

TH SERIES ■ HIGH TEMP., AUTOMOTIVE 125°C TYPE

KEY FEATURES



AEC-Q200



HIGH VOLTAGE



TEMPERATURE

- ALUMINUM ELECTROLYTIC CAPACITOR • THT type
- Endurance: 125°C ■ 1 000 hours up to 3 000 hours
- Especially for applications with high ambient temperatures
- High reliability
- AEC-Q200 version available



SPECIFICATIONS

Items		Performance Characteristics								
Operating Temperature Range		-40 ~ +125°C				-25 ~ +125°C				
Rated Voltage Range	V _R	10 ~ 400V DC				450V DC				
Surge Voltage	V _S	(V _R ≤ 315V): V _S = 1.15·V _R				(V _R > 315V): V _S = 1.10·V _R				
Capacitance Range	C _R	1 ~ 8200μF				1 ~ 47μF				
Cap. Tolerance	ΔC	±20% (120Hz ▪ 20°C)								
Leakage Current (20°C ▪ V _R applied)	I _{LEAK}	10 ~ 100V				≤ 0.01C _R ·V _R or 3μA (After 2 minutes)				
		160 ~ 450V	C _R ·V _R ≤ 1000		≤ 0.1C _R ·V _R + 40μA (After 1 minute)					
			C _R ·V _R > 1000		≤ 0.04C _R ·V _R + 100μA (After 1 minute)					
		[I _{LEAK} (μA) ; C _R (μF) ; V _R (V)]								
Dissipation Factor % (20°C ▪ 120Hz)	tanδ	V _R (V DC)	10	16	25	35	50	63	80	
		tanδ (%)	18	15	13	12	10	8	8	
		V _R (V DC)	100	160	200	250	350	400	450	
		tanδ (%)	7	12	12	12	15	15	20	
		For C _R > 1000μF, add 2% per every multiple 1000μF of rated capacitance value								
Low Temperature Characteristics at 120Hz	Z ratio max.	V _R (V DC)	10	16 ~ 100	160 ~ 250	350 ~ 400	450			
		Z-25°C/Z+20°C	3	2	3	6	6			
		Z-40°C/Z+20°C	4	4	6	12	-			
		For capacitance > 1000μF								
		Z-25°C/Z+20°C	Add 0.5 for every multiple 1000μF of rated capacitance value							
		Z-40°C/Z+20°C	Add 1 for every multiple 1000μF of rated capacitance value							
Lifetime Test										
Endurance 125°C (V _R & I _R applied)	Test	1 000 hours				ø D < 8 mm				
		2 000 hours				ø D = 8 ~ 10 mm				
		3 000 hours				ø D ≥ 13 mm				
	ΔC/C _R	≤ ±20% of initial measured value								
	tanδ	≤ 300% of initial specified value								
	I _{Leak}	≤ the initial specified value								
Shelf Life 125°C (V _R = 0)	Test	1 000 hours								
	ΔC/C _R	≤ ±20% of initial measured value								
	tanδ	≤ 300% of initial specified value								
	I _{Leak}	≤ the initial specified value								
	Before measurement: Restore capacitor to 20°C, apply V _R for 30 min according JIS-C-5101-4									

STANDARD RATINGS

Part number shows bulk version with straight leads

V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
10	47	5	11	92	TH470M010C110A □
	56	5	11	100	TH560M010C110A □
	100	5	11	130	TH101M010C110A □
	100	6.3	11	145	TH101M010E110A □
	120	6.3	11	160	TH121M010E110A □
	330	8	11.5	350	TH331M010F115A □
	330	10	12.5	410	TH331M010G125A □
	470	8	11.5	430	TH471M010F115A □
	470	8	16	500	TH471M010F160A □
	470	10	12.5	505	TH471M010G125A □
	470	10	16	525	TH471M010G160A □
	560	10	12.5	530	TH561M010G125A □
	680	8	20	640	TH681M010F200A □
	680	10	16	660	TH681M010G160A □
	1000	10	16	870	TH102M010G160A □
	1000	10	20	960	TH102M010G200A □
	1200	10	20	1000	TH122M010G200A □
	1500	10	20	1120	TH152M010G200A □
16	22	5	11	66	TH220M016C110A □
	33	6.3	11	91	TH330M016E110A □
	47	5	11	97	TH470M016C110A □
	47	6.3	11	110	TH470M016E110A □
	100	6.3	11	175	TH101M016E110A □
	100	8	11.5	206	TH101M016F115A □
	220	8	11.5	340	TH221M016F115A □
	220	10	12.5	400	TH221M016G125A □
	330	8	11.5	400	TH331M016F115A □
	330	8	16	460	TH331M016F160A □
	330	10	12.5	470	TH331M016G125A □
	330	10	16	525	TH331M016G160A □
	470	8	11.5	500	TH471M016F115A □
	470	8	20	640	TH471M016F200A □
	470	10	12.5	590	TH471M016G125A □
	470	10	16	650	TH471M016G160A □
	470	10	20	720	TH471M016G200A □
	680	10	20	760	TH681M016G200A □
	820	10	16	740	TH821M016G160A □
	820	10	25	900	TH821M016G250A □
	1000	10	20	860	TH102M016G200A □
	1000	10	25	950	TH102M016G250A □
	1000	13	20	1000	TH102M016I200A □

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See "PACKAGING INFORMATION" to taped or formed products.

STANDARD RATINGS

Part number shows bulk version with straight leads

V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
25	22	6.3	11	70	TH220M025E110A
	33	5	11	88	TH330M025C110A
	33	6.3	11	100	TH330M025E110A
	47	5	11	97	TH470M025C110A
	47	6.3	11	110	TH470M025E110A
	47	8	11.5	130	TH470M025F115A
	56	6.3	11	120	TH560M025E110A
	100	8	11.5	210	TH101M025F115A
	100	10	12.5	250	TH101M025G125A
	120	8	11.5	220	TH121M025F115A
	150	8	11.5	260	TH151M025F115A
	180	8	11.5	290	TH181M025F115A
	220	8	11.5	360	TH221M025F115A
	220	8	16	415	TH221M025F160A
	220	10	12.5	420	TH221M025G125A
	220	10	16	470	TH221M025G160A
	270	8	20	470	TH271M025F200A
	270	10	12.5	435	TH271M025G125A
	330	8	16	510	TH331M025F160A
	330	10	12.5	520	TH331M025G125A
	330	10	16	570	TH331M025G160A
	330	10	20	631	TH331M025G200A
	390	10	16	650	TH391M025G160A
	470	8	20	620	TH471M025F200A
	470	10	16	640	TH471M025G160A
	470	10	20	700	TH471M025G200A
	470	10	25	770	TH471M025G250A
	470	13	20	810	TH471M025I200A
	560	10	20	680	TH561M025G200A
	560	10	25	750	TH561M025G250A
	680	10	20	740	TH681M025G200A
	1000	13	20	880	TH102M025I200A
	1000	13	25	970	TH102M025I250A
	1000	16	25	1100	TH102M025J250A
	1200	10	20	1010	TH122M025G200A
	1500	10	25	1220	TH152M025G250A
	1800	13	20	1350	TH182M025I200A
	2700	13	25	1710	TH272M025I250A
	3300	13	30	2070	TH332M025I300A
	5600	18	25	2730	TH562M025K250A
	6800	16	35.5	3300	TH682M025J355A
	8200	16	40	3750	TH822M025J400A

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
35	22	5	11	72	TH220M035C110A □
	22	6.3	11	82	TH220M035E110A □
	33	8	11.5	108	TH330M035F115A □
	47	6.3	11	110	TH470M035E110A □
	47	8	11.5	130	TH470M035F115A □
	47	10	12.5	158	TH470M035G125A □
	56	6.3	11	130	TH560M035E110A □
	100	8	11.5	200	TH101M035F115A □
	100	10	12.5	230	TH101M035G125A □
	100	10	16	262	TH101M035G160A □
	120	8	11.5	300	TH121M035F115A □
	120	8	16	350	TH121M035F160A □
	150	10	12.5	360	TH151M035G125A □
	180	8	20	410	TH181M035F200A □
	180	10	12.5	380	TH181M035G125A □
	220	10	12.5	440	TH221M035G125A □
	220	10	16	490	TH221M035G160A □
	220	10	20	540	TH221M035G200A □
	270	10	16	500	TH271M035G160A □
	270	10	20	550	TH271M035G200A □
	330	10	16	560	TH331M035G160A □
	330	10	25	680	TH331M035G250A □
	330	13	20	718	TH331M035I200A □
	390	10	20	590	TH391M035G200A □
	470	10	20	700	TH471M035G200A □
	470	13	20	810	TH471M035I200A □
	470	13	25	900	TH471M035I250A □
	560	10	20	580	TH561M035G200A □
	560	13	16	610	TH561M035I160A □
	680	10	20	800	TH681M035G200A □
	820	10	25	980	TH821M035G250A □
	1000	13	25	1140	TH102M035I250A □
	1000	16	25	1280	TH102M035I250A □
	1200	10	30	1290	TH122M035G300A □
	1500	13	25	1368	TH152M035I250A □
	2200	13	30	1660	TH222M035I300A □
	2700	13	40	2350	TH272M035I400A □
	3300	16	31.5	2480	TH332M035J315A □
	3300	18	25	2400	TH332M035K250A □
	4700	16	40	3000	TH472M035J400A □

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
50	2.2	8	11.5	25	TH2R2M050F115A □
	3.3	8	11.5	30	TH3R3M050F115A □
	4.7	5	11	32	TH4R7M050C110A □
	4.7	8	11.5	42.5	TH4R7M050F115A □
	10	5	11	42	TH100M050C110A □
	10	6.3	11	48	TH100M050E110A □
	10	8	11.5	56	TH100M050F115A □
	22	5	11	66	TH220M050C110A □
	22	6.3	11	75	TH220M050E110A □
	22	8	11.5	86	TH220M050F115A □
	33	8	11.5	118	TH330M050F115A □
	47	6.3	11	120	TH470M050E110A □
	47	8	11.5	140	TH470M050F115A □
	47	10	12.5	164	TH470M050G125A □
	56	8	11.5	150	TH560M050F115A □
	68	8	11.5	160	TH680M050F115A □
	82	8	11.5	170	TH820M050F115A □
	100	10	12.5	230	TH101M050G125A □
	100	10	16	250	TH101M050G160A □
	100	10	20	277	TH101M050G200A □
	120	10	16	290	TH121M050G160A □
	180	10	20	400	TH181M050G200A □
	220	10	20	510	TH221M050G200A □
	220	10	25	560	TH221M050G250A □
	220	13	20	587	TH221M050I200A □
	270	10	20	610	TH271M050G200A □
	330	10	20	700	TH331M050G200A □
	330	13	20	810	TH331M050I200A □
	330	13	25	900	TH331M050I250A □
	470	13	25	900	TH471M050I250A □
	470	16	25	1000	TH471M050J250A □
	560	10	30	950	TH561M050G300A □
	680	13	25	1050	TH681M050I250A □
	1000	13	30	1390	TH102M050I300A □
	1200	13	35	1510	TH122M050I350A □
	1200	18	20	1450	TH122M050K200A □
	1500	13	40	1960	TH152M050I400A □
	1800	18	25	1960	TH182M050K250A □
	2200	18	31.5	2500	TH222M050K315A □
	2700	18	35.5	2750	TH272M050K355A □
	3300	18	40	2950	TH332M050K400A □

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
63	4.7	6.3	11	38	TH4R7M063E110A
	10	8	11.5	58	TH100M063F115A
	22	8	11.5	93	TH220M063F115A
	33	8	11.5	115	TH330M063F115A
	33	10	12.5	132	TH330M063G125A
	47	10	12.5	155	TH470M063G125A
	47	10	16	172	TH470M063G160A
	100	10	16	260	TH101M063G160A
	180	10	20	400	TH181M063G200A
	220	10	25	520	TH221M063G250A
	220	13	25	595	TH221M063I250A
	330	13	25	880	TH331M063I250A
	330	16	25	1000	TH331M063J250A
	390	13	20	800	TH391M063I200A
	680	13	30	1290	TH681M063I300A
	820	13	35	1420	TH821M063I350A
	820	18	20	1360	TH821M063K200A
	1200	18	25	1620	TH122M063K250A
	1500	18	31.5	1980	TH152M063K315A
	1800	16	40	2260	TH182M063J400A
	2200	18	40	2680	TH222M063K400A
80	22	8	11.5	120	TH220M080F115A
	33	10	12.5	170	TH330M080G125A
	47	10	12.5	200	TH470M080G125A
	100	10	20	370	TH101M080G200A
	330	13	25	870	TH331M080I250A
	390	16	20	900	TH391M080J200A
	470	16	25	1010	TH471M080J250A
	560	13	35	1100	TH561M080I350A
	560	16	25	1060	TH561M080J250A
	560	18	20	1050	TH561M080K200A
	680	16	31.5	1300	TH681M080J315A
100	1	6.3	11	24	TH010M100E110A
	2.2	6.3	11	31	TH2R2M100E110A
	3.3	6.3	11	36	TH3R3M100E110A
	4.7	6.3	11	38	TH4R7M100E110A
	4.7	8	11.5	48	TH4R7M100F115A
	10	8	11.5	60	TH100M100F115A
	10	10	12.5	70	TH100M100G125A
	22	8	11.5	76	TH220M100F115A
	22	10	12.5	90	TH220M100G125A
	22	10	16	100	TH220M100G160A

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STANDARD RATINGS

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
100	33	10	12.5	130	TH330M100G125A
	33	10	16	140	TH330M100G160A
	33	10	20	158	TH330M100G200A
	47	10	16	150	TH470M100G160A
	47	10	25	175	TH470M100G250A
	47	13	20	185	TH470M100I200A
	100	13	25	320	TH101M100I250A
	100	16	25	350	TH101M100J250A
	330	13	35	890	TH331M100I350A
	330	16	25	860	TH331M100J250A
	330	18	20	850	TH331M100K200A
	390	13	40	1050	TH391M100I400A
	390	16	31.5	1050	TH391M100J315A
	560	18	31.5	1290	TH561M100K315A
	680	18	35.5	1480	TH681M100K355A
	820	18	40	1850	TH821M100K400A
160	1	6.3	11	23	TH010M160E110A
	2.2	6.3	11	35	TH2R2M160E110A
	3.3	6.3	11	37	TH3R3M160E110A
	3.3	8	11.5	41	TH3R3M160F115A
	4.7	8	11.5	52	TH4R7M160F115A
	6.8	10	12.5	70	TH6R8M160G125A
	10	8	11.5	70	TH100M160F115A
	10	10	12.5	82	TH100M160G125A
	22	10	16	115	TH220M160G160A
	22	10	20	128	TH220M160G200A
	33	13	20	200	TH330M160I200A
	47	13	20	240	TH470M160I200A
	47	13	25	260	TH470M160I250A
	82	10	30	340	TH820M160G300A
	100	10	35	380	TH101M160G350A
	100	13	25	390	TH101M160I250A
	100	16	25	430	TH101M160J250A
	120	10	40	450	TH121M160G400A
	150	13	30	500	TH151M160I300A
	180	13	35	600	TH181M160I350A
	180	18	20	550	TH181M160K200A
	220	16	31.5	690	TH221M160J315A
	330	18	35.5	900	TH331M160K355A
200	1	6.3	11	23	TH010M200E110A
	2.2	6.3	11	35	TH2R2M200E110A
	3.3	8	11.5	48	TH3R3M200F115A
	4.7	8	11.5	50	TH4R7M200F115A

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
200	4.7	10	12.5	60	TH4R7M200G125A
	6.8	10	12.5	70	TH6R8M200G125A
	10	10	12.5	80	TH100M200G125A
	22	10	20	140	TH220M200G200A
	22	10	25	150	TH220M200G250A
	22	13	20	160	TH220M200I200A
	33	13	20	200	TH330M200I200A
	33	13	25	220	TH330M200I250A
	47	13	20	245	TH470M200I200A
	47	13	25	270	TH470M200I250A
	47	16	25	300	TH470M200J250A
	56	13	20	260	TH560M200I200A
	82	13	25	360	TH820M200I250A
	100	13	30	430	TH101M200I300A
	100	16	20	400	TH101M200J200A
	100	16	25	440	TH101M200J250A
	100	16	31.5	490	TH101M200J315A
	150	13	40	600	TH151M200I400A
	150	16	25	530	TH151M200J250A
	180	18	25	650	TH181M200K250A
	220	18	31.5	850	TH221M200K315A
	330	18	35.5	1100	TH331M200K355A
250	1	6.3	11	23	TH010M250E110A
	2.2	6.3	11	35	TH2R2M250E110A
	2.2	8	11.5	40	TH2R2M250F115A
	3.3	8	11.5	50	TH3R3M250F115A
	3.3	10	12.5	53	TH3R3M250G125A
	4.7	10	12.5	60	TH4R7M250G125A
	4.7	10	16	68	TH4R7M250G160A
	6.8	10	16	75	TH6R8M250G160A
	10	10	16	83	TH100M250G160A
	22	13	20	160	TH220M250I200A
	22	13	25	170	TH220M250I250A
	33	13	25	220	TH330M250I250A
	33	16	25	240	TH330M250J250A
	39	10	30	230	TH390M250G300A
	47	10	35	280	TH470M250G350A
	47	16	25	300	TH470M250J250A
	47	16	31.5	330	TH470M250J315A
	56	10	40	300	TH560M250G400A
	68	13	30	330	TH680M250I300A
	82	13	35	380	TH820M250I350A
	82	18	20	350	TH820M250K200A

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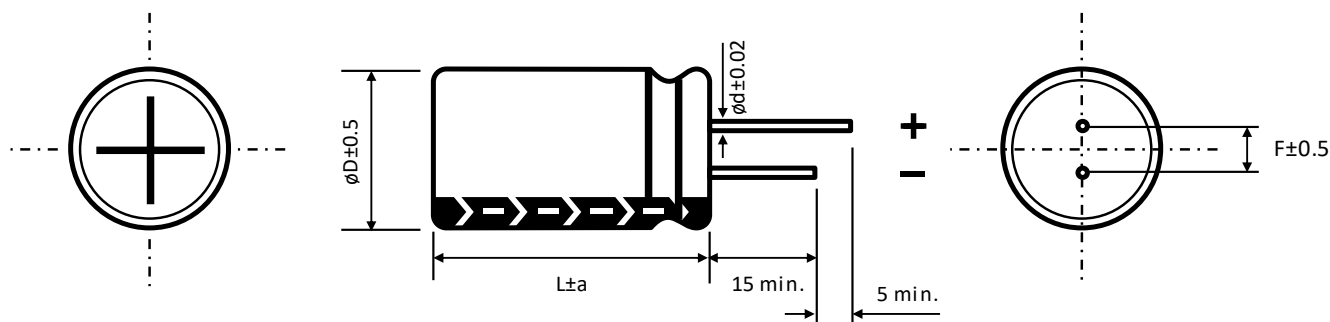
V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
250	100	13	40	490	TH101M250I400A
	120	18	25	460	TH121M250K250A
	220	18	35.5	850	TH221M250K355A
350	1	8	11.5	26	TH010M350F115A
	2.2	8	11.5	40	TH2R2M350F115A
	2.2	10	12.5	47	TH2R2M350G125A
	3.3	10	12.5	55	TH3R3M350G125A
	3.3	10	16	60	TH3R3M350G160A
	4.7	10	16	68	TH4R7M350G160A
	4.7	10	20	75	TH4R7M350G200A
	5.6	10	20	78	TH5R6M350G200A
	6.8	13	20	85	TH6R8M350I200A
	10	10	25	105	TH100M350G250A
	10	13	20	110	TH100M350I200A
	22	13	25	180	TH220M350I250A
	22	16	25	200	TH220M350J250A
	27	10	30	180	TH270M350G300A
	33	10	35	220	TH330M350G350A
	33	16	25	230	TH330M350J250A
	33	16	31.5	260	TH330M350J315A
	47	13	30	280	TH470M350I300A
	47	16	31.5	320	TH470M350J315A
	47	16	35.5	340	TH470M350J355A
	56	13	35	330	TH560M350I350A
	56	16	25	320	TH560M350J250A
	56	18	20	310	TH560M350K200A
	68	13	40	390	TH680M350I400A
400	1	10	12.5	30	TH010M400G125A
	2.2	10	16	50	TH2R2M400G160A
	3.3	10	16	60	TH3R3M400G160A
	4.7	10	16	70	TH4R7M400G160A
	4.7	10	20	80	TH4R7M400G200A
	5.6	10	20	85	TH5R6M400G200A
	6.8	13	20	90	TH6R8M400I200A
	10	13	20	110	TH100M400I200A
	22	13	25	180	TH220M400I250A
	27	13	25	190	TH270M400I250A
	33	16	20	220	TH330M400J200A
	33	16	25	240	TH330M400J250A
	47	16	25	290	TH470M400J250A
	47	16	31.5	320	TH470M400J315A

: Enter **blank** for Standard version

: Enter **X** for AEC-Q200 version

See “PACKAGING INFORMATION” to taped or formed products.

DIMENSIONS ▪ All dimensions in mm



ϕD	5	6.3	8		10	13	16	18
F	2	2.5	3.5		5	5	7.5	7.5
ϕd	0.5		L < 20	L ≥ 20	0.6		0.8	
			0.5	0.6				

a	$\phi D < 16$	$\phi D = 16$		$\phi D = 18$	
	1.5	L = 25 to 35.5	L < 25 and L ≥ 40	L = 25 to 31.5	L < 25 and L ≥ 35.5
		1.5	2	1.5	2

MULTIPLIER K_f for RIPPLE CURRENT vs. FREQUENCY

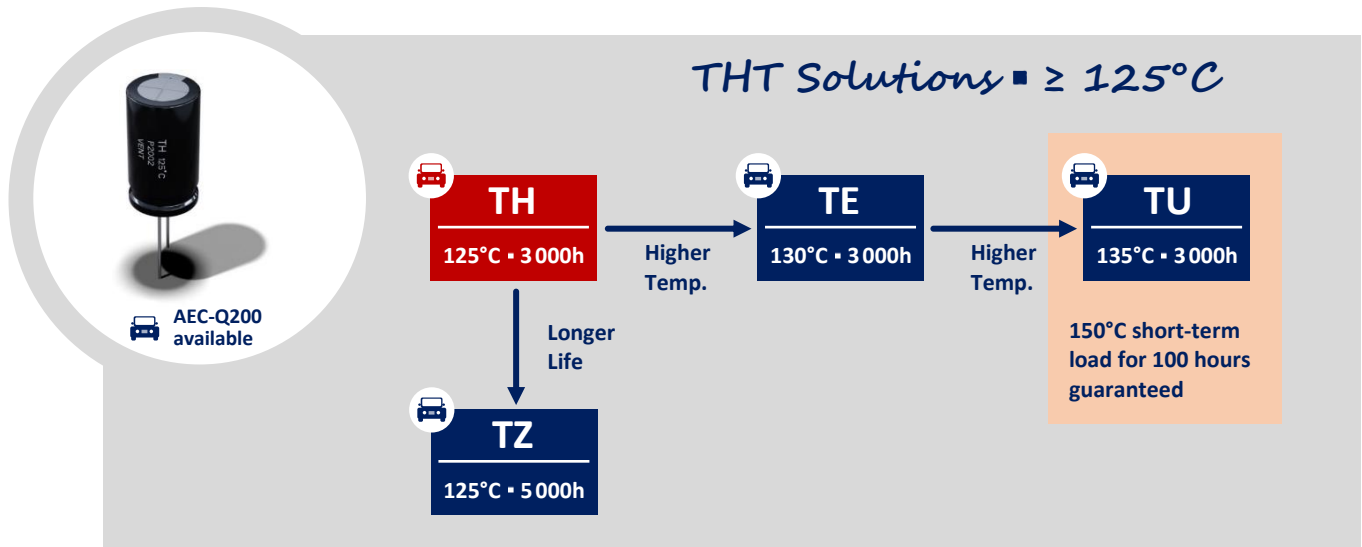
C_R (μF) / Frequency (Hz)	50/60	100/120	400	1k	10k	50k ~ 100k
$C_R \leq 10$	0.8	1	1.3	1.45	1.65	1.7
$10 < C_R \leq 100$	0.8	1	1.23	1.36	1.48	1.53
$100 < C_R \leq 1000$	0.8	1	1.16	1.25	1.35	1.38
$1000 \leq C_R$	0.8	1	1.11	1.17	1.25	1.28

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.

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