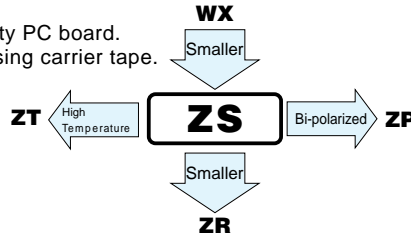


**ZS** 4.5mmL Chip Type  
series



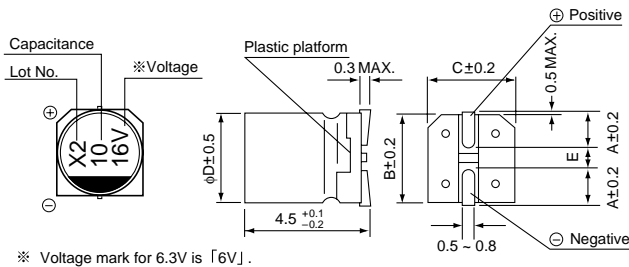
- Chip type with 4.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine using carrier tape.



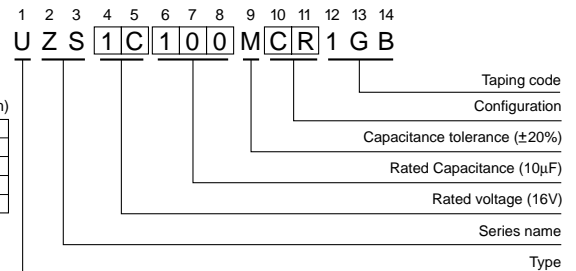
## Specifications

Item	Performance Characteristics							
Category Temperature Range	-40 ~ +85°C							
Rated Voltage Range	4 ~ 50V							
Rated Capacitance Range	0.1 ~ 220μF							
Capacitance Tolerance	±20% at 120Hz, 20°C							
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.							
tan δ	Measurement frequency : 120Hz, Temperature : 20°C							
	Rated voltage (V)	4	6.3	10	16	25	35	50
Stability at Low Temperature	Measurement frequency : 120Hz							
	Impedance ratio	Z-25°C / Z+20°C	7	4	3	2	2	2
Endurance	After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristics requirements listed at right.		Capacitance change		Within ±20% of initial value			
			tan δ		200% or less of initial specified value			
Shelf Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for endurance characteristics listed above.		Leakage current		Initial specified value or less			
Resistance to soldering heat	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the characteristic requirements listed at right.		Capacitance change		Within ±10% of initial value			
			tan δ		Initial specified value or less			
Marking			Leakage current		Initial specified value or less			
Marking	Black print on the case top.							

## Chip Type



## Type numbering system (Example : 16V 10μF)



- The lead-free product is also available upon request. In this case, □ will be put at 11th digit of type numbering system.

## Dimensions

Cap. (μF)	Code	4		6.3		10		16		25		35		50	
		0G		0J		1A		1C		1E		1V		1H	
0.1	0R1													4	1.0
0.22	R22													4	2.0
0.33	R33													4	2.8
0.47	R47													4	4.0
1	010													4	8.4
2.2	2R2													4	13
3.3	3R3													4	17
4.7	4R7													4	20
10	100							4	23	4	16	4	18	5	20
22	220			4	28	5	33	5	37	6.3	42	6.3	46	6.3	33
33	330	4	28	5	37	5	41	6.3	49	6.3	52				
47	470	4	33	5	45	6.3	52	6.3	58						
100	101	5	56	6.3	70										
220	221	6.3	96												

Rated Ripple (mA rms) at 85°C 120Hz

## Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz~
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 22.
- Recommended land size are given in page 23
- Please refer to page 3 for the minimum order quantity.