CAPXON

ELECTROLYTIC CAPACITORS

PRODUCT OVERVIEW

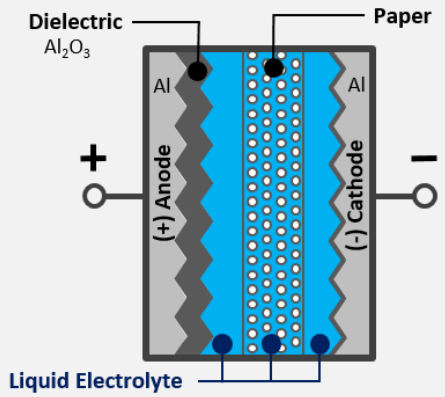
ALUMINUM ELECTROLYTIC CAPACITORS
SOLID CONDUCTIVE POLYMER CAPACITORS
HYBRID CONDUCTIVE POLYMER CAPACITORS

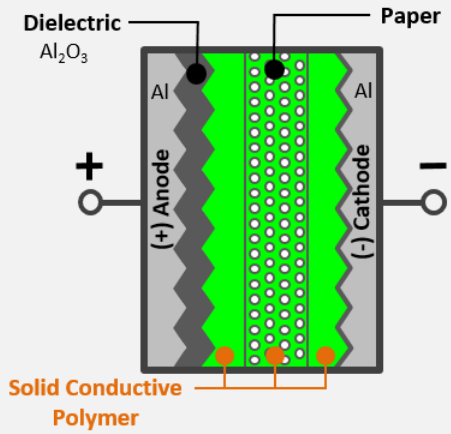
2024

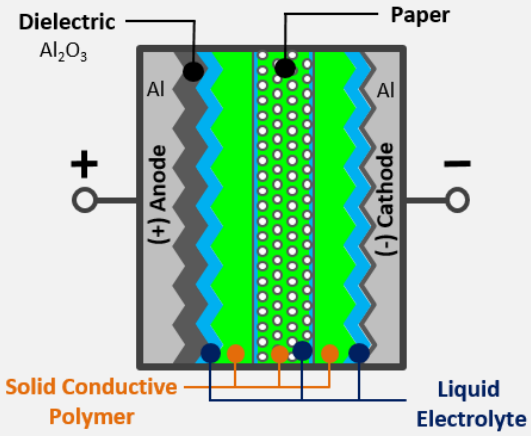
CONTENT

A WORLD OF ELECTROLYTIC CAPACITORS

CapXon's know-how in Electrolytic Capacitors covers technologies with aluminum foil. These are Aluminum Electrolytics, Solid Conductive Polymers and the combination known as Hybrid Conductive Polymers:

Aluminum Electrolytic	Description	Features
	Rated Voltage ▪ V_R	4 VDC to 650 VDC
	Cathode Material	Liquid Electrolyte
	Self-healing of Dielectric	Yes
	Package	Widest range in all sizes
	Stability	Reduced performance at low temperature
	Lifetime	Limited life at high temperature
	Reliability	Automotive AEC-Q200 qualified

Solid Conductive Polymer	Description	Features
	Rated Voltage ▪ V_R	2.5 VDC to 100 VDC
	Cathode Material	Solid Conductive Polymer
	Self-Healing of Dielectric	No
	ESR	Ultra-low ESR at high frequency
	Stability	Stable for low and high temperature
	Lifetime	Very stable and long life - no dry out
	Reliability	Only internal standard qualification

Hybrid Conductive Polymer	Description	Features
	Rated Voltage ▪ V_R	16 VDC to 400 VDC
	Cathode Material	Solid Conductive Polymer & Liquid Electrolyte
	Self-Healing of Dielectric	Yes
	ESR	Very low ESR at high frequency
	Stability	Even more stable than liquid type
	Leakage Current ▪ I_{LEAK}	Lower leakage current than Solid Conductive Polymer Type
	Reliability	Automotive AEC-Q200 qualified

For further information please contact sales@capxon.org

COMPARISON OF ELECTROLYTIC CAPACITOR TECHNOLOGIES

Characteristics	Aluminum Electrolytic Capacitor	Solid Conductive Polymer Capacitor	Hybrid Conductive Polymer Capacitor
ESR at High Frequency	● (120 ~ 1 000 mΩ)	++ (7 ~ 15 mΩ)	+ (20 ~ 30 mΩ)
Leakage Current ▪ I_{LEAK}	++ ($0.01*C_R*V_R$)	● ($0.2*C_R*V_R$)	++ ($0.01*C_R*V_R$)
Ripple Current ▪ I_R	● (~ 600 mA)	++ (2 000 ~ 7 000 mA)	+ (2 000 ~ 3 000 mA)
Rated Voltage ▪ V_R	++ (~ 700 V)	● (~ 100 V)	+ (~ 400 V)
Operating Temperature Characteristics	+ (-40 ~ + 125 °C)	+ (-55 ~ + 125 °C)	++ (-55 ~ + 150 °C)
Low Temperature Characteristics	● (-40 ~ + 125 °C)	++ (-55 ~ + 125 °C)	+ (-55 ~ + 150 °C)
Lifetime	● (105 °C / 3 000h)	++ (105 °C / 5 000h)	++ (105 °C / 10 000h)
Failure Mode	+ Open	● Short	+ Open

++ ... best performance

\+ ... well performance

● ... basic performance

Aluminum Electrolytic Capacitors

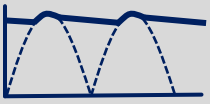
SMD Types

OVERVIEW ▪ SMD ALUMINUM ELECTROLYTIC CAPACITORS

Features

Series		Datasheet	AEC-Q200	Bi-Polar	High Temperature	High Voltage	Long Life	Low ESR	Low Leakage	Standard	Ultra Long Life	Ultra Low ESR	Vibration Proof	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
KV		PDF							•					-40	+85	6.3	50	1	330	1000
NV		PDF		•										-40	+85	6.3	50	1	560	2000
LV		PDF	•			•				•			•	-40	+85	4	450	1	6800	2000
EV		PDF	•							•			•	-55	+105	6.3	50	1	1500	1000
HV		PDF	•			•	•						•	-55 -40	+105	6.3 160	100 450	1 2.2	6800 68	2000
JV		PDF	•				•						•	-55	+105	6.3	50	1	1000	3000
DV		PDF	•					•					•	-55	+105	6.3	100	1	6800	2000 to 5000
RV		PDF	•									•	•	-55 -40	+105	6.3 160	100 450	1 2.2	6800 68	2000 to 5000
MV		PDF									•			-40	+105	6.3	50	1	1000	5000
CV		PDF	•								•	•	•	-40	+105	6.3	50	22	1500	7000
QV	NEW	PDF	•								•		•	-25	+105	6.3	50	10	680	10000
TV		PDF	•		•								•	-40	+125	10	450	1	330	1000 to 2000
GV	NEW	PDF	•		•								•	-55	+150	10	50	33	3300	1000

TYPICAL APPLICATIONS

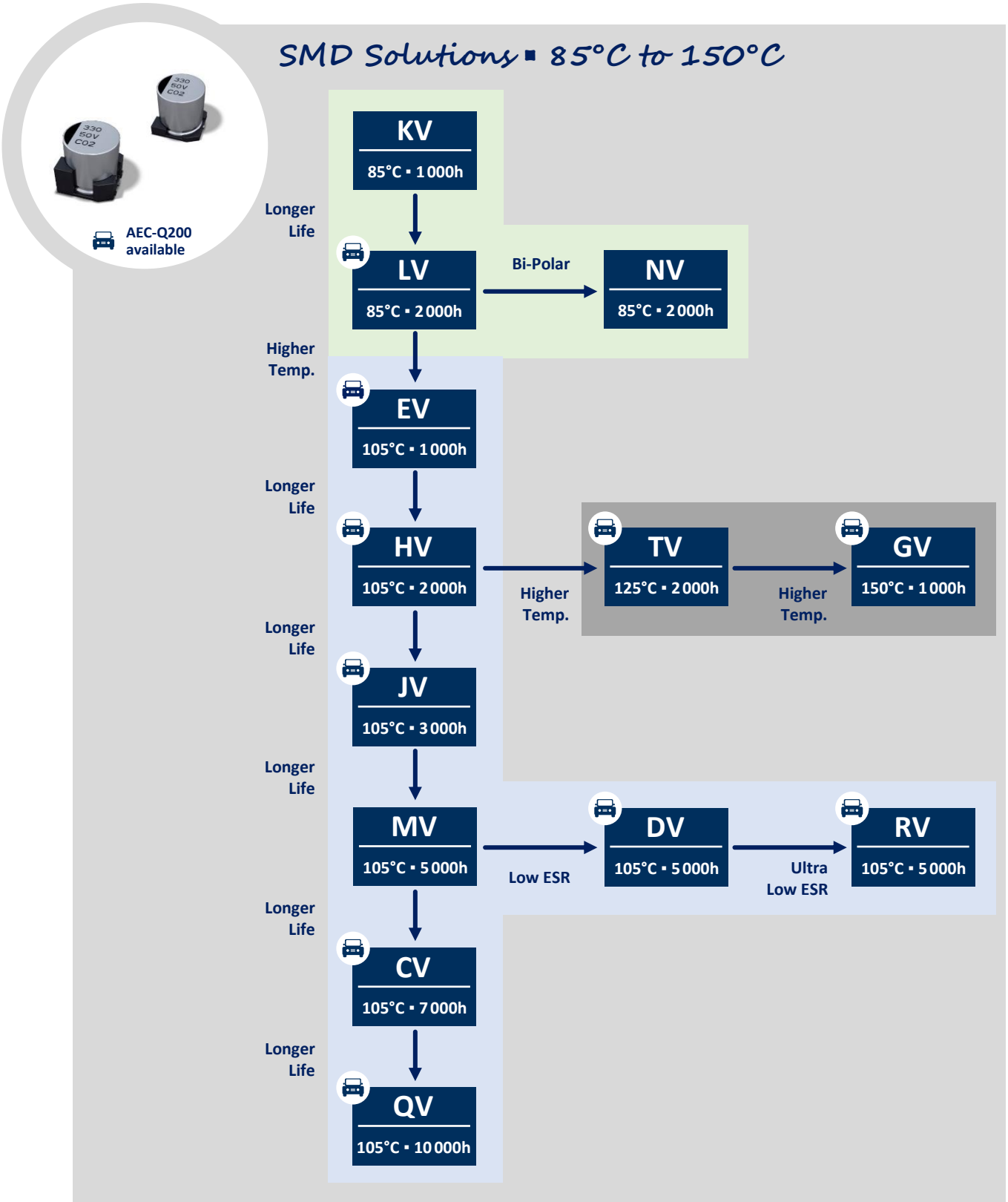
Buffering	Filtering	DC/DC Converters	Miniature Power Supplies	Smoothing
				

ADDITIONAL INFORMATION

For further information on our Aluminum SMD Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	Vibration Test Profiles	3D Models	Reliability Tests	Environmental Declarations
					

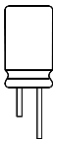
GROUP CHART ▪ SMD ALUMINUM ELECTROLYTIC CAPACITORS



Aluminum Electrolytic Capacitors

Radial Types

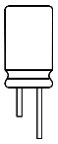
OVERVIEW ▪ THT ALUMINUM ELECTROLYTIC CAPACITORS



Features

Series	Datasheet	AEC-Q200	Bi-Polar	High Temperature	Low Impedance	Low Height	Low Leakage	Overvoltage Vent	Photo Flash	Slim Type	Standard	Ultra Long Life	Ultra Low Impedance	Ultra Miniaturized	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
RF									•						-20	+55	330	350	100	450	5000 times
SS						•								•	-40	+85	4	50	1	330	1000
SM						•								•	-40	+85	4	63	1	470	1000
SR						•									-40	+85	6.3	50	1	220	1000
SW						•									-40	+85	4	50	1	470	1000
SH						•								•	-40	+85	4	63	1	470	2000
RW											•				-40	+85	6.3	100	1	33000	2000
NR			•												-40	+85	6.3	100	1	1000	2000
GS											•				-40	+85	6.3	100	1	33000	2000
															-25		160	450	1	560	
NP			•												-40	+85	6.3	100	1	3300	2000
															-25		160	250	1	47	
ST						•								•	-40	+105	4	50	1	220	1000
SK						•								•	-40	+105	4	63	1	470	1000
SZ					•									•	-55	+105	6.3	35	6.8	330	1000
KZ					•										-40	+105	6.3	50	1	6800	1000 to 2000
KS								•							-25	+105	200	400	4.7	400	2000
KY										•					-25	+105	250	450	12	150	2000
KM											•				-40	+105	6.3	100	1	22000	2000
															-25		160	500	1	560	
NK			•												-40	+105	6.3	100	1	3300	2000
															-25		160	250	1	47	
SJ						•								•	-40	+105	6.3	63	1	220	2000
LL							•								-40	+105	6.3	63	1	2200	2000
LZ													•		-40	+105	6.3	25	220	3300	2000
SY					•	•									-55	+105	6.3	50	1	330	2000

OVERVIEW ▪ THT ALUMINUM ELECTROLYTIC CAPACITORS



Features

Series		Datasheet	AEC-Q200	Bi-Polar	High Temperature	Low Impedance	Low Height	Low Leakage	Overvoltage Vent	Photo Flash	Slim Type	Standard	Ultra Long Life	Ultra Low Impedance	Ultra Miniaturized	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
KF		PDF				•										-40	+105	6.3	100	1	15000	2000 to 5000
																-25		160	450	1	330	
GF		PDF				•										-40	+105	6.3	100	4.7	6800	2000 to 5000
KC		PDF									•				•	-25	+105	400	450	82	220	3000
SG		PDF	•				•								•	-40	+105	6.3	50	1	470	4000
FH		PDF												•		-40	+105	6.3	100	6.8	18000	4000 to 10000
LY		PDF									•					-25	+105	250	450	12	150	5000
KL		PDF	•										•			-40	+105	160	400	3.3	330	5000
																-25		450	500	2.2	180	
GH		PDF	•			•										-55	+105	6.3	100	1	12000	5000 to 10000
KH		PDF											•			-40	+105	10	400	6.8	3300	5000 to 10000
																-25		450		6.8	100	
FK		PDF	•										•			-40	+105	160	450	1	330	6000 to 8000
																-25		500		4.7	120	
ZH		PDF												•		-40	+105	6.3	100	8.2	8200	6000 to 10000
FL		PDF	•										•			-40	+105	160	450	1	680	8000 to 12000
																-25		500		10	68	
HY		PDF									•					-25	+105	250	450	12	120	10000
GT		PDF	•										•			-40	+105	10	100	1	330	10000
LE		PDF											•			-40	+105	160	450	1	68	12000 to 20000
TH		PDF	•		•											-40	+125	10	400	1	8200	1000 to 3000
																-25		450		1	47	
TZ	NEW	PDF	•		•								•			-40	+125	10	100	4.7	1000	2000 to 5000
TE		PDF	•		•											-40	+130	10	400	2.2	4700	1000 to 3000
TU	NEW	PDF	•		•								•	•		-40	+135	25	100	160	12000	2000 to 3000

GROUP CHART ▪ THT ALUMINUM ELECTROLYTIC CAPACITORS

THT Solutions ▪ 85°C

GS — 85°C ▪ 2000h
→ Low Height 7mm → **SM** — 85°C ▪ 1000h
→ Longer Life → **SH** — 85°C ▪ 2000h
↓ Low Height 5mm → **SS** — 85°C ▪ 1000h

THT Audio Solutions ▪ 85°C

AUDIO

RW — 85°C ▪ 2000h
→ Low Height 7mm → **SR** — 85°C ▪ 1000h
→ Low Height 5mm → **SW** — 85°C ▪ 1000h
↓ **NR** — 85°C ▪ 2000h
Non-Polarized Bi-Polar

THT Bi-Polar Solutions

NON POLARIZED

NP — 85°C ▪ 2000h
→ Higher Temperature → **NK** — 105°C ▪ 2000h

Pulse / Photoflash

RF — 55°C ▪ Pulse

Especially for impulse applications as

Beacons · Hair Remover · Laser · Photo Flash

GROUP CHART ▪ THT ALUMINUM ELECTROLYTIC CAPACITORS

THT Solutions ▪ 105°C

SJ 105°C ▪ 2 000h

Longer Life

SK 105°C ▪ 1 000h

Low Height 7mm/9mm

ST 105°C ▪ 1 000h

Low Impedance

SZ 105°C ▪ 1 000h

Very Low Impedance

SY 105°C ▪ 2 000h

Ultra Low Impedance

SG 105°C ▪ 4 000h

KS 105°C ▪ 2 000h

High Surge

Low Height 5mm

KM 105°C ▪ 2 000h

Low Impedance

KZ 105°C ▪ 2 000h

Very Low Impedance

LZ 105°C ▪ 2 000h

Ultra Low Impedance

Slim Type

KY 105°C ▪ 2 000h

Longer Life

KC 105°C ▪ 3 000h

Longer Life

LY 105°C ▪ 5 000h

Longer Life

HY 105°C ▪ 10 000h

Longer Life

KL 105°C ▪ 5 000h

KF 105°C ▪ 5 000h

GF 105°C ▪ 5 000h

Longer Life

FK 105°C ▪ 8 000h

Longer Life

KH 105°C ▪ 10 000h

GH 105C ▪ 10 000h

FH 105°C ▪ 10 000h

ZH 105°C ▪ 10 000h

Longer Life

FL 105°C ▪ 12 000h

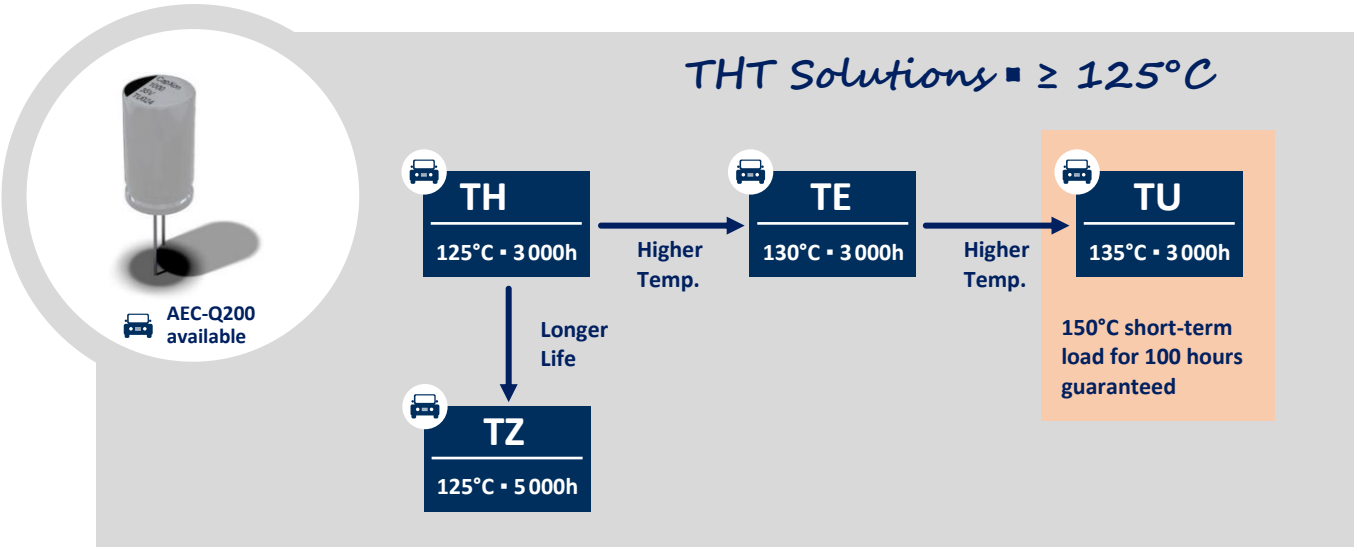
Longer Life

LE 105°C ▪ 20 000h

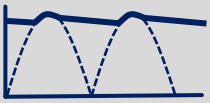
Miniaturized

GT 105°C ▪ 10 000h

GROUP CHART ▪ THT ALUMINUM ELECTROLYTIC CAPACITORS



TYPICAL APPLICATIONS

Buffering	Filtering	DC Linking	Smoothing	Switched Mode Power Supplies
				

ADDITIONAL INFORMATION

For further information on our Aluminum THT Capacitors, simply click on the symbols in the table below.

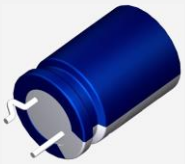
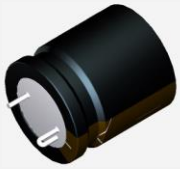
General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations
				

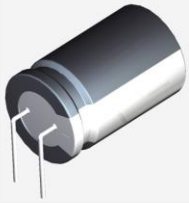
AVAILABLE LEAD TREATMENTS ▪ THT ALUMINUM ELECTROLYTIC CAPACITORS

In addition to the taped versions, the following lead treatments are also possible.
Please contact your local CapXon representative if you have any further questions.

CA	CE	CF / CG / CH / CI	FA / FE
Cutted Leads Standard Lead Spacing	Cutted Leads Wide Lead Spacing ≤ 2.5mm	Cutted Leads Wide Lead Spacing ≥ 2.5mm	Wide Lead Spacing > 5mm Long Anode
			

FB / FC / FD	KA	KE	KF
Wide Lead Spacing ≤ 3.5mm Long Anode	Kinked Anode and Cathode Standard Lead Spacing	Kinked Anode and Cathode Wide Lead Spacing ≤ 2.5mm	Kinked Anode and Cathode Wide Lead Spacing 5mm
			

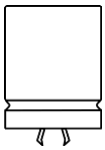
EF	CK	JI	CD
Double Kinked Anode and Cathode Lead Spacing 5mm	Kinked Anode	Polarity Protected Footprint Cathode Bended	Polarity Protected Footprint Anode Pressed
			

CR	CL	CZ	CS
Bended Leads Cathode Right	Bended Leads Cathode Left	Quasi SMD ▪ Bended Leads Cathode Right	Quasi SMD ▪ Bended Leads Cathode Left
			

Aluminum Electrolytic Capacitors

Snap In Types

OVERVIEW ▪ SNAP-IN ALUMINUM ELECTROLYTIC CAPACITORS



Features

AEC-Q200 | HIGH RIPPLE CURRENT | HIGH TEMPERATURE | LOW ESR | LONG LIFE | MINIATURIZED | PHOTO FLASH | STANDARD | ULTRA LONG LIFE | VIBRATION PROOF

Series	Datasheet	AEC-Q200	High Ripple Current	High Temperature	Low ESR	Long Life	Miniaturized Size	Photo Flash / Pulse	Standard Size	Ultra Long Life	Vibration Proof	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)	Useful Life (hours)
SF								•				-20	+55	330	350	150	1500	> 5000 times	
LP									•			-40 -25	+85	6.3 385	350 600	100 22	1mF 2700	2000	3000 to 5000
UB									•			-40 -25	+85	200 500	450	68 100	3300 1500	2000	5000
UC									•			-40 -25	+85	200 500	450 630	68 56	6800 1500	3000	7000
UD						•			•			-40 -25	+85	200 500	450 600	68 47	2700 680	5000	10000
HP									•			-40 -25	+105	6.3 400	350 550	68 47	1mF 1200	2000	3000 to 5000
UJ		•							•			-40 -25	+105	200 500	450 550	82 47	3300 1000	2000	5000
UK		•							•			-40 -25	+105	200 500	450 550	68 47	2200 680	3000	8000
UE	NEW	•					•					-40 -25	+105	160 475	450 500	120 68	4700 820	3000	8000
UA	NEW	•	•		•							-40	+105	160	450	56	3300	3000	8000
UL		•				•			•			-40 -25	+105	200 500	450 550	82 47	2700 680	5000	10000
UG	NEW	•				•	•					-40 -25	+105	400 475	450 500	120 68	1200 820	5000	10000
UF	NEW	•	•		•	•						-40 -25	+105	200 475	450 500	100 56	2700 560	5000	10000
UM	NEW	•								•		-40	+105	160	450	47	2200	7000	10000
UH	NEW	•								•		-40	+105	200	450	39	1500	10000	12000
HC		•	•	•	•					•	•	-55	+125	25	63	600	3300	3000	4000
HH		•		•						•		-40	+125	400	450	47	560	3000	4000

Legend

ECONOMY GRADE	Economy Series	Not for 24h continuous applications
HIGH RELIABILITY	High Reliability Series	For 7days / 24h continuous applications
NEW	New Product Series	For 7days / 24h continuous applications

COMPARISON ▪ ECONOMY GRADE SERIES vs. HIGH RELIABILITY GRADE SERIES

Technical performance, quality control and application area

		Economy Grade		High Reliability Grade	
CapXon Series		LP ▪ HP		UA ▪ UB ▪ UC ▪ UD ▪ UE ▪ UF ▪ UG ▪ UH ▪ UJ ▪ UK ▪ UM ▪ HC ▪ HH	
Technical Performance	Working voltage and ripple current change	Low	Stable conditions	High	Various changes
	Recommended frequency range	Low	Mains 100/120Hz	Low to High	100/120Hz to several kHz
	Temperature stability	Standard		High	Harsh and outdoor usage
	Leakage current stability (I_{LEAK})	Standard		High	Harsh and outdoor usage
	Dissipation factor (tanδ)	Standard		Low	Lower self-heating
	Impedance (IMP)	Standard		Low	Lower self-heating
	Resistance to ripple current and surge voltage	Standard		High	More resistant to in-rush current and voltage spikes
Quality Control	Stage aging voltage	Short	Electrical parameters within specification value range	Long	Highly uniformity between electrical parameters
	Sorting	Single	Electrical parameters within specification value range	Detailed	Highly uniformity between electrical parameters
Application Area	24 hours continuous operation			•	
	Battery chargers	•			
	Frequency converters			•	
	Industrial power supplies			•	
	Inverter household appliances			•	
	Inverter output filtering			•	
	Ordinary household appliances	•			
	Outdoor equipment			•	
	Rectifier input filtering	•			
	Renewable energy inverters			•	
	Servo drives			•	
	Standard power supplies	•			
	Uninterruptible power supplies (UPS)			•	

Pulse / Photoflash

SF
55°C ▪ Pulse

Especially for impulse applications as

Beacons · Hair Remover · Laser · Photo Flash

85°C ▪ 2000h to 5000h

LP 85°C ▪ 2000h → **UB** 85°C ▪ 2000h → **UC** 85°C ▪ 3000h → **UD** 85°C ▪ 5000h

Economy Type
Not for 24h continuous operation

AEC-Q200 available

105°C ▪ 2000h to 3000h

HP 105°C ▪ 2000h → **UJ** 105°C ▪ 2000h → **UK** 105°C ▪ 3000h → **UE** 105°C ▪ 3000h / **UA** 105°C ▪ 3000h

Economy Type
Not for 24h continuous operation

Miniaturized Size
High Ripple Current

105°C ▪ 5000h to 10000h

UG 105°C ▪ 5000h
UF 105°C ▪ 5000h
UL 105°C ▪ 5000h → **UM** 105°C ▪ 7000h → **UH** 105°C ▪ 10000h

Standard Size · Miniaturized Size · High Ripple Current

AEC-Q200 available

125°C High Reliability

AEC-Q200 available

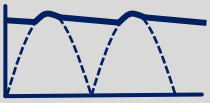
HC 125°C ▪ 3000h — Low Voltage Type 25V to 63V

HIGH VIBRATION

HH 125°C ▪ 3000h — High Voltage Type 400V to 450V

HIGH VOLTAGE

TYPICAL APPLICATIONS

Buffering	Filtering	DC Linking	Smoothing	Switched Mode Power Supplies
				

ADDITIONAL INFORMATION

For further information on our Aluminum Snap-In Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	Vibration Test Profiles	3D Models	Reliability Tests	Environmental Declarations
					

AVAILABLE TERMINALS ▪ SNAP-IN ALUMINUM ELECTROLYTIC CAPACITORS

Snap-In capacitors are available with the following terminals.
Please contact your local CapXon representative if you have any further questions.

PP	ZP	YP
2-Pin Standard Type ▪ ØD = 20 to 45mm	3-Pin Polarity Protection ▪ ØD = 20 to 45mm	Multi-Pin Polarity Protection ▪ ØD = 20 to 45mm
		

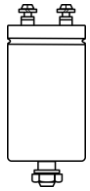
LP	CP	HP
Slim Terminal ØD = 20 to 45mm	Lug Type Robust Terminals ▪ ØD = 30 to 45mm	Lug Type Robust Terminals ▪ ØD = 30 to 45mm
		

TP ▪ Right	TP ▪ Left	VP
Long Terminal Bended Cathode Right Side ▪ ØD = 20 to 45mm	Long Terminal Bended Cathode Left Side ▪ ØD = 20 to 45mm	Lug Type for Soldered Wires ØD = 20 to 45mm
		

Aluminum Electrolytic Capacitors

Screw Types

OVERVIEW ▪ SCREW TERMINAL ALUMINUM ELECTROLYTIC CAPACITORS



Features

Series	Datasheet	High Ripple Current	Long Life	Standard	Ultra Long Life	With Stud	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)	Useful Life (hours)
RS					•	•	-40	+85	10	100	1800	10mF	2000	12000
RG				•		•	-40	+85	160	450	390	39000	2000	6000
							-25		500	630	1000	10000		
RP			•			•	-40	+85	160	450	270	68000	2000	10000
							-25		500	630	100	10000		
RX					•	•	-40	+85	160	450	220	1mF	5000	20000
							-25		500	630	10000	15000		
RU		•			•	•	-40	+85	160	450	1000	33000	2000	12000
							-25		500		820	10000		
RK				•		•	-40	+105	10	100	1000	10mF	2000	4000
RM			•			•	-40	+105	160	450	180	68000	2000	6000
							-25		500		330	10000		
RH		•	•			•	-40	+105	160	450	220	47000	2000	8000
RL			•		•	•	-40	+105	160	450	220	22000	5000	10000

GROUP CHART ▪ SCREW TERMINAL ALUMINUM ELECTROLYTIC CAPACITORS

85°C ▪ 6000h to 20000h ▪ Useful Life

RS — 85°C ▪ 12 000h

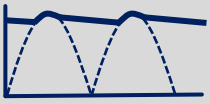
Low Voltage 10V to 100V

RG — 85°C ▪ 6 000h → Longer Life → **RP** — 85°C ▪ 10 000h → Longer Life → **RU** — 85°C ▪ 12 000h → Longer Life → **RX** — 85°C ▪ 20 000h

105°C ▪ 4000h to 10000h ▪ Useful Life

RK — 105°C ▪ 4 000h ← Low Voltage 10V to 100V ← **RM** — 105°C ▪ 6 000h → Longer Life → **RH** — 105°C ▪ 8 000h → Longer Life → **RL** — 105°C ▪ 10 000h

TYPICAL APPLICATIONS

Buffering	Filtering	DC Linking	Smoothing	Switched Mode Power Supplies
				

ADDITIONAL INFORMATION

For further information on our Aluminum Screw Terminal Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations
				

Conductive Polymer Capacitors

Stacked Types

OVERVIEW ▪ SMD MULTILAYER POLYMER CAPACITORS (MLPC)

Features

Series		Datasheet	Low ESR	Low Height	Standard	Ultra Low Height	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
XA		PDF	•	•	•		-55	+105	2	25	10	470	2000
XH	NEW	PDF	•			•	-55	+105	2	25	22	330	2000

GROUP CHART ▪ SMD MULTILAYER POLYMER CAPACITORS (MLPC)

Flat Multilayer Solutions

XA — 105°C ▪ 2000h — 1.9mm Height → **XH** — 105°C ▪ 2000h — 1.4mm Height

LIFETIME ▪ SMD MULTILAYER POLYMER CAPACITORS (MLPC)

MULTILAYER POLYMER CAPACITORS don't have a dry-out effect, either by the ambient temperature or the temperature rise in the capacitor. Only the influence of material due to the temperature in the component and the conversion of the conductivity limit the lifetime. The Arrhenius rule also applies to MULTILAYER POLYMER CAPACITORS their application.

The lifetime increases TEN-TIMES when the application of the capacitor is reduced by 20°C.

Below an example of a 105°C series (XA) with 2000h endurance.

Lifetime	Legend	
	L_0	Endurance at max. capacitor temperature
	L_A	Expected lifetime at application conditions
	T_{0_Max}	Upper category temperature
	T_A	Application temperature

Multilayer Polymer

$$L_A = L_0 \cdot 10^{\frac{T_{0\_Max} - T_A}{20°C}}$$

20°C reduced 10 x lifetime

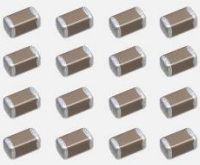
Lifetime Estimation

2000h@105°C

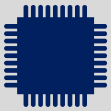
95°C	6325 h
85°C	20000 h
75°C	63246 h
65°C	200000 h

BENEFITS OF MLPC VS. MLCC TECHNOLOGY ▪ EXAMPLE

 vs. 

Capacitor Technology	MLCC	MLPC	Benefits
Nominal Capacitance	47µF	150µF	Gain of Integration Density
Rated Voltage	6.3V (DC)	6.3V (DC)	
Size	0805	2917	
DC Bias at 6V	80.85% drop >> 9µF	No drop ▪ stable 150µF	No MLCC DC Bias Issue
System Capacitance at 6V	16 x 9µF = **144µF**	1 x 150µF = **150µF**	
Footprint per Component	0805 2mm x 1.5mm = **3mm²**	2917 7.4mm x 4.3mm = **32mm²**	
Footprint Occupation	A = 16 x 3mm² **A = 48mm²**	A = 1 x 32mm² **A = 32mm²**	No MLCC Cracking Issue
Size Change Ratio	100%	66%	Space Savings
Example Picture of Applied Capacitor	 34% space reduction 		Cost Savings

TYPICAL APPLICATIONS

CPU, FPGA and IC Buffering	High Frequency Applications	Substitution of MLCC Banks	USB Power Supplies & Banks	Voltage Stabilizing in LED Panels
				

ADDITIONAL INFORMATION

For further information on our MLPC's, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations
				

Conductive Polymer Capacitors

SMD Types

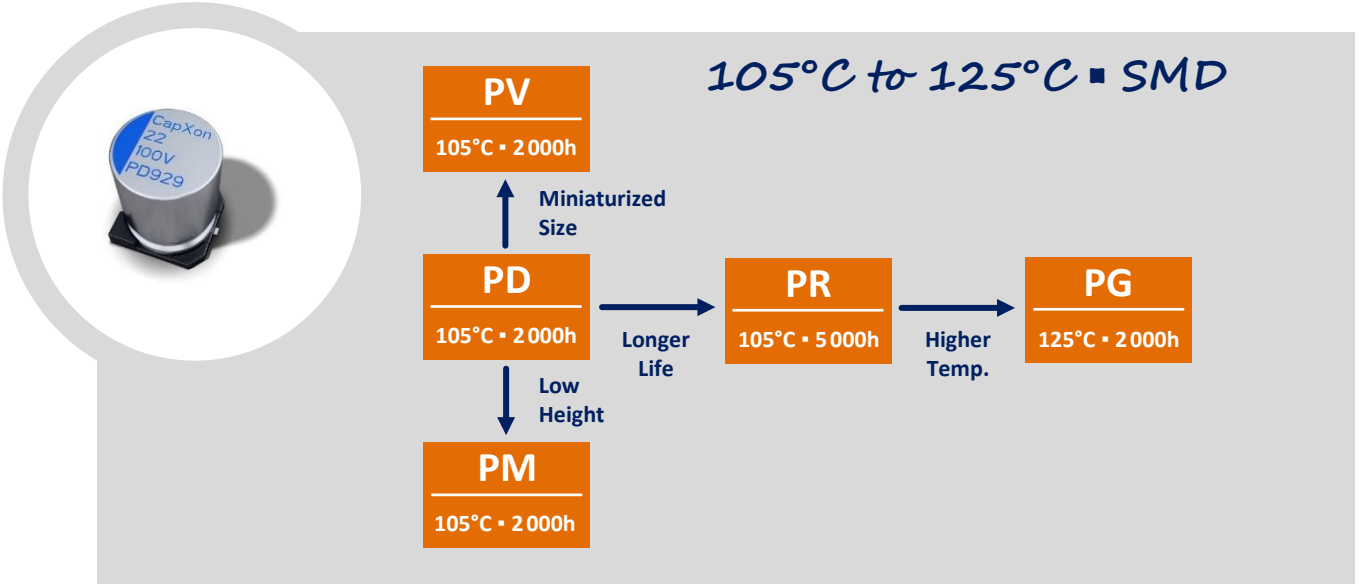
OVERVIEW ▪ SMD CONDUCTIVE POLYMER CAPACITORS

Features

HIGH TEMPERATURE | HIGH VOLTAGE | LOW ESR | LOW HEIGHT | STANDARD | ULTRA LOW ESR | ULTRA LONG LIFE | ULTRA MINIATURIZED

Series	Datasheet	High Temperature	High Voltage	Low ESR	Low Height	Standard	Ultra Long Life	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
PD	PDF		•	•		•	•	-55	+105	2.5	100	10	3300	2000
PM	PDF		•	•	•			-55	+105	2.5	100	4.7	560	2000
PV	PDF		•	•	•			-55	+105	2.5	100	6.8	2500	2000
PR	PDF			•				-55	+105	6.3	50	10	1500	5000
PG	PDF	•		•				-55	+125	6.3	50	10	1500	2000

GROUP CHART ▪ SMD CONDUCTIVE POLYMER CAPACITORS



ADDITIONAL INFORMATION

For further information on our SMD Conductive Polymer Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations

LIFETIME ▪ SMD CONDUCTIVE POLYMER CAPACITORS

SMD CONDUCTIVE POLYMER CAPACITORS don't have a dry-out effect, either by the ambient temperature or the temperature rise in the capacitor. Only the influence of material due to the temperature in the component and the conversion of the conductivity limit the lifetime. The Arrhenius rule also applies to CONDUCTIVE POLYMER CAPACITORS their application.

The lifetime increases TEN-TIMES when the application of the capacitor is reduced by 20°C.

Below an example of a 105°C series (PD) with 2000h endurance.

Lifetime	Legend	
	L_0	Endurance at max. capacitor temperature
	L_A	Expected lifetime at application conditions
	T_{0_Max}	Upper category temperature
	T_A	Application temperature

Multilayer Polymer

$$L_A = L_0 \cdot 10^{\frac{T_{0\_Max} - T_A}{20°C}}$$

20°C reduced 10 x lifetime

Lifetime Estimation

2000h@105°C

95°C	6325 h
85°C	20000 h
75°C	63246 h
65°C	200000 h

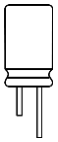
TYPICAL APPLICATIONS

Input/Output Filter in DC/DC Converters	High Frequency Applications	Equipment with High Expected Life	Server & Industrial PC	Voltage Stabilizing in LED Panels
				

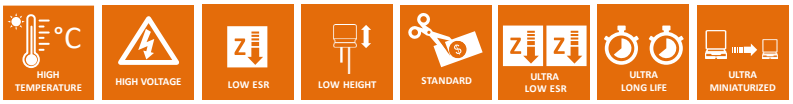
Conductive Polymer Capacitors

Radial Types

OVERVIEW ▪ THT CONDUCTIVE POLYMER CAPACITORS

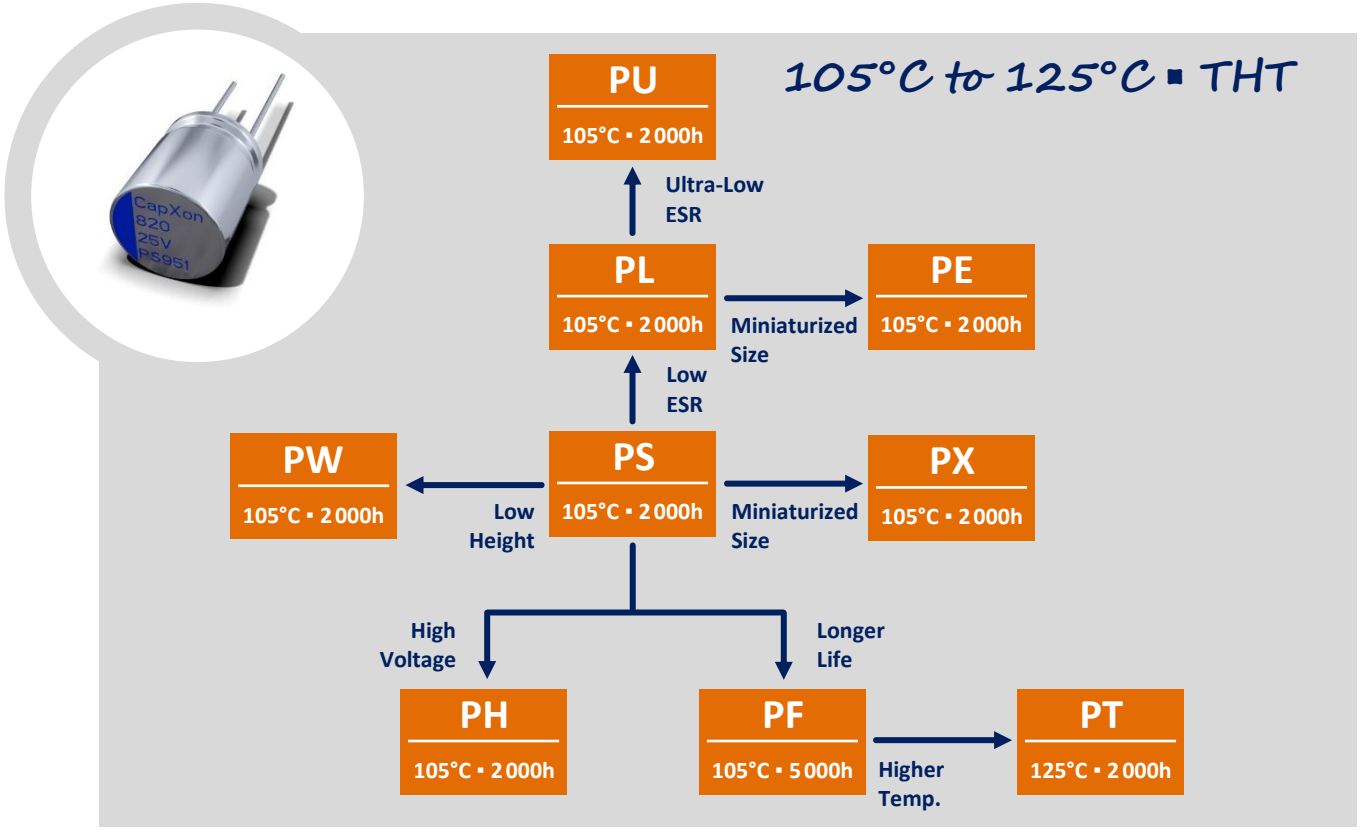


Features



Series	Datasheet	High Temperature	High Voltage	Low ESR	Low Height	Standard	Ultra Low ESR	Ultra Long Life	Ultra Miniaturized	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
PS				•		•				-55	+105	2.5	25	39	3500	2000
PL				•						-55	+105	2.5	16	180	3500	2000
PU							•			-55	+105	2.5	10	180	3900	2000
PX				•	•					-55	+105	2.5	25	6.8	820	2000
PW				•	•					-55	+105	2.5	25	39	2500	2000
PE				•					•	-55	+105	2.5	16	270	1200	2000
PH			•	•						-55	+105	35	100	6.8	330	2000
PF				•				•		-55	+105	2.5	35	10	2700	5000
PT		•		•						-55	+125	2.5	50	22	2700	2000

GROUP CHART ▪ THT CONDUCTIVE POLYMER CAPACITORS



LIFETIME ▪ SMD CONDUCTIVE POLYMER CAPACITORS

THT CONDUCTIVE POLYMER CAPACITORS don't have a dry-out effect, either by the ambient temperature or the temperature rise in the capacitor. Only the influence of material due to the temperature in the component and the conversion of the conductivity limit the lifetime. The Arrhenius rule also applies to CONDUCTIVE POLYMER CAPACITORS their application.

The lifetime increases TEN-TIMES when the application of the capacitor is reduced by 20°C.

Below an example of a 105°C series (PS) with 2000h endurance.

Lifetime	Legend	
	L_0	Endurance at max. capacitor temperature
	L_A	Expected lifetime at application conditions
	T_{0_Max}	Upper category temperature
	T_A	Application temperature

Conductive Polymer

$$L_A = L_0 \cdot 10^{\frac{T_{0\_Max} - T_A}{20°C}}$$

20°C reduced
10 x lifetime

Lifetime Estimation

2000h@105°C

95°C	6325 h
85°C	20000 h
75°C	63246 h
65°C	200000 h

ADDITIONAL INFORMATION

For further information on our THT Conductive Polymer Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations
				

TYPICAL APPLICATIONS

Input/Output Filter in DC/DC Converters	High Frequency Applications	Equipment with High Expected Life	Server & Industrial PC	Voltage Stabilizing in LED Panels
				

Hybrid Electrolytic Capacitors

SMD Types

OVERVIEW ▪ SMD HYBRID CONDUCTIVE POLYMER CAPACITORS

Features

Series		Datasheet	AEC-Q200	High Temperature	Low ESR	Slim Type	Standard	Ultra Miniaturized	Ultra Low ESR	Vibration Proof	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
AA			•		•	•	•			•	-55	+105	16	200	10	1500	5000 to 10000
AC			•	•	•	•				•	-55	+125	16	100	10	1500	4000
AB			•	•	•			•	•	•	-55	+125	25	35	33	680	4000
AN			•	•	•					•	-55	+135	16	100	10	820	4000
AU	NEW		•	•					•	•	-55	+135	25	100	22	680	4000
AR			•	•	•					•	-55	+145	16	80	22	560	2000
AP			•	•	•					•	-55	+150	16	80	22	560	1000

SMD ECONOMY SERIES FOR NON-AUTOMOTIVE APPLICATIONS

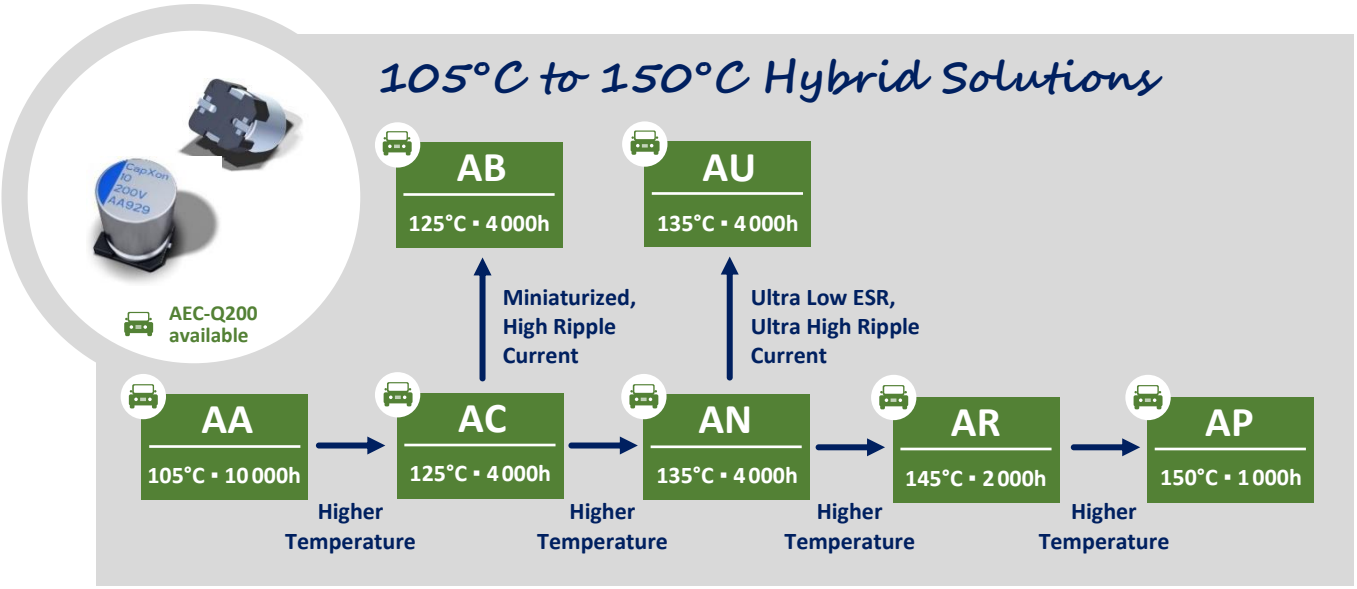
Series		Datasheet	AEC-Q200	High Temperature	Low ESR	Slim Type	Standard	Ultra Miniaturized	Ultra Low ESR	Vibration Proof	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
YA	NEW				•		•				-55	+105	16	100	10	1500	10000
YC	NEW			•	•		•				-55	+125	16	100	10	1500	4000
YB	NEW			•	•		•	•	•		-55	+125	25	35	33	680	4000

ADDITIONAL INFORMATION

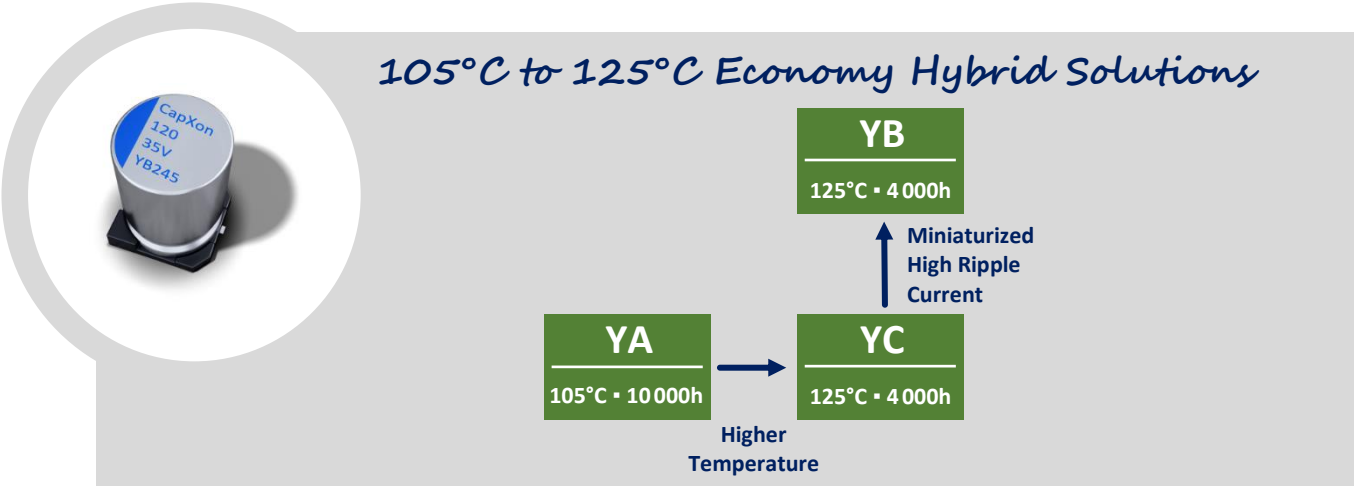
For further information on our SMD Hybrid Polymer Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations

GROUP CHART ▪ HIGH PERFORMANCE SERIES FOR AUTOMOTIVE APPLICATIONS



GROUP CHART ▪ ECONOMY SERIES FOR NON-AUTOMOTIVE APPLICATIONS



TYPICAL APPLICATIONS

Automotive Electronics *	DC Link in Motor Drives	Harsh Environmental Applications	Input/Output Filter in DC/DC Converters	Power and Battery Decoupling

*** Automotive electronics not for YA, YB and YC series.**

BENEFITS OF HYBRID POLYMER CAPACITORS

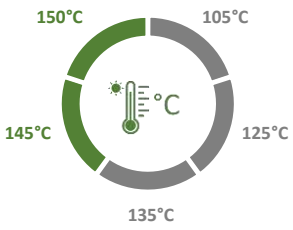
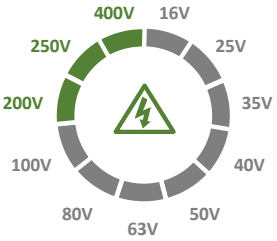
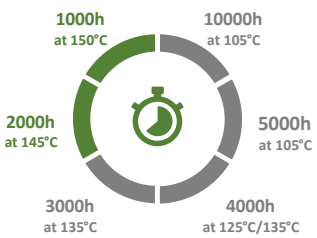
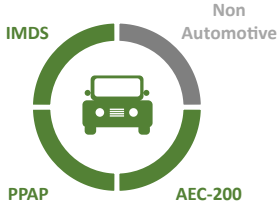
As a mix of the two worlds, the HYBRID POLYMER TECHNOLOGY offers the best performance of high-capacity storage components.

Liquid Electrolyte		Solid Conductive Polymer		Hybrid Polymer
	+		=	
High voltage capabilities		High ripple current		Best performance of both worlds
High temperature performance		High lifetime perfomance		
Low leakage current		Low ESR		

HYBRID POLYMER PERFORMANCE

The bandwidth and performance speak for themselves. Exceed existing limits and raise the bar.

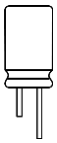
That is performance "made by CapXon"

Upper Category Temperature ▪ T_{0_MAX}	Rated Ripple Current ▪ I_R	Rated Voltage ▪ V_R
		
Lifetime	**Available Case Styles**	**Performance**
	 SMD Vibration proof	

Hybrid Electrolytic Capacitors

Radial Types

OVERVIEW ▪ THT HYBRID POLYMER CONDUCTIVE CAPACITORS



Features

AEC-Q200 | HIGH TEMPERATURE | HIGH VOLTAGE | LOW ESR | SLIM TYPE | STANDARD

Series		Datasheet	AEC-Q200	High Temperature	High Voltage	Low ESR	Slim Type	Standard	Ultra Low ESR	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
AS		PDF	•		•	•	•	•		-55	+105	16	400	1.2	1500	2000 to 10000
AT		PDF	•	•		•	•			-55	+125	16	100	8.2	1500	2000 to 4000
AK		PDF	•	•		•				-55	+135	16	100	8.2	560	2000 to 3000
AE	NEW	PDF	•	•					•	-55	+135	25	100	22	680	4000
AL		PDF	•	•		•				-55	+145	16	80	8.2	560	2000
AM		PDF	•	•		•				-55	+150	16	80	8.2	560	1000

THT ECONOMY SERIES FOR NON-AUTOMOTIVE APPLICATIONS

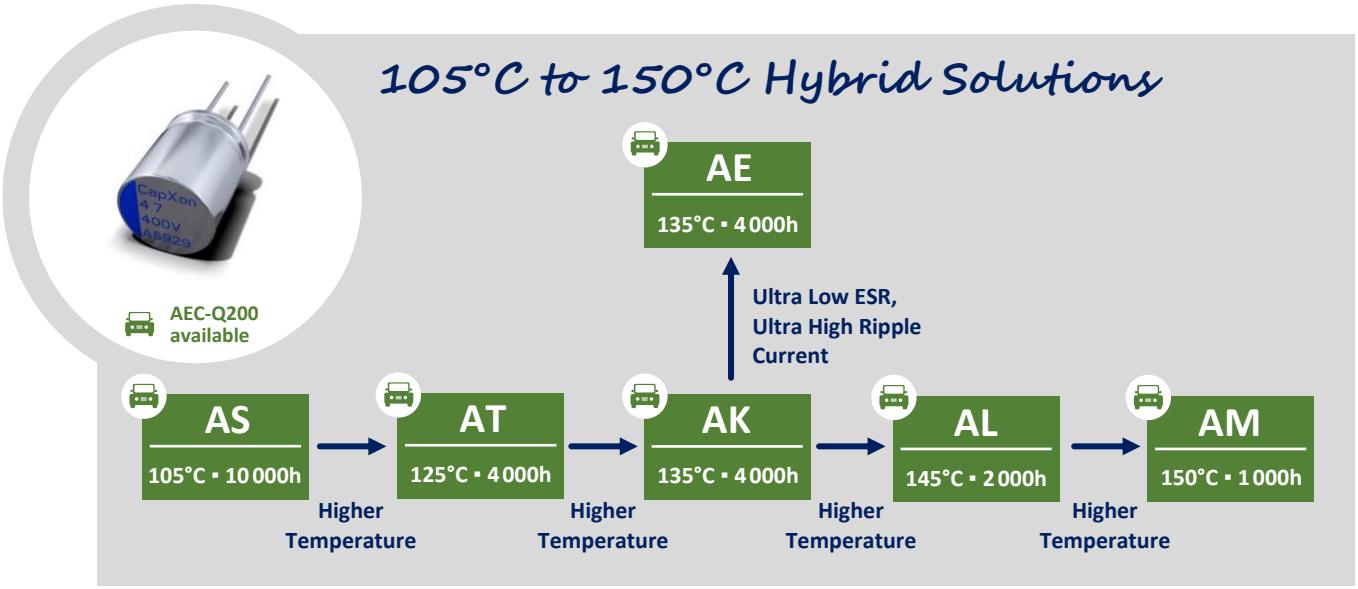
Series		Datasheet	AEC-Q200	High Temperature	High Voltage	Low ESR	Slim Type	Standard	Ultra Low ESR	Temperature Range (°C)		Voltage Range (V)		Capacitance Range (µF)		Endurance (hours)
YS	NEW	PDF				•	•	•		-55	+105	16	100	10	1500	5000 to 10000
YT	NEW	PDF		•		•	•	•		-55	+125	16	100	10	1500	2000 to 4000

ADDITIONAL INFORMATION

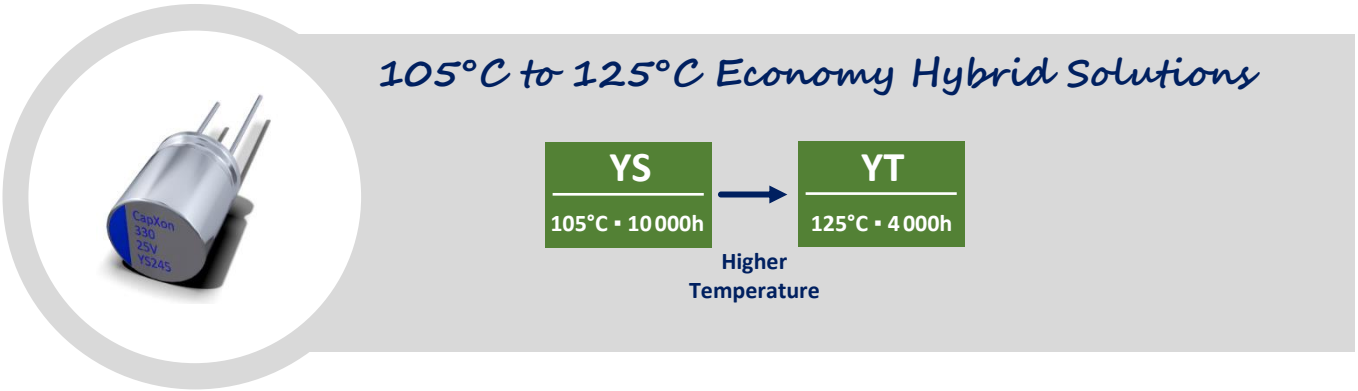
For further information on our THT Hybrid Polymer Capacitors, simply click on the symbols in the table below.

General Precautions & Guidelines	Packaging Information	3D Models	Reliability Tests	Environmental Declarations

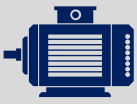
GROUP CHART ▪ HIGH PERFORMANCE SERIES FOR AUTOMOTIVE APPLICATIONS



GROUP CHART ▪ ECONOMY SERIES FOR NON-AUTOMOTIVE APPLICATIONS



TYPICAL APPLICATIONS

Automotive Electronics	DC Link in Motor Drives	Harsh Environmental Applications	Input/Output Filter in DC/DC Converters	Power and Battery Decoupling
				

*** Automotive electronics not for YS and YT series.**

BENEFITS OF HYBRID POLYMER CAPACITORS

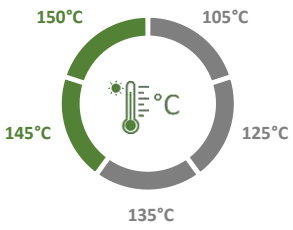
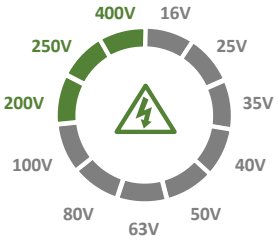
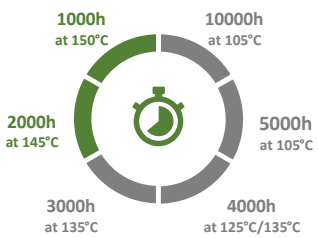
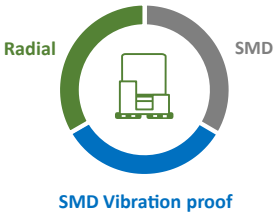
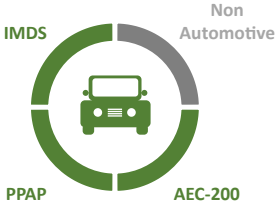
As a mix of the two worlds, the HYBRID POLYMER TECHNOLOGY offers the best performance of high-capacity storage components.

Liquid Electrolyte		Solid Conductive Polymer		Hybrid Polymer	
					
High voltage capabilities		High ripple current		Best performance of both worlds	
High temperature performance		High lifetime perfomance			
Low leakage current		Low ESR			

HYBRID POLYMER PERFORMANCE

The bandwidth and performance speak for themselves. Exceed existing limits and raise the bar.

That is performance "made by CapXon"

Upper Category Temperature ▪ T_{0_MAX}	Rated Ripple Current ▪ I_R	Rated Voltage ▪ V_R
		
Lifetime	**Available Case Styles**	**Performance**
	 SMD Vibration proof	

CapXon

IATF 16949

AEC-Q200

ISO 9001

ISO 14001

QC 080000

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