135℃ LEAD FREE REFLOW SOLDERING.

ALUMINUM ELECTROLYTIC CAPACITOR, POLARIZED

G RoHS COMPLIANT

FEATURES

* NSPE-YP capacitors are the electrolytic capacitors with hybrid cathode construction, which is realized by adding electro conductive polymer together with liquid electrolyte as cathode.
* Structure of hybrid cathode electrolyte keeps their self-healing function as aluminum electrolytic capacitors.
* NSPE-YP series has stable characteristics at temperature of wide range (-55 to +135℃)
* Lead free terminals

CHARACTERISTICS

Rated Voltage Range		25 ～ 35Vdc	
Capacitance Range		220 ～ 1000μF	
Operating Temperature Range		-55 ～ +135℃	
Capacitance Tolerance (120Hz/20℃)		±20%(M)	
Max. Leakage Current After 2 minutes @20℃		0.01CV	
Rated Voltage (V)		25	35
Surge Voltage (V)		32	44
Max. Tan δ at 120Hz & 20℃		0.14	0.12
Temperature Stability Impedance Ratio @ 120Hz	Z-55℃/Z+20℃	1.0～2.5	
	Z+125℃/Z+20℃	0.6～1.0	
	Z+135℃/Z+20℃		
Load Life Test 125℃ & 135℃ With Rated Voltage	Test	4000hrs	
	Capacitance Change	Within ±30% of initial measured value	
	Tan δ	Less than 200% of specified value	
	ESR	Less than 200% of specified value	
	Leakage Current	Less than specified value	
Resistance to Soldering Heat	After reflow soldering and then being stabilized at +20℃, capacitors shall meet the following limits.		
	Capacitance Change	Within ±10% of initial measured value	
	Tan δ	Less than specified value	
	ESR	Less than 130% of specified value	
	Leakage Current	Less than specified value	

PART NUMBER SYSTEM

NSPE-YP 221 M 35V 8X10.5 N LB Y F – RoHS Compliant

- F – RoHS Compliant
- Y: Y control
- LB: Sn-Bi Finish & 15" reel
- N: Reflow peak temp. N: 260℃
- 8X10.5: Case Size (mm)
- 35V: Rated Voltage (Vdc)
- M: Capacitance Tolerance, M : ±20%
- 221: Capacitance (μF), 3 digits system (R shows decimal point)
- NSPE-YP: Series

REFLOW PEAK TEMPERATURE

Temp. Code	Peak Temperature
N	260℃

TERMINAL FINISH & REEL CODE

Code	Terminal Finish & Tape Reel
LBF	Sn-Bi Finish & 15″ Reel
LSF	Sn 100% Finish & 15″ Reel

STANDARD PRODUCTS TABLE φDXL :

R.V.(Vdc) / Cap.(μF)	25	35
220		8X10.5
330	8X10.5	
390		10X10.5
470		10X12.5
560	10X10.5	10X13.8
680	10X12.5	10X16.5
820	10X13.8	
1000	10X16.5	

MAXIMUM ESR (mΩ at 100kHz & 20℃)

R.V.(Vdc) / Cap.(μF)	25	35
220		27
330	27	
390		20
470		16
560	20	15
680	16	11
820	15	
1000	11	

MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA r.m.s. at 100kHz & 125℃/135℃)

R.V.(Vdc)	25		35	
Cap.(μF)	125℃	135℃	125℃	135℃
220			3100	1500
330	3100	1500		
390			3600	1750
470			4100	1950
560	3600	1750	4300	2050
680	4100	1950	5200	2500
820	4300	2050		
1000	5200	2500		

MULTIPLIER FOR RIPPLE CURRENT (Frequency coefficient)

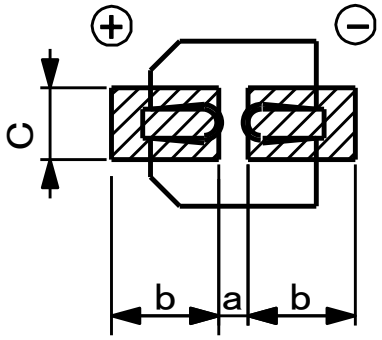
100≦F＜1k	1k≦F＜10k	10k≦F＜100k	100k≦F＜500k
0.15	0.45	0.75	1.00

PRODUCTS AND SPECIFICATIONS

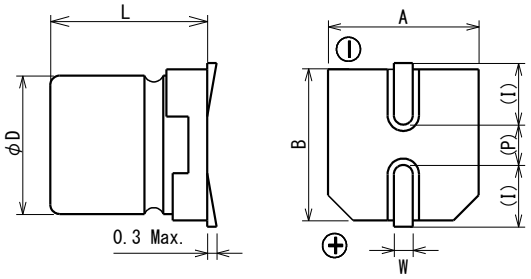
Part number	R.V. (V.DC)	Cap. (μF)	tan δ	ESR (mΩ) (100kHz, 20℃)	Max.Ripple Current mA r.m.s. (100kHz) 125℃	Max.Ripple Current mA r.m.s. (100kHz) 135℃	Life
NSPE-YP331M25V8X10.5NLBYF	25V	330	0.14	27	3100	1500	4000
NSPE-YP561M25V10X10.5NLBYF		560	0.14	20	3600	1750	4000
NSPE-YP681M25V10X12.5NLBYF		680	0.14	16	4100	1950	4000
NSPE-YP821M25V10X13.8NLBYF		820	0.14	15	4300	2050	4000
NSPE-YP102M25V10X16.5NLBYF		1000	0.14	11	5200	2500	4000
NSPE-YP221M35V8X10.5NLBYF	35V	220	0.12	27	3100	1500	4000
NSPE-YP391M35V10X10.5NLBYF		390	0.12	20	3600	1750	4000
NSPE-YP471M35V10X12.5NLBYF		470	0.12	16	4100	1950	4000
NSPE-YP561M35V10X13.8NLBYF		560	0.12	15	4300	2050	4000
NSPE-YP681M35V10X16.5NLBYF		680	0.12	11	5200	2500	4000

RECOMMEND LAND PATTERN (mm)

Case Size	a	b	c
Φ8	2.8	4.1	2.1
Φ10	4.3	4.4	2.5

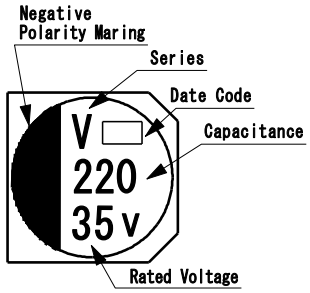


DIMENSIONS (mm)



Note : L dimension does not include terminal deflection.

MARKING

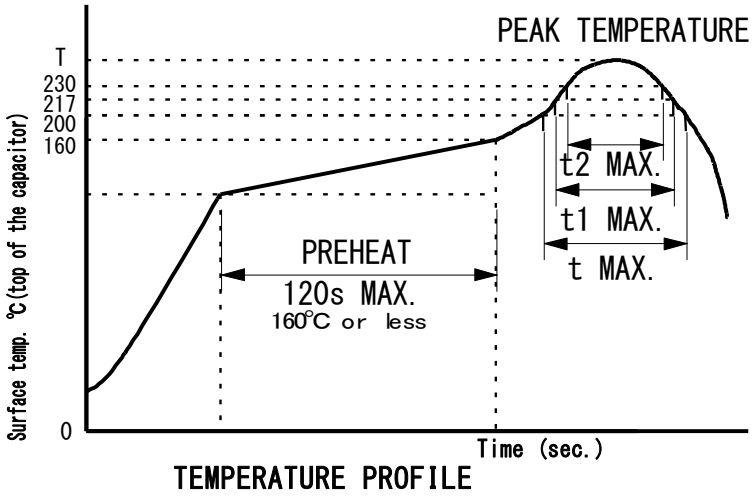


Color : Blue

Case Size	φD±0.5	L max.	A±0.2	B±0.2	(I)	W	(P)
8X10.5	8	10.5	8.3	8.3	2.9	0.7～1.0	3.2
10X10.5	10	10.5	10.3	10.3	3.2	1.0～1.4	4.6
10X12.5	10	12.5	10.3	10.3	3.2	1.0～1.4	4.6
10X13.8	10	13.8	10.3	10.3	3.2	1.0～1.4	4.6
10X16.5	10	16.5	10.3	10.3	3.2	1.0～1.4	4.6

( ) : Reference value

PERMISSIBLE REFLOW TEMPERATURE PROFILE



TEMPERATURE PROFILE

.Rated Voltage : 25～35Vdc

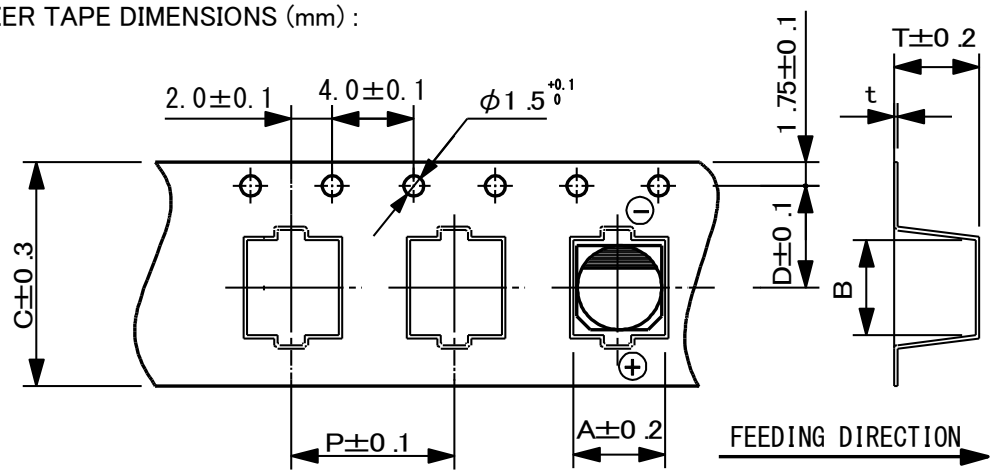
Size	Peak temperature (T)	Time for more than 200℃ (t)	Time for more than 217℃ (t1)	Time for more than 230℃ (t2)	Reflow Cycle(max.)
Φ8, Φ10	Less than 260℃	Within 70sec.	Within 40sec.	Within 30sec.	1
	Less than 245℃	Within 70sec.	Within 50sec.	Within 40sec.	2

Capacitor can withstand two reflow processes on the above condition.
Second reflow shall be taken after more than one hour natural cooling time
and taken after the return to normal temperatures of PCB board and components.

TAPING SPECIFICATIONS :

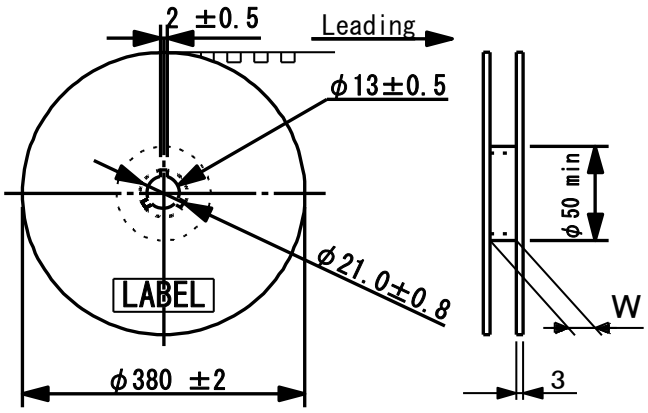
1. Leader and ending tape : Min. 10 empty pockets and 20 cm of cover tape.
2. Connection : Within 3 connections per reel.

CARRIER TAPE DIMENSIONS (mm) :



Case Size	A ±0.2	B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t Max.
8X10.5	8.7	8.7	24.0	11.5	16.0	11.1	0.6
10X10.5	10.7	10.7	24.0	11.5	16.0	11.2	0.6
10X12.5	10.7	10.7	24.0	11.5	16.0	13.3	0.6
10X13.8	10.7	10.7	24.0	11.5	16.0	14.6	0.6
10X16.5	10.7	10.7	24.0	11.5	16.0	17.7	0.6

REEL DIMENSIONS (mm) :



Case Size	W	Q'ty per reel (pcs)
		TR15 (380mm)
8X10.5	26	500
10X10.5	26	500
10X12.5	26	400
10X13.8	26	400
10X16.5	26	325