HUW Series

Features

- 135℃, 2,000 ~ 4,000 hours assured
- Low ESR and High ripple current
- RoHS compliant
- AEC-Q200 compliant

Marking color: Dark Green

Specifications

Items	Performance
Category Temperature Range	-55℃ ~ +135℃
Capacitance Tolerance	±20% (at 120 Hz, 20℃)
Leakage Current (at 20℃)	I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF, V = rated DC working voltage in V
Tanδ (at 120 Hz, 20℃)	See Standard Ratings
Low Temperature Characteristics (at 100k Hz)	Impedance ratio shall not exceed the values given in the table below

Rated Voltage		16	25	35	50	63
Impedance ratio	Z (-25℃) / Z (+20℃)	1.5	1.5	1.5	1.5	1.5
	Z (-55℃) / Z (+20℃)	2.0	2.0	2.0	2.0	2.0

Endurance

Test Time	135℃	125℃
	2,000 Hrs for φD = 6.3 mm 4,000 Hrs for φD = 8 ~ 10 mm	4,000 Hrs
Capacitance Change	Within ±30% of initial value	
Tanδ	Less than 200% of specified value	
ESR	Less than 200% of specified value	
Leakage Current	Within specified value	

* The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied with rated ripple current for 2,000 / 4,000 hours at 125 or 135℃.

Shelf Life Test

* After storage for 1,000 hours at 135 ± 2℃ with no voltage applied and then being stabilized at 20℃, capacitors shall meet the limits specified in Endurance. (With voltage treatment)

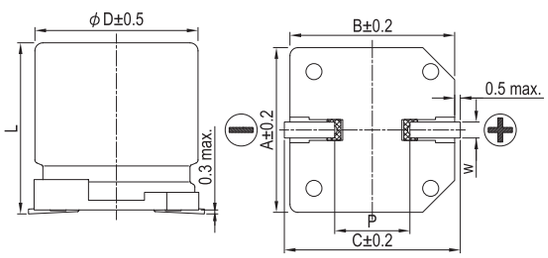
Resistance to Soldering Heat (Please refer to page 15 for reflowsoldering conditions)

Capacitance Change	Within ±10% of initial value
Tanδ	Within specified value
ESR	Within specified value
Leakage Current	Within specified value

Ripple Current and Frequency Multipliers

Frequency (Hz)	120 ≦ f < 1k	1k ≦ f < 10k	10k ≦ f < 100k	100k ≦ f < 500k
Multiplier	0.1	0.3	0.6	1.0

Diagram of Dimensions

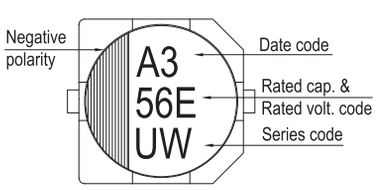


Lead Spacing and Diameter Unit: mm

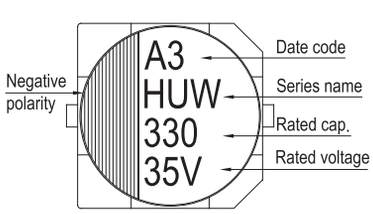
φD	L	A	B	C	W	P ± 0.2
6.3	5.8 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	10.0 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	10.0 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	12.5 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	16.5 ± 0.5	10.3	10.3	11.0	1.0 ~ 1.4	4.7

Marking

φD = 6.3



φD = 8 ~ 10



Dimension: ϕD×L(mm)
Ripple Current: mA/rms at 100k Hz

Standard Ratings

Rated Voltage (V)	Surge Voltage (V)	Capacitance (μF)	Size ϕD×L (mm)	Tanδ (120 Hz, 20℃)	L C (μA)	E S R (mΩ/at 100kHz, 20℃ max.)	Rated R. C. (mA/rms at 100k Hz) 125℃	135℃
16V (1C)	18.4	82	6.3 × 5.8	0.16	13.1	45	1,700	950
		150	6.3 × 7.7		24.0	27	2,500	1,450
		270	8 × 10		43.2	20	3,050	1,700
		470	10 × 10		75.2	18	3,400	2,100
		560	10 × 12.5		89.6	15	4,200	2,550
25V (1E)	28.8	56	6.3 × 5.8	0.14	14.0	50	1,400	900
		100	6.3 × 7.7		25.0	30	2,100	1,400
		220	8 × 10		55.0	22	2,900	1,600
		330	10 × 10		82.5	20	3,300	2,000
		470	10 × 12.5		117	16	4,050	2,500
		560	10 × 16.5		140	14	4,300	2,500
35V (1V)	40.3	47	6.3 × 5.8	0.12	16.5	60	1,400	900
		68	6.3 × 7.7		23.8	35	2,100	1,400
		150	8 × 10		52.5	22	2,900	1,600
		270	10 × 10		94.5	20	3,300	2,000
		330	10 × 12.5		115	17	3,950	2,400
		470	10 × 16.5		164	14	4,300	2,500
50V (1H)	57.5	33	8 × 10	0.10	16.5	30	2,400	1,250
		47	8 × 10		23.5	30	2,400	1,250
		56	10 × 10		28.0	25	2,900	1,600
		68	8 × 10		34.0	30	2,400	1,250
		100	10 × 10		50.0	25	2,900	1,600
		120	10 × 10		60.0	25	2,900	1,600
		150	10 × 12.5		75.0	19	3,700	2,250
		220	10 × 16.5		110	16	4,100	2,400
63V (1J)	72.5	22	8 × 10	0.08	13.9	40	2,100	1,100
		33	8 × 10		20.8	40	2,100	1,100
		33	10 × 10		20.8	30	2,600	1,400
		47	8 × 10		29.6	40	2,100	1,100
		56	10 × 10		35.3	30	2,600	1,400
		82	10 × 10		51.7	30	2,600	1,400
		100	10 × 12.5		63.0	22	3,450	2,100
		150	10 × 16.5		94.5	16	4,100	2,400

Part Numbering System

HUW Series	470μF	±20%	25V	Carrier Tape		10ϕ×12.5L	General Purpose
HUW	**471**	**M**	**1E**	**TR**	**-**	**1013**	
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size	Application

Note: For more details, please refer to “Part Numbering System” on page 87.