

PD SERIES ■ STANDARD TYPE

KEY FEATURES

- **SOLID CONDUCTIVE POLYMER** ■ SMD type
- Low ESR at high frequency range
- Endurance: 105°C ■ 2 000 hours
- Large permissible ripple current
- No dry-out effect guarantees extremely long life



SPECIFICATIONS

| Items | | Performance Characteristics |
|--|--------------|---|
| Operating Temperature Range | | -55 ~ +105°C |
| Rated Voltage Range | V_R | 2.5 ~ 100V DC |
| Surge Voltage | V_S | ($V_R \leq 20V$): $V_S = 1.15 \cdot V_R$ ($V_R \geq 25V$): $V_S = 1.10 \cdot V_R$ |
| Capacitance Range | C_R | 10 ~ 3300μF |
| Cap. Tolerance | ΔC | ±20% (120Hz ■ 20°C) |
| Leakage Current (20°C ■ V_R applied) | I_{LEAK} | Not to exceed the values shown in standard ratings After 2 minutes |
| Dissipation Factor % (20°C ■ 120Hz) | $\tan\delta$ | Not to exceed the values shown in standard ratings |
| Equivalent Series Resistance (20°C ■ 100kHz) | ESR | Not to exceed the values shown in standard ratings |

| Lifetime Test | | |
|--|----------------|---|
| Endurance 105°C (V_R applied) | Test | 2 000 hours |
| | $\Delta C/C_R$ | Within ±20% of the initial value |
| | $\tan\delta$ | Not to exceed 150% of the value specified |
| | ESR | Not to exceed 150% of the value specified |
| | I_{Leak} | Less than the specified value |
| Moisture Resistance stored at 60°C (RH 90 ~ 95%) | Test | 1 000 hours |
| | $\Delta C/C_R$ | Within ±20% of the initial value |
| | $\tan\delta$ | Not to exceed 150% of the value specified |
| | ESR | Not to exceed 150% of the value specified |
| | I_{Leak} | Less than the specified value |

MULTIPLIER K_f for RIPPLE CURRENT vs. FREQUENCY

| Frequency (Hz) | 120 ≤ Freq. < 1k | 1k ≤ Freq. < 10k | 10k ≤ Freq. < 100k | 100k ≤ Freq. < 300k |
|-------------------|------------------|------------------|--------------------|---------------------|
| Coefficient K_f | 0.05 | 0.3 | 0.7 | 1 |

STANDARD RATINGS

Part number shows blister tape on paper reel

| V _R (V) | C _R (μF) | ø D (mm) | L (mm) | I _{LEAK} (μA, 2min) | tanδ +20°C • 120Hz (%) | Max. ESR +20°C • 100kHz (mΩ) | I _R • Max. Ripple Current +105°C • 100kHz (mA rms) | CapXon Part Number |
|-----------------------|------------------------|-------------|-----------|---------------------------------|---------------------------------|---------------------------------------|--|--------------------|
| 2.5 | 560 | 8.0 | 11.7 | 280 | 8 | 9 | 5200 | PD561M2R5F117PTR |
| | 680 | 8.0 | 11.7 | 340 | 8 | 9 | 5200 | PD681M2R5F117PTR |
| | 820 | 8.0 | 11.7 | 410 | 8 | 9 | 5400 | PD821M2R5F117PTR |
| | 1000 | 8.0 | 11.7 | 500 | 8 | 9 | 5400 | PD102M2R5F117PTR |
| | 1500 | 8.0 | 11.7 | 750 | 8 | 9 | 5400 | PD152M2R5F117PTR |
| | 1500 | 10.0 | 12.4 | 750 | 8 | 9 | 5600 | PD152M2R5G124PTR |
| | 2500 | 10.0 | 12.4 | 1250 | 8 | 9 | 5600 | PD252M2R5G124PTR |
| | 2700 | 10.0 | 12.4 | 1350 | 10 | 9 | 5600 | PD272M2R5G124PTR |
| | 3300 | 10.0 | 12.4 | 1650 | 10 | 9 | 5600 | PD332M2R5G124PTR |
| 4 | 560 | 8.0 | 11.7 | 448 | 8 | 9 | 5200 | PD561M004F117PTR |
| | 680 | 8.0 | 11.7 | 544 | 8 | 9 | 5200 | PD681M004F117PTR |
| | 820 | 8.0 | 11.7 | 656 | 8 | 9 | 5200 | PD821M004F117PTR |
| | 1000 | 8.0 | 11.7 | 800 | 10 | 9 | 5200 | PD102M004F117PTR |
| | 1200 | 8.0 | 11.7 | 960 | 10 | 9 | 5200 | PD122M004F117PTR |
| | 1200 | 10.0 | 12.4 | 960 | 10 | 9 | 5600 | PD122M004G124PTR |
| | 1500 | 8.0 | 11.7 | 1200 | 10 | 9 | 5200 | PD152M004F117PTR |
| | 1500 | 10.0 | 12.4 | 1200 | 10 | 9 | 5600 | PD152M004G124PTR |
| | 1800 | 10.0 | 12.4 | 1440 | 10 | 9 | 5600 | PD182M004G124PTR |
| | 2200 | 10.0 | 12.4 | 1760 | 10 | 9 | 5600 | PD222M004G124PTR |
| | 2500 | 10.0 | 12.4 | 2000 | 10 | 9 | 5600 | PD252M004G124PTR |
| | 2700 | 10.0 | 12.4 | 2160 | 10 | 9 | 5600 | PD272M004G124PTR |
| 6.3 | 180 | 8.0 | 11.7 | 227 | 8 | 9 | 5200 | PD181M6R3F117PTR |
| | 270 | 8.0 | 11.7 | 340 | 8 | 9 | 5200 | PD271M6R3F117PTR |
| | 330 | 8.0 | 11.7 | 416 | 8 | 9 | 5200 | PD331M6R3F117PTR |
| | 390 | 8.0 | 11.7 | 491 | 8 | 9 | 5200 | PD391M6R3F117PTR |
| | 470 | 8.0 | 11.7 | 592 | 8 | 9 | 5200 | PD471M6R3F117PTR |
| | 560 | 8.0 | 11.7 | 706 | 8 | 9 | 5200 | PD561M6R3F117PTR |
| | 680 | 10.0 | 12.4 | 856 | 8 | 9 | 5500 | PD681M6R3G124PTR |
| | 820 | 8.0 | 11.7 | 1033 | 10 | 9 | 5200 | PD821M6R3F117PTR |
| | 820 | 10.0 | 12.4 | 1033 | 10 | 9 | 5500 | PD821M6R3G124PTR |
| | 1000 | 8.0 | 11.7 | 1260 | 10 | 9 | 5200 | PD102M6R3F117PTR |
| | 1000 | 10.0 | 12.4 | 1260 | 10 | 9 | 5500 | PD102M6R3G124PTR |
| | 1500 | 10.0 | 12.4 | 1890 | 10 | 9 | 5500 | PD152M6R3G124PTR |
| | 2000 | 10.0 | 12.4 | 2520 | 10 | 9 | 5500 | PD202M6R3G124PTR |
| | 2200 | 10.0 | 12.4 | 2772 | 10 | 9 | 5500 | PD222M6R3G124PTR |
| 10 | 180 | 8.0 | 11.7 | 360 | 8 | 9 | 5200 | PD181M010F117PTR |
| | 220 | 8.0 | 11.7 | 440 | 8 | 9 | 5200 | PD221M010F117PTR |
| | 270 | 8.0 | 11.7 | 540 | 8 | 9 | 5200 | PD271M010F117PTR |
| | 330 | 8.0 | 11.7 | 660 | 8 | 9 | 5200 | PD331M010F117PTR |
| | 390 | 8.0 | 11.7 | 780 | 8 | 9 | 5200 | PD391M010F117PTR |
| | 470 | 8.0 | 11.7 | 940 | 8 | 9 | 5200 | PD471M010F117PTR |
| | 470 | 10.0 | 12.4 | 940 | 8 | 9 | 5500 | PD471M010G124PTR |
| | 560 | 8.0 | 11.7 | 1120 | 8 | 9 | 5200 | PD561M010F117PTR |
| | 560 | 10.0 | 12.4 | 1120 | 8 | 9 | 5500 | PD561M010G124PTR |
| | 680 | 8.0 | 11.7 | 1360 | 10 | 9 | 5200 | PD681M010F117PTR |

STANDARD RATINGS

Part number shows blister tape on paper reel

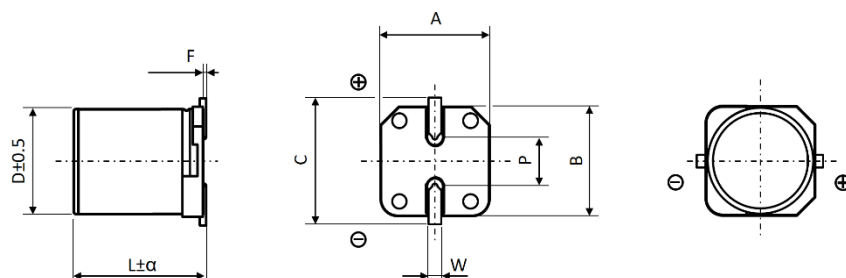
| V _R (V) | C _R (μF) | ø D (mm) | L (mm) | I _{LEAK} (μA, 2min) | tanδ +20°C • 120Hz (%) | Max. ESR +20°C • 100kHz (mΩ) | I _R • Max. Ripple Current +105°C • 100kHz (mA rms) | CapXon Part Number |
|-----------------------|------------------------|-------------|-----------|---------------------------------|---------------------------------|---------------------------------------|--|--------------------|
| 10 | 680 | 10.0 | 12.4 | 1360 | 10 | 9 | 5500 | PD681M010G124PTR |
| | 820 | 10.0 | 12.4 | 1640 | 10 | 9 | 5500 | PD821M010G124PTR |
| | 1000 | 10.0 | 12.4 | 2000 | 10 | 9 | 5500 | PD102M010G124PTR |
| | 1200 | 10.0 | 12.4 | 2400 | 10 | 9 | 5500 | PD122M010G124PTR |
| | 1500 | 10.0 | 12.4 | 3000 | 10 | 9 | 5500 | PD152M010G124PTR |
| 16 | 180 | 8.0 | 11.7 | 576 | 8 | 15 | 4700 | PD181M016F117PTR |
| | 220 | 8.0 | 11.7 | 704 | 8 | 15 | 4700 | PD221M016F117PTR |
| | 220 | 10.0 | 12.4 | 704 | 8 | 15 | 5100 | PD221M016G124PTR |
| | 270 | 8.0 | 11.7 | 864 | 8 | 15 | 4700 | PD271M016F117PTR |
| | 270 | 10.0 | 12.4 | 864 | 8 | 15 | 5100 | PD271M016G124PTR |
| | 330 | 8.0 | 11.7 | 1056 | 8 | 15 | 4700 | PD331M016F117PTR |
| | 330 | 10.0 | 12.4 | 1056 | 8 | 15 | 5100 | PD331M016G124PTR |
| | 390 | 8.0 | 11.7 | 1248 | 10 | 15 | 4700 | PD391M016F117PTR |
| | 470 | 10.0 | 12.4 | 1504 | 10 | 15 | 5100 | PD471M016G124PTR |
| | 560 | 8.0 | 11.7 | 1792 | 12 | 14 | 4950 | PD561M016F117PTR |
| | 680 | 10.0 | 12.4 | 2176 | 10 | 15 | 5100 | PD681M016G124PTR |
| | 820 | 10.0 | 12.4 | 2624 | 10 | 15 | 5100 | PD821M016G124PTR |
| | 1000 | 10.0 | 12.4 | 3200 | 12 | 14 | 5400 | PD102M016G124PTR |
| 20 | 39 | 8.0 | 11.7 | 156 | 8 | 20 | 4210 | PD390M020F117PTR |
| | 68 | 8.0 | 11.7 | 272 | 8 | 20 | 4210 | PD680M020F117PTR |
| | 82 | 8.0 | 11.7 | 328 | 8 | 20 | 4210 | PD820M020F117PTR |
| | 100 | 8.0 | 11.7 | 400 | 8 | 20 | 4210 | PD101M020F117PTR |
| | 100 | 10.0 | 12.4 | 400 | 8 | 20 | 4800 | PD101M020G124PTR |
| | 150 | 10.0 | 12.4 | 600 | 10 | 20 | 4800 | PD151M020G124PTR |
| | 180 | 10.0 | 12.4 | 720 | 10 | 20 | 4800 | PD181M020G124PTR |
| | 220 | 8.0 | 11.7 | 880 | 10 | 22 | 4000 | PD221M020F117PTR |
| | 220 | 10.0 | 12.4 | 880 | 10 | 20 | 4800 | PD221M020G124PTR |
| | 270 | 8.0 | 11.7 | 1080 | 10 | 22 | 4000 | PD271M020F117PTR |
| | 270 | 10.0 | 12.4 | 1080 | 10 | 20 | 4800 | PD271M020G124PTR |
| | 330 | 10.0 | 12.4 | 1320 | 10 | 20 | 4800 | PD331M020G124PTR |
| | 390 | 8.0 | 11.7 | 1560 | 12 | 14 | 4950 | PD391M020F117PTR |
| | 470 | 10.0 | 12.4 | 1880 | 12 | 20 | 4800 | PD471M020G124PTR |
| | 680 | 10.0 | 12.4 | 2720 | 12 | 16 | 5000 | PD681M020G124PTR |
| 25 | 33 | 8.0 | 11.7 | 165 | 8 | 25 | 3800 | PD330M025F117PTR |
| | 47 | 8.0 | 11.7 | 235 | 8 | 20 | 4210 | PD470M025F117PTR |
| | 56 | 10.0 | 12.4 | 280 | 8 | 28 | 3800 | PD560M025G124PTR |
| | 82 | 8.0 | 11.7 | 410 | 8 | 20 | 4210 | PD820M025F117PTR |
| | 100 | 8.0 | 11.7 | 500 | 10 | 20 | 4210 | PD101M025F117PTR |
| | 100 | 10.0 | 12.4 | 500 | 10 | 20 | 4800 | PD101M025G124PTR |
| | 180 | 8.0 | 11.7 | 900 | 10 | 25 | 3800 | PD181M025F117PTR |
| | 180 | 10.0 | 12.4 | 900 | 10 | 20 | 4800 | PD181M025G124PTR |
| | 220 | 8.0 | 11.7 | 1100 | 10 | 25 | 3800 | PD221M025F117PTR |
| | 220 | 10.0 | 12.4 | 1100 | 10 | 20 | 4800 | PD221M025G124PTR |
| | 270 | 10.0 | 12.4 | 1350 | 10 | 20 | 4800 | PD271M025G124PTR |
| | 330 | 8.0 | 11.7 | 1650 | 12 | 20 | 4210 | PD331M025F117PTR |

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Part number shows blister tape on paper reel

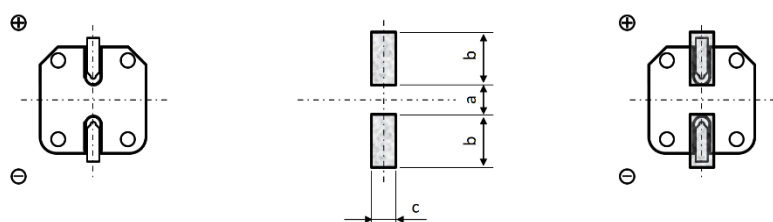
| V _R (V) | C _R (μF) | ø D (mm) | L (mm) | I _{LEAK} (μA, 2min) | tanδ +20°C • 120Hz (%) | Max. ESR +20°C • 100kHz (mΩ) | I _R • Max. Ripple Current +105°C • 100kHz (mA rms) | CapXon Part Number |
|-----------------------|------------------------|-------------|-----------|---------------------------------|---------------------------------|---------------------------------------|--|--------------------|
| 25 | 330 | 10.0 | 12.4 | 1650 | 12 | 22 | 4200 | PD331M025G124PTR |
| | 390 | 10.0 | 12.4 | 1950 | 12 | 22 | 4200 | PD391M025G124PTR |
| | 470 | 10.0 | 12.4 | 2350 | 12 | 25 | 3800 | PD471M025G124PTR |
| 35 | 39 | 8.0 | 11.7 | 273 | 12 | 32 | 2700 | PD390M035F117PTR |
| | 68 | 8.0 | 11.7 | 476 | 12 | 28 | 3300 | PD680M035F117PTR |
| | 82 | 8.0 | 11.7 | 574 | 12 | 28 | 3300 | PD820M035F117PTR |
| | 100 | 10.0 | 12.4 | 700 | 12 | 25 | 3800 | PD101M035G124PTR |
| | 120 | 8.0 | 11.7 | 840 | 12 | 25 | 3800 | PD121M035F117PTR |
| | 150 | 8.0 | 11.7 | 840 | 12 | 25 | 3800 | PD151M035F117PTR |
| | 150 | 10.0 | 12.4 | 1050 | 12 | 25 | 3800 | PD151M035G124PTR |
| | 180 | 10.0 | 12.4 | 1260 | 12 | 22 | 4100 | PD181M035G124PTR |
| | 220 | 10.0 | 12.4 | 1540 | 12 | 22 | 4100 | PD221M035G124PTR |
| | 270 | 10.0 | 12.4 | 1890 | 12 | 20 | 4400 | PD271M035G124PTR |
| | 330 | 10.0 | 12.4 | 2310 | 12 | 20 | 4400 | PD331M035G124PTR |
| | 10 | 8.0 | 11.7 | 100 | 12 | 40 | 1800 | PD100M050F117PTR |
| 50 | 22 | 8.0 | 11.7 | 220 | 12 | 40 | 1800 | PD220M050F117PTR |
| | 33 | 8.0 | 11.7 | 300 | 12 | 35 | 2000 | PD330M050F117PTR |
| | 39 | 8.0 | 11.7 | 390 | 12 | 30 | 2300 | PD390M050F117PTR |
| | 47 | 8.0 | 11.7 | 470 | 12 | 30 | 2300 | PD470M050F117PTR |
| | 56 | 8.0 | 11.7 | 560 | 12 | 30 | 2500 | PD560M050F117PTR |
| | 56 | 10.0 | 12.4 | 560 | 12 | 25 | 3000 | PD560M050G124PTR |
| | 68 | 10.0 | 12.4 | 680 | 12 | 25 | 3000 | PD680M050G124PTR |
| | 100 | 10.0 | 12.4 | 1000 | 12 | 25 | 3000 | PD101M050G124PTR |
| 63 | 22 | 8.0 | 11.7 | 277 | 12 | 35 | 1800 | PD220M063F117PTR |
| | 27 | 8.0 | 11.7 | 340 | 12 | 35 | 2200 | PD270M063F117PTR |
| | 33 | 8.0 | 11.7 | 416 | 12 | 35 | 2200 | PD330M063F117PTR |
| | 33 | 10.0 | 12.4 | 416 | 12 | 30 | 2500 | PD330M063G124PTR |
| | 39 | 8.0 | 11.7 | 491 | 12 | 35 | 2200 | PD390M063F117PTR |
| | 47 | 10.0 | 12.4 | 592 | 12 | 30 | 2500 | PD470M063G124PTR |
| | 56 | 10.0 | 12.4 | 706 | 12 | 30 | 2500 | PD560M063G124PTR |
| | 68 | 10.0 | 12.4 | 857 | 12 | 30 | 2500 | PD680M063G124PTR |
| 80 | 12 | 8.0 | 11.7 | 192 | 12 | 40 | 1800 | PD120M080F117PTR |
| | 22 | 10.0 | 12.4 | 352 | 12 | 38 | 2300 | PD220M080G124PTR |
| | 47 | 10.0 | 12.4 | 752 | 12 | 40 | 1800 | PD470M080G124PTR |
| 100 | 10 | 8.0 | 11.7 | 200 | 12 | 45 | 1700 | PD100M100F117PTR |
| | 18 | 10.0 | 12.4 | 360 | 12 | 40 | 2100 | PD180M100G124PTR |
| | 22 | 10.0 | 12.4 | 440 | 12 | 40 | 2100 | PD220M100G124PTR |

DIMENSIONS STANDARD PACKAGE ▀ All dimensions in mm



| $\varnothing D$ | L | α | $A \pm 0.2$ | $B \pm 0.2$ | $C \pm 0.2$ | F | $P \pm 0.2$ | W |
|-----------------|------|----------|-------------|-------------|-------------|----------|-------------|------------|
| 8.0 | 11.7 | 0.3 | 8.3 | 8.3 | 9.0 | 0.3 max. | 3.1 | 0.7 to 1.1 |
| 10.0 | 12.4 | 0.3 | 10.3 | 10.3 | 11.0 | 0.3 max. | 4.5 | 1.0 to 1.4 |

PAD LAYOUT STANDARD PACKAGE ▀ All dimensions in mm



Bottom view

Recommended land patterns

Capacitor mounted on pads

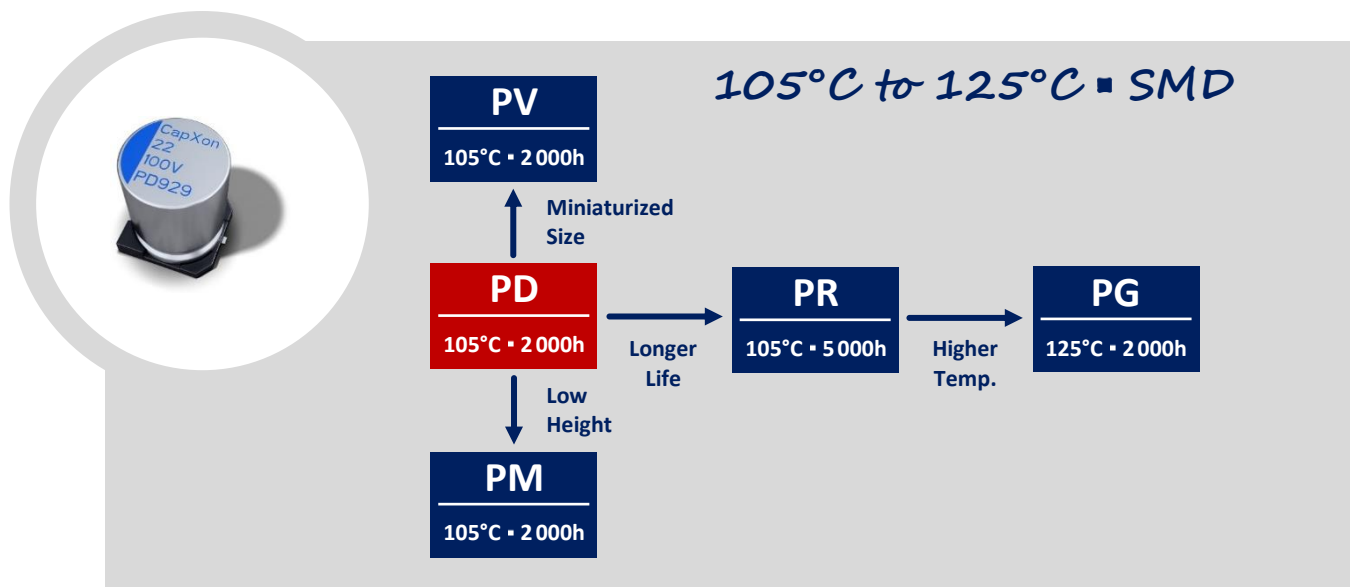
| $\varnothing D$ | L | a | b | c |
|-----------------|------|-----|-----|-----|
| 8.0 | 11.7 | 2.8 | 4.2 | 1.9 |
| 10.0 | 12.4 | 4.3 | 4.4 | 1.9 |

PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATION

Unless otherwise agreed in individual specifications, all products are subject to our “General Precautions and Guidelines” as well as our “Packaging Information”. Please refer to the following links in the table.

| | | | |
|--|---------------------------------------|---------------------------|-----------------------------------|
| | | | |
| General Precautions & Guidelines | Packaging Information | 3D Models | Reliability Tests |

GROUP CHART



DISCLAIMER

All product related data (e.g. specification, statements and general information) are subject to change without any notice. It is necessary that the customer observes all product related technical / application information and handling instructions.

CapXon products are designed and manufactured according to severe quality and safety standards. Under no circumstance, CapXon warrants that any CapXon product is suitable for the purposes intended for your application, even CapXon knows the application. It is customer's duty and obligation to check and make sure that CapXon products are suitable for the purposes intended and select the correct and proper CapXon product. Customers are requested to perform a sufficient validation and reliability evaluation to assure needed safety level and reliability performance by suitable designs and to apply proper safeguards (e.g. redundancies, protective circuits).

Particular operating conditions (ambient temperature, ripple current, voltage, thermal resistance, etc.) as well as storage, production or assembly may affect the performance and the lifetime of the capacitor. Please consult CapXon for lifetime estimation, failure mode considerations or worst-case scenarios according to the product technology, product tolerances / deviations or change of the characteristics of the capacitor due to shipment, storage, handling, production and usage.

For aerospace or military application, life-saving, life-sustaining, safety critical applications or any application where failure may cause severe personal injury or death, please consult us before design-in the capacitor in your application.

Except for the written expressed warranties, CapXon does not impliedly, by assumption or whatever else, warrant, undertake, promise any other warranty or guaranty for any CapXon product.

For further information, please visit our website www.capxongroup.com or contact CapXon directly.