

Pencil – shaped Type Aluminum Electrolytic Capacitors

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

ALUMINUM ELECTROLYTIC CAPACITORS



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



Smaller



Long Life



High Ripple Current



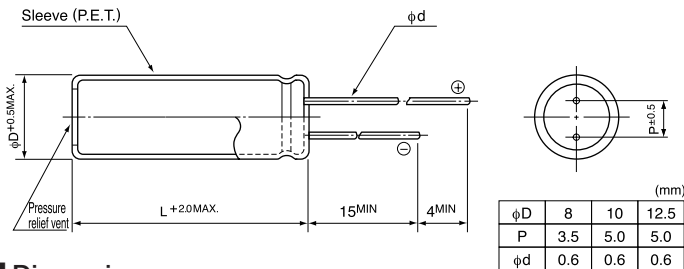
- High ripple current and load life of 10000 hours at +105°C.
- Suited for slim-designed products.
- Compliant to the RoHS directive (2002/95/EC).



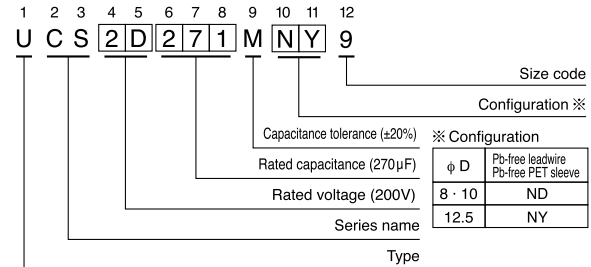
Specifications

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)	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.

ALUMINUM ELECTROLYTIC CAPACITORS

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



NEW

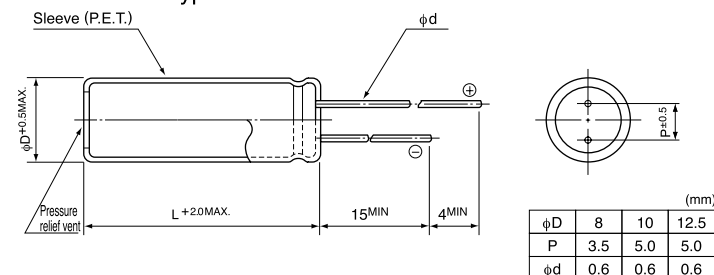
- Load life of 2000 hours at 105°C.
- Suited for slim-designed products.
- Compliant to the RoHS directive (2002/95/EC).



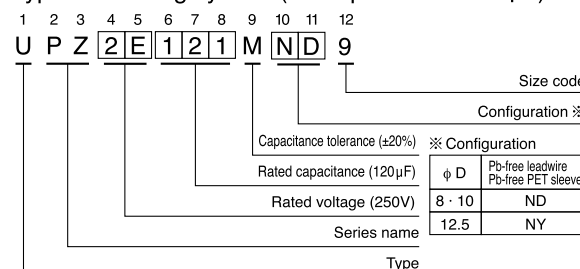
Specifications

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.					<table border="1"> <tr> <td>Capacitance Change</td> <td>Within ± 20% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>200% or less than the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </table>	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
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	200		250		400		450	
		Code	2D	2E	2G	2W	Case size φD × L (mm)	Rated ripple	
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						

※ 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.

NICHICON CORPORATION

NICHICON CORPORATION



<http://www.nichicon.co.jp/> <http://www.nichicon.com>

HEAD OFFICE

Karasumadori Oike-agaru, Nakagyo-ku, Kyoto, 604-0845 Japan
TEL.81-75-231-8461 FAX.81-75-256-4158

TOKYO SALES OFFICE

5-5, 2-chome, Hamamatsu-cho, Minato-ku, Tokyo, 105-0013 Japan
TEL.81-3-5473-5611 FAX.81-3-5473-5651

NAGOYA SALES OFFICE

18F Nishiki-Park Bldg. 4-3, Nishiki 2-chome, Naka-ku, Nagoya, 460-0003 Japan
TEL.81-52-223-5581 FAX.81-52-220-1839

WEST JAPAN SALES OFFICE

Karasumadori Oike-agaru, Nakagyo-ku, Kyoto, 604-0845 Japan
TEL.81-75-241-5370 FAX.81-75-231-8467

NICHICON (AMERICA) CORP.

927 East State Parkway, Schaumburg, Illinois 60173, U.S.A.
TEL.1-847-843-7500 FAX.1-847-843-2798

NICHICON (AUSTRIA) GmbH

Am Concorde Business Park C2 Top, Nr.14
2320 Schwechat, Austria
TEL.43-1-706-7932 FAX.43-1-706-7933

• U.K.OFFICE

Coliseum Business Centre, Riverside Way, Camberley,
Surrey GU15 3YL, United Kingdom
TEL.44-1276-685393 FAX.44-1276-686531

NICHICON (HONG KONG) LTD.

Unit 308, Harbour Centre Tower 1, 1 Hok Cheung Street,
Hungghom, Kowloon, Hong Kong
TEL.852-2363 4331 FAX.852-2764 1867

NICHICON (SINGAPORE) PTE. LTD.

20 Jalan Afifi, #06-08, Certis CISCO Centre II, Singapore 409179
TEL.65-6481 5641 FAX.65-6481 6485

NICHICON (THAILAND) CO., LTD.

Empire Tower 15th Floor, Unit 1506, Tower 3,
195 South Sathorn Road, Yannawa, Bangkok 10120, Thailand
TEL.66-2-670-0150 FAX.66-2-670-0153

NICHICON (TAIWAN) CO., LTD.

16F-12, No.6, Sec.4, Hsin-Yi Rd., Taipei, Taiwan
TEL.886-2-2708-0200 FAX.886-2-2708-0959

NICHICON ELECTRONICS TRADING (SHANGHAI) CO., LTD.

Room 1406-1408, Orient International Plaza (Part C)
85 Lou Shan Guan Road, Shanghai 200336, China
TEL.86-21-6278-7658 FAX.86-21-6278-7657

NICHICON ELECTRONICS TRADING (SHENZHEN) CO., LTD.

Room 2709, 27/F, Excellence Times Square Bldg.
No.4068, Yi Tian Road, Futian District, Shenzhen 518048, China
TEL.86-755-8294-5715 FAX.86-755-8294-5716

NICHICON (MALAYSIA) SDN. BHD.

No.4 Jalan P/10, Kawasan Perusahaan Bangi,
43650 Bandar Baru Bangi, Selangor Darul Ehsan, Malaysia
TEL.60-3-8925 0678 FAX.60-3-8925 0858

NICHICON ELECTRONICS (WUXI) CO., LTD.

Block 51-B, Wuxi National High & New Technology Industrial
Development Zone, Wuxi, Jiangsu 214028, China
TEL.86-510-8521 8222 FAX.86-510-8522 1170

NICHICON ELECTRONICS (TIANJIN) CO., LTD.

No.4 Xinghua Road, Xiqing Economic Development Zone,
Tianjin 300381, China
TEL.86-22-8396-8930 FAX.86-22-8396-8931

FPCAP ELECTRONICS (SUZHOU) CO., LTD.

112 Sutong Road, Suzhou Industrial Park, Jiangsu 215021, China
TEL.86-512-6761-2423 FAX.86-512-6761-7076



CAUTION FOR SAFETY

- TO USE NICHICON PRODUCT CORRECTLY AND SAFETY, PLEASE READ "APPLICATION GUIDELINES" VERY CAREFULLY.
- THE PRODUCTS ARE DESIGNED AND MANUFACTURED CHIEFLY FOR GENERAL ELECTRONIC APPLIANCES. IN CASE THAT YOU ARE GOING TO APPLY THEM FOR MEDICAL EQUIPMENT, AIRCRAFT / SPACE EQUIPMENT, OR THE SAME KIND THAT REQUIRES HIGH SAFETY, YOU ARE REQUESTED TO CONFIRM THEIR ADAPTATION BEFORE THE USE.
- PRIOR TO ORDERING A PRODUCT, PLEASE OBTAIN A COPY OF SPECIFICATION FROM NICHICON AND USE THE SPECIFICATION AS A BASIS WHEN DESIGNING EQUIPMENT AND INCORPORATING OUR PRODUCT. NICHICON ADMITS NO LIABILITY FOR EQUIPMENT PROBLEMS DUE TO THE LACK OF PRODUCT SPECIFICATIONS BEING CONFIRMED. ALSO, PLEASE BE SURE TO PERFORM ALL NECESSARY UNIT LEVEL EVALUATION TESTING TO AVOID MALFUNCTIONS THAT COULD BE UNFORESEEABLE DURING COMPONENT LEVEL TESTING ALONE.

- NOTE : ● SPECIFICATION AND DIMENSIONS IN THIS CATALOG ARE SUBJECT TO CHANGE WITHOUT NOTICE. IF NECESSARY, DRAWINGS CAN BE PROVIDED.
- IN CASE THAT THERE IS A CERTAIN DANGER OF THE PRODUCTS CONFLICTING WITH THE USE AND ACTIVITY FOR THE DEVELOPMENTS OF WEAPONS OF MASS DESTRUCTION, THE PROCEDURES BASED UPON THE RELEVANT EXPORT REGULATION LAWS ARE ABSOLUTELY NEEDED.
 - THE PRODUCTS AND THEIR PACKAGES DO NOT CONTAIN ANY OZONE DEPLETING SUBSTANCES (ODS) UNDER THE MONTREAL PROTOCOL. AND ODS IN NOT USED IN THEIR MANUFACTURING PROCESSES, TOO.
 - OTHER THAN THE EXPRESS WRITTEN SPECIFICATIONS CONTAINED IN NICHICON'S CATALOG OR OTHER NICHICON LITERATURE. NICHICON MAKES NO WARRANTY, EXPRESS, IMPLIED, OR OTHERWISE, INCONNECTION WITH THESE PRODUCTS, AND ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PRODUCT, ARE DISCLAIMED. NICHICON SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.
- CUSTOMER'S SOLE REMEDY IN THE EVENT THAT NICHICON'S SPECIFICATIONS ARE NOT MET IS TO REPAIR, REPLACE, OR REFUND THE PURCHASE PRICE OF THE SUBJECT PRODUCT, AT NICHICON'S OPTION.
- CATALOG PRINTED IN Feb. 1, 2011