

## *Data Sheet*

Customer: \_\_\_\_\_

Product: Aluminum Electrolytic Capacitors – ESX Series \_\_\_\_\_

Size : 5x11mm ~ 18x41mm \_\_\_\_\_

Issued Date: 20-May.-2016 \_\_\_\_\_

Edition: Ver. 1 \_\_\_\_\_

### Record of change

Date	Ver.	Description	Page
20-May-2016	1		

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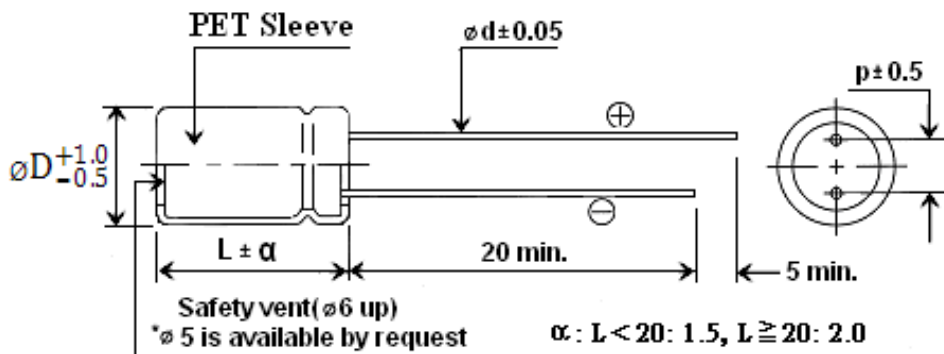
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20-May-2016	20-May-2016	20-May-2016	
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- ESX series capacitors are extremely low impedance for high frequency.
- Load life 105°C, 5000 hours assured. (2000 hours for  $D \leq 8\text{mm}$  as specified below)

**Characteristics**

<b>Voltage Range</b>	6.3 ~ 63V				100V				
<b>Capacitance Range</b>	1.0 ~ 10000uF								
<b>Temperature Range</b>	-55 ~ + 105°C				-40 ~ + 105°C				
<b>Leakage Current</b>	I=0.01CV or 3uA, whichever is greater (After 2 minutes)								
<b>Capacitance Tolerance</b>	±20% at 120Hz, 20°C( 10% Tol. is available upon request)								
<b>Dissipation Factor</b>	WV	6.3	10	16	25	35	50	63	100
	tan δ	0.20	0.18	0.16	0.14	0.12	0.10	0.09	0.08
For capacitance > 1000uF, add 0.02 for every 1000uF.(at 20°C, 120Hz)									
<b>Stability at Low Temperature (120Hz)</b>	Rated Voltage (V)	6.3	10	16	25	35	50	63	100
	Z-40°C/Z 20°C	6	4	3	3	2	2	2	2
	Z-55°C/Z 20°C	8	6	5	5	4	4	4	3
<b>Load Life</b> After the rated voltage has been applied for 2000~5000 hours at 105°C	2000hrs for $D \leq 8\text{mm}$ , 5000hrs for $D \geq 10\text{mm}$				Capacitance change		Within ±25% of initial value		
					D.F. (tanδ)		200% or less of initial specified value		
					Leakage current		Less than initial specified value		
<b>Shelf life (at 105°C)</b>	After storage for 1000 hours at 105°C with no voltage applied, the capacitor shall meet the specified limit in load life. Pre-treatment for measurement shall be conducted after application of DC working voltage for 30 minutes.								



**Drawing**

Dφ	5	6.3	8	10	13	16	18
p	2.0	2.5	3.5	5.0	5.0	7.5	7.5
dφ	0.5	0.5	0.5	0.6	0.6	0.8	0.8

**■ Ripple Current Coefficients**

Cap(uF)\Freq. (Hz)	60	120	400	1K	10K	>10K
Cap. ≤ 10	0.47	0.59	0.76	0.85	0.97	1
10 < Cap. ≤ 100	0.52	0.62	0.80	0.89	0.97	1
100 < Cap. ≤ 1000	0.58	0.72	0.84	0.90	0.98	1
1000 < Cap.	0.63	0.78	0.87	0.91	0.98	1

**Part Numbering System**

ESX    □ □ □    □    □ □    B    □ □  
Series    Capacitance    Tolerance    Rated Voltage    Package    Extended Code

## Case size & Maximum Ripple Current (mA rms 105°C 100KHz) & Imp. ( $\Omega$ 20°C 100KHz)

WV Cap.	6.3			10			16			25		
	uF	Size	Imp	RC	Size	Imp	RC	Size	Imp	RC	Size	Imp
<b>10</b>							5x11	4.00	37	5x11	2.10	56
<b>22</b>							5x11	2.00	70	5x11	1.80	120
<b>33</b>							5x11	1.26	130	5x11	1.20	150
<b>47</b>				5x11	1.20	120	5x11	0.52	190	5x11	0.50	220
<b>68</b>				5x11	0.89	145	5x11	0.45	210	6.3x11	0.39	270
<b>100</b>	5x11	0.95	185	5x11	0.48	205	6.3x11	0.31	260	6.3x11	0.28	300
<b>150</b>	6.3x11	0.75	210	6.3x11	0.37	270	6.3x11	0.26	300	8x12	0.19	435
<b>220</b>	6.3x11	0.55	300	6.3x11	0.28	330	8x12	0.21	455	8x12	0.125	550
<b>330</b>	8x12	0.30	390	8x12	0.16	430	8x12	0.12	550	10x13	0.082	720
<b>470</b>	8x12	0.22	430	8x12	0.12	555	10x13	0.095	722	10x16	0.065	1040
<b>680</b>	8x12	0.18	510	10x13	0.10	660	10x16	0.074	920	10x20	0.052	1280
<b>1000</b>	10x13	0.10	660	10x16	0.07	1010	10x20 10x25	0.054 0.050	1100 1180	13x20 13x25	0.039 0.038	1530 1580
<b>1500</b>	10x16 10x20	0.074 0.054	1050 1100	10x20	0.054	1270	10x25 13x20	0.041 0.050	1470 1400	13x25	0.032	2020
<b>2200</b>	10x25 13x20	0.057 0.050	1300 1400	13x20 13x25	0.050 0.040	1400 1690	13x20 13x25	0.035 0.033	1850 1950	16x25	0.027	2405
<b>3300</b>	13x20 13x25	0.050 0.048	1400 1500	13x25	0.029	1980	16x25	0.028	2340	16x31.5 18x25	0.020 0.022	2960 3050
<b>4700</b>	13x25 16x25	0.032 0.030	1800 2100	16x25	0.029	2100	16x31.5	0.022	2650	18x36	0.021	3520
<b>6800</b>	16x25	0.022	2230	16x31.5	0.025	2600	18x31.5 18x36	0.020 0.022	2700 3000	18x41	0.017	3600
<b>10000</b>	16x31.5 16x36	0.021 0.019	2600 2740	18x31.5 18x36	0.017 0.022	2770 3000	18x41	0.015	3300			

**Case size & Maximum Ripple Current (mA rms 105°C 100KHz) & Imp. (Ω 20°C 100KHz)**

WV Cap.	35			50			63			100		
	uF	Size	Imp	RC	Size	Imp	RC	Size	Imp	RC	Size	Imp
<b>1</b>				5x11	3.95	25	5x11	2.80	27	5x11	3.50	40
<b>2.2</b>				5x11	2.60	33	5x11	2.40	38	5x11	2.50	52
<b>3.3</b>				5x11	2.00	45	5x11	2.00	48	5x11	2.50	64
<b>4.7</b>				5x11	1.89	58	5x11	1.89	62	5x11	2.50	76
<b>10</b>	5x11	1.90	70	5x11	1.70	100	5x11	1.65	105	6.3x11	1.0	128
<b>22</b>	5x11	1.36	130	6.3x11	1.00	135	6.3x11	0.80	170	8x12	0.64	224
<b>33</b>	5x11	0.95	175	6.3x11	0.74	230	8x12	0.61	245	10x13	0.40	319
<b>47</b>	6.3x11	0.44	250	8x12	0.50	285	8x12	0.56	290	10x16	0.30	417
<b>68</b>	6.3x11	0.35	300	8x12	0.30	340	8x16	0.30	480	10x20	0.25	470
<b>100</b>	8x12	0.19	380	8x12 10x13	0.24 0.18	340 475	10x16	0.24	590	13x20	0.15	570
<b>150</b>	8x16	0.15	580	10x13 10x16	0.17 0.13	490 675	10x20	0.11	790	13x25	0.12	762
<b>220</b>	10x13	0.098	720	10x16 10x20	0.12 0.085	675 900	10x25 13x20	0.082 0.080	1020 1054	16x25	0.070	1048
<b>330</b>	10x16	0.065	995	10x20 10x25	0.085 0.068	810 1050	13x25	0.067	1160	16x31.5	0.050	1404
<b>470</b>	10x20	0.050	1150	13x21	0.048	1490	16x25	0.044	1750	18x41	0.030	1980
<b>680</b>	13x20	0.044	1440	13x25	0.041	1840	16x31.5	0.040	2070			
<b>1000</b>	16x25	0.036	1950	16x25 16x31.5	0.043 0.030	1600 2130	16x36	0.031	2450			
<b>1500</b>	16x25 16x31.5	0.030 0.027	2100 2520	16x31.5 16x36	0.038 0.026	2000 2700	18x35.5	0.025	2700			
<b>2200</b>	16x31.5 18x25	0.025 0.026	2600 2570	18x36	0.024	2900	18x41	0.023	2990			
<b>3300</b>	18x36	0.020	3000									
<b>4700</b>	18x41	0.019	3300									