## PX series

## $105^{\circ} \mathrm{C}$ Standard

FEATURES

- RoHS compliance.


## SPECIFICATIONS

| Iterns | Characteristics |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category Temperature Range | $-55 \sim+105^{\circ} \mathrm{C}$ |  |  |  |  | $-40 \sim+105^{\circ} \mathrm{C}$ |  |  |  |  |  |  | $-25 \sim+105^{\circ} \mathrm{C}$ |  |  |  |  |
| Rated Voltage Range | $6.3 \sim 100 \mathrm{~V} . \mathrm{DC}$ |  |  |  |  | 160~400V.DC |  |  |  |  |  |  | 450V.DC |  |  |  |  |
| Capacitance Tderance | $\pm 20 \%\left(20^{\circ} \mathrm{C}, 12 \mathrm{OHz}\right)$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Leakage Current(MAX) | 6.3~100V.DC |  |  |  |  |  |  |  | 160~450V.DC |  |  |  |  |  |  |  |  |
|  | $\mathrm{I}=0.01 \mathrm{CV}$ or $3 \mu \mathrm{~A}$ whichever is greater. <br> (After 2 minutes application of rated voltage) |  |  |  |  |  |  |  | $C V \leqq 1000$ |  |  |  |  |  | $C V>1000$ |  |  |
|  |  |  |  |  |  |  |  |  | $\begin{aligned} & \mathrm{I}=0.1 \mathrm{CV}+40 \mu \mathrm{~A} \text { ( } 1 \text { minute) } \\ & \mathrm{I}=0.03 \mathrm{CV}+15 \mu \mathrm{~A} \text { (5minutes) } \end{aligned}$ |  |  |  |  |  | $\begin{aligned} & \mathrm{I}=0.04 \mathrm{CV}+100 \mu \mathrm{~A} \text { (1 minute) } \\ & \mathrm{I}=0.02 \mathrm{CV}+25 \mu \mathrm{~A} \text { ( } 5 \text { minutes) } \end{aligned}$ |  |  |
|  | $\mathrm{I}=(\mu \mathrm{A})$ $\mathrm{C}=(\mu \mathrm{F})$ $\mathrm{V}=(\mathrm{V})$ <br> Leakage Curent Rated Capacitance Rated Voltage |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{aligned} & (\tan \delta) \\ & \text { Dissipation Factor(MAX) } \end{aligned}$ | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 0400 | -450 | $\left(20^{\circ} \mathrm{C}, 120 \mathrm{~Hz}\right)$ |  |
|  | $\tan \delta$ | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.20 | 0.20 | 0.20 | 0.25 | 550.25 | 50.25 |  |  |
|  | When rated capacitance is over $1000 \mu \mathrm{~F}$, tan $\delta$ shall be added 0.02 to the listed value with increase of every $1000 \mu \mathrm{~F}$. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Endurance | After life test with rated ripple current at conditions stated in the table below, the capacitors shall meet the following requirements. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Capacitance Change |  |  |  | Within $\pm 25 \%$ of the initial value. |  |  |  |  |  |  |  |  | $\begin{aligned} & \text { Case } \\ & \text { Size } \end{aligned}$ |  |  | (hrs) Life Time |
|  | Dissipation Factor |  |  |  | Not more than $200 \%$ of the specified value. |  |  |  |  |  |  |  |  | $\phi \mathrm{D} \leqq 8$ |  |  | 1000 |
|  | Leakage Current |  |  |  | Not more than the specified value. |  |  |  |  |  |  |  |  | $\phi \mathrm{D} \geq 10$ |  |  | 2000 |
| Low Temperature Stability Impedance Ratio(MAX) | Rated Voltage |  | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | $(120 H z)$ |
|  | Z $\left(-25^{\circ} \mathrm{C}\right) / \mathrm{Z}\left(20^{\circ} \mathrm{C}\right)$ |  | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 6 | 6 | 7 |  |
|  | Z $\left(-40^{\circ} \mathrm{C}\right) / \mathrm{Z}\left(20^{\circ} \mathrm{C}\right)$ |  | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 8 | 8 | 10 | - |  |

MULTIPLIER FOR RIPPLE CURRENT
Frequency Coefficient

| $\begin{gathered} (\mathrm{Hz}) \\ \text { Frequency } \end{gathered}$ |  | 6050) | 120 | 500 | 1k | 10k |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Coelficient | $0.47 \sim 1 \mu \mathrm{~F}$ | 0.50 | 1.00 | 1.20 | 1.3 | 1.50 |
|  | $2.2 \sim 4.7 \mu \mathrm{~F}$ | 0.65 | 1.00 | 1.20 | 1.30 | 1.50 |
|  | 10~47 $\mu \mathrm{F}$ | 0.80 | 1.00 | 1.20 | 1.30 | 1.50 |
|  | 100~1000 $\mathrm{\mu}$ | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 |
|  | 2200~33000 HF | 0.80 | 1.0 | 1.05 | 1.10 |  |

## -OPTION

|  | Code |
| :---: | :---: |
| PET Sleeve | EFC |

(mm)


## PART NUMBER

STANDARD SIZE

| WV $(V . D C)$ | $\begin{aligned} & \hline 6.3 \\ & \text { (0J) } \end{aligned}$ |  | $\begin{array}{r} 10 \\ (1 \mathrm{~A}) \\ \hline \end{array}$ |  | $\begin{gathered} 16 \\ (1 \mathrm{C}) \\ \hline \end{gathered}$ |  | $\begin{gathered} 25 \\ (1 \mathrm{E}) \end{gathered}$ |  | $\begin{gathered} 35 \\ \text { (1V) } \\ \hline \end{gathered}$ |  | $\begin{gathered} 50 \\ (1 \mathrm{H}) \end{gathered}$ |  | $\begin{gathered} 63 \\ (1 \mathrm{~J}) \end{gathered}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $C a p(\mu \mathrm{~F})$ | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple |
| 0.47 |  |  |  |  |  |  |  |  |  |  | $5 \times 11$ | 7 |  |  |
| 1 |  |  |  |  |  |  |  |  |  |  | $5 \times 11$ | 13 |  |  |
| 2.2 |  |  |  |  |  |  |  |  |  |  | $5 \times 11$ | 20 |  |  |
| 3.3 |  |  |  |  |  |  |  |  |  |  | $5 \times 11$ | 25 |  |  |
| 4.7 |  |  |  |  |  |  |  |  |  |  | $5 \times 11$ | 32 |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  | $5 \times 11$ | 47 | $5 \times 11$ | 48 |
| 22 |  |  |  |  |  |  |  |  | $5 \times 11$ | 64 | $5 \times 11$ | 70 | $5 \times 11$ | 80 |
| 33 |  |  |  |  |  |  | $5 \times 11$ | 69 | $5 \times 11$ | 77 | $5 \times 11$ | 94 | $6.3 \times 11$ | 100 |
| 47 |  |  |  |  | $5 \times 11$ | 80 | $5 \times 11$ | 84 | $5 \times 11$ | 100 | $6.3 \times 11$ | 115 | $6.3 \times 11$ | 140 |
| 100 | $5 \times 11$ | 96 | $5 \times 11$ | 105 | $5 \times 11$ | 130 | $5 \times 11$ | 135 | $6.3 \times 11$ | 170 | $8 \times 11.5$ | 200 | $8 \times 11.5$ | 230 |
| 220 | $5 \times 11$ | 160 | $5 \times 11$ | 165 | $6.3 \times 11$ | 220 | $6.3 \times 11$ | 240 | $8 \times 11.5$ | 300 | $10 \times 12.5$ | 360 | $10 \times 16$ | 390 |
| 330 | $6.3 \times 11$ | 210 | $6.3 \times 11$ | 235 | $6.3 \times 11$ | 270 | $8 \times 11.5$ | 335 | $10 \times 12.5$ | 400 | $10 \times 16$ | 470 | $10 \times 20$ | 540 |
| 470 | $6.3 \times 11$ | 275 | $6.3 \times 11$ | 295 | $8 \times 11.5$ | 375 | $8 \times 11.5$ | 440 | $10 \times 12.5$ | 525 | $10 \times 20$ | 600 | $12.5 \times 20$ | 700 |
| 680 | $6.3 \times 11$ | 285 | $8 \times 11.5$ | 430 | $8 \times 11.5$ | 480 | $10 \times 12.5$ | 630 | $10 \times 16$ | 760 | $12.5 \times 20$ | 980 | $12.5 \times 25$ | 800 |
| 1000 | $8 \times 11.5$ | 460 | $8 \times 11.5$ | 500 | $10 \times 12.5$ | 640 | $10 \times 16$ | 740 | $10 \times 20$ | 865 | $12.5 \times 25$ | 1060 | $16 \times 25$ | 1200 |
| 2200 | $10 \times 16$ | 775 | $10 \times 16$ | 860 | $10 \times 20$ | 1050 | $12.5 \times 20$ | 1090 | $16 \times 25$ | 1370 | $16 \times 31.5$ | 1600 | $18 \times 31.5$ | 1400 |
| 3300 | $10 \times 20$ | 985 | $10 \times 20$ | 11100 | $12.5 \times 20$ | 1300 | $16 \times 25$ | 11500 | $16 \times 25$ | 11680 | $18 \times 35.5$ | 1780 |  |  |
| 4700 | $12.5 \times 20$ | 1150 | $12.5 \times 20$ | 1350 | $12.5 \times 25$ | 1650 | $16 \times 25$ | 1800 | $16 \times 35.5$ | 1870 |  |  |  |  |
| 6800 | $12.5 \times 25$ | 1480 | $16 \times 25$ | 1700 | $16 \times 25$ | 1900 | $16 \times 35.5$ | 1910 | $18 \times 35.5$ | 1920 |  |  |  |  |
| 10000 | $16 \times 25$ | 1700 | $16 \times 25$ | 1950 | $16 \times 31.5$ | 1950 | $18 \times 35.5$ | 2050 |  |  |  |  |  |  |
| 15000 | $16 \times 31.5$ | 2090 | $16 \times 35.5$ | :2090 | $18 \times 35.5$ | 2070 |  |  |  |  |  |  |  |  |
| 22000 | $18 \times 31.5$ | 2280 | $18 \times 35.5$ | \|2180 |  |  |  |  |  |  |  |  |  |  |
| 33000 | $18 \times 40$ | 2350 |  |  |  |  |  |  |  |  |  |  |  |  |


|  | $\begin{aligned} & 100 \\ & (2 \mathrm{~A}) \\ & \hline \end{aligned}$ |  | $\begin{array}{r} 160 \\ (2 \mathrm{C}) \\ \hline \end{array}$ |  | $\begin{array}{r} 200 \\ (2 \mathrm{D}) \\ \hline \end{array}$ |  | $\begin{aligned} & 250 \\ & (2 \mathrm{E}) \end{aligned}$ |  | $\begin{aligned} & 350 \\ & (2 \mathrm{~V}) \end{aligned}$ |  | $\begin{aligned} & 400 \\ & (2 \mathrm{G}) \end{aligned}$ |  | $\begin{aligned} & 450 \\ & (2 W) \end{aligned}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple |
| 0.47 | $5 \times 11$ | 8 |  |  |  |  | $6.3 \times 11$ | 8 | $6.3 \times 11$ | 8 |  |  |  |  |
| 1 | $5 \times 11$ | 15 |  |  |  |  | $6.3 \times 11$ | 16 | $6.3 \times 11$ | 16 | $6.3 \times 11$ | 16 | $6.3 \times 11$ | 15 |
| 2.2 | $5 \times 11$ | 21 |  |  |  |  | $6.3 \times 11$ | 30 | $6.3 \times 11$ | 25 | $8 \times 11.5$ | 31 | $8 \times 11.5$ | 20 |
| 3.3 | $5 \times 11$ | 30 |  |  | $6.3 \times 11$ | 36 | $6.3 \times 11$ | 30 | $8 \times 11.5$ | 30 | $8 \times 11.5$ | 34 | $10 \times 12.5$ | 33 |
| 4.7 | $5 \times 11$ | 35 | $6.3 \times 11$ | 43 | $6.3 \times 11$ | 40 | $8 \times 11.5$ | 45 | $8 \times 11.5$ | 45 | $10 \times 12.5$ | 42 | $10 \times 12.5$ | 35 |
| 10 | $5 \times 11$ | 60 | $8 \times 11.5$ | 77 | $8 \times 11.5$ | 57 | $10 \times 12.5$ | 90 | $10 \times 16$ | 95 | $10 \times 16$ | 64 | $10 \times 20$ | 37 |
| 22 | $6.3 \times 11$ | 98 | $10 \times 12.5$ | 92 | $10 \times 16$ | 105 | $10 \times 16$ | 105 | $12.5 \times 20$ | 175 | $12.5 \times 20$ | 140 | $12.5 \times 25$ | 100 |
| 33 | $8 \times 11.5$ | 140 | $10 \times 16$ | 125 | $10 \times 20$ | 140 | $10 \times 20$ | 140 | $12.5 \times 25$ | 220 | $16 \times 25$ | 170 | $16 \times 25$ | 125 |
| 47 | $8 \times 11.5$ | 185 | $10 \times 20$ | 150 | $10 \times 20$ | 195 | $12.5 \times 20$ | 190 | $16 \times 25$ | 260 | $16 \times 25$ | 200 | $16 \times 31.5$ | 155 |
| 100 | $10 \times 16$ | 290 | $12.5 \times 25$ | 320 | $16 \times 25$ | 340 | $16 \times 25$ | 310 | $18 \times 31.5$ | 370 | $18 \times 35.5$ | 310 | $18 \times 40$ | 200 |
| 220 | $12.5 \times 20$ | 560 | $16 \times 31.5$ | 410 | $16 \times 35.5$ | 580 | $18 \times 35.5$ | 485 |  |  |  |  |  |  |
| 330 | $12.5 \times 25$ | 690 | $18 \times 31.5$ | 570 | $18 \times 40$ | 675 |  |  |  |  |  |  |  |  |
| 470 | $16 \times 25$ | 880 | $18 \times 40$ | 855 |  |  |  |  |  |  |  |  |  |  |
| 680 | $16 \times 31.5$ | 900 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1000 | $18 \times 35.5$ | 985 |  |  |  |  |  |  |  |  |  |  |  |  |

