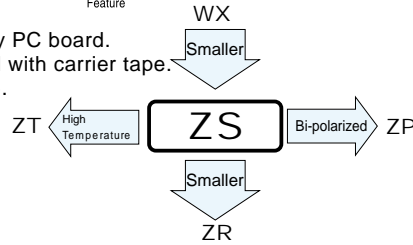


ZS 4.5mmL Chip Type



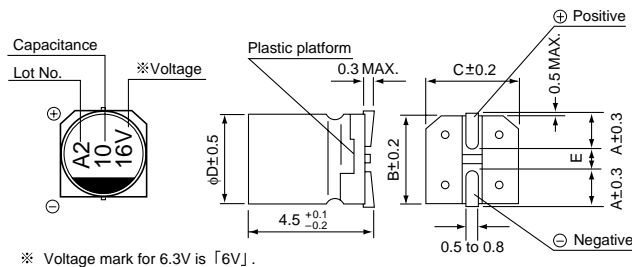
- Chip type with 4.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

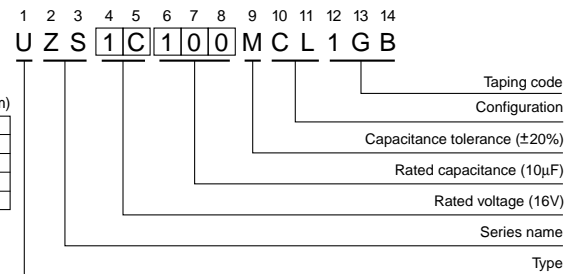
Item	Performance Characteristics								
Category Temperature Range	-40 to + 85°C								
Rated Voltage Range	4 to 50V								
Rated Capacitance Range	0.1 to 220μF								
Capacitance Tolerance	±20% at 120Hz, 20°C								
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) ,whichever is greater.								
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C								
	Rated voltage (V)	4	6.3	10	16	25	35	50	
	tan δ (MAX.)	0.50	0.30	0.24	0.19	0.16	0.14	0.14	
Stability at Low Temperature	Measurement frequency : 120Hz								
	Rated voltage (V)		4	6.3	10	16	25	35	50
	Impedance ratio	Z-25°C / Z+20°C	7	4	3	2	2	2	2
	ZT / Z20 (MAX.)	Z-40°C / Z+20°C	15	8	8	4	4	3	3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.				Capacitance change		Within ±20% of the initial capacitance value		
					tan δ		200% or less than the initial specified value		
					Leakage current		Less than or equal to the initial specified value		
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.								
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.				Capacitance change		Within ±10% of the initial capacitance value		
					tan δ		Less than or equal to the initial specified value		
					Leakage current		Less than or equal to the initial specified value		
Marking	Black print on the case top.								

Chip Type



※ Voltage mark for 6.3V is 「6V」.

Type numbering system (Example : 16V 10μF)



Dimensions

V	4	6.3	10	16	25	35	50
Cap. (μF)	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 16	4 18	5 20
10	100			4 23	5 27	5 29	6.3 33
22	220	4 28	5 33	5 37	6.3 42	6.3 46	
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 current (mA rms) at 85°C 120Hz

Frequency coefficient of rated ripple current

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

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UR(p.154), UG(p.162) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.