

**GVS** 4.5mmL, 105°C, 1000Hrs, Standard Series



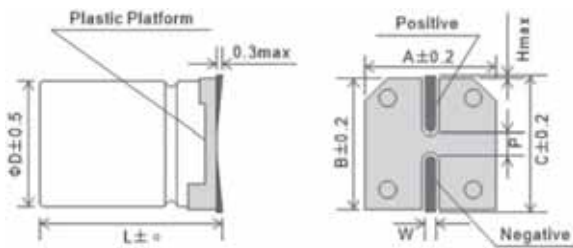
**Features**

105°C, 1000 hours assured.  
Available for high density surface mounting.  
High stability and reliability.

**Specifications**

Item	Condition	Specifications							
Category Temperature Range(°C)	—	-55°C ~ +105°C							
Capacitance Tolerance (%)	120Hz, 20°C	±20%							
Rated Voltage (v)	—	4	6.3	10	16	25	35	50	
Dissipation Factor (tanδ)	120Hz, 20°C (Max.)	tanδ	0.40	0.30	0.24	0.20	0.18	0.16	0.14
		Notes	Exceeding 1,000uF, +0.02 every 1,000uF						
Leakage Current (LC)	After 2 minutes, 20°C (uA, Max.)	0.01CV or 3uA, whichever is greater.							
Low Temperature Characteristics	Impedance Ratio (Max.)	Z <sub>-25°C</sub> /Z <sub>+20°C</sub>	7	4	3	2	2	2	2
		Z <sub>-40°C</sub> /Z <sub>+20°C</sub>	15	8	5	4	3	3	3
Endurance	105°C, Rated Voltage Applied (With the rated ripple current)	Hours	1,000						
		ΔC/C	Within ±30% of initial value						
		tanδ	300% or less of the initial specified value						
		LC	The initial specified value or less						
Shelf life	105°C	Hours	1,000						
		Other Items	same as those for the endurance.						

**Dimensions**



D	L	A	B	C	P	α	W
4	4.5	4.3	4.3	5.0	1.0	±0.3	0.5-0.8
5	4.5	5.3	5.3	6.0	1.5	±0.3	0.5-0.8
6.3	4.5	6.6	6.6	7.3	2.0	±0.3	0.5-0.8

**Rated Ripple Current Multipliers**

Frequency (Hz)	50	120	1k	10k up
Capacitance (uF)	0.70	1.00	1.3	1.40
Under 100	0.70	1.00	1.3	1.40

**GVS** Series

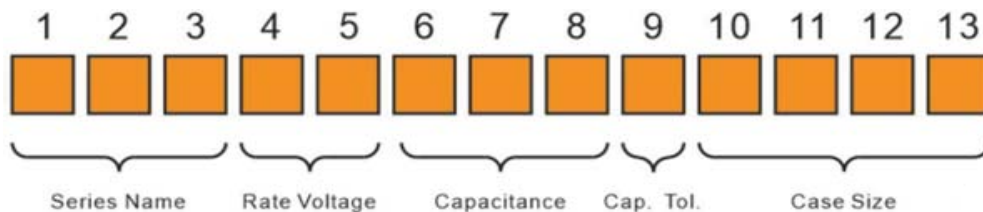
■ Dimensions

uF \ WV	4v		6.3v		10v		16v		25v		35v		50v	
	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.
0.47													4x4.5	3.3
1.0													4x4.5	5.4
2.2													4x4.5	9.6
3.3													4x4.5	12
4.7									4x4.5	11	4x4.5	13	5x4.5	16
10							4x4.5	16	5x4.5	20	5x4.5	22	6.3x4.5	26
22			4x4.5	19	5x4.5	24	5x4.5	26	6.3x4.5	33	6.3x4.5	36		
33	4x4.5	22	5x4.5	26	5x4.5	30	6.3x4.5	35	6.3x4.5	42	6.3x4.5	45		
47	4x4.5	28	5x4.5	32	6.3x4.5	40	6.3x4.5	44	6.3x4.5	46				
100	5x4.5	44	6.3x4.5	52	6.3x4.5	56	6.3x4.5	58						

Note1: Case size ΦD x L(mm), ripple current (mA, rms) at 105°C, 120Hz.

Note2: Produce custom product too, which are not found in these tables.

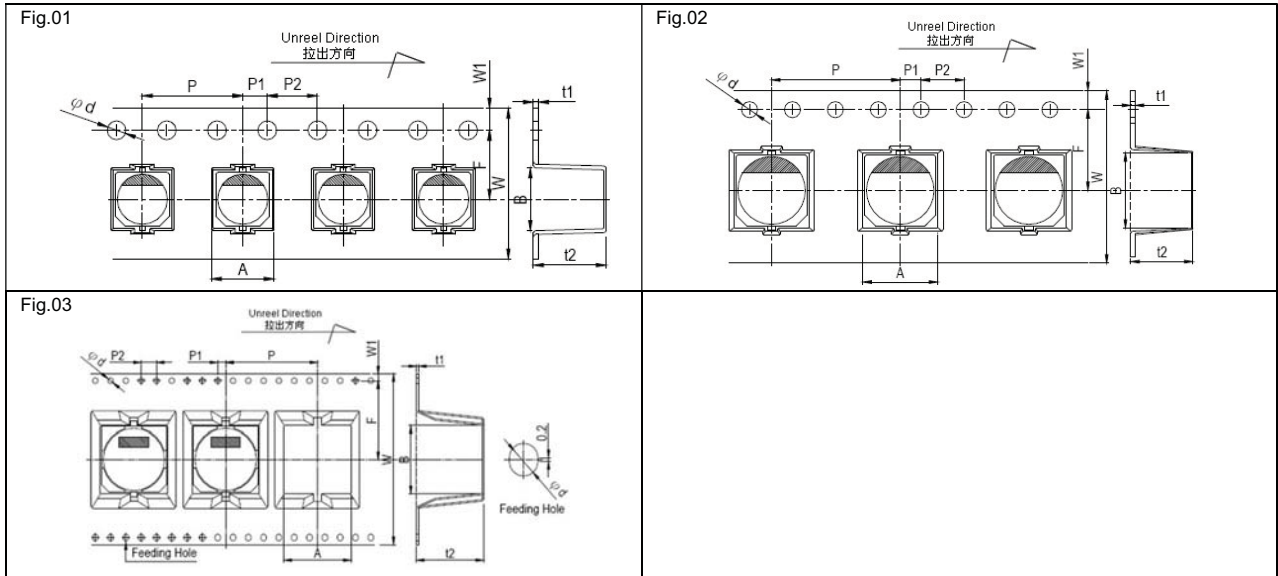
■ Explanation of Part Numbers



(1-3)			(4-5)		(6-8)		(9)	(10-13)	
Series	Voltage (W.V)	Code	Capacitance (UF)	Code	Cap. Tolerance (%)	Code	Size $\phi$ DxL	Code	
GVS	4	0G	0.1	0R1	+5	J	4x5(5.7)	0405	
GVT	6.3	0J	0.22	0R22	-5		4x7	0407	
GVE	10	1A	0.33	0R33	+10	K	5x5(5.7)	0505	
GVZ	16	1C	0.47	0R47	-10		5x7	0507	
GVM	25	1E	1	1R0	+15	L	5x11	0511	
GVL	35	1V	2.2	2R2	-15		6.3x5(5.7)	0605	
GVU	50	1H	3.3	3R3	+20	M	6.3x7(7.7)	0607	
GVY	63	1J	4.7	4R7	-20		6.3x11	0611	
GVF	80	1K	10	100	+30	N	8x5	0805	
GVR	100	2A	22	220	-30		8x6.5	0806	
GVG	125	2B	33	330	+20	V	8x9	0809	
GVD	160	2C	47	470	-10		8x10(10.5)	0810	
GVP	180	2Z	68	680	+30	Q	8x11(11.5)	0811	
GVT	200	2D	100	101	-10		8x12	0812	
GVC	220	2P	220	221	+50	T	10x10(10.5)	1010	
GVN	250	2E	330	331	-10		10x12.5	1012	
GVK	315	2F	470	471	+50	S	10x14	1014	
GVA	330	2L	680	681	-20		12.5x13.5	1213	
	350	2V	1000	102	+80	Z	12.5x16	1216	
	400	2G	2200	222	-20		16x16.5	1616	
	420	2Q	3300	332	+20	R	16x25	1625	
	450	2W	4700	472	-0		20x25	2025	
	500	2H	6800	682			35x42	3542	

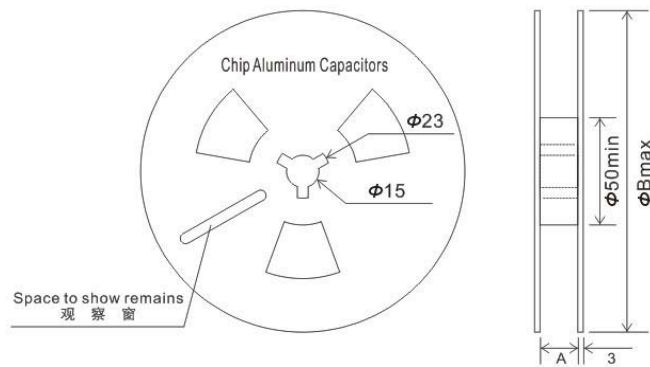
## ■ Taping Specifications

### ■ Carrier Tape



Case Size	W (mm)	W1 (mm)	F (mm)	P (mm)	P1 (mm)	P2 (mm)	A (mm)	B (mm)	t1 (mm)	t2 (mm)
φ 4x5.7	12	1.75	5.5	8	2	4	4.7	4.7	0.4	6.3
φ 5x5.7	12		5.5	12			6	6		6.3
φ 6.3x5.7	16		7.5	12			7	7		6.3
φ 6.3x7.7	16		7.5	12			7	7		8.3
φ 8x6.5	16		7.5	12			8.7	8.7		7
φ 8x10.5	24		11.5	16			8.7	8.7		11
φ 10x10.5	24		11.5	16			10.7	10.7	11	
φ 10x13.5	24		11.5	16			10.7	10.7	14.1	
φ 12.5x13.5	32		14.2	24			14	14	14.1	
φ 12.5x16	32		14.2	24			14	14	16.4	
φ 16x16.5	44	20.2	28	17.5	17.5	16.9				
φ 16x21.5	44	20.2	28	17.5	17.5	21.9				
φ 18x16.5	44	20.2	32	19.5	19.5	16.9				
φ 18x21.5	44	20.2	32	19.5	19.5	21.9				
Tolerance	±0.3	±0.15	±0.1	±0.1	±0.1	±0.1	±0.2	±0.2	±0.1	±0.2

### ■ Carrier Tape



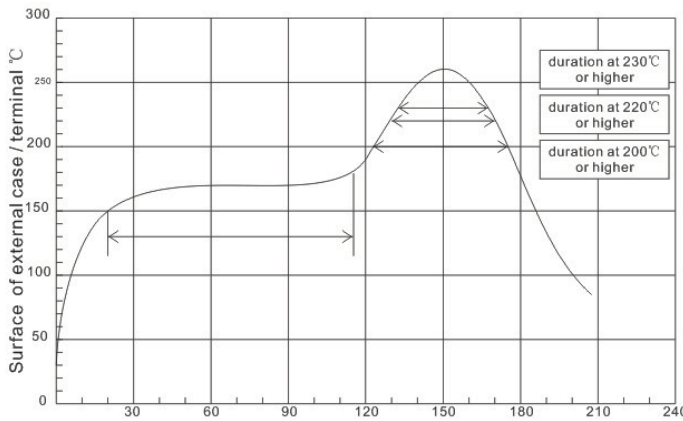
Case Size	Reel	Carton	A±0.3	B±2	Case Size	Reel	Carton	A±0.3	B±2
φ 4x5.7	2000	20000	14	382	φ 10x13.5	300	3000	26	382
φ 5x5.7	1000	10000	14	382	φ 12.5x13.5	200	600	34	332
φ 6.3x5.7	1000	10000	18	382	φ 12.5x16	150	450	34	332
φ 6.3x7.7	1000	10000	18	382	φ 16x16.5	125	250	46	332
φ 8x6.5	1000	10000	18	382	φ 16x21.5	75	150	46	332
φ 8x10.2	500	5000	26	382	φ 18x16.5	125	250	46	332
φ 10x10.2	500	5000	26	382	φ 18x21.5	75	150	46	332

## Reflow Soldering Conditions

### Recommended soldering heat conditions

- The following conditions are recommended for air convection and infrared reflow soldering on the SMD products onto a glass epoxy circuit boards by cream solder. The temperatures shown are the surface temperature values on the top of the can and on the capacitor terminals.
- Reflow should be performed twice or less.
- Please ensure that the capacitor became cold enough to the room temperature (5 to 35°C) before the second reflow.

### Classification Reflow Profile

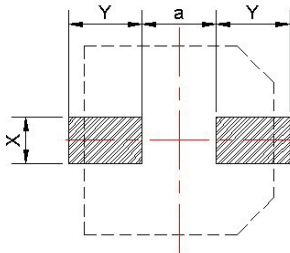


**Notice:**

- Average ramp-up rate is 5°C/second max.
- Ramp-down rate is 6°C/second max.
- Time from 25°C to peak temperature is 6 minutes max.

	Preheat	Time maintained above 200°C	Time maintained above 220°C	Time maintained above 230°C	Peak temp.	Reflow number
Dia. 4~10mm general	120°C to 180°C 120 sec. Max.	60 sec.	50 sec.	30 sec.	250°C Max.	2 times or less
φ8x6.5		50 sec.	40 sec.	25 sec.	245°C Max.	2 times or less
WV 160v-450v		60 sec.	50 sec.	30 sec.	240°C Max.	2 times or less
Dia. 12.5~20mm Cap.		60 sec.	40 sec.	30 sec.	240°C Max.	2 times or less
125°C Category Temp.		60 sec.	40 sec.	30 sec.	250°C Max.	2 times or less

### Recommended Solder Land Size on PC Board



Size	X	Y	a
φ4	1.6	2.6	1.0
φ5	1.6	3.0	1.4
φ6.3	1.6	3.5	2.1
φ8x6.5	1.6	4.5	2.1
φ8x10.5	2.5	3.5	3.0
φ10	2.5	4.0	4.0
φ12.5	3.0	5.7	4.0
φ16	3.5	6.5	6.0