**INDUSTRY** 



# **Conductive Polymer Hybrid Aluminum Electrolytic Capacitors**

Surface Mount Type

**ZTU** series

High temperature lead-free reflow

**Hybrid** 

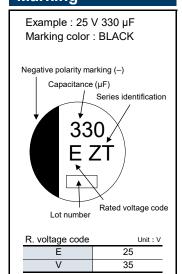
### **Features**

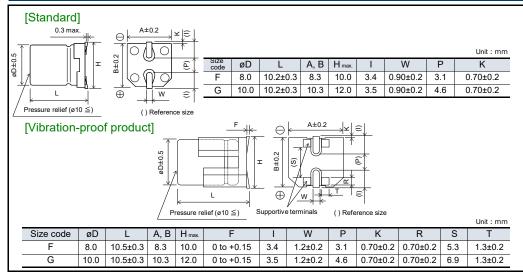
- Endurance: 4000 h at 125 °C / 135 °C
- Higher ripple current (max 180 % of ZC series)
- Larger capacitance (max 170 % of ZT series)
- AEC-Q200 compliant
- RoHS compliant

Specifications						
Size code	F		G			
Category temp. range		−55 °C to	0 +135 °C			
Rated voltage range	25 V to 35 V					
Nominal cap.range	220 µF to 3		390 μF to 560 μF			
Capacitance tolerance	±20 % (120 Hz / +20 ℃)					
Leakage current	I ≤ 0.01 CV (μA), 2 minutes after reaching rated voltage, 20 °C *CV = (Capacitance in μF) x (Rated voltage in V)					
Dissipation factor (tan δ)	Please see the attached characteristics list					
Surge voltage (V)	Rated voltage × 1.25 (15 ℃ to 35 ℃)					
	+125 °C ± 2 °C, 4000 h, apply the rated ripple current without exceeding the rated voltage					
	Capacitance change					
	Dissipation factor (tan δ)	≤ 200 % of the initial limit				
Endurance 1	E.S.R.	≦ 200 % of the initial limit				
Endarance	Leakage current	Within the initial limit				
	ESR after endurance (Ω / 100 kHz)(-40 ℃)	Size code				
		F G				
	, , , ,	0.4 0.3				
	+135 ℃ ± 2 ℃, 4000 h, apply the rated ripple current without exceeding the rated voltage.					
	Capacitance change Within ±30% of the initial value					
	Dissipation factor (tan $\delta$ ) $\leq 200$ % of the initial limit					
Endurance 2		E.S.R. ≤ 200 % of the initial limit				
	Leakage current	0: 1				
	ESR after endurance	Size code				
	(Ω / 100 kHz)(-40 °C)	F G 0.4 0.3				
	, , , ,		hand and the section			
Shelf life	After storage for 1000 hours at +135 °C ± 2 °C with no voltage applied and then being					
Stiell life	stabilized at +20 °C, capacitors shall meet the limits specified in endurance.					
	(With voltage treatment)  85 ℃ ± 2 ℃, 85 % to 90 %RH, 2000 h, rated voltage applied					
Damp heat (Load)	Capacitance change Within ±30% of the initial value					
	Dissipation factor (tan δ)	77.00.00 = 44.00 = 0.00.00				
	E.S.R.	≤ 200 % of the initial limit ≤ 200 % of the initial limit				
	Leakage current	■ 200 % of the initial limit  Within the initial limit				
	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the					
	following limits.					
Resistance to soldering heat	Capacitance change Within ±10% of the initial value					
	Dissipation factor (tan δ)	Within the initial limit				
	Leakage current	Within the initial limit				
	Loakago ourront	Within the initial limit				

## Marking

#### Dimensions (not to scale)





# **Characteristics list**

Endurance 1: 125 °C 4000 h Endurance 2: 135 °C 4000 h

		Case size (mm)				Specification				Part number		Min. packaging
Rated voltage (±20 %) (μF)	øD	ı	L	Size code	Ripple current *1 (mA rms)		ESR*2	tan δ <sup>*3</sup>	Standard	Vibration-proof	q'ty (pcs)	
			Standard	Vibration -proof		Endurance 1 (+125℃)	Endurance 2 (+135℃)	(mΩ)		product	product	Taping
25	330	8.0	10.2	10.5	F	2900	1800	22	0.14	EEHZT1E331UP	EEHZT1E331UV	500
25	560	10.0	10.2	10.5	G	3500	2200	16	0.14	EEHZT1E561UP	EEHZT1E561UV	500
35	220	8.0	10.2	10.5	F	2900	1800	22	0.12	EEHZT1V221UP	EEHZT1V221UV	500
	390	10.0	10.2	10.5	G	3500	2200	16	0.12	EEHZT1V391UP	EEHZT1V391UV	500

<sup>\*1:</sup> Ripple current (100 kHz / +125  $^{\circ}$ C or +135  $^{\circ}$ C)

<sup>♦</sup> Please refer to the page of "Reflow profile" and "The taping dimensions".

Frequency corre	ction factor	for rinnle	current
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Frequency correction factor for ripple current							
Rated capacitance (C)	Frequency (f)						
	100 Hz ≦ f < 200 Hz	200 Hz ≦ f < 300 Hz	300 Hz ≦ f < 500 Hz	500 Hz ≦ f < 1 kHz			
150 µF ≦ C	0.15	0.25	0.25	0.30			
F.,							
Rated capacitance (C)	Frequency (f)						
rtatou oupuoitarioo (o)	$1 \text{ kHz} \le f < 2 \text{ kHz}$	$2 \text{ kHz} \le f < 3 \text{ kHz}$	$3 \text{ kHz} \le f < 5 \text{ kHz}$	$5 \text{ kHz} \le f < 10 \text{ kHz}$			
150 $\mu F \le C$	0.45	0.50	0.60	0.65			
Rated capacitance (C)	Frequency (f)						
	10 kHz $\leq$ f < 15 kHz	15 kHz $\leq$ f < 20 kHz	$20 \text{ kHz} \le f < 30 \text{ kHz}$	$30 \text{ kHz} \le f < 40 \text{ kHz}$			
150 µF ≦ C	0.75	0.80	0.85	0.85			
Rated capacitance (C)	Frequency (f)						
	$40 \text{ kHz} \le f < 50 \text{ kHz}$	50 kHz ≦ f < 100 kHz	100 kHz $\leq$ f < 500 kHz	500 kHz ≦ f < 1000 kHz			
150 µF ≦ C	0.85	0.90	1.00	1.00			

<sup>\*2:</sup> ESR (100 kHz / +20 ℃)

<sup>\*3:</sup> tan δ (120 Hz / +20 °C)