PZ(PW) series

- **Low Impedance, High Reliability for Switching Power Supply.**
- **Low impedance and high reliability withstanding 5000 hours load life at 105℃ (2000/3000 hours for smaller case sizes as specified below).**

■ SPECIFICATIONS

Item	Performance Characteristics
Operating Temperature Range	–40~+105℃
Voltage Range	6.3V~100V
Capacitance Range	0.47~15000 μF
Capacitance Tolerance	± 20% at 120Hz, 20℃
Tan δ	For capacitance of more than 1000 μF, add 0.02 for every increase of 1000 μF, Measurement frequency: 120Hz, Temperature: 20℃

Rated voltage (V)	6.3	10	16	25	35	50	63	100
Tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08

Leakage Current

Measured at 120Hz, 20℃

Rated voltage (V)	6.3~100
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03 CV or 4 μA,whichever is greater.

Stability at Low Temperature

Rated Voltage(V)		6.3	10	16	25	35~50	63~100
Impedance Ratio (MAX.)	Z–40℃/Z+20℃	8	6	4	3	3	3
	Z–25℃/Z+20℃	4	3	2	2	2	2

Load Life

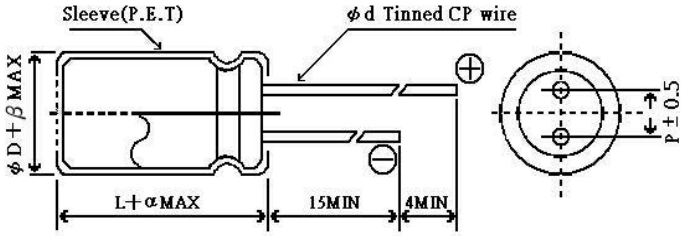
After an application of D.C. bias voltage plus the rated ripple current for 5000 hours' (2000 hours' for D=4.5 and 6.3,3000 hours' for D=8 and 10) at 105℃ the peak voltage shall not exceed the rated D.C. voltage,the capacitors meet the characteristic requirements shown on the right

Capacitance Change	Within ±20%MAX. of initial value
Tan δ	Not exceeding 200% of initial specified value
Leakage Current	Not exceeding Initial specified value

Shelf Life

After storing capacitors under no load at105℃ for 1000 hours. they will meet the specified value for endurance characteristics listed above.

■ RADIAL LEAD TYPE



α	(L=7) 1.0
	(L<20) 1.5
	(L≥20) 2.0

ϕD	4	5	6.3	8	10	12.5	16	18
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5
ϕd	0.45	0.5 (0.45)	0.5 (0.45)	0.6	0.6	0.6	0.8	0.8
β	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

( ) Applied to 7mmL products

■ Allowable Ripple Current VS. Ambient Temperature

Ambient temp. (℃)	~+70	+85	+105
Coefficient	1.78	1.4	1.0

■ Frequency Coefficient of Allowable Ripple Current

V	Frequency Cap(μF)	50Hz	120Hz	300Hz	1KHz	10KHz~
6.3~100	~47	0.20	0.30	0.50	0.80	1.00
	68~330	0.55	0.65	0.75	0.85	1.00
	390~1000	0.70	0.75	0.80	0.90	1.00
	1200~15000	0.80	0.85	0.90	0.95	1.00

■ STANDARED RATINGS

D×L (mm)

W.V.		6.3(0J)				10(1A)			
S.V.		8				13			
Item		Case size ϕDXL (mm)	Impedance(ΩMAX.)		Allowable Ripple (mA. rms) 105℃/100KHz	Case size ϕDXL(mm)	Impedance(ΩMAX.)		Allowable Ripple (mA. rms) 105℃/100KHz
Cap(μF)	Code		20℃/100KHz	–10℃/100KHz			20℃/100KHz	–10℃/100KHz	
22	220	5×11	0.60	2.32	180	5×11	0.60	2.32	180
						4×7	2.00	5.00	65
27	270	4×7	2.00	5.00	65				
33	330	5×11	0.60	2.32	180	5×11	0.60	2.32	180
47	470	5×11	0.60	2.32	180	5×11	0.60	2.32	180
82	820					5×11	0.60	2.32	180
						6.3×7	0.45	1.20	200
100	101	5×11	0.60	2.32	180	5×11	0.60	2.32	180
120	121	6.3×7	0.45	1.20	200				
150	151	6.3×11	0.25	0.875	290	6.3×11	0.25	0.875	290
180	181					6.3×11	0.25	0.875	290
220	221	6.3×11	0.25	0.875	290	6.3×11	0.25	0.875	290
330	331	6.3×11	0.25	0.875	290	8×11.5	0.117	0.525	555
470	471	8×11.5	0.117	0.525	555	8×11.5	0.117	0.525	550
560	561	8×11.5	0.117	0.525	555				
680	681	10×12.5	0.090	0.325	755	10×12.5	0.090	0.325	755
						8×15	0.085	0.350	730
820	821	8×15	0.085	0.350	730				
		10×12.5	0.090	0.325	755				
1000	102	8×15	0.085	0.350	730	8×15	0.085	0.350	730
						8×20	0.065	0.273	995
		10×12.5	0.090	0.325	755	10×12.5	0.090	0.325	755
						10×16	0.068	0.246	1050

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■ STANDARED RATINGS

D×L (mm)

W.V.		6.3 (0J)				10 (1A)			
S.V.		8				13			
Item		Case size	Impedance(ΩMAX.)		Allowable Ripple	Case size	Impedance(ΩMAX.)		Allowable Ripple
Cap(μF)	Code	φD×L (mm)	20℃/100KHz	−10℃/100KHz	(mA. rms) 105℃/100KHz	φD×L (mm)	20℃/100KHz	−10℃/100KHz	(mA. rms) 105℃/100KHz
1200	122	8×20	0.065	0.273	995	10×20	0.052	0.184	1220
		10×16	0.068	0.246	1050				
1500	152	10×20	0.052	0.184	1220	10×20	0.052	0.184	1220
						10×25	0.045	0.176	1440
2200	222	12.5×20	0.038	0.127	1655	10×20	0.052	0.184	1220
						10×30.5	0.035	0.127	1815
		10×25	0.045	0.176	1440	12.5×20	0.038	0.127	1655
2700	272	10×30.5	0.035	0.127	1815	12.5×25	0.030	0.089	1945
3300	332	12.5×20	0.038	0.127	1650	12.5×25	0.030	0.089	1945
						12.5×30.5	0.025	0.078	2310
3900	392	12.5×25	0.030	0.089	1945	16×20	0.029	0.078	2205
4700	472	16×25	0.022	0.064	2555	16×25	0.022	0.064	2555
		12.5×30.5	0.025	0.078	2310				
5600	562	16×20	0.027	0.078	2530	16×25	0.022	0.064	2555
6800	682	16×25	0.022	0.064	2555	16×30.5	0.018	0.053	3010
						18×25	0.020	0.049	2740
8200	822	16×30.5	0.018	0.053	3010	16×35.5	0.016	0.044	3150
						18×30.5	0.016	0.040	3635
10000	103	16×30.5	0.016	0.053	3150	18×35.5	0.015	0.038	3680
		18×25	0.020	0.049	2740				
12000	123	18×30.5	0.016	0.040	3635				
15000	153	18×35.5	0.015	0.038	3680	18×40	0.014	0.032	3800

■ STANDARED RATINGS

D×L (mm)

W.V.		16 (1C)				25 (1E)			
S.V.		20				32			
Item		Case size	Impedance(ΩMAX.)		Allowable Ripple	Case size	Impedance(ΩMAX.)		Allowable Ripple
Cap(μF)	Code	φD×L (mm)	20℃/100KHz	−10℃/100KHz	(mA. rms) 105℃/100KHz	φD×L (mm)	20℃/100KHz	−10℃/100KHz	(mA. rms) 105℃/100KHz
4.7	4R7					5×11	0.60	2.32	180
10	100	4×7	2.00	5.00	65	5×11	0.60	2.32	180
		5×11	0.60	2.32	180	4×7	2.00	5.00	65
15	150	4×7	2.00	5.00	65	5×11	0.60	2.32	180
22	220	5×11	0.60	2.32	180	5×11	0.60	2.32	180
33	330	5×11	0.60	2.32	180	5×11	0.60	2.32	180
		6.3×7	0.45	1.20	200				
39	390					5×11	0.60	2.32	180
						6.3×7	0.45	1.20	200
47	470	5×11	0.60	2.32	180	5×11	0.60	2.32	180
56	560	5×11	0.60	2.32	180	5×11	0.60	2.32	180
		6.3×7	0.45	1.20	200				
82	820					6.3×11	0.25	0.875	290
100	101	6.3×11	0.25	0.875	290	6.3×11	0.25	0.875	290
120	121	6.3×11	0.25	0.875	290				
150	151	6.3×11	0.25	0.875	290	8×11.5	0.117	0.525	555
220	221	8×11.5	0.117	0.525	555	8×11.5	0.117	0.525	555
330	331	8×11.5	0.117	0.525	555	10×12.5	0.090	0.325	755
						8×15	0.085	0.350	730
470	471	10×12.5	0.090	0.325	755	10×16	0.068	0.246	1050
		8×15	0.085	0.350	730	8×20	0.065	0.273	995
560	561					10×20	0.052	0.184	1220
680	681	10×16	0.068	0.246	1050	8×20	0.065	0.273	995
		8×20	0.065	0.273	995	10×16	0.068	0.246	1050
						10×20	0.052	0.184	1220
820	821	10×20	0.052	0.184	1220	10×25	0.045	0.176	1440
1000	102	10×20	0.052	0.184	1220	10×30.5	0.035	0.127	1815
						12.5×15	0.060	0.120	1000
						12.5×20	0.038	0.127	1655
1200	122	10×25	0.045	0.176	1440				
1500	152	12.5×20	0.038	0.127	1655	16×25	0.022	0.064	2555
		10×30.5	0.035	0.127	1815	12.5×25	0.030	0.089	1945
2200	222	10×25	0.045	0.176	1440	16×25	0.022	0.064	2555
		12.5×25	0.030	0.089	1945				
2700	272	12.5×30.5	0.025	0.078	2310	16×25	0.022	0.064	2555
		16×20	0.029	0.078	2205				
3300	332	16×25	0.022	0.064	2555	16×30.5	0.018	0.053	3010
						18×25	0.020	0.049	2740
3900	392	16×25	0.022	0.064	2555	16×35.5	0.016	0.044	3150
						18×30.5	0.016	0.040	3635
4700	472	16×30.5	0.018	0.053	3010	18×35.5	0.015	0.038	3680
		18×25	0.020	0.049	2740				
5600	562	16×35.5	0.016	0.044	3150				
		18×30.5	0.016	0.040	3635				
6800	682	18×35.5	0.015	0.038	3680	18×40	0.014	0.032	3800
8200	822	18×35.5	0.015	0.038	3680				
10000	103	18×40	0.014	0.032	3840				

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■ STANDARED RATINGS

D×L (mm)

W.V.		35(1V)				50(1H)			
S.V.		44				63			
Item		Case size	Impedance(ΩMAX.)		Allowable Ripple	Case size	Impedance(ΩMAX.)		Allowable Ripple
Cap(μF)	Code	φD×L (mm)	20℃/100KHz	−10℃/100KHz	(mA. rms) 105℃/100KHz	φD×L (mm)	20℃/100KHz	−10℃/100KHz	(mA. rms) 105℃/100KHz
0.47	R47					5×11	5.00	10.0	25
1.0	1R0					5×11	3.50	7.00	40
2.2	2R2					5×11	3.00	6.00	55
3.3	3R3					5×11	2.60	5.20	65
4.7	4R7	5×11	0.60	2.32	180	5×11	2.30	4.60	90
6.8	6R8	4×7	2.00	5.00	65				
10	100	5×11	0.60	2.32	180	5×11	1.40	3.00	120
18	180					5×11	1.40	2.80	155
22	220	5×11	0.60	2.32	180	5×11	1.40	2.80	170
27	270	5×11	0.60	2.32	180				
		6.3×7	0.45	1.20	200				
33	330	5×11	0.60	2.32	180	6.3×11	0.430	0.860	300
47	470	6.3×11	0.25	0.875	290	6.3×11	0.430	0.860	300
56	560	6.3×11	0.25	0.875	290				
82	820					8×11.5	0.234	0.68	485
100	101	8×11.5	0.117	0.525	555	8×11.5	0.234	0.68	485
						10×12.5	0.162	0.48	615
120	121					8×15	0.155	0.48	635
						10×12.5	0.162	0.48	615
150	151	8×11.5	0.117	0.525	555	10×12.5	0.162	0.48	615
180	181					8×20	0.120	0.36	860
						10×16	0.119	0.348	850
220	221	10×12.5	0.090	0.325	755	10×16	0.119	0.248	850
		8×15	0.085	0.350	730	10×20	0.090	0.24	1030
270	271					10×25	0.082	0.224	1200
330	331	10×16	0.068	0.246	1050	10×20	0.090	0.24	1030
		8×20	0.065	0.273	995	10×30.5	0.060	0.195	1610
390	391	10×20	0.052	0.184	1220	12.5×20	0.063	0.156	1480
470	471	10×16	0.068	0.246	1050	12.5×20	0.060	0.156	1500
		10×20	0.052	0.184	1220				
		12.5×15	0.060	0.120	1000				
560	561	10×25	0.045	0.176	1440	12.5×25	0.050	0.110	1832
680	681	12.5×20	0.038	0.127	1655	12.5×25	0.050	0.110	1832
		10×30.5	0.035	0.127	1815	16×20	0.048	0.106	1835
1000	102	12.5×20	0.038	0.127	1655	16×25	0.034	0.078	2235
		12.5×25	0.030	0.089	1945				
1200	122	12.5×30.5	0.025	0.078	2310	16×30.5	0.028	0.066	2700
		16×20	0.029	0.078	2205	16×25	0.029	0.078	2610
1500	152	16×25	0.022	0.064	2550	16×30.5	0.028	0.066	2700
						16×35.5	0.025	0.057	2790
1800	182	16×25	0.027	0.064	2555	18×30.5	0.025	0.057	3000
2200	222	16×30.5	0.018	0.053	3010	18×35.5	0.023	0.046	3100
		18×25	0.020	0.049	2740				
2700	272	16×35.5	0.016	0.044	3150				
		18×30.5	0.016	0.040	3635				
3300	332	18×35.5	0.015	0.038	3680				
4700	472	18×40	0.014	0.032	3800				

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■ STANDARED RATINGS

D×L (mm)

W.V.		63(1J)				100(2A)			
S.V.		79				125			
Item / Cap(μF)	Code	Case size φD×L (mm)	Impedance(ΩMAX.) 20℃/100KHz	Impedance(ΩMAX.) −10℃/100KHz	Allowable Ripple (mA. rms) 105℃/100KHz	Case size φD×L (mm)	Impedance(ΩMAX.) 20℃/100KHz	Impedance(ΩMAX.) −10℃/100KHz	Allowable Ripple (mA. rms) 105℃/100KHz
0.47	R47					5×11	43.0	86.0	20
1.0	1R0					5×11	20.0	40.0	30
2.2	2R2					5×11	9.8	19.6	44
3.3	3R3					5×11	6.6	13.2	58
4.7	4R7	5×11	4.70	11.4	68	5×11	4.6	9.2	74
6.8	6R8	5×11	2.50	7.50	95	5×11	3.50	9.0	95
10	100	5×11	2.10	6.20	110	6.3×11	1.80	4.6	130
12	120	5×11	2.00	6.00	145				
15	180	6.3×11	1.20	3.40	160	8×11.5	0.83	2.8	180
22	220	6.3×11	0.85	2.42	250	8×11.5	0.68	2.1	230
33	330	6.3×11	0.85	2.42	250	10×12.5	0.46	1.8	320
						3×15	0.45	2.1	360
47	470	8×11.5	0.63	1.68	405	10×16	0.37	1.46	420
						8×20	0.37	1.64	420
68	680	8×11.5	0.63	1.68	405	10×20	0.30	0.96	490
82	820					10×25	0.25	0.75	540
100	101	10×12.5	0.41	1.7	535	12.5×20	0.18	0.66	580
		8×15	0.36	2.04	535				
120	121	10×16	0.28	1.45	600				
150	151	10×16	0.28	1.45	660	12.5×25	0.13	0.46	710
180	181	10×20	0.19	0.94	885	12.5×30.5	0.12	0.40	790
		12.5×15	0.21	1.05	1020	16×20	0.13	0.36	750
220	221	10×20	0.19	0.94	885	16×25	0.10	0.28	890
		10×25	0.16	0.76	1050	18×20	0.11	0.31	850
330	331	12.5×20	0.15	0.64	1285	16×25	0.09	0.28	1080
390	391	12.5×25	0.092	0.45	1720	18×25	0.083	0.26	1260
470	471	12.5×25	0.092	0.45	1720	16×30.5	0.076	0.23	1310
		12.5×30.5	0.105	0.4	2090				
		16×20	0.086	0.34	1765				
560	561					18×30.5	0.068	0.186	1370
680	681	16×25	0.070	0.24	2160	16×35.5	0.064	0.188	1410
820	821	16×30.5	0.068	0.19	2670				
		18×25	0.050	0.21	2585				
1000	102	16×30.5	0.048	0.19	2670	18×40	0.047	0.125	1520
		16×35.5	0.043	0.165	2770				
1200	122	18×30.5	0.045	0.165	2950				
1500	152	18×35.5	0.040	0.146	3095				
2200	222	18×40	0.035	0.125	3200				