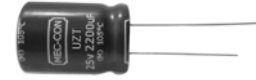
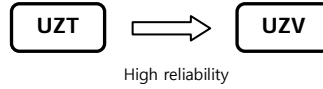




UZV series

- Super Low ESR
- High-Ripple current
- RoHS compliant

- 105°C 4,000~10,000Hrs assured.
- Low impedance
- For SMPS, IP-Board, Adaptor, Charger
- RoHS compliant
- Halogen-free capacitors are also available.

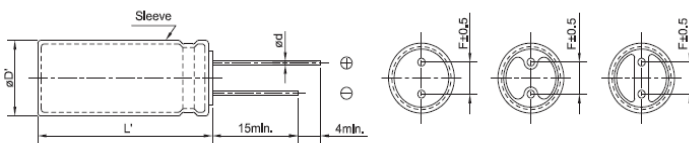


Specifications

Item	Characteristics																														
Rated Voltage Range	6.3 ~ 100Vdc																														
Operating Temperature Range	-40 ~ +105°C																														
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)																														
Leakage Current	I=0.01CV(μA) or 3μA, whichever is greater. Where, I:Max. Leakage current(μA), C:Nominal capacitance(μF), V:Rated voltage(VDC) (at 20°C, 2 minutes)																														
Dissipation Factor(Tanδ)	<table border="1"> <tr> <td>Rated voltage (Vdc)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Tanδ (max.)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.09</td> <td>0.08</td> </tr> </table> <p>If the capacitance exceeds 1,000uF, then Tanδ will be added 0.02 every 1000uF increase.(at 20°C, 120Hz)</p>	Rated voltage (Vdc)	6.3	10	16	25	35	50	63	80	100	Tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08										
Rated voltage (Vdc)	6.3	10	16	25	35	50	63	80	100																						
Tanδ (max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08																						
Temperature characteristics (Max,impedance ratio)	<table border="1"> <tr> <td>Rated voltage (Vdc)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>5</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> <p>(at 120Hz)</p>	Rated voltage (Vdc)	6.3	10	16	25	35	50	63	80	100	Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	2	Z(-40°C)/Z(20°C)	5	6	4	3	3	3	3	3	3
Rated voltage (Vdc)	6.3	10	16	25	35	50	63	80	100																						
Z(-25°C)/Z(20°C)	4	3	2	2	2	2	2	2	2																						
Z(-40°C)/Z(20°C)	5	6	4	3	3	3	3	3	3																						
Load life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for specified life times at 105°C.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>≤±25% of the initial value</td> <td>WV</td> <td>5~6.30</td> <td>8~100</td> <td>12.5~180</td> </tr> <tr> <td>Tan δ</td> <td>≤200% of the initial specified value</td> <td>6.3~10Vdc</td> <td>4,000hrs</td> <td>6,000hrs</td> <td>8,000hrs</td> </tr> <tr> <td>Leakage current</td> <td>≤The initial specified value</td> <td>16~100Vdc</td> <td>5,000hrs</td> <td>7,000hrs</td> <td>10,000hrs</td> </tr> </table>	Capacitance change	≤±25% of the initial value	WV	5~6.30	8~100	12.5~180	Tan δ	≤200% of the initial specified value	6.3~10Vdc	4,000hrs	6,000hrs	8,000hrs	Leakage current	≤The initial specified value	16~100Vdc	5,000hrs	7,000hrs	10,000hrs												
Capacitance change	≤±25% of the initial value	WV	5~6.30	8~100	12.5~180																										
Tan δ	≤200% of the initial specified value	6.3~10Vdc	4,000hrs	6,000hrs	8,000hrs																										
Leakage current	≤The initial specified value	16~100Vdc	5,000hrs	7,000hrs	10,000hrs																										
Shelf life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes at least 24 hours and not more than 48 hours before the measurements.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>≤±20% of the initial value</td> </tr> <tr> <td>Tanδ</td> <td>≤200% of the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤200%The initial specified value</td> </tr> </table>	Capacitance change	≤±20% of the initial value	Tanδ	≤200% of the initial specified value	Leakage current	≤200%The initial specified value																								
Capacitance change	≤±20% of the initial value																														
Tanδ	≤200% of the initial specified value																														
Leakage current	≤200%The initial specified value																														

Dimensions

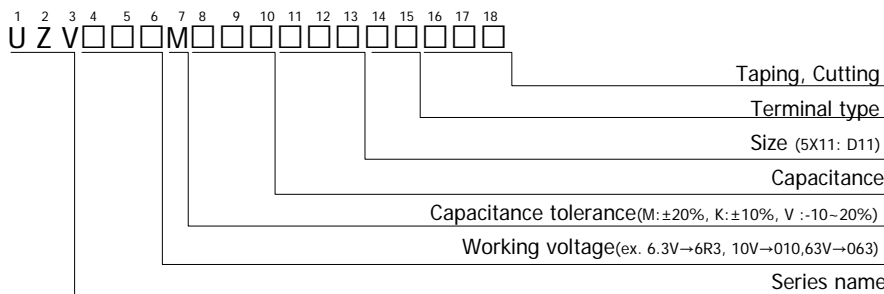
Unit(mm)



	5	6.3	8	10	12.5	16	18
ØD	5	6.3	8	10	12.5	16	18
Ød	0.5	0.5	0.5	0.6	0.6	0.6	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ØD'	ØD+0.5 max.						
L'	L+1.5 max			L+2.0 max			

- Printed black color letter on PET purple sleeve

Code numbering system



Ø5	D
Ø6.3	E
Ø8	F
Ø10	G
Ø12.5	X
Ø16	J
Ø18	K



UZV series

■ Standard Ratings

Note1) Imp. = $\Omega_{max} / 20^\circ C, 100kHz$ 2) Ripple current = $mArms / 105^\circ C, 100kHz$

WV (Vdc)	Cap (uF)	Size ØxL(mm)	Imp. ¹⁾	Ripple ²⁾	Code No
6.3	150	5 x 11	0.58	210	UZV6R3□151D11CS□□□
	330	6.3 x 11	0.22	340	UZV6R3□331E11CS□□□
	470	6.3 x 15	0.18	490	UZV6R3□471E15CS□□□
	680	8 x 11.5	0.13	640	UZV6R3□681F12CS□□□
	820	10 x 12.5	0.069	865	UZV6R3□821G13CS□□□
	1,000	8 x 15	0.087	840	UZV6R3□102F15CS□□□
		8 x 20	0.069	1,050	UZV6R3□122F20CS□□□
	1,200	10 x 16	0.060	1,210	UZV6R3□122G16CS□□□
		10 x 20	0.046	1,400	UZV6R3□152G20CS□□□
	2,200	10 x 25	0.042	1,650	UZV6R3□222G25CS□□□
	2,700	10 x 30	0.031	1,910	UZV6R3□272G30CS□□□
	3,300	12.5 x 20	0.035	1,900	UZV6R3□332X20CS□□□
	3,900	12.5 x 25	0.027	2,230	UZV6R3□392X25CS□□□
	4,700	12.5 x 30	0.023	2,650	UZV6R3□472X30CS□□□
		12.5 x 35	0.020	2,880	UZV6R3□562X35CS□□□
	5,600	16 x 20	0.027	2,530	UZV6R3□562J20CS□□□
		16 x 25	0.021	2,930	UZV6R3□682J25CS□□□
	6,800	18 x 20	0.026	2,860	UZV6R3□682K20CS□□□
		16 x 31.5	0.017	3,450	UZV6R3□822J32CS□□□
	10,000	16 x 35.5	0.015	3,610	UZV6R3□103J36CS□□□
18 x 25		0.019	3,140	UZV6R3□103K25CS□□□	
12,000	18 x 31.5	0.015	4,170	UZV6R3□123K32CS□□□	
15,000	18 x 35.5	0.014	4,220	UZV6R3□153K36CS□□□	
18,000	18 x 40	0.012	4,280	UZV6R3□183K40CS□□□	
10	100	5 x 11	0.58	210	UZV010□101D11CS□□□
	220	6.3 x 11	0.22	340	UZV010□221E11CS□□□
	330	6.3 x 15	0.18	400	UZV010□331E15CS□□□
	470	8 x 11.5	0.13	640	UZV010□471F12CS□□□
	680	8 x 15	0.069	840	UZV010□681F15CS□□□
		10 x 12.5	0.080	865	UZV010□681G13CS□□□
	1,000	8 x 20	0.069	1,050	UZV010□102F20CS□□□
		10 x 16	0.060	1,210	UZV010□102G16CS□□□
	1,200	10 x 20	0.046	1,400	UZV010□122G20CS□□□
	1,500	10 x 25	0.042	1,650	UZV010□152G25CS□□□
		12.5 x 16	0.049	1,450	UZV010□152X16CS□□□
	2,200	12.5 x 20	0.031	1,910	UZV010□222X20CS□□□
		16 x 15	0.042	1,940	UZV010□222J15CS□□□
	3,300	12.5 x 25	0.027	2,230	UZV010□332X25CS□□□
		12.5 x 30	0.024	2,650	UZV010□392X30CS□□□
	3,900	16 x 20	0.027	2,530	UZV010□392J20CS□□□
		16 x 25	0.021	2,930	UZV010□562J25CS□□□
	5,600	18 x 20	0.026	2,860	UZV010□562K20CS□□□
		16 x 31.5	0.017	3,450	UZV010□682J32CS□□□
	6,800	18 x 25	0.019	3,140	UZV010□682K25CS□□□
16 x 35.5		0.015	3,610	UZV010□822J36CS□□□	
8,200	18 x 31.5	0.015	4,170	UZV010□822K32CS□□□	
	18 x 35.5	0.014	4,220	UZV010□103K36CS□□□	
12,000	18 x 40	0.012	4,280	UZV010□123K40CS□□□	
16	56	5 x 11	0.58	210	UZV016□560D11CS□□□
	120	6.3 x 11	0.22	240	UZV016□121E11CS□□□
	330	8 x 11.5	0.13	640	UZV016□331F12CS□□□
		8 x 15	0.087	840	UZV016□471F15CS□□□
	470	10 x 12.5	0.080	865	UZV016□471G13CS□□□
		8 x 20	0.069	1,050	UZV016□681F20CS□□□
	680	10 x 16	0.060	1,210	UZV016□681G13CS□□□
		10 x 20	0.046	1,400	UZV016□102G20CS□□□
	1,000	12.5 x 16	0.049	1,450	UZV016□102X16CS□□□
		10 x 25	0.042	1,650	UZV016□122G25CS□□□

WV (Vdc)	Cap (uF)	Size ØxL(mm)	Imp. ¹⁾	Ripple ²⁾	Code No
16	1,500	10 x 30	0.031	1,940	UZV016□152G30CS□□□
		12.5 x 20	0.035	1,900	UZV016□152X20CS□□□
		16 x 25	0.042	1,940	UZV016□152J25CS□□□
	2,200	12.5 x 25	0.027	2,230	UZV016□222X25CS□□□
		12.5 x 30	0.024	2,650	UZV016□272X30CS□□□
	2,700	16 x 20	0.027	2,530	UZV016□272J20CS□□□
		12.5 x 35	0.020	2,880	UZV016□332X35CS□□□
	3,900	16 x 25	0.021	2,930	UZV016□392J25CS□□□
		18 x 20	0.026	2,860	UZV016□392K20CS□□□
	4,700	16 x 31.5	0.017	3,450	UZV016□472J32CS□□□
18 x 25		0.019	3,140	UZV016□472K25CS□□□	
5,600	16 x 35.5	0.015	3,610	UZV016□562J36CS□□□	
	18 x 31.5	0.015	4,170	UZV016□562K32CS□□□	
8,200	18 x 35.5	0.014	4,220	UZV016□822K36CS□□□	
	18 x 40	0.012	4,280	UZV016□103K40CS□□□	
25	47	5 x 11	0.58	210	UZV025□470D11CS□□□
	100	6.3 x 11	0.22	340	UZV025□101E11CS□□□
	220	8 x 11.5	0.13	640	UZV025□221F12CS□□□
	330	8 x 15	0.087	840	UZV025□331F15CS□□□
		10 x 12.5	0.080	865	UZV025□331G13CS□□□
	470	8 x 20	0.069	1,050	UZV025□471F20CS□□□
		10 x 16	0.068	1,210	UZV025□471G16CS□□□
	680	10 x 20	0.046	1,400	UZV025□681G20CS□□□
		12.5 x 16	0.049	1,450	UZV025□681X16CS□□□
	820	10 x 25	0.042	1,650	UZV025□821G25CS□□□
1,000	10 x 30	0.031	1,910	UZV025□102G30CS□□□	
	12.5 x 20	0.035	1,900	UZV025□102X20CS□□□	
1,500	16 x 15	0.042	1,940	UZV025□102J15CS□□□	
	12.5 x 25	0.027	2,230	UZV025□152X25CS□□□	
1,800	12.5 x 30	0.024	2,650	UZV025□182X30CS□□□	
	16 x 20	0.027	2,530	UZV025□182J20CS□□□	
2,200	12.5 x 35	0.020	2,880	UZV025□222X35CS□□□	
	18 x 20	0.026	2,860	UZV025□222K20CS□□□	
2,700	16 x 25	0.021	2,930	UZV025□272J25CS□□□	
	16 x 31.5	0.017	3,450	UZV025□332J32CS□□□	
3,300	18 x 25	0.019	3,140	UZV025□332K25CS□□□	
	16 x 35.5	0.015	3,610	UZV025□392J36CS□□□	
3,900	18 x 31.5	0.015	4,170	UZV025□392K32CS□□□	
	16 x 40	0.013	4,080	UZV025□472J40CS□□□	
4,700	18 x 35.5	0.014	4,220	UZV025□472K36CS□□□	
	18 x 40	0.012	4,280	UZV025□562K40CS□□□	
35	33	5 x 11	0.58	210	UZV035□330D11CS□□□
	56	6.3 x 11	0.22	340	UZV035□560E11CS□□□
	150	8 x 11.5	0.13	640	UZV035□151F11CS□□□
		8 x 15	0.087	840	UZV035□221F15CS□□□
	220	10 x 12.5	0.080	865	UZV035□221G13CS□□□
		8 x 20	0.069	1,050	UZV035□271F20CS□□□
	330	10 x 16	0.060	1,210	UZV035□331G16CS□□□
	470	10 x 20	0.046	1,400	UZV035□471G20CS□□□
		12.5 x 16	0.049	1,450	UZV035□471X16CS□□□
	560	10 x 25	0.042	1,650	UZV035□561G25CS□□□
680	10 x 30	0.031	1,910	UZV035□681G30CS□□□	
	12.5 x 20	0.035	1,900	UZV035□681X20CS□□□	
1,000	12.5 x 25	0.027	2,230	UZV035□102X25CS□□□	
	12.5 x 30	0.024	2,650	UZV035□122X30CS□□□	
1,200	16 x 20	0.027	2,530	UZV035□122J20CS□□□	
	12.5 x 35	0.020	2,880	UZV035□152X35CS□□□	
1,500	16 x 25	0.021	2,930	UZV035□182J25CS□□□	
	18 x 20	0.026	2,860	UZV035□182K20CS□□□	



UZV series

Standard Ratings

Note1) Imp. = $\Omega_{max} / 20^\circ C, 100kHz$ 2) Ripple current = $mA_{rms} / 105^\circ C, 100kHz$

VV (Vdc)	Cap (uF)	Size ØxL(mm)	Imp. ¹⁾	Ripple ²⁾	Code No
35	2,200	16 x 31.5	0.017	3,450	UZV035□222J32CS□□□
		18 x 25	0.019	3,140	UZV035□222K25CS□□□
	2,700	16 x 35.5	0.015	3,610	UZV035□272J36CS□□□
		18 x 31.5	0.015	4,170	UZV035□272K32CS□□□
	3,300	16 x 40	0.013	4,080	UZV035□332J40CS□□□
18 x 35.5		0.014	4,220	UZV035□332K36CS□□□	
	3,900	18 x 40	0.012	4,280	UZV035□392K40CS□□□
50	1.0	5 X 11	4.0	50	UZV050□1R0D11CS□□□
	2.2	5 X 11	2.5	51	UZV050□2R2D11CS□□□
	3.3	5 X 11	2.2	53	UZV050□3R3D11CS□□□
	4.7	5 x 11	2.0	80	UZV050□4R7D11CS□□□
	10	5 x 11	1.5	100	UZV050□100D11CS□□□
	22	5 x 11	0.70	180	UZV050□220D11CS□□□
		6.3 x 11	0.30	295	UZV050□220E11CS□□□
	47	6.3 x 11	0.17	555	UZV050□470E11CS□□□
	100	8 x 11.5	0.18	485	UZV050□101F12CS□□□
	120	8 x 15	0.12	730	UZV050□121F15CS□□□
	150	10 x 12.5	0.12	760	UZV050□151G13CS□□□
	180	8 x 20	0.09	910	UZV050□181F20CS□□□
	220	10 x 16	0.084	1,050	UZV050□221G16CS□□□
	270	10 x 20	0.060	1,220	UZV050□271G20CS□□□
		12.5 x 16	0.061	1,260	UZV050□271X16CS□□□
	330	10 x 25	0.055	1,440	UZV050□331G25CS□□□
	470	10 x 30	0.043	1,690	UZV050□471G30CS□□□
		12.5 x 20	0.045	1,660	UZV050□471X20CS□□□
	560	16 x 15	0.055	1,690	UZV050□471J15CS□□□
		12.5 x 25	0.034	1,950	UZV050□561X25CS□□□
	680	12.5 x 30	0.030	2,310	UZV050□681X30CS□□□
		12.5 x 35	0.025	2,510	UZV050□821X35CS□□□
	820	16 x 20	0.034	2,210	UZV050□821J20CS□□□
		16 x 25	0.025	2,555	UZV050□102J25CS□□□
	1,000	18 x 20	0.036	2,490	UZV050□102K20CS□□□
		16 x 31.5	0.022	3,010	UZV050□122J32CS□□□
1,200	18 x 25	0.026	2,740	UZV050□122K25CS□□□	
	16 x 35.5	0.019	3,150	UZV050□152J36CS□□□	
1,800	16 x 40	0.016	3,710	UZV050□182J40CS□□□	
	18 x 31.5	0.021	3,635	UZV050□182K32CS□□□	
2,200	18 x 35.5	0.017	3,680	UZV050□222K36CS□□□	
2,700	18 x 40	0.014	3,800	UZV050□272K40CS□□□	
63	15	5 x 11	0.88	165	UZV063□150D11CS□□□
	33	6.3 x 11	0.35	265	UZV063□330E11CS□□□
	47	8 x 11.5	0.22	500	UZV063□470F12CS□□□
	56	8 x 11.5	0.22	500	UZV063□560F12CS□□□
		8 x 15	0.16	665	UZV063□820F15CS□□□
	82	10 x 12.5	0.11	690	UZV063□820G13CS□□□
		8 x 20	0.12	820	UZV063□121F20CS□□□
	120	10 x 16	0.076	950	UZV063□121G16CS□□□
		10 x 20	0.056	1,150	UZV063□181G20CS□□□
	180	12.5 x 16	0.072	1,150	UZV063□181X16CS□□□
		10 x 25	0.046	1,350	UZV063□221G25CS□□□
	220	12.5 x 20	0.041	1,500	UZV063□271X20CS□□□
	390	12.5 x 25	0.031	1,900	UZV063□391X25CS□□□
	470	12.5 x 30	0.028	2,300	UZV063□471X30CS□□□
		16 x 20	0.032	2,000	UZV063□471J20CS□□□
	560	12.5 x 35	0.024	2,500	UZV063□561X35CS□□□
		16 x 25	0.025	2,600	UZV063□681J25CS□□□
	680	18 x 20	0.030	2,500	UZV063□681K20CS□□□
		16 x 31.5	0.021	2,850	UZV063□821J32CS□□□
	820	18 x 25	0.024	2,800	UZV063□821K25CS□□□
16 x 35.5		0.019	2,900	UZV063□102J36CS□□□	

VV (Vdc)	Cap (uF)	Size ØxL(mm)	Imp. ¹⁾	Ripple ²⁾	Code No
63	1,200	16 x 40	0.018	3,400	UZV063□122J40CS□□□
		18 x 31.5	0.020	3,300	UZV063□122K32CS□□□
	1,500	18 x 35.5	0.018	3,400	UZV063□152K36CS□□□
		18 x 40	0.017	3,500	UZV063□182K40CS□□□
80	68	10 x 12.5	0.17	480	UZV080□680K40CS□□□
	100	10 x 16	0.11	600	UZV080□101G16CS□□□
	120	10 x 20	0.084	800	UZV080□121G20CS□□□
	150	10 x 25	0.069	900	UZV080□151G25CS□□□
		12.5 x 16	0.11	750	UZV080□151X16CS□□□
	220	12.5 x 20	0.062	1,100	UZV080□221X20CS□□□
	330	12.5 x 25	0.047	1,250	UZV080□331X25CS□□□
		16 x 20	0.048	1,350	UZV080□331J20CS□□□
	390	12.5 x 30	0.042	1,500	UZV080□391X30CS□□□
		12.5 x 35	0.036	1,650	UZV080□471X35CS□□□
	470	16 x 25	0.038	1,700	UZV080□471J25CS□□□
		18 x 20	0.038	1,700	UZV080□471K20CS□□□
	680	16 x 31.5	0.032	1,850	UZV080□681J32CS□□□
		18 x 25	0.036	1,750	UZV080□681K25CS□□□
	820	16 x 35.5	0.029	2,000	UZV080□821J36CS□□□
		18 x 31.5	0.030	1,900	UZV080□821K32CS□□□
1,000	16 X 40	0.027	2,200	UZV080□102J40CS□□□	
	18 x 35.5	0.027	2,200	UZV080□102K36CS□□□	
	1,200	18 x 40	0.026	2,700	UZV080□122K40CS□□□
100	4.7	5 x 11	1.5	105	UZV100□4R7D11CS□□□
	6.8	5 x 11	1.4	125	UZV100□6R8D11CS□□□
	15	6.3 x 11	0.57	205	UZV100□150E11CS□□□
	22	8 x 11.5	0.50	310	UZV100□220F12CS□□□
	27	8 x 11.5	0.36	355	UZV100□270F12CS□□□
	39	8 x 15	0.25	450	UZV100□390F15CS□□□
	47	10 x 12.5	0.17	480	UZV100□470G13CS□□□
		8 x 20	0.19	565	UZV100□680F20CS□□□
	68	10 x 16	0.11	600	UZV100□680G16CS□□□
		10 x 20	0.084	800	UZV100□820G20CS□□□
	100	10 x 20	0.084	800	UZV100□101G20CS□□□
		10 x 25	0.069	900	UZV100□101G25CS□□□
	120	12.5 x 16	0.11	750	UZV100□101X16CS□□□
		10 x 25	0.069	900	UZV100□121G25CS□□□
	150	12.5 x 20	0.062	1,100	UZV100□151X20CS□□□
	220	12.5 x 25	0.047	1,250	UZV100□221X25CS□□□
		16 x 20	0.048	1,350	UZV100□221J20CS□□□
	270	12.5 x 30	0.042	1,500	UZV100□271X30CS□□□
		12.5 x 35	0.036	1,650	UZV100□331X35CS□□□
	330	16 x 25	0.036	1,650	UZV100□331J25CS□□□
18 x 20		0.045	1,500	UZV100□331K20CS□□□	
390	12.5 x 35	0.036	1,650	UZV100□391X35CS□□□	
	16 x 31.5	0.032	1,850	UZV100□471J32CS□□□	
470	18 x 25	0.036	1,750	UZV100□471K25CS□□□	
	16 x 35.5	0.029	2,000	UZV100□561J36CS□□□	
560	18 x 31.5	0.030	1,900	UZV100□561K32CS□□□	
	16 x 40	0.027	2,200	UZV100□681J40CS□□□	
680	18 x 35.5	0.027	2,200	UZV100□681K36CS□□□	
	18 x 40	0.026	2,700	UZV100□821K40CS□□□	

Rated ripple current multipliers

Capacitance (uF)	Frequency (Hz)				
	120	1K	10K	50K	100K
22 ~ 180	0.40	0.75	0.90	0.94	1.00
220 ~ 560	0.50	0.85	0.94	0.96	1.00
680 ~ 1,800	0.60	0.87	0.95	0.97	1.00
2,200 ~ 3,900	0.75	0.90	0.95	0.97	1.00
4,700 ~ 18,000	0.85	0.95	0.98	0.99	1.00