5	6.35±0.5	8.9±0.5	9.2±0.5	11.5±0.5	14.0±0.5	16.5±0.5	19.0±0.5
Width (W)	3.8±0.5	5.0±0.5	7.6±0.5	10.2±0.5	10.2±0.5	12.7±0.5	15.3±0.5	16.5±0.5
Thickness max. (T)	3.2 max.	3.2 max.	5.0 max.	5.0 max.	5.0 max.	5.0 max.	5.0 max.	5.0 max.
Termination Width min. (P)	0.3 min.	0.3 min.	0.3 min.	0.3 min.	0.3 min.	0.3 min.	0.3 min.	0.3 min.

CONSTRUCTION

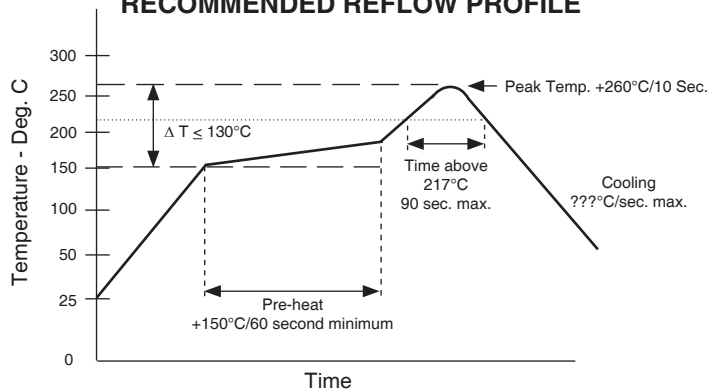


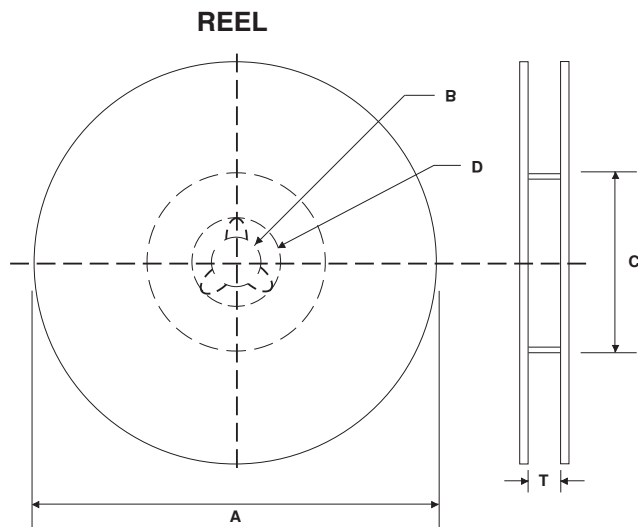
RECOMMENDED LAND PATTERN DIM. (mm)

Dimensions	1515	2520	3530	3640	4540	5550	6560	7565
A	0.165	0.215	0.315	0.420	0.420	0.525	0.630	0.685
B	0.070	0.085	0.090	0.090	0.105	0.110	0.115	0.120
C	0.060	0.130	0.230	0.240	0.300	0.400	0.490	0.590



RECOMMENDED REFLOW PROFILE





REEL DIMENSIONS (mm)

Reel Diameter (A)	B	C	D	T max.
7" (178 ± 2.0)	13 ± 0.5	60 ± 2.0	21 ± 0.8	17.5 ± 0.3

7 INCH REEL QUANTITIES

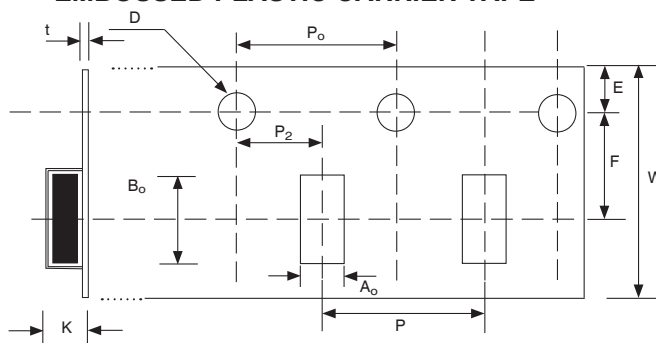
Size	1515	2520	3530
Tape Width	12mm	12mm	16mm
Reel Qty	T ≤ 2.20	T > 2.20	T ≤ 2.20
	1,000	400	400

EMBOSSED PLASTIC CARRIER TAPE DIMENSIONS (mm)

Tape Size	W	F	E	P ₀	P ₂	D	K max.	t max.	P
12mm	12.0 + 3.0/-0	5.5 ± 0.05	1.75 ± 0.10	4.0 ± 0.1	2.0 ± 0.5	1.5 ^{+0.1} _{-0.0}	4.0	0.3	4.0 ± 0.1
16mm	16.0 ± 0.1	7.5 ± 0.10			8.0 ± 0.1				8.0 ± 0.1

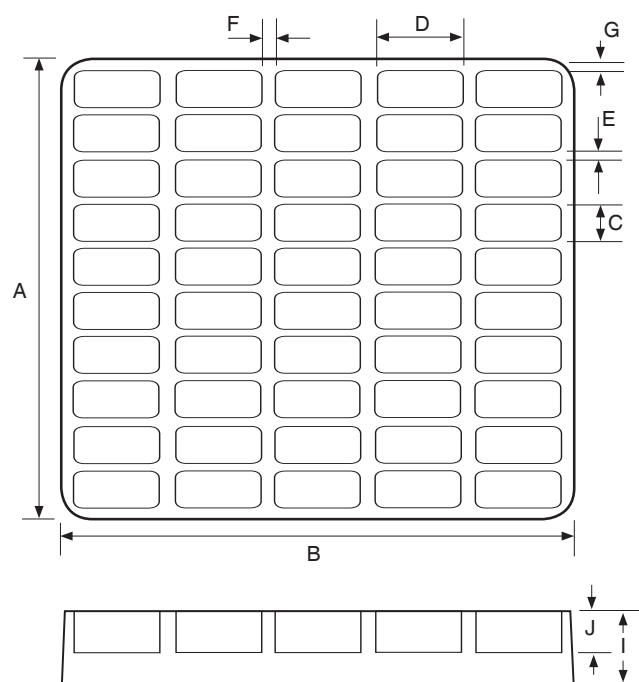
Pocket Dim.	Case Size		
	1515	2520	3530
A ₀	4.0 ± 0.2	5.4 ± 0.2	8.0 ± 0.2
B ₀	4.0 ± 0.2	6.8 ± 0.2	9.3 ± 0.2

EMBOSSED PLASTIC CARRIER TAPE

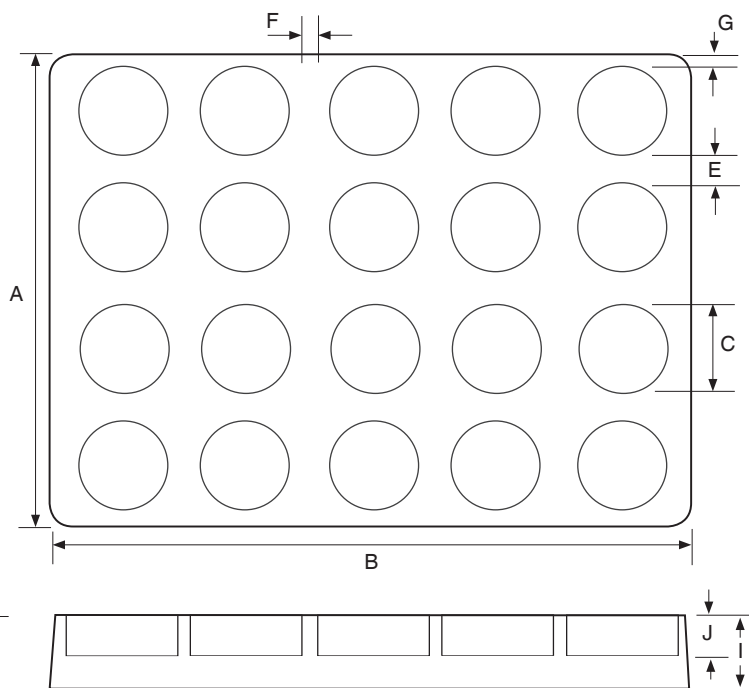


TRAY PACKAGING

CASE SIZE 3640



CASE SIZES 4540 ~ 7565
(NUMBER OF POCKETS VARIES WITH CASE SIZE)



Tray Dimensions (mm)	Case Size				
	3640	4540	5550	6560	7565
A	20	22	22	22	22
B	17	19	19	19	19
C	1.4	2.3	2.3	3.8	3.8
D	1.4	-	-	-	-
E	0.25	0.40	0.40	0.70	0.70
F	0.25	0.40	0.40	0.40	0.40
G	0.25	0.30	0.30	0.70	0.70
I	1.5	1.5	1.5	1.5	1.5
J	0.75	0.75	0.75	0.75	0.75
Tray Quantity	100 pcs	55 pcs	55 pcs	20 pcs	20 pcs