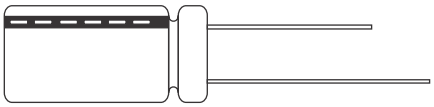
ALUMINUM ELECTROLYTIC CAPACITORS
RZW Series: Long Life, Low Impedance, 105°C



■ FEATURES

- Long life, 105°C, 4,000-12,000 hours.
- High performance, high reliability.
- Low impedance, high ripple current.

■ SPECIFICATIONS

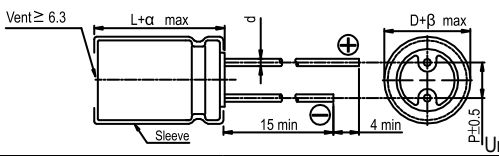
Items	Performance
Category Temperature Range	-40˚C ~ +105˚C
Rated Voltage Range	6.3 ~ 120V_{dc}
Capacitance Tolerance	±20% (+20˚C, 120Hz)
Leakage Current	I ≤0.01CV or 3μA, whichever is greater. Leakage current (μA), C: Nominal capacitance (μF) V: Rated Voltage (V)(20˚C, 2 minutes)
Dissipation Factor (120Hz, +20˚C)	See table below When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase
Temperature Characteristics (Max. Impedance Ratio) (120Hz)	See table below
Load Life	The specifications listed below shall be met when the capacitors are restored to 20˚C after DC voltage plus rated ripple current is applied for a period of time at 105˚C. Capacitance change: ±20% (6.3V, 10V:≤ ±30%) Dissipation factor: 200% of the initial specified value. Leakage Current: The initial specified value.
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20˚C after leaving them under no load at 105˚C for 1,000 hours: Capacitance change: ±20% of the initial value (6.3V, 10V:≤ ±30%) Dissipation factor: 200% of the initial specified value Leakage Current: 200% of the initial specified value

Rated Voltage (V_{dc})	6.3	10	16	25	35	50	63	80	100	120
Tan δ(Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08	0.12

Rated Voltage (V_{dc})	6.3	10	16	25	35	50	63	80	100	120
Z(-25˚C)/Z(+20˚C)	4	3	2							3
Z(-40˚C)/Z(+20˚C)	8	6	4	3						6

Dia.	Load life (hours)	
	6.3 - 10V	16 - 120V
D ≤ 6.3	4000	5000
D = 8,10	6000	8000
D ≥ 12.5	10000	12000

■ DIMENSIONS



Unit:mm

D	5	6.3	8		10	12.5	16	18
d	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2	2.5	3.5		5	5	7.5	7.5
D'	D + 0.5max							
L'	L + 2max							

Multiplier for Ripple Current/Frequency Coefficient

Cap. (F) \ Freq. (Hz)	120	1K	10K	100K
Cap. < 220	0.40	0.75	0.90	1.00
220 ≤ Cap. < 680	0.50	0.85	0.94	1.00
680 ≤ Cap. < 2200	0.60	0.87	0.95	1.00
2200 ≤ Cap. < 4700	0.75	0.9	0.95	1
Cap. ≥ 4700	0.85	0.95	0.98	1

DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: D x L(mm)
Ripple Current: mA/rms at 100Hz, 105°C

V. DC / Code / µF		6.3V (0J)			10V (1A)			16V (1C)			25V (1E)		
			Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105°C)	D x L	Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105°C)	D x L	Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105°C)	D x L	Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105°C)
			20°C	100KHz		20°C	100KHz		20°C	100KHz		20°C	100KHz
47	470										5 x 11	0.57	200
											6.3 x 9	0.74	180
56	560							5 x 11	0.57	200			
								6.3 x 9	0.74	180			
100	101				5 x 11	0.57	200				6.3 x 11	0.21	350
					6.3 x 9	0.74	180				8 x 9	0.27	310
120	121							6.3 x 11	0.21	350			
								8 x 9	0.27	310			
150	151	5 x 11	0.57	200									
		6.3 x 9	0.74	180									
220	221				6.3 x 11	0.21	350				8 x 12	0.13	660
					8 x 9	0.27	310				10 x 9	0.17	590
330	331	6.3 x 11	0.21	350				8 x 12	0.13	660	8 x 16	0.086	850
		8 x 9	0.27	310				10 x 9	0.17	590	10 x 12.5	0.08	850
470	471				8 x 12	0.13	660	8 x 16	0.087	850	8 x 20	0.069	1050
					10 x 9	0.17	590	10 x 12.5	0.08	870	10 x 16	0.6	1230
680	681										10 x 20	0.046	1400
											12.5 x 16	0.049	1450
820	821	10 x 12.5	0.08	870							10 x 25	0.042	1650
1,000	102	8 x 16	0.086	850							10 x 30	0.03	1920
					8 x 20	0.069	1050	10 x 20	0.046	1400	12.5 x 20	0.035	1910
					10 x 16	0.06	1230	12.5 x 16	0.049	1450	16 x 15	0.041	1950
1,200	122	8 x 20	0.07	1050	10 x 20	0.046	1400	10 x 25	0.042	1650			
		10 x 16	0.06	1230									
1,500	152	10 x 20	0.046	1400	10 x 25	0.042	1650	10 x 30	0.031	1920	12.5 x 25	0.026	2230
								12.5 x 20	0.035	1910			
					12.5 x 16	0.049	1450	16 x 15	0.041	1950			
1800	182	12.5 x 6	0.049	1450							12.5 x 30	0.024	2650
											16 x 20	0.027	2650
2,200	222	10 x 20	0.042	1650	10 x 30	0.03	1920	12.5 x 25	0.027	2230	12.5 x 35	0.02	2880
					12.5 x 20	0.035	1910						
					16 x 15	0.041	1950				18 x 20	0.026	2860
2,700	272	10 x 30	0.03	1920				12.5 x 30	0.024	2650	12.5 x 40	0.017	3350
		16 x 15	0.041	1950				16 x 20	0.027	2530	16 x 25	0.021	2930
3300	332	12.5 x 20	0.035	1910	12.5 x 25	0.026	2230	12.5 x 35	0.02	2880	16 x 30	0.017	3450
											18 x 25	0.019	3140
3,900	392	12.5 x 25	0.026	2230	12.5 x 30	0.024	2650	12.5 x 40	0.017	3350	16 x 30	0.015	3610
								16 x 25	0.021	2930			
					16 x 20	0.027	2530	18 x 20	0.026	2860	18 x 30	0.015	4170
4700	472	12.5 x 30	0.024	2650	12.5 x 35	0.02	2880	16 x 30	0.017	3450	16 x 40	0.013	4100
								18 x 25	0.019	3140	18 x 35	0.014	4220
5,600	562				12.5 x 40	0.017	3350	16 x 35	0.015	3610	18 x 40	0.012	4300
		12.5 x 35	0.02	2880	16 x 25	0.021	2930	18 x 30	0.015	4170			
		16 x 20	0.027	2530	18 x 20	0.026	2860						
6,800	682	12.5 x 40	0.017	3350	16 x 30	0.017	3450	16 x 40	0.013	4100			
		16 x 25	0.02	2930	18 x 25	0.019	3140						
		18 x 20	0.026	2860									
8200	822	16 x 30	0.017	3450	16 x 35	0.015	3610	18 x 35	0.014	4220			
					18 x 30	0.015	4170						
10,000	103	16 x 35	0.015	3610	16 x 40	0.013	4100	18 x 40	0.012	4300			
		18 x 25	0.019	3140	18 x 35	0.014	4220						
12,000	123	16 x 40	0.013	4100	18 x 40	0.012	4300						
		18 x 30	0.015	4170									
15,000	153	18 x 35	0.014	4220									
18,000	183	18 x 40	0.012	4300									

DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: D x L(mm)
105°C

V. DC / Code / µF		35V (1V)			50V (1H)			63V (1J)		
		D x L	Impedance (Ω, Max / 100KHz) 20°C	Ripple Current (mA / rms. 105°C) 100KHz	D x L	Impedance (Ω, Max / 100KHz) 20°C	Ripple Current (mA / rms. 105°C) 100KHz	D x L	Impedance (Ω, Max / 100KHz) 20°C	Ripple Current (mA / rms. 105°C) 100KHz
15	150							5 x 11	0.88	165
								6.3 x 9	1.15	145
22	220				5 x 12	0.68	190			
					6.3 x 9	0.89	170			
33	330	5 x 11	0.57	200				6.3 x 12	0.35	265
		6.3 x 9	0.74	180				8 x 9	0.46	235
56	560	6.3 x 11	0.21	350	6.3 x 11	0.3	300	8 x 12	0.22	500
		8 x 9	0.27	310	8 x 9	0.39	270	10 x 9	0.29	440
82	820							8 x 16	0.16	665
								10 x 12.5	0.11	690
100	101	8 x 12	0.17	560	8 x 12	0.17	560			
					10 x 9	0.22	500			
120	121							8 x 20	0.12	820
					8 x 16	0.12	740	10 x 16	0.076	950
150	151	8 x 12	0.13	660	10 x 12.5	0.12	0.12			
		10 x 9	0.17	590						
180	181							10 x 20	0.056	1150
					8 x 20	0.09	910	12.5 x 16	0.072	1150
220	221	8 x 16	0.086	850	10 x 16	0.084	1050	10 x 25	0.046	1350
		10 x 12.5	0.08	870						
270	271	8 x 20	0.069	1050	10 x 20	0.058	1230			
					12.5 x 16	0.061	1260			
330	331	10 x 16	0.06	1230	10 x 25	0.055	1440	12.5 x 20	0.041	1500
390	391							12.5 x 25	0.031	1900
470	471				10 x 30	0.043	1700	12.5 x 30	0.028	2300
		10 x 20	0.46	1400	12.5 x 20	0.045	1660			
		12.5 x 16	0.046	1400	16 x 15	0.055	1690	16 x 20	0.032	2000
560	561	10 x 25	0.042	1650	12.5 x 25	0.034	1960	12.5 x 35	0.024	2500
680	681	10 x 30	0.03	1920	12.5 x 30	0.03	2310	12.5 x 40	0.021	2800
		12.5 x 20	0.035	1910				16 x 25	0.025	2600
		16 x 15	0.041	1950				18 x 20	0.03	2500
820	821				12.5 x 20	0.031	1250			
					12.5 x 35	0.025	2510	16 x 30	0.021	2850
					16 x 20	0.034	2210	18 x 25	0.024	2800
1000	102	12.5 x 25	0.026	2230	12.5 x 40	0.021	2920	16 x 35	0.019	2900
					16 x 25	0.025	2560			
					18 x 20	0.036	2490			
1,200	122	12.5 x 30	0.024	2650	16 x 30	0.021	3010	16 x 40	0.018	3400
		16 x 20	0.028	2247						
		16 x 25	0.027	2530	18 x 25	0.026	2740	18 x 30	0.02	3300
1,500	152	12.5 x 35	0.02	2880	16 x 35	0.019	3150	18 x 35	0.018	3400
1,800	182	12.5 x 40	0.017	3350	16 x 40	0.016	3710	18 x 40	0.017	3500
		16 x 25	0.021	2930						
		18 x 20	0.015	4170	18 x 30	0.021	3640			
2,200	222	16 x 30	0.017	3450	18 x 35	0.017	3680			
		18 x 25	0.019	3140						
2,700	272	16 x 35	0.015	3610	18 x 40	0.014	3800			
		18 x 30	0.015	4170						
3,300	332	16 x 40	0.012	4100						
		18 x 35	0.014	4220						
3,900	392	18 x 40	0.011	4300						

DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: D x L(mm)
105°C

V DC / Code / μF		80V (1K)			100V (2A)			120V (2B)		
		D x L	Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105˚C)	D x L	Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105˚C)	D x L	Impedance (Ω, Max / 100KHz)	Ripple Current (mA / rms. 105˚C)
			20˚C	100KHz		20˚C	100KHz		20˚C	100KHz
6.8	6R8				5 x 11	1.4	125			
					6.3 x 9	1.9	110			
10	100							6.3 x 11	6	85
15	150				6.3 x 12	0.57	205	6.3 x 12	5	110
					8 x 9	0.75	180			
18	180							8 x 9	4.5	125
22	220							8 x 12	4	140
27	270				8 x 12	0.36	355			
					10 x 9	0.45	310			
33	330							8 x 16	3.5	245
								10 x 12.5	3.5	245
39	390				8 x 16	0.25	450			
47	470				10 x 12.5	0.17	480	8 x 20	2.8	300
								10 x 16	2.8	315
56	560				8 x 20	0.19	565	10 x 16	2.5	315
68	680	10 x 12.5	0.17	480	10 x 16	0.11	600	10 x 16	2.2	315
82	820				10 x 20	0.084	800	10 x 20	2	330
100	101	10 x 16	0.11	600	12.5 x 16	0.11	750	10 x 25	1.7	417
120	121	10 x 20	0.084	800	10 x 25	0.069	900	12.5 x 20	1.5	470
150	151	10 x 25	0.069	900	12.5 x 20	0.062	1100	12.5 x 25	1	620
		12.5 x 16	0.11	750						
220	221	12.5 x 20	0.062	1100	12.5 x 25	0.047	1250	13 x 30	0.85	760
					16 x 20	0.048	1350	16 x 20	0.85	760
270	271				12.5 x 30	0.042	1500	16 x 25	0.6	860
								18 x 20	0.6	860
330	331	12.5 x 25	0.047	1250	12.5 x 35	0.036	1650	16 x 30	0.46	930
					16 x 25	0.038	1700			
		16 x 20	0.048	1350	18 x 20	0.045	1500	18 x 25	0.46	930
390	391	12.5 x 30	0.042	1500	12.5 x 40	0.032	1800			
470	471	12.5 x 35	0.036	1650	16 x 30	0.032	1850	16 x 40	0.33	1035
		16 x 25	0.038	1700						
		18 x 20	0.045	1500	18 x 25	0.036	1750	18 x 30	0.33	1035
560	561	12.5 x 40	0.032	1800	16 x 35	0.029	2250			
					18 x 30	0.03	2200			
680	681	16 x 30	0.036	2530	16 x 40	0.027	2600			
		18 x 25	0.036	2500	18 x 35	0.027	2600			
820	821	16 x 35	0.029	2600	18 x 40	0.026	2700			
		18 x 30	0.03	2650						
1000	102	16 x 40	0.027	2700						
		18 x 35	0.027	2700						
1,200	122	18 x 40	0.026	2750						

HOW TO MAKE A PART NUMBER (Example below)

RZW 100 M 1H SA 050110

(1) RZW Series
(2) 10 µF Capacitance
(3) ±20% Tolerance
(4) 50V Rated Voltage
(5) Tape and Ammo Packaging
(6) 5 x 11 mm Case Size
(7) Wire and Sleeve Type

1. Series: RZW

2. Capacitance: Rated capacitance in µF is represented by a three digit number. The first two digits are the significant figures of the nominal capacitance and the third digit indicates the number of zeros following these figures. The decimal point is represented by the capital letter R. Please refer to the following example.

µF	0.1	0.47	1	4.7	10	47	100	470	1000	4700	10000
Part Number	0R1	R47	010	4R7	100	470	101	471	102	472	103

3. Tolerance: (20% IS Typical)

Code	K	M	T	W
Tolerance	± 10%	± 20%	+ 50% / -10%	+ 100% / -10%

4. Rated Voltage: Voltage in volts (V) is represented by a two digit code showing the rated working voltage indicated as follows:

Voltage (WV)	6.3	10	16	25	35	40	50	63	80	100	160	200	250	350	400	450
Code	0J	1A	1C	1E	1V	1G	1H	1J	1K	2A	2C	2D	2E	2V	2G	2W

5. Lead Forming & Package

Code	Lead Description	Packaging
BC	Bending Cut	Bulk Packing
BK	Straight Lead	Bulk Packing
CC	Lead Cutting	Bulk Packing
FC	Lead Forming & Cutting	Bulk Packing
FF	Lead Forming	Bulk Packing
SC	Snap-in & Cutting	Bulk Packing
SD	Cathode Lead Beading	Bulk Packing
SF	Snap-in, Forming & Cutting	Bulk Packing
SA	Straight Lead	Tape & Ammo
TA	Lead Forming	Tape & Ammo
SR	Straight Lead	Tape & Reel
TR	Lead Forming	Tape & Reel

6. Can Size
Diameter (mm)x10 & Length (mm)x10. Can Size 063110, represents 6.3mm diameter by 11mm length.
7. Sleeve Type* = (Omit) PVC Sleeve
P = PET Sleeve

*Note: All standard RFE Aluminum Electrolytic Capacitors are Lead (Pb) free and RoHS compliant. PET sleeve is available for those companies that also require PVC free product.

LEADED TAPING & PACKAGING SPECIFICATIONS Taping Specification for Radial Lead Type

Fig. 1

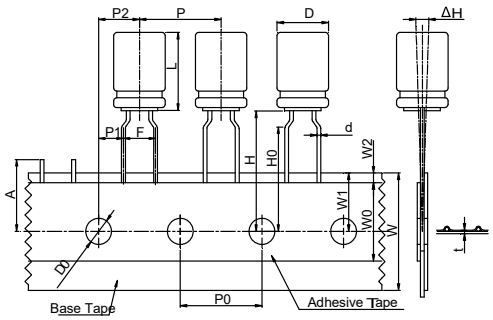


Fig. 2

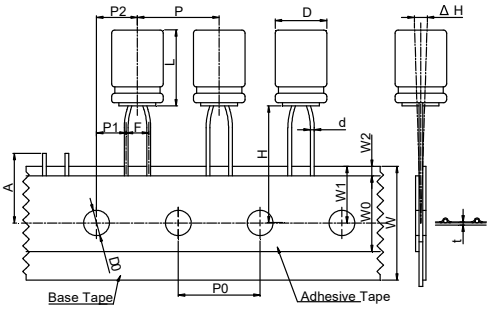


Fig. 3

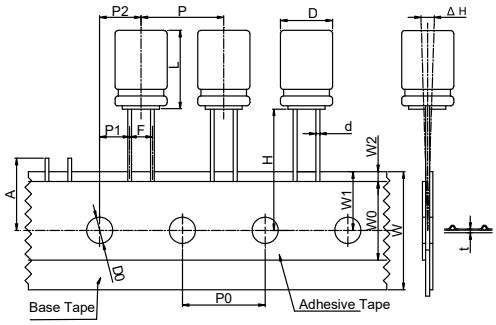
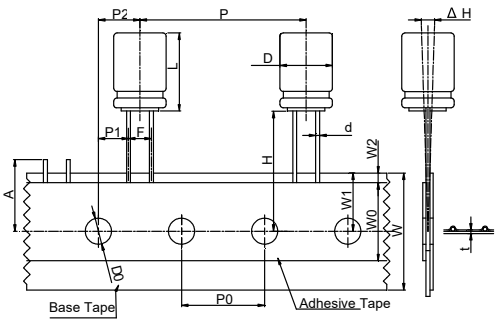


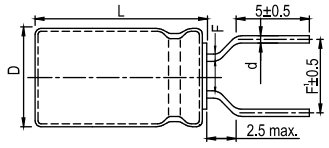
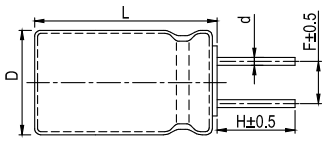
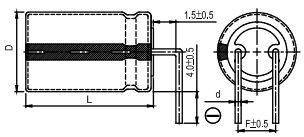
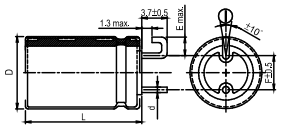
Fig. 4



Packing	TA,TR (Fig. 1)								SA, SR (Fig. 2, 3, 4)											
L	L≤ 7mm					L ≥ 7mm			L ≤ 7mm					L ≥ 7mm						
D / Symbol	3	4	5	6.3	8	5	6.3	8	3	4	5	6.3	8	5	6.3	8	Tol.	10	13	Tol.
d	0.4	0.45	0.5	0.5	0.5	0.5	0.5	0.6	0.4	0.45	0.45	0.45	0.45	0.5	0.5	0.6	± 0.05	0.6	0.6	± 0.05
F	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.5	2.5	2.5	2.5	3.5	2.5	2.5	3.5	-0.2/+0.8	5.0	5.0	-0.2/+0.8
P	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 1.0	12.7	25.4	± 1.0
P0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	± 0.2	12.7	12.7	± 0.30
P2	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	6.35	± 1.0	6.35	6.35	± 1.3
P1	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	5.1	5.1	5.1	5.1	4.6	5.1	5.1	4.6	± 0.5	3.85	3.85	± 0.7
H	17.5	17.5	17.5	17.5	17.5	18.5	18.5	20.0	17.5	17.5	17.5	17.5	17.5	18.5	18.5	18.5	± 0.75	18.5	18.5	± 0.75
H0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	--	--	--	--	--	--	--	--	± 0.5	--	--	± 0.5
W	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	± 0.5	18.0	18.0	± 0.5
W0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	Min	12.0	12.0	Min.
W1	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	± 0.5	9.0	9.0	± 0.5
W2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	Max.	1.5	1.5	Max.
D0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	± 0.2	4.0	4.0	± 0.2
t	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	± 0.2	0.7	0.7	± 0.2
Δ H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	± 1.0	0	0	± 1.0
ℓ	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	Max.	1.0	1.0	Max.
A	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	Max.	11	11	Max.
Fig. No.	1	1	1	1	1	1	1	1	2	2	2	3	3	2	3	3		3	3,4	

RADIAL FORMING

Lead Forming & Cutting Specifications for Radial Type (Unit: mm)

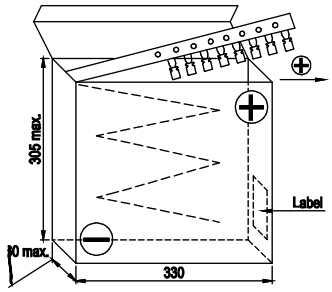
Forming Method	Code	Shape	Dimensions
Forming Cut (4 ~ 8)	FC		
Cut (3 ~ 25)	CC		
Bending Cut (5 ~ 25)	BC		
(10 ~ 25)	SD		

D x L	d	F	F¹	H
3 x 5	0.40	1.0	5.0	5.0
4 x 5	0.45	1.5	5.0	5.0
5 x 5	0.45	2.0	5.0	5.0
6.3 ~ 8 x 5	0.45	2.5	5.0	5.0
4 x 7	0.45	1.5	5.0	5.0
5 x 7 ~ 11	0.5	2.0	5.0	5.0
6 x 7 ~ 15	0.5	2.5	5.0	5.0
8 x 7 ~ 9	0.5	3.5	5.0	5.0
8 x 11.5 ~ 20	0.6	3.5	5.0	5.0
10	0.6	5.0	-	4.5
12.5	0.6	5.0	-	4.5
16	0.8	7.5	-	4.5
18	0.8	7.5	-	4.5
22	1.0	10.0	-	4.5
25	1.0	12.5	-	4.5

D x L	d	F±0.5
5 X 11	0.5	2.0
6.3 X 11 ~ 15	0.5	2.5
8 X 11.5 ~ 20	0.6	3.5
10	0.6	5.0
12.5	0.6	5.0
16	0.8	7.5
18	0.8	7.5
22	1.0	10.0
25	1.0	12.5

Ammo pack box.(SA,TA)
10 Boxes per carton

Reel pack box.(SR,TR)



Packaging Quantity

D	3	4	5	6.3	8	10	13
TA, SA	3000	2000	2000	2000	1000	500	250
TR, SR	3000	1500	1200	1000	800	500	500

NOTES:
1. The above quantities are typical. Quantities may vary.
2. The component will be oriented on the tape so that the positive lead is leading or the negative lead is leading, depending on the customer's request