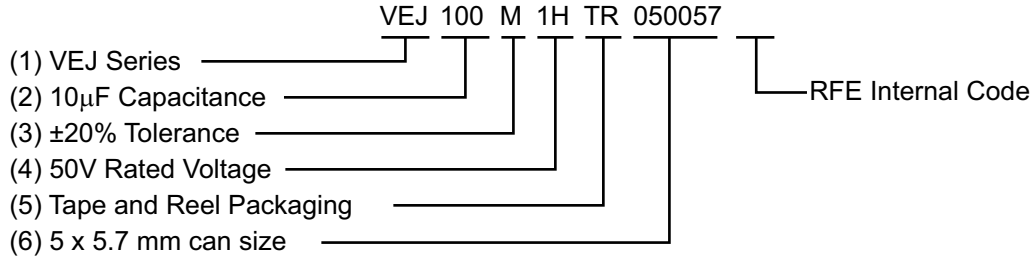


FEATURES

- Standard 105°C, 2,000 hours assured
- Voltage Range 6.3 Vdc ~ 450Vdc, 4Φ ~ 18Φ
- Capacitance Range 1μF ~ 8,200 μF
- Automotive version available, TS-16949



PART NUMBER EXAMPLE



SPECIFICATIONS

Items	Performance												
Operating Temperature Range	6.3 ~ 100V					160 ~ 450V							
	-55 °C ~ +105°C					-40°C ~ +105°C							
Capacitance Tolerance	Standard (±20% (at 120Hz, 20°C), Option ± 10% (at 120Hz, 20°C))												
Leakage Current (at 20°C)	Rated Voltage	6.3 ~ 100V					160 ~ 450V						
	Time	after 2 minutes					after 5 minutes						
	Case Size	4 ~ 10φ			12.5 ~ 18φ			12.5 ~ 18φ					
	Leakage Current	I = 0.01CV or 3 A, whichever is greater					I = 0.03CV or 4 A, whichever is greater			I = 0.04CV + 100 A			
Dissipation Factor (Tan δ at 120Hz, 20°C)	Where, C = rated capacitance in μF V = rated DC working voltage in V												
	Rated Voltage	6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450		
	4 ~ 10	0.45	0.35	0.28	0.18	0.16	0.14	0.12	0.12	-	-		
Low Temperature Characteristics (at 120Hz)	12.5 ~ 18	0.40	0.38	0.34	0.26	0.22	0.18	0.14	0.10	0.20	0.25		
	When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.												
	Impedance ratio shall not exceed the values given in the table below.												
Impedance Ratio	Rated Voltage		6.3	10	16	25	35	50	63	100	160 ~ 250	400 ~ 450	
	Z (-25°C)/Z(+20°C)	φD < 12.5	4	4	3	2	2	2	2	2	3	-	-
		φD < 12.5	5	4	3	2	2	2	2	2	2	3	6
	Z(-55/-40°C)/Z(+20°C)	φD < 12.5	12	8	6	4	3	3	3	3	4	-	-
Endurance	Test Time		2,000 Hrs										
	Capacitance Change		Within ±25% of initial value for φ D ≤ 6.3mm; Within ± 20% of initial value for φ D ≥ 8mm										
	Dissipation Factor		Less than 300% of specified value for φ D ≤ 6.3mm; less than 200% of specified value for φ D ≥ 8mm										
	Leakage Current		Within specified value										
	The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hrs at 105°C												
Shelf Life Test	Test Time: 1,000 hrs; other items are the same as those for the Endurance. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1).												
Ripple Current & Frequency Multipliers	Cap. (μF)	Freq. (Hz)	50	120	1k	10k up							
		Under 1,000	0.80	1.00	1.25	1.40							
	1,000 < C ≤ 8,200	0.85	1.00	1.15	1.25								

DIMENSION & PERMISSIBLE RIPPLE CURRENT

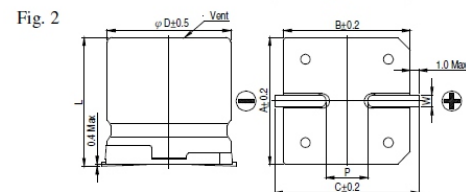
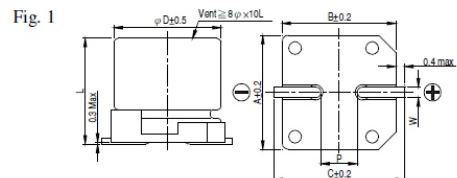
Unit: mm

μF	V.DC	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		Code	φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA	φD x L	mA	φD x L
1	010											4 x 5.7	8	4 x 5.7	8		
2.2	2R2											4 x 5.7	12	4 x 5.7	12		
3.3	3R3											4 x 5.7	14	5 x 5.7	17		
4.7	4R7							4 x 5.7	17	4 x 5.7	17	5 x 5.7	20	6.3 x 5.7	22		
10	100					4 x 5.7	20	4 x 5.7	20	5 x 5.7	27	6.3 x 5.7	32	6.3 x 5.7	32		
22	220	4 x 5.7	22	4 x 5.7	22	5 x 5.7	30	5 x 5.7	30	6.3 x 5.7	44	6.3 x 5.7	38	6.3 x 7.7	58	8 x 10	100
33	330	5 x 5.7	34	5 x 5.7	34	5 x 5.7	34	6.3 x 5.7	46	6.3 x 5.7	46	6.3 x 7.7	65	8 x 10	140	10 x 10	150
47	470	5 x 5.7	38	5 x 5.7	38	6.3 x 5.7	48	6.3 x 5.7	48	6.3 x 7.7	80	6.3 x 7.7	70	8 x 10	170	12.5 x 13.5	250
100	101	6.3 x 5.7	69	6.3 x 5.7	69	6.3 x 5.7	69	6.3 x 7.7	100	8 x 10	240	8 x 10	210	10 x 10.3	310	12.5 x 13.5	380
220	221	6.3 x 7.7	120	6.3 x 7.7	120	6.3 x 7.7	120	8 x 10 10 x 7.7	270 270	8 x 10	270	10 x 10.3	330	12.5 x 13.5	470	16 x 16.5	450
330	331	8 x 10	290	8 x 10	290	8 x 10 10 x 7.7	290 290	8 x 10	290	10 x 10	370	12.5 x 13.5	490	16 x 16.5	650	18 x 16.5 16 x 21.5	590 750
470	471	8 x 10	320	8 x 10 10 x 7.7	320 320	10 x 10	380	10 x 10	380	12.5 x 13.5	520	12.5 x 16	550	16 x 16.5	700	18 x 21.5	980
1,000	102	10 x 10	410	10 x 10.3	410	12.5 x 13.5	550	12.5 x 16	550	16 x 16.5	800	18 x 16.5	990				
2,200	222	12.5 x 13.5	680	12.5 x 13.5	680	16 x 16.5	900	16 x 16.5	900	18 x 16.5	1,050						
3,300	332	12.5 x 16	850	16 x 16.5	950	16 x 16.5	950	18 x 16.5 16 x 21.5	1,150 1,200								
4,700	472	16 x 16.5	1,000	16 x 16.5	1,000	18 x 16.5 16 x 21.5	1,225 1,275	18 x 21.5	1,300								
6,800	682	18 x 16.5 16 x 21.5	1,290 1,350	18 x 16.5 16 x 21.5	1,290 1,350												
8,200	822	18 x 21.5	1,450	18 x 21.5	1,450												

μF	V.DC	160V (2C)		200V (2D)		250V (2E)		400V (2G)		450V (2W)	
		Code	φD x L	mA	φD x L	mA	φD x L	mA	D x L	mA	D x L
3.3	3R3					12.5 x 13.5	60			12.5 x 13.5	40
4.7	4R7					12.5 x 13.5	65	12.5 x 13.5	45	12.5 x 13.5	45
10	100			12.5 x 13.5	80	12.5 x 13.5	70	12.5 x 13.5	50	12.5 x 16	75
22	220			12.5 x 16	10	12.5 x 13.5	105	16 x 16.5	85	16 x 16.5	85
33	330	12.5 x 13.5	95	12.5 x 16	120	16 x 16.5	180	18 x 16.5	100	18 x 16.5	100
47	470	16 x 16.5	240	16 x 16.5	220	16 x 16.5	220	18 x 21.5	130		
100	101	16 x 16.5	250	18 x 16.5	280	18 x 16.5	260				

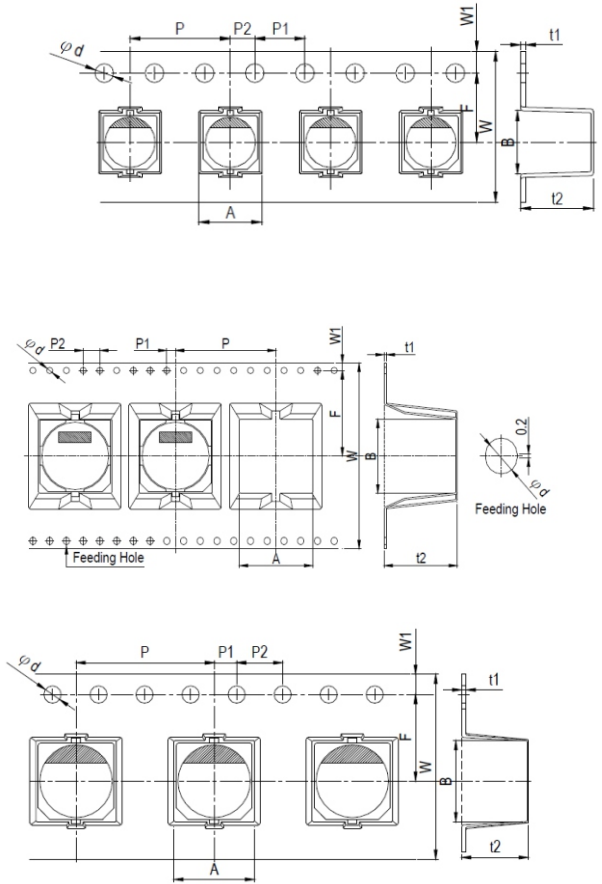
LEAD SPACING AND DIAMETER

D	L	A	B	C	W	P±0.2	Fig. No.
4	5.7 ± 0.3	4.3	4.3	5.1	0.5 ~ 0.8	1.0	1
5	5.7 ± 0.3	5.3	5.3	5.9	0.5 ~ 0.8	1.5	1
6.3	5.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0	1
8	10.0 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1	1
10	7.7 ± 0.3	10.4	10.4	11.0	0.7 ~ 1.3	4.7	1
10	10.0 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7	1
10	10.3 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7	1
13	13.5 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
13	16.0 ± 0.5	13.0	13.0	13.7	1.1 ~ 1.4	4.4	2
16	16.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
16	21.5 ± 0.5	17.0	17.0	18.0	1.1 ~ 1.4	6.4	2
18	16.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2
18	21.5 ± 0.5	19.0	19.0	20.0	1.1 ~ 1.4	6.4	2

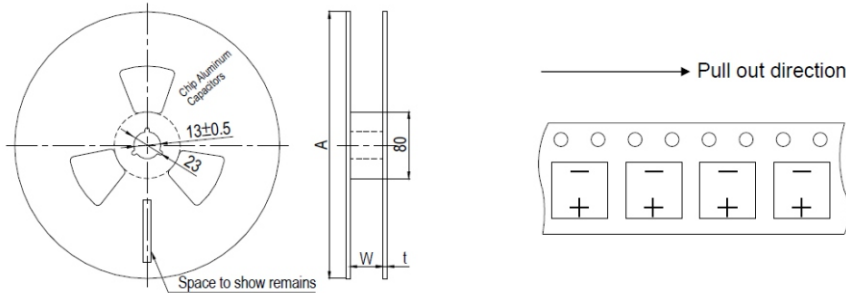


TAPING SPECIFICATIONS

ΦD x L	A	B	d	F	P	P1	P2	t1	t2	W	W1	Fig. No.
3 ~ 4 x 4.5 ~ 5.3	5.0	5.0	1.5	5.5	8.0	2.0	4.0	0.4	5.8	12.0	1.75	1-1
4 x 5.7	5.0	5.0		5.5	8.0				6.2			
5 x 4.5 ~ 5.3	6.0	6.0		5.5	12.0				5.8			
5 x 5.7 (*)	6.0	6.0		5.5	12.0				6.2			
6.3 x 4.5 ~ 5.3	7.0	7.0		7.5	12.0				5.8			
6.3 x 5.7									6.2			
6.3 x 5.9*									6.2			
6.3 x 7.0*									6.8			
6.3 x 7.7									8.3			
8 x 6.5									6.8			
8 x 6.7*	8.7	8.7		11.5	16.0				11.0			
8 x 10									11.0			
8 x 12*									13.0			
10 x 7.7*									10.0			
10 x 10 (9.9*)	10.7	10.7		14.2	24.0				11.0			
10 x 12.7*									14.0			
12.5 x 13.5	13.4	13.4	14.2	24.0	15.0	32.0						
12.5 x 13.5 (G)	13.7	13.7	14.2	24.0	15.0	32.0						
12.5 X 16	13.4	13.4	14.2	24.0	17.5	32.0						
12.5 X 16 (G)	13.7	13.7	14.2	24.0	17.5	44.0						
16 X 16.5	17.5	17.5	20.2	28.0	17.5	44.0						
16 X 16.5 (G)	17.5	17.5	20.2	28.0	17.5	44.0						
16 X 21.5	17.5	17.5	20.2	28.0	22.5	44.0						
18 X 16.5	19.5	19.5	20.2	32.0	17.5	44.0						
18 X 21.5	19.5	19.5	20.2	32.0	22.5	44.0						
Tolerance	± 0.2	± 0.2	+0.1 / -0	± 0.1	± 0.2	± 0.1	± 0.1	± 0.1	± 0.2	± 0.3	± 0.15	



REEL SPECIFICATIONS

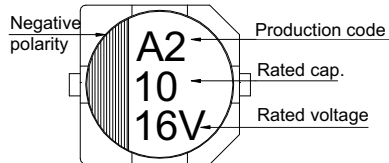


Unit: mm

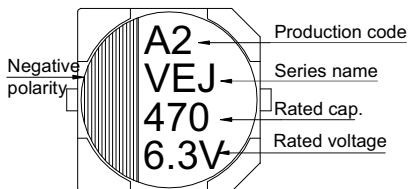
Case Size	3 ~ 4Φ	5Φ	6.3Φ	8Φ x 6.5 ~ 7.0L	8Φ x 10 ~ 12L	10Φ	12.5Φ	16 ~ 18Φ
W	14	14	18	18	26	26	34	46
A	380	380	380	380	380	380	380 / 450	380 / 450
t	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0

■ LEGACY MARKING

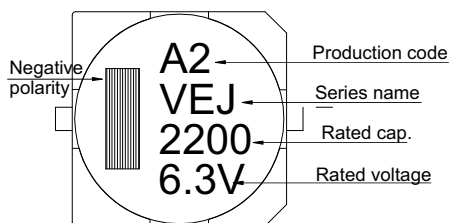
$\phi D = 4 \sim 6.3 \text{ mm}$



$\phi D = 8 \sim 10 \text{ mm}$



$\phi D = 12.5 \sim 18 \text{ mm}$



■ NEW MARKING

$\phi D \geq 6.3 \text{ mm}$

