

# Miniature Aluminum Electrolytic Capacitors

NRSG Series

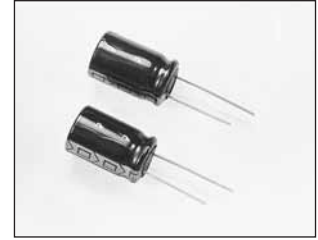
ULTRA LOW IMPEDANCE, RADIAL LEADS, POLARIZED, ALUMINUM ELECTROLYTIC

## FEATURES

- VERY LOW IMPEDANCE
- LONG LIFE AT 105°C (2000 ~ 4000 hrs.)
- HIGH STABILITY AT LOW TEMPERATURE
- IDEALLY FOR SWITCHING POWER SUPPLIES & CONVERTORS

**RoHS Compliant**  
includes all homogeneous materials

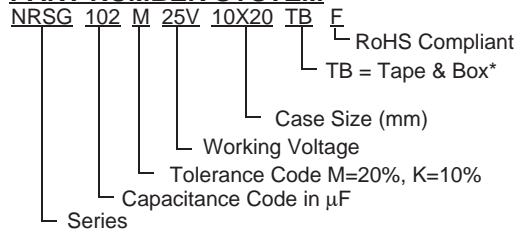
\*See Part Number System for Details



## CHARACTERISTICS

Rated Voltage Range	6.3 ~ 100Vdc								
Capacitance Range	6.8 ~ 6,800 $\mu$ F								
Operating Temperature Range	-40°C ~ +105°C								
Capacitance Tolerance	$\pm$ 20% (M)								
Maximum Leakage Current After 2 Minutes at 20°C	0.01CV or 3 $\mu$ A whichever is greater								
Max. Tan $\delta$ at 120Hz/20°C	W.V. (Vdc)	6.3	10	16	25	35	50	63	100
	S.V. (Vdc)	8	13	20	32	44	63	79	125
	C $\leq$ 1,000 $\mu$ F	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08
	C = 1,200 $\mu$ F	0.22	0.19	0.16	0.14	0.12	-	-	-
	C = 1,500 $\mu$ F	0.22	0.19	0.16	0.14	-	-	-	-
	C = 1,800 $\mu$ F	0.22	0.19	0.16	0.14	0.12	-	-	-
	C = 2,200 $\mu$ F	0.24	0.21	0.18	-	-	-	-	-
	C = 2,700 $\mu$ F	0.24	0.21	0.18	0.16	-	-	-	-
	C = 3,300 $\mu$ F	0.26	0.23	-	-	-	-	-	-
	C = 3,900 $\mu$ F	0.26	0.23	0.20	-	-	-	-	-
	C = 4,700 $\mu$ F	0.28	-	-	-	-	-	-	-
	C = 5,600 $\mu$ F	0.30	0.27	-	-	-	-	-	-
	C = 6,800 $\mu$ F	0.32	-	-	-	-	-	-	-
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z+20°C	2							
	Z-40°C/Z+20°C	3							
Load Life Test at Rated W.V. & 105°C 2,000 Hrs. 5 ~ 6.3mm Dia. 3,000 Hrs 8mm Dia. 4,000 Hrs 10 ~ 12.5mm Dia. 5,000 Hrs 16 ~ 18mm Dia.	Capacitance Change	Within $\pm$ 25% of initial measured value							
	Tan $\delta$	Less than 200% of specified value							
	Leakage Current	Less than specified value							

## PART NUMBER SYSTEM



\*see tape specification for details

## PRECAUTIONS

Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.  
Also found at [www.niccomp.com/precautions](http://www.niccomp.com/precautions)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

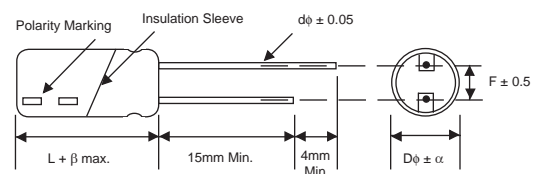


## STANDARD PRODUCT AND CASE SIZE TABLE DΦ x L (mm)

Cap (μF)	Code	Working Voltage (Vdc)							
		6.3	10	16	25	35	50	63	100
6.8	6R8	-	-	-	-	-	-	-	5x11
15	150	-	-	-	-	-	-	5x11	6.3x11
22	220	-	-	-	-	-	5x11	-	-
27	270	-	-	-	-	-	-	-	8x11.5
33	330	-	-	-	-	5x11	-	6.3x11	-
39	390	-	-	-	-	-	-	-	8x16
47	470	-	-	-	5x11	-	6.3x11	-	10x12.5
56	560	-	-	5x11	-	6.3x11	-	8x11.5	8x20
68	680	-	-	-	-	-	-	-	10x16
82	820	-	-	-	-	-	-	8x16	10x20
								10x12.5	12.5x16
100	101	-	5x11	-	6.3x11	-	8x12.5	-	10x23
120	121	-	-	6.3x11	-	-	8x15	8x20	12.5x20
								10x16	
150	151	5x11	-	-	-	8x12.5	10x12.5	-	-
180	181	-	-	-	-	-	8x20	10x20	12.5x25
								12.5x16	
220	221	-	6.3x11	-	8x11.5	8x15	10x16	10x23	12.5x30
						10x12.5			16x20
270	271	-	-	-	-	8x20	10x20	12.5x20	12.5x35
									16x25
									18x20
330	331	6.3x11	-	8x11.5	8x15	10x16	10x23	12.5x25	12.5x40
					10x12.5				
390	391	-	-	-	-	-	-	-	16x31.5
									18x25
470	471	-	8x11.5	8x15	8x20	10x20	12.5x20	12.5x30	16x35.5
				10x12.5	10x16			16x20	18x31.5
560	561	8x11.5	-	-	-	10x23	12.5x25	12.5x35	16x40
								16x25	18x35.5
680	681	-	8x15	8x20	10x20	12.5x20	12.5x30	12.5x40	18x40
			10x12.5	10x16				18x20	
820	821	8x15	-	-	10x20	-	16x21	16x31.5	-
								18x25	
1000	102	10x12.5	8x20	10x20	12.5x20	12.5x25	16x25	16x35.5	-
			10x16					18x31.5	
1200	122	8x20	10x20	10x20	-	12.5x30	-	16x40	-
		10x16				16x21		18x35.5	
1500	152	10x20	10x20	12.5x20	12.5x25	-	-	18x40	-
1800	182	-	-	-	12.5x30	16x25	-	-	-
					16x21				
2200	222	10x20	12.5x20	12.5x25	-	-	-	-	-
2700	272	-	-	12.5x30	16x25	-	-	-	-
				16x21					
3300	332	12.5x20	12.5x25	-	-	-	-	-	-
3900	392	12.5x25	12.5x30	16x25	-	-	-	-	-
			16x21						
4700	472	12.5x30	-	-	-	-	-	-	-
5600	562	16x21	16x25	-	-	-	-	-	-
6800	682	16x25	-	-	-	-	-	-	-

## LEAD SPACING AND DIAMETER (mm)

Case Dia. (DΦ)	5	6.3	8	10	12.5	12.5x30	16	18
Lead Dia. (Dφ)	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0	5.0	7.5	7.5
Dim. α	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dim. β	L<20mm: 1.5mm, L>20mm: 2.0mm							



Drawing is representative of parts as supplied in bulk or straight lead format, please see taping specifications for details on taped format packaging.



## STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS D $\phi$ x L (mm)

Part Number	Cap (μF)	W.V (Vdc)	Max. Tanδ	Max. Z (mΩ) 100KHz & 20°C	Max. Ripple Current (mA) 100KHz & 105°C	Load Life Hours @ +105°C	
NRSG151M6.3V5x11F	150	6.3	0.22	300	250	2000	
NRSG331M6.3V6.3x11F	330		0.22	130	405	2000	
NRSG561M6.3V8x11.5F	560		0.22	72	760	3000	
NRSG821M6.3V8x15F	820		0.22	56	995	3000	
NRSG102M6.3V10x12.5F	1000		0.22	53	1030	4000	
NRSG122M6.3V8x20F	1200		0.22	41	1250	3000	
NRSG122M6.3V10x16F			0.22	38	1430	4000	
NRSG152M6.3V10x20F	1500		0.22	23	1820	4000	
NRSG222M6.3V10x20F	2200		0.24	23	1820	4000	
NRSG332M6.3V12.5x20F	3300		0.26	21	2360	4000	
NRSG392M6.3V12.5x25F	3900		0.26	18	2770	4000	
NRSG472M6.3V12.5x30F	4700		0.28	16	3290	4000	
NRSG562M6.3V16x21F	5600		0.30	18	3140	5000	
NRSG682M6.3V16x25F	6800		0.32	16	3460	5000	
NRSG101M10V5x11F	100	10	0.19	300	250	2000	
NRSG221M10V6.3x11F	220		0.19	130	405	2000	
NRSG471M10V8x11.5F	470		0.19	72	760	3000	
NRSG681M10V8x15F	680		0.19	56	995	3000	
NRSG681M10V10x12.5F			0.19	53	1030	4000	
NRSG102M10V8x20F	1000		0.19	41	1250	3000	
NRSG102M10V10x16F			0.19	38	1430	4000	
NRSG122M10V10x20F	1200		0.19	23	1820	4000	
NRSG152M10V10x20F	1500		0.19	23	1820	4000	
NRSG222M10V12.5x20F	2200		0.21	21	2360	4000	
NRSG332M10V12.5x25F	3300		0.23	18	2770	4000	
NRSG392M10V12.5x30F	3900		0.23	16	3290	4000	
NRSG392M10V16x21F			0.23	18	3140	5000	
NRSG562M10V16x25F	5600		0.27	16	3460	5000	
NRSG560M16V5x11F	56		16	0.16	300	250	2000
NRSG121M16V6.3x11F	120			0.16	130	405	2000
NRSG331M16V8x11.5F	330			0.16	72	760	3000
NRSG471M16V8x15F	470			0.16	56	995	3000
NRSG471M16V10x12.5F		0.16		53	1030	4000	
NRSG681M16V8x20F	680	0.16		41	1250	3000	
NRSG681M16V10x16F		0.16		38	1430	4000	
NRSG102M16V10x20F	1000	0.16		23	1820	4000	
NRSG122M16V10x20F	1200	0.16		23	1820	4000	
NRSG152M16V12.5x20F	1500	0.16		21	2360	4000	
NRSG222M16V12.5x25F	2200	0.18		18	2770	4000	
NRSG272M16V12.5x30F	2700	0.18		16	3290	4000	
NRSG272M16V16x21F		0.18		18	3140	5000	
NRSG392M16V16x25F	3900	0.20		16	3460	5000	
NRSG470M25V5x11F	47	25		0.14	300	250	2000
NRSG101M25V6.3x11F	100			0.14	130	405	2000
NRSG221M25V8x11.5F	220			0.14	72	760	3000
NRSG331M25V8x15F	330			0.14	56	995	3000
NRSG331M25V10x12.5F			0.14	53	1030	4000	
NRSG471M25V8x20F	470		0.14	41	1250	3000	
NRSG471M25V10x16F			0.14	38	1430	4000	
NRSG681M25V10x20F	680		0.14	23	1820	4000	
NRSG821M25V10x20F	820		0.14	23	1820	4000	
NRSG102M25V12.5x20F	1000		0.14	21	2360	4000	
NRSG152M25V12.5x25F	1500		0.14	18	2770	4000	
NRSG182M25V12.5x30F	1800		0.14	16	3290	4000	
NRSG182M25V16x21F			0.14	18	3140	5000	
NRSG272M25V16x25F	2700		0.16	16	3460	5000	



## STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS D $\phi$ x L (mm)

Part Number	Cap (μF)	W.V (Vdc)	Max. Tanδ	Max. Z (mΩ) 100KHz & 20°C	Max. Ripple Current (mA) 100KHz & 105°C	Load Life Hours @ +105°C
NRSG330M35V5x11F	33	35	0.12	300	250	2000
NRSG560M35V6.3x11F	56		0.12	130	405	2000
NRSG151M35V8x12.5F	150		0.12	72	760	3000
NRSG221M35V8x15F	220		0.12	56	995	3000
NRSG221M35V10x12.5F			0.12	53	1030	4000
NRSG271M35V8x20F	270		0.12	41	1250	3000
NRSG331M35V10x16F	330		0.12	38	1430	4000
NRSG471M35V10x20F	470		0.12	23	1820	4000
NRSG561M35V10x23F	560		0.12	22	2150	4000
NRSG681M35V12.5x20F	680		0.12	21	2360	4000
NRSG102M35V12.5x25F	1000		0.12	18	2770	4000
NRSG122M35V12.5x30F	1200		0.12	16	3290	4000
NRSG122M35V16x21F			0.12	18	3140	5000
NRSG182M35V16x25F	1800		0.12	16	3460	5000
NRSG220M50V5x11F	22	50	0.10	340	238	2000
NRSG470M50V6.3x11F	47		0.10	140	385	2000
NRSG101M50V8x12.5F	100		0.10	74	724	3000
NRSG121M50V8x15F	120		0.10	61	950	3000
NRSG151M50V10x12.5F	150		0.10	61	979	4000
NRSG181M50V8x20F	180		0.10	46	1190	3000
NRSG221M50V10x16F	220		0.10	42	1370	4000
NRSG271M50V10x20F	270		0.10	30	1580	4000
NRSG331M50V10x23F	330		0.10	28	1870	4000
NRSG471M50V12.5x20F	470		0.10	27	2050	4000
NRSG561M50V12.5x25F	560		0.10	28	2410	4000
NRSG681M50V12.5x30F	680		0.10	21	2360	4000
NRSG821M50V16x21F	820		0.10	23	2730	5000
NRSG102M50V16x25F	1000		0.10	21	3010	5000
NRSG150M63V5x11F	15	63	0.09	880	165	2000
NRSG330M63V6.3x11F	33		0.09	350	265	2000
NRSG560M63V8x11.5F	56		0.09	220	500	3000
NRSG820M63V8x16F	82		0.09	160	665	3000
NRSG820M63V10x12.5F			0.09	150	685	4000
NRSG121M63V8x20F	120		0.09	120	820	3000
NRSG121M63V10x16F			0.09	110	945	4000
NRSG181M63V10x20F	180		0.09	80	1100	4000
NRSG181M63V12.5x16F			0.09	82	1135	4000
NRSG221M63V10x23F	220		0.09	73	1300	4000
NRSG271M63V12.5x20F	270		0.09	60	1495	4000
NRSG331M63V12.5x25F	330		0.09	43	1850	4000
NRSG471M63V12.5x30F	470		0.09	39	2250	4000
NRSG471M63V16x20F			0.09	45	1990	5000
NRSG561M63V12.5x35F	560		0.09	33	2450	4000
NRSG561M63V16x25F			0.09	32	2550	5000
NRSG681M63V12.5x40F	680		0.09	29	2780	4000
NRSG681M63V18x20F			0.09	38	2450	5000
NRSG821M63V16x31.5F	820		0.09	26	2810	5000
NRSG821M63V18x25F			0.09	31	2780	5000
NRSG102M63V16x35.5F	1000		0.09	21	2835	5000
NRSG102M63V18x31.5F			0.09	25	3270	5000
NRSG122M63V16x40F	1200		0.09	19	3340	5000
NRSG122M63V18x35.5F			0.09	20	3310	5000
NRSG152M63V18x40F	1500	0.09	18	3420	5000	



## STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS D $\phi$ x L (mm)

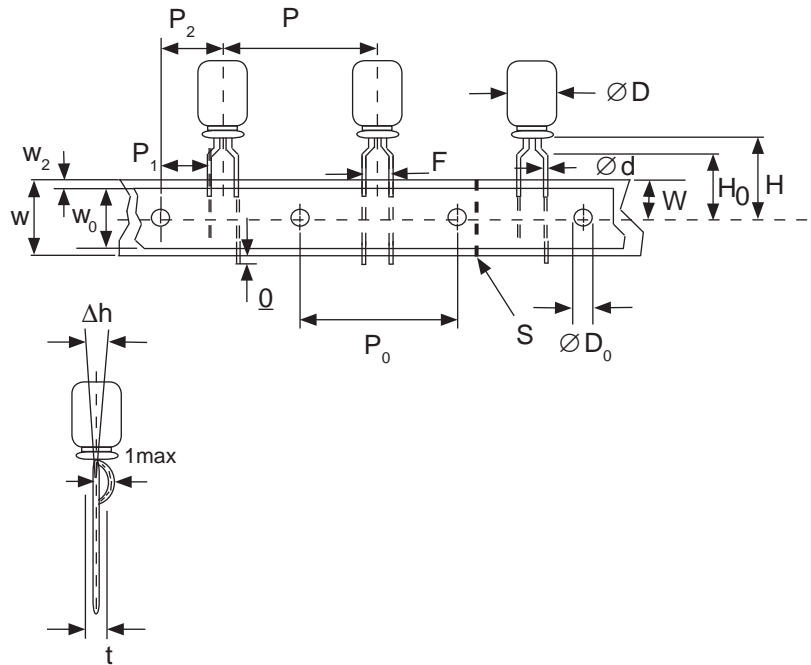
Part Number	Cap (μF)	W.V (Vdc)	Max. Tanδ	Max. Z (mΩ) 100KHz & 20°C	Max. Ripple Current (mA) 100KHz & 105°C	Load Life Hours @ +105°C
NRSG6R8M100V5x11F	6.8	100	0.08	1400	125	2000
NRSG150M100V6.3x11F	15		0.08	570	205	2000
NRSG270M100V8x11.5F	27		0.08	360	355	3000
NRSG390M100V8x16F	39		0.08	250	450	3000
NRSG470M100V10x12.5F	47		0.08	240	450	4000
NRSG560M100V8x20F	56		0.08	190	565	3000
NRSG680M100V10x16F	68		0.08	180	580	4000
NRSG820M100V10x20F	82		0.08	130	750	4000
NRSG820M100V12.5x16F			0.08	130	735	4000
NRSG101M100V10x23F	100		0.08	120	880	4000
NRSG121M100V12.5x20F	120		0.08	94	1045	4000
NRSG181M100V12.5x25F	180		0.08	71	1195	4000
NRSG221M100V12.5x30F	220		0.08	63	1410	4000
NRSG221M100V16x20F			0.08	71	1295	5000
NRSG271M100V12.5x35F	270		0.08	52	1560	4000
NRSG271M100V16x25F			0.08	53	1600	5000
NRSG271M100V18x20F			0.08	69	1470	5000
NRSG331M100V12.5x40F	330		0.08	46	1700	4000
NRSG391M100V16x31.5F	390		0.08	41	1750	5000
NRSG391M100V18x25F			0.08	49	1620	5000
NRSG471M100V16x35.5F	470		0.08	33	1890	5000
NRSG471M100V18x31.5F			0.08	39	1775	5000
NRSG561M100V16x40F			0.08	30	2080	5000
NRSG561M100V18x35.5F	560		0.08	31	2060	5000
NRSG681M100V18x40F	680		0.08	28	2570	5000

# Miniature Aluminum Electrolytic Capacitors Taping Specifications

## STANDARD RADIAL TAPING (5mm LEAD SPACING, FORMED LEADS) TR, TB

Taping Dimensions (mm)

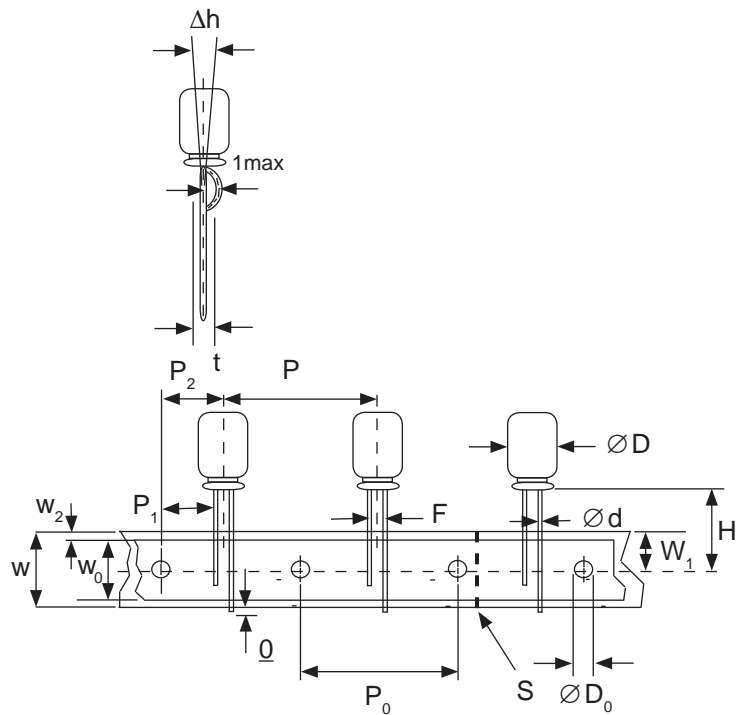
Case Dia. (D $\phi$ )	4	5	6.3	8
Case Size	4x5	5x5	6.3x5	8x11.5
Dim.	4x7	5x7	6.3x7	6.3x11
d $\phi$ $\pm$ 0.05	0.45	0.45	0.5	0.5
H $\pm$ 0.75	17.5	17.5	18.5	18.5
F +0.8 ~ -0.2	5.0 -0.2 ~ +0.8			
P	12.7 $\pm$ 1.0			
P <sub>0</sub>	12.7 $\pm$ 0.2			
P <sub>1</sub>	3.85 $\pm$ 0.5 (at end of tape)			
P <sub>2</sub>	6.35 $\pm$ 1.0			
W	18.0 $\pm$ 0.5			
W <sub>0</sub>	11.5 min.			
W <sub>1</sub>	9.0 $\pm$ 0.5			
W <sub>2</sub>	0 ~ 2.5			
H <sub>0</sub>	16.0 $\pm$ 0.5			
l	1.0 max.			
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2			
$\Delta$ h	0 $\pm$ 1.0 (at top of can)			
t	0.7 $\pm$ 0.2 (not including lead)			



## STANDARD RADIAL TAPING (5mm LEAD SPACING, STRAIGHT LEADS) TR, TB

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	10	12.5
Case Size	All	All
Dim.	All	All
d $\phi$ $\pm$ 0.05	0.6	0.6
H $\pm$ 0.75	19.0	19.0
F +0.8 ~ -0.2	5.0	5.0
P $\pm$ 1.0	25.4*	
P <sub>0</sub>	12.7 $\pm$ 0.2	
P <sub>1</sub>	3.85	
P <sub>2</sub>	6.35 $\pm$ 1.0	
W	18.0 $\pm$ 0.5	
W <sub>0</sub>	11.5 min	
W <sub>1</sub>	9.0 $\pm$ 0.5	
W <sub>2</sub>	0 ~ 2.5	
H <sub>0</sub>	16.0 $\pm$ 0.5	
l	1.0 max.	
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2	
$\Delta$ h	0 $\pm$ 1.0 (at top of can)	
t	0.7 $\pm$ 0.2 (not including lead)	



### \*Optional Taping Specifications

10mm diameter available with P dim. = 12.7mm  
(P/N Suffix: TB12.7MMP)

12.5mm diameter available with P dim. = 15mm, P<sub>1</sub> = 5.0mm,  
P<sub>0</sub> = 15.0mm & P<sub>2</sub> = 7.5mm (P/N Suffix: TB15MMP)

**NOTE:** ANODE (+) LEAD FEEDS OFF FIRST.  
FOR OPTION OF NEGATIVE (-) LEAD FIRST,  
SPECIFY "TRN" OR "TBN".

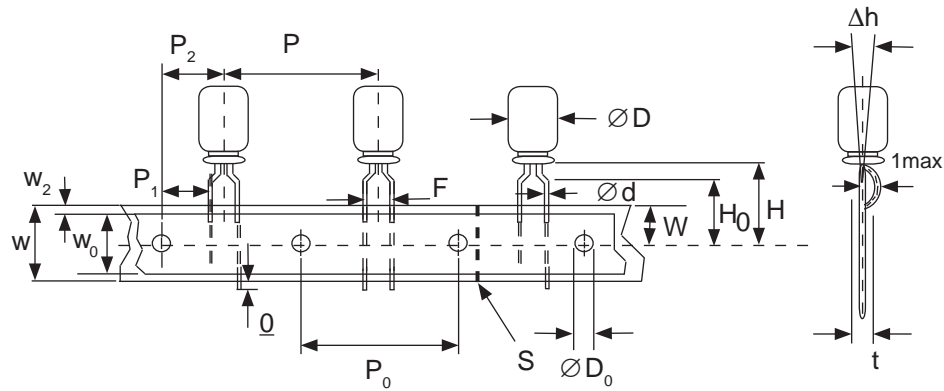


# Miniature Aluminum Electrolytic Capacitors Taping Specifications

## SPECIAL RADIAL TAPING (2.5mm LEAD SPACING, FORMED LEADS) TRF1, TBF1

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	4		5	
Case Size Dim.	4x5 4x7	5x5 5x7	5x11	
d $\phi$ $\pm$ 0.05	0.45	0.45	0.5	
H $\pm$ 0.75	17.5	17.5	18.5	
H <sub>0</sub> $\pm$ 0.5	16.0	-	-	
F	2.5 -0.2 ~ +0.8			
P	12.7 $\pm$ 1.0			
P <sub>0</sub>	12.7 $\pm$ 0.2			
P <sub>1</sub>	5.1 $\pm$ 0.5			
P <sub>2</sub>	6.35 $\pm$ 1.0			
W	18.0 $\pm$ 0.5			
W <sub>0</sub>	11.5 min.			
W <sub>1</sub>	9.0 $\pm$ 0.5			
W <sub>2</sub>	0 ~ 1.5			
l	1.0 max.			
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2			
$\Delta$ h	0 $\pm$ 1.0			
t	0.7 $\pm$ 0.2			

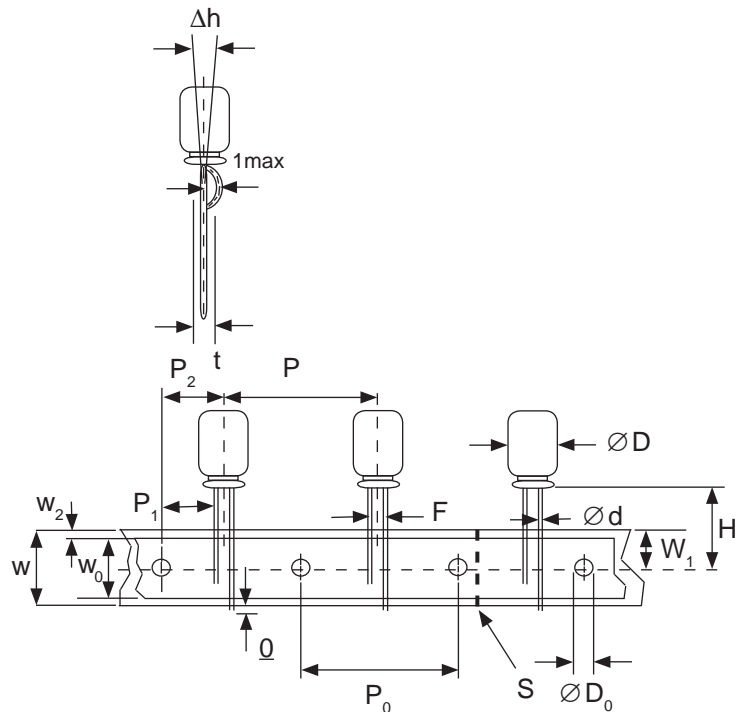


## SPECIAL STRAIGHT LEAD TAPING TRST, TBST

Taping Dimensions (mm)

Case Dia. (D $\phi$ )	4			5			6.3		8	
Case Size Dim.	4x5 4x7	5x5 5x7	5x11		6.3x5 6.3x7	6.3x11	8x11.5			
d $\phi$ $\pm$ 0.05	0.45	0.45	0.5		0.45	0.5	0.6			
H $\pm$ 0.75	17.5	17.5	18.5		17.5	18.5	20.0			
F +0.8 ~ -0.2	2.0*	2.0	2.0		2.5	2.5	3.5			
P $\pm$ 1.0	12.7 $\pm$ 0.2									
P <sub>0</sub>	12.7 $\pm$ 0.2									
P <sub>1</sub>	5.1	5.1	5.1	5.1	5.1	5.1	4.6			
P <sub>2</sub>	6.35 $\pm$ 1.0									
W	18.0 $\pm$ 0.5									
W <sub>0</sub>	11.5 min.									
W <sub>1</sub>	9.0 $\pm$ 0.5									
W <sub>2</sub>	0 ~ 2.5									
H <sub>0</sub>	16.0 $\pm$ 0.5									
l	1.0 max.									
D <sub>0</sub> $\phi$	4.0 $\pm$ 0.2									
$\Delta$ h	0 $\pm$ 1.0 (at top of can)									
t	0.7 $\pm$ 0.2 (not including lead)									

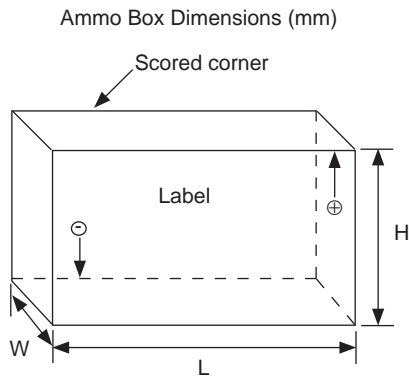
\* Parts with 4mm diameter are taped with a slight flare in the lead and a 2.0mm lead-space.



## RADIAL TAPED PACKAGING

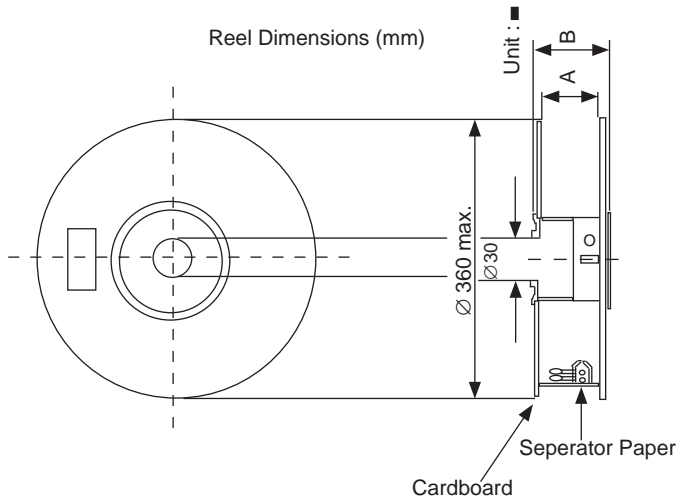
Ammo Box (Tape & Box) TB, TBF, TBST

Size of box and component quantity



Case Dia (D $\phi$ ) or Case Size	Q'ty per Box (pcs)	Dim. L	Dim. H	Dim. W
4x5, 4x7	2,000	331	175	43
5x5, 5x7	2,000	331	220	43
5x11	2,000	340	255	55
6.3x5, 6.3x7	2,000	331	280	43
6.3x11	2,000	331	280	48
8x11.5, 8x12.5	1,000	335	235	53
10x12.5*	500	335	190	53
10x16*	500	335	300	53
10x20*	500	335	300	55
12.x20*	500	335	300	55
12.5x25*	500	335	300	61

\*Special Taping Consult Factory For Availability



Reel Packages (Tape & Reel) TR, TRF1, TRST

Size of reel and component quantity

Case Dia (D $\phi$ ) or Case Size	Q'ty per Box (pcs)	Dim. A	Dim. B
4 $\phi$	1,800	42	52
5 $\phi$	1,500	42	52
6.3 $\phi$	1,000	42	52
8 $\phi$	800	42	52
10x12.5*	600	42	52
10x16*	600	48	56
10x20*	600	52	60
12.x20*	250	52	60
12.5x25*	250	56	64

\*Special Taping Consult Factory For Availability