

### PL SERIES ▀ ULTRA LOW ESR $\leq 9\text{m}\Omega$

#### KEY FEATURES



- **SOLID CONDUCTIVE POLYMER** ▀ THT type
- Ultra-low ESR at high frequency range
- Endurance: 105°C ▀ 2 000 hours
- Very large permissible ripple current
- No dry-out effect guarantees extremely long life

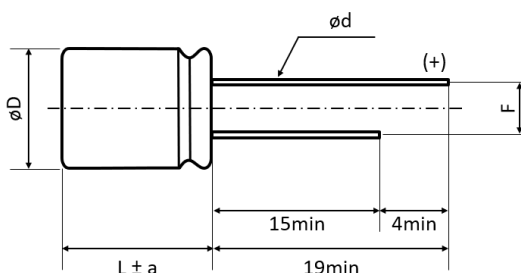


#### SPECIFICATIONS

Items		Performance Characteristics
Operating Temperature Range		-55 ~ +105°C
Rated Voltage Range	$V_R$	2.5 ~ 16V DC
Surge Voltage	$V_S$	$V_S = 1.15 \cdot V_R$
Capacitance Range	$C_R$	180 ~ 3500 $\mu\text{F}$
Cap. Tolerance	$\Delta C$	$\pm 20\%$ (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	<b>2 000 hours</b>
	$\Delta C/C_R$	Within $\pm 20\%$ 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	<b>1 000 hours</b>
	$\Delta C/C_R$	Within $\pm 20\%$ 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

#### DIMENSIONS ▀ All dimensions in mm



$\phi D$	L	$\phi D+0.5\text{max}$	a	F $\pm 0.5$	$\phi d \pm 0.05$
8	8	8	1	3.5	0.6
8	11.5	8	1.5	3.5	0.6
10	12.5	10	1.5	5.0	0.6

**STANDARD RATINGS**

Part number shows tape version with straight leads

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	$I_{LEAK}$ ( $\mu$ A, 2min)	$\tan\delta$ +20°C • 120Hz (%)	Max. ESR +20°C • 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
2.5	560	8	8	280	8	9	6100	PL561M2R5F080PTD
	560	8	11.5	280	8	9	6100	PL561M2R5F115PTD
	680	8	8	340	8	9	6100	PL681M2R5F080PTD
	680	8	11.5	340	8	9	6100	PL681M2R5F115PTD
	820	8	8	410	8	9	6100	PL821M2R5F080PTD
	820	8	11.5	410	8	9	6100	PL821M2R5F115PTD
	1000	8	8	500	8	9	6100	PL102M2R5F080PTD
	1000	8	11.5	500	8	9	6100	PL102M2R5F115PTD
	1200	8	8	600	8	9	6100	PL122M2R5F080PTD
	1200	8	11.5	600	8	9	6100	PL122M2R5F115PTD
	1500	8	8	750	8	9	6100	PL152M2R5F080PTD
	1500	8	11.5	750	8	9	6100	PL152M2R5F115PTD
	1800	8	8	900	8	9	6100	PL182M2R5F080PTD
	2000	8	11.5	1000	8	9	6100	PL202M2R5F115PTD
	2000	10	12.5	1000	8	9	6640	PL202M2R5G125PTA
	2500	10	12.5	1250	8	9	6640	PL252M2R5G125PTA
	2700	10	12.5	1350	8	9	6640	PL272M2R5G125PTA
	3000	10	12.5	1500	8	9	6640	PL302M2R5G125PTA
3300	10	12.5	1650	8	9	6640	PL332M2R5G125PTA	
3500	10	12.5	1750	8	9	6640	PL352M2R5G125PTA	
4	560	8	8	224	8	9	6100	PL561M004F080PTD
	560	8	11.5	224	8	9	6100	PL561M004F115PTD
	680	8	8	272	8	9	6100	PL681M004F080PTD
	680	8	11.5	272	8	9	6100	PL681M004F115PTD
	820	8	8	328	8	9	6100	PL821M004F080PTD
	820	8	11.5	328	8	9	6100	PL821M004F115PTD
	820	10	12.5	328	8	9	6100	PL821M004G125PTA
	1000	8	8	800	8	9	6100	PL102M004F080PTD
	1000	8	11.5	800	8	9	6100	PL102M004F115PTD
	1200	8	8	960	8	9	6100	PL122M004F080PTD
	1200	8	11.5	960	8	9	6100	PL122M004F115PTD
	1200	10	12.5	960	8	9	6640	PL122M004G125PTA
	1500	8	11.5	1200	8	9	6100	PL152M004F115PTD
	1500	10	12.5	1200	8	9	6100	PL152M004G125PTA
	1800	8	11.5	1440	8	9	6500	PL182M004F115PTD
2000	10	12.5	1600	8	9	6640	PL202M004G125PTA	
2500	10	12.5	1500	8	9	6640	PL252M004G125PTA	
6.3	180	8	8	227	7	9	6100	PL181M6R3F080PTD
	180	8	11.5	227	7	9	6100	PL181M6R3F115PTD
	220	8	8	277	7	9	6100	PL221M6R3F080PTD
	220	8	11.5	277	7	9	6100	PL221M6R3F115PTD
	270	8	8	340	7	9	6100	PL271M6R3F080PTD
	270	8	11.5	340	7	9	6100	PL271M6R3F115PTD
	330	8	8	416	7	9	6100	PL331M6R3F080PTD
	330	8	11.5	416	7	9	6100	PL331M6R3F115PTD

See "PACKAGING INFORMATION" for pin treatment options.

**STANDARD RATINGS**

Part number shows tape version with straight leads

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	$I_{LEAK}$ ( $\mu$ A, 2min)	$\tan\delta$ +20°C • 120Hz (%)	Max. ESR +20°C • 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
6.3	390	8	8	491	8	9	6100	PL391M6R3F080PTD
	390	8	11.5	491	8	9	6100	PL391M6R3F115PTD
	470	8	8	592	8	9	6100	PL471M6R3F080PTD
	470	8	11.5	592	8	9	6100	PL471M6R3F115PTD
	560	8	8	706	8	9	6100	PL561M6R3F080PTD
	560	8	11.5	706	8	9	6100	PL561M6R3F115PTD
	680	8	8	428	8	9	6100	PL681M6R3F080PTD
	680	8	11.5	428	8	9	6100	PL681M6R3F115PTD
	820	8	8	517	10	9	6100	PL821M6R3F080PTD
	820	8	11.5	517	10	9	6100	PL821M6R3F115PTD
	1000	8	8	630	10	9	6100	PL102M6R3F080PTD
	1000	8	11.5	630	10	9	6100	PL102M6R3F115PTD
	1000	10	12.5	630	10	9	6640	PL102M6R3G125PTA
	1200	8	8	756	10	9	6100	PL122M6R3F080PTD
	1200	8	11.5	756	10	9	6100	PL122M6R3F115PTD
	1200	10	12.5	756	10	9	6640	PL122M6R3G125PTA
	1500	8	11.5	945	10	9	6100	PL152M6R3F115PTD
	1500	10	12.5	945	10	9	6640	PL152M6R3G125PTA
	2000	10	12.5	1260	10	9	6640	PL202M6R3G125PTA
	2200	10	12.5	1336	10	9	6640	PL222M6R3G125PTA
2500	10	12.5	1575	10	9	6640	PL252M6R3G125PTA	
10	180	8	8	360	7	9	6100	PL181M010F080PTD
	180	8	11.5	360	7	9	6100	PL181M010F115PTD
	220	8	8	440	8	9	6100	PL221M010F080PTD
	220	8	11.5	440	8	9	6100	PL221M010F115PTD
	270	8	8	540	8	9	6100	PL271M010F080PTD
	270	8	11.5	540	8	9	6100	PL271M010F115PTD
	330	8	8	660	8	9	6100	PL331M010F080PTD
	330	8	11.5	660	8	9	6100	PL331M010F115PTD
	390	8	8	780	8	9	6100	PL391M010F080PTD
	390	8	11.5	780	8	9	6100	PL391M010F115PTD
	470	8	8	940	8	9	6100	PL471M010F080PTD
	470	8	11.5	940	8	9	6100	PL471M010F115PTD
	560	8	8	560	10	9	6100	PL561M010F080PTD
	560	8	11.5	560	10	9	6100	PL561M010F115PTD
	680	8	8	680	10	9	5600	PL681M010F080PTD
	680	8	11.5	680	10	9	5600	PL681M010F115PTD
	680	10	12.5	680	10	9	6100	PL681M010G125PTA
	820	8	11.5	820	10	9	5600	PL821M010F115PTD
	820	10	12.5	820	10	9	6100	PL821M010G125PTA
	1000	8	11.5	1000	10	9	5600	PL102M010F115PTD
1000	10	12.5	1000	10	9	6100	PL102M010G125PTA	
1200	10	12.5	1200	10	9	6100	PL122M010G125PTA	
1500	10	12.5	1500	10	9	6100	PL152M010G125PTA	

See "PACKAGING INFORMATION" for pin treatment options.

**STANDARD RATINGS**

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$V_R$ (V)	$C_R$ ( $\mu F$ )	$\phi D$ (mm)	L (mm)	$I_{LEAK}$ ( $\mu A$ , 2min)	$\tan\delta$ +20°C • 120Hz (%)	Max. ESR +20°C • 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
16	180	8	11.5	576	8	9	5600	PL181M016F115PTD
	220	8	11.5	704	8	9	5600	PL221M016F115PTD
	270	8	8	864	8	9	5600	PL271M016F080PTD
	270	8	11.5	864	8	9	5600	PL271M016F115PTD
	330	8	8	528	8	9	5600	PL331M016F080PTD
	330	8	11.5	528	8	9	5600	PL331M016F115PTD
	330	10	12.5	528	8	9	6100	PL331M016G125PTA
	390	8	11.5	624	8	9	5600	PL391M016F115PTD
	390	10	12.5	624	8	9	6100	PL391M016G125PTA
	470	8	11.5	752	10	9	5600	PL471M016F115PTD
	470	10	12.5	752	10	9	6100	PL471M016G125PTA
	560	8	11.5	896	10	9	5600	PL561M016F115PTD
	560	10	12.5	896	10	9	6100	PL561M016G125PTA
	680	10	12.5	1000	10	9	6100	PL681M016G125PTA
	820	10	12.5	1280	10	9	6100	PL821M016G125PTA
	1000	10	12.5	1600	10	9	6100	PL102M016G125PTA

See "PACKAGING INFORMATION" for pin treatment options.

**MULTIPLIER  $K_f$  for RIPPLE CURRENT vs. FREQUENCY**

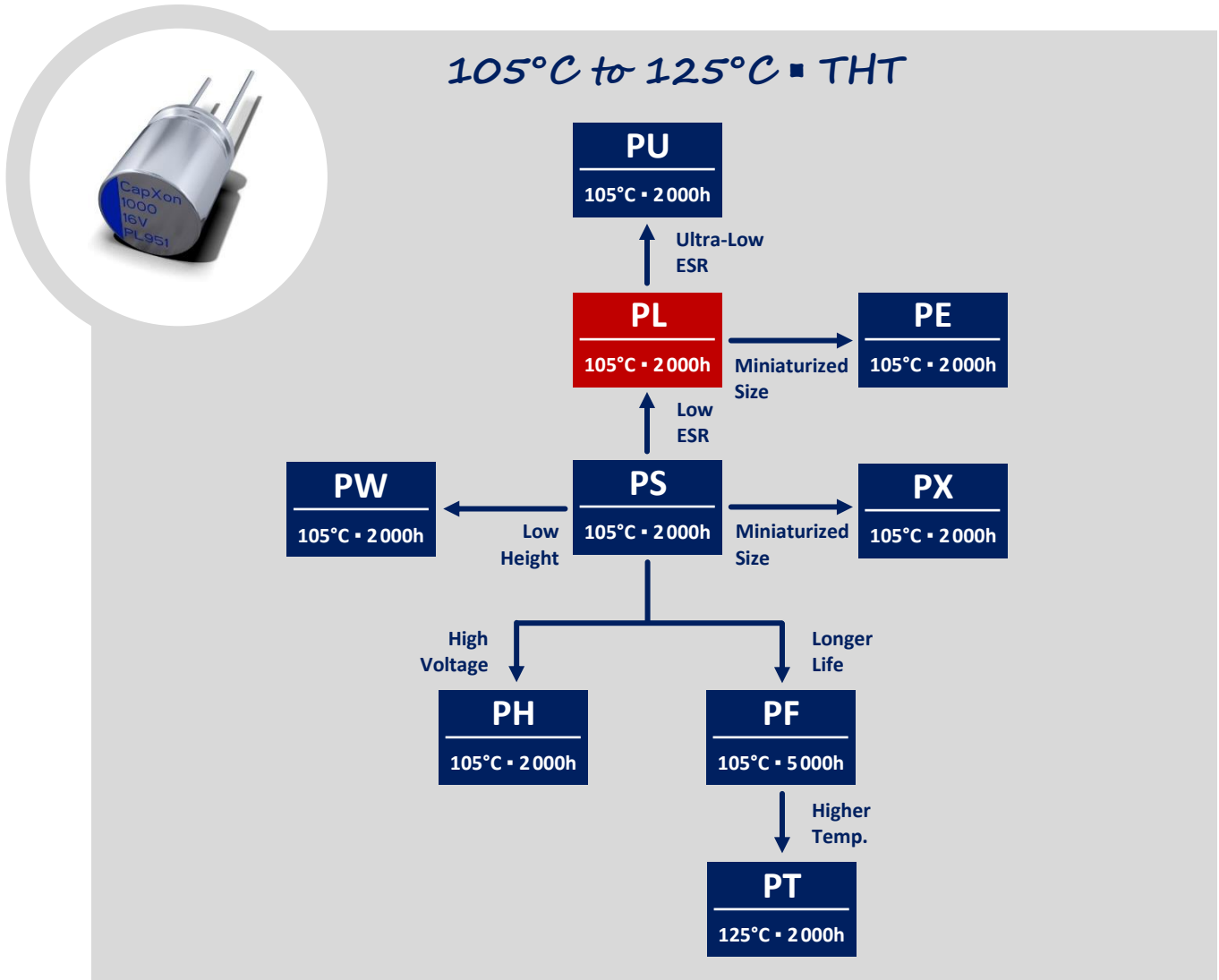
Frequency (Hz)	$120 \leq \text{Freq.} < 1k$	$1k \leq \text{Freq.} < 10k$	$10k \leq \text{Freq.} < 100k$	$100k \leq \text{Freq.} < 300k$
Coefficient $K_f$	0.05	0.3	0.7	1

**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.

<a href="#">General Precautions &amp; Guidelines</a>	<a href="#">Packaging Information</a>	<a href="#">3D Models</a>	<a href="#">Reliability Tests</a>

### 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.

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