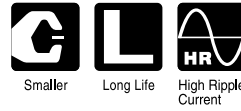


# **Pencil – shaped Type Aluminum Electrolytic Capacitors**

<b>CS</b> series Miniature Sized, High Ripple Current, High Reliability ·····	<b>1</b>
<b>PZ</b> series High Voltage, Smaller-Sized ·····	<b>2</b>

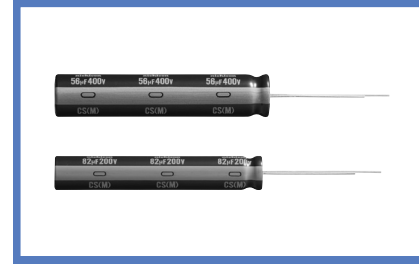
# ALUMINUM ELECTROLYTIC CAPACITORS

**CS** Miniature Sized, High Ripple Current, High Reliability series (pencil-shaped type)



**NEW**

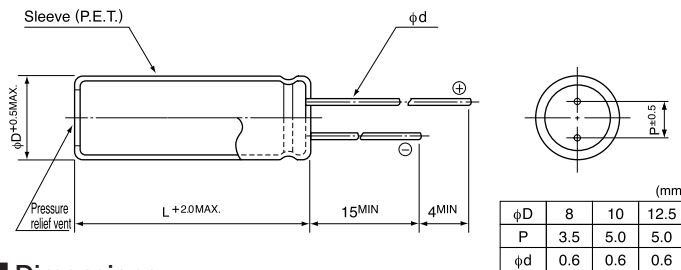
- High ripple current and load life of 10000 hours at +105°C.
- Suited for slim-designed products.
- Compliant to the RoHS directive (2002/95/EC).



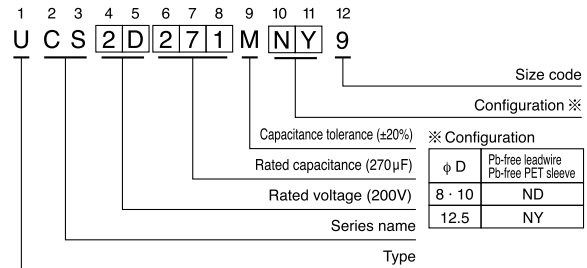
## Specifications

Item	Performance Characteristics						
Category Temperature Range	-40 to +105°C (200 to 400V), -25 to +105°C (450V)						
Rated Voltage Range	200 to 450V						
Rated Capacitance Range	18 to 270μF						
Capacitance Tolerance	±20% at 120Hz, 20°C						
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.04CV+100 (μA)						
Tangent of loss angle (tan δ)	Rated voltage (V)	200	250	400	450	Measurement frequency : 120Hz, Temperature : 20°C	
	tan δ (MAX.)	0.20	0.20	0.24	0.24		
Stability at Low Temperature	Rated voltage (V)		200	250	400	450	Measurement frequency : 120Hz
	Impedance ratio ZT / Z20 (MAX.)	Z-25°C / Z+20°C	3	3	5	6	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 10000 hours at 105°C, the peak voltage shall not exceed the rated voltage.					Capacitance Change	Within ± 20% of the initial capacitance value
						tan δ	200% or less than the initial specified value
Shelf Life	After storing the capacitors under no load at 105°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.					Leakage current	Less than or equal to the initial specified value
Marking	Printed with white color letter on dark brown sleeve.						

## Radial Lead Type



## Type numbering system (Example : 200V 270μF)



## Dimensions

Cap (μF)	V Code	200		250		400		450	
		2D		2E		2G		2W	
18	180							8 × 50	220
27	270					8 × 50	255	10 × 40	290
33	330							10 × 40	360
39	390					10 × 40	400	10 × 50	410
47	470							12.5 × 40	525
56	560			8 × 50	430	10 × 50	520		
68	680					12.5 × 40	600	12.5 × 50	670
82	820	8 × 50	530	10 × 40	610	12.5 × 50	700		
100	101	10 × 40	630	10 × 50	680				
120	121	10 × 40	680						
150	151	10 × 50	830	12.5 × 40	920				
180	181			12.5 × 50	1035				
220	221	12.5 × 40	1075					Case size φD × L (mm)	Rated ripple
270	271	12.5 × 50	1265						

※ The over voltages are also available upon request.

Rated ripple current (mArms) at 105°C 120Hz

## Frequency coefficient of rated ripple current

Frequency	50Hz	120Hz	1kHz	10kHz	100kHz or more
Coefficient	0.80	1.00	1.60	1.80	2.00

**Design, Specifications are subject to change without notice.**

**NICHICON CORPORATION**

# ALUMINUM ELECTROLYTIC CAPACITORS

**PZ** High Voltage, Smaller-sized series (pencil-shaped type)



**NEW**

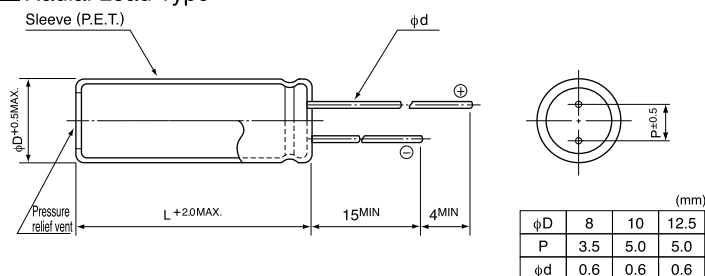
- Load life of 2000 hours at 105°C.
- Suited for slim-designed products.
- Compliant to the RoHS directive (2002/95/EC).



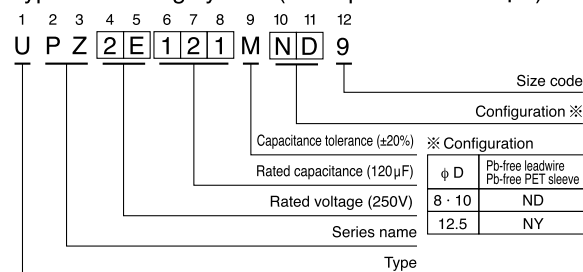
## Specifications

Item	Performance Characteristics						
Category Temperature Range	-40 to +105°C (200 to 400V), -25 to +105°C (450V)						
Rated Voltage Range	200 to 450V						
Rated Capacitance Range	24 to 270μF						
Capacitance Tolerance	±20% at 120Hz, 20°C						
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.04CV+100 (μA)						
Tangent of loss angle (tan δ)	Rated voltage (V)	200	250	400	450	Measurement frequency : 120Hz, Temperature : 20°C	
	tan δ (MAX.)	0.20	0.20	0.24	0.24		
Stability at Low Temperature	Rated voltage (V)	200	250	400	450	Measurement frequency : 120Hz	
	Impedance ratio Z-25°C / Z+20°C	3	3	5	6		
	ZT / Z20 (MAX.)	Z-40°C / Z+20°C	6	6	6	-	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 2000 hours at 105°C, the peak voltage shall not exceed the rated voltage.					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 105°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.						
Marking	Printed with white color letter on dark brown sleeve.						

## Radial Lead Type



## Type numbering system (Example : 250V 120μF)



## Dimensions

Cap (μF)	V Code	200		250		400		450	
		2D		2E		2G		2W	
24	240							8 × 50	250
27	270					8 × 50	255		
33	330							10 × 40	360
47	470					10 × 40	435	10 × 50	450
56	560			8 × 50	430	10 × 50	520	12.5 × 40	570
82	820	8 × 50	530	10 × 40	610	12.5 × 40	660	12.5 × 50	730
100	101					12.5 × 50	770		
120	121	10 × 40	680	10 × 50	740				
150	151	10 × 50	830	12.5 × 40	920				
220	221	12.5 × 40	1075	12.5 × 50	1140				
270	271	12.5 × 50	1265					Case size φD × L (mm)	Rated ripple

※ The over voltages are also available upon request.

Rated ripple current (mArms) at 105°C 120Hz

## Frequency coefficient of rated ripple current

V	60Hz	120Hz	500Hz	1kHz	10kHz or more
200 · 250	0.80	1.00	1.20	1.30	1.40
400 · 450	0.80	1.00	1.25	1.40	1.50

Design, Specifications are subject to change without notice.

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