

TE SERIES ■ HIGH TEMP., AUTOMOTIVE 130°C TYPE

KEY FEATURES



- ALUMINUM ELECTROLYTIC CAPACITOR • THT type
- Endurance: 130°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 ~ +130°C			-25 ~ +130°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	2.2 ~ 4700μF			1 ~ 100μF				
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)				
Dissipation Factor % (20°C ▪ 120Hz)	tanδ	V _R (V DC)	10	16	25	35	50	63	
		tanδ (%)	20	16	14	12	10	9	
		V _R (V DC)	100	160	200	250	350	400	450
		tanδ (%)	8	15	15	15	20	20	25
		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	5	6		
		Z-40°C/Z+20°C	4	4	6	-	-		
		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 130°C (V _R & I _R applied)	Test	1 000 hours			ø D 6.3 mm				
		2 000 hours			ø D 8 mm				
		3 000 hours			ø D ≥ 10 mm ▪ 10 ~ 100V				
		2 000 hours			ø D ≥ 10 mm ▪ 160 ~ 450V				
	ΔC/C _R	≤ ±30% of initial measured value							
	tanδ	≤ 300% of initial specified value							
Shelf Life 130°C (V _R = 0)	I _{Leak}	≤ the initial specified value							
	Test	1 000 hours							
	ΔC/C _R	≤ ±30% 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 +130°C • 100kHz (mA rms)	CapXon Part Number
10	220	8	11.5	360	TE221M010F115A
	330	8	11.5	475	TE331M010F115A
	330	10	12.5	500	TE331M010G125A
	470	10	12.5	670	TE471M010G125A
	470	10	16	720	TE471M010G160A
	1000	10	20	1175	TE102M010G200A
	1500	13	20	1495	TE152M010I200A
	2200	13	25	1690	TE222M010I250A
	3300	16	25	2275	TE332M010J250A
	4700	16	31.5	2765	TE472M010J315A
16	220	8	11.5	360	TE221M016F115A
	220	10	12.5	375	TE221M016G125A
	330	8	11.5	395	TE331M016F115A
	330	10	16	515	TE331M016G160A
	470	10	12.5	655	TE471M016G125A
	470	10	20	800	TE471M016G200A
	1000	10	20	1175	TE102M016G200A
	1000	13	20	1240	TE102M016I200A
	1500	13	20	1515	TE152M016I200A
	1500	13	25	1665	TE152M016I250A
	2200	13	25	1690	TE222M016I250A
	2200	16	25	1875	TE222M016J250A
	3300	16	31.5	2690	TE332M016J315A
	4700	16	35.5	2940	TE472M016J355A
25	220	8	11.5	360	TE221M025F115A
	220	10	16	475	TE221M025G160A
	330	10	12.5	630	TE331M025G125A
	330	10	20	775	TE331M025G200A
	470	10	16	755	TE471M025G160A
	470	13	20	960	TE471M025I200A
	1000	13	20	1240	TE102M025I200A
	1000	16	25	1465	TE102M025J250A
	1500	16	25	1865	TE152M025J250A
	1500	16	31.5	2065	TE152M025J315A
	2200	16	31.5	2380	TE222M025J315A
	2200	16	35.5	2515	TE222M025J355A
	3300	16	35.5	2695	TE332M025J355A
	3300	18	35.5	2875	TE332M025K355A

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +130°C • 100kHz (mA rms)	CapXon Part Number
35	100	8	11.5	460	TE101M035F115A
	100	10	16	600	TE101M035G160A
	220	10	12.5	610	TE221M035G125A
	220	10	20	745	TE221M035G200A
	330	10	16	790	TE331M035G160A
	330	13	20	1000	TE331M035I200A
	470	10	20	920	TE471M035G200A
	470	13	25	1175	TE471M035I250A
	1000	13	25	1235	TE102M035I250A
	1000	16	31.5	1535	TE102M035J315A
	1500	16	31.5	2340	TE152M035J315A
	1500	16	35.5	2465	TE152M035J355A
	2200	16	35.5	2695	TE222M035J355A
	2200	18	35.5	2875	TE222M035K355A
50	10	6.3	11	140	TE100M050E110A
	22	6.3	11	200	TE220M050E110A
	22	8	11.5	240	TE220M050F115A
	33	8	11.5	285	TE330M050F115A
	47	8	11.5	275	TE470M050F115A
	47	10	12.5	315	TE470M050G125A
	100	10	12.5	465	TE101M050G125A
	100	10	16	515	TE101M050G160A
	220	10	20	865	TE221M050G200A
	220	13	20	1000	TE221M050I200A
	330	13	20	1065	TE331M050I200A
	330	13	25	1175	TE331M050I250A
	470	16	20	1240	TE471M050J200A
	470	16	25	1335	TE471M050J250A
	1000	16	31.5	2465	TE102M050J315A
	2200	18	40	3065	TE222M050K400A
63	33	8	11.5	255	TE330M063F115A
	47	10	12.5	285	TE470M063G125A
	100	10	16	415	TE101M063G160A
	220	13	20	845	TE221M063I200A
	330	13	25	1145	TE331M063I250A
	470	16	25	1455	TE471M063J250A
	1000	16	31.5	1865	TE102M063J315A
	1500	18	40	2735	TE152M063K400A

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +130°C • 100kHz (mA rms)	CapXon Part Number
100	4.7	8	11.5	115	TE4R7M100F115A □
	10	8	11.5	130	TE100M100F115A □
	22	8	11.5	190	TE220M100F115A □
	33	10	12.5	275	TE330M100G125A □
	47	10	16	285	TE470M100G160A □
	100	13	20	545	TE101M100I200A □
	220	16	25	1000	TE221M100J250A □
	330	16	31.5	1345	TE331M100J315A □
	470	18	31.5	1600	TE471M100K315A □
160	3.3	6.3	11	65	TE3R3M160E110A □
	4.7	6.3	11	70	TE4R7M160E110A □
	4.7	8	11.5	85	TE4R7M160F115A □
	5.6	8	11.5	100	TE5R6M160F115A □
	6.8	8	11.5	110	TE6R8M160F115A □
	6.8	8	16	130	TE6R8M160F160A □
	10	8	16	145	TE100M160F160A □
	15	8	16	190	TE150M160F160A □
	22	10	16	310	TE220M160G160A □
	33	10	20	360	TE330M160G200A □
	47	13	20	460	TE470M160I200A □
	68	13	25	585	TE680M160I250A □
	100	16	25	820	TE101M160J250A □
	150	16	31.5	940	TE151M160J315A □
200	3.3	6.3	11	70	TE3R3M200E110A □
	4.7	6.3	11	75	TE4R7M200E110A □
	4.7	8	11.5	85	TE4R7M200F115A □
	5.6	8	11.5	100	TE5R6M200F115A □
	5.6	8	16	120	TE5R6M200F160A □
	6.8	8	11.5	115	TE6R8M200F115A □
	6.8	8	16	135	TE6R8M200F160A □
	10	8	16	160	TE100M200F160A □
	10	8	20	180	TE100M200F200A □
	15	8	16	190	TE150M200F160A □
	15	8	20	210	TE150M200F200A □
	22	8	20	310	TE220M200F200A □
	22	10	16	310	TE220M200G160A □
	22	10	20	320	TE220M200G200A □
	33	10	20	360	TE330M200G200A □
	33	13	20	410	TE330M200I200A □
	47	13	20	460	TE470M200I200A □
	47	13	25	515	TE470M200I250A □
	68	16	20	585	TE680M200J200A □
	68	16	25	630	TE680M200J250A □

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V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +130°C • 100kHz (mA rms)	CapXon Part Number
200	100	13	30	675	TE101M200I300A □
	100	16	25	820	TE101M200J250A □
	150	13	40	880	TE151M200I400A □
	150	16	35.5	945	TE151M200J355A □
250	3.3	6.3	11	75	TE3R3M250E110A □
	4.7	8	11.5	110	TE4R7M250F115A □
	5.6	8	11.5	110	TE5R6M250F115A □
	6.8	8	16	135	TE6R8M250F160A □
	8.2	8	16	165	TE8R2M250F160A □
	10	8	16	180	TE100M250F160A □
	15	8	20	220	TE150M250F200A □
	22	10	16	300	TE220M250G160A □
	33	13	20	450	TE330M250I200A □
	47	13	20	475	TE470M250I200A □
	68	13	30	640	TE680M250I300A □
	68	16	25	640	TE680M250J250A □
	100	13	35	710	TE101M250I350A □
	100	16	31.5	835	TE101M250J315A □
	150	13	50	980	TE151M250I500A □
	150	16	35.5	1025	TE151M250J355A □
350	2.2	6.3	11	60	TE2R2M350E110A □
	3.3	8	11.5	85	TE3R3M350F115A □
	4.7	8	11.5	110	TE4R7M350F115A □
	5.6	8	16	125	TE5R6M350F160A □
	6.8	8	20	150	TE6R8M350F200A □
	8.2	8	20	170	TE8R2M350F200A □
	10	10	20	195	TE100M350G200A □
	15	10	20	250	TE150M350G200A □
	22	13	20	310	TE220M350I200A □
	33	16	20	450	TE330M350J200A □
	47	16	20	540	TE470M350J200A □
	68	18	25	645	TE680M350K250A □
	100	18	31.5	850	TE101M350K315A □
400	2.2	6.3	11	75	TE2R2M400E110A □
	2.2	8	11.5	85	TE2R2M400F115A □
	2.2	8	16	95	TE2R2M400F160A □
	2.7	8	16	100	TE2R7M400F160A □
	3.3	8	11.5	95	TE3R3M400F115A □
	3.3	8	16	115	TE3R3M400F160A □
	3.3	8	20	125	TE3R3M400F200A □
	4.7	8	11.5	110	TE4R7M400F115A □
	4.7	8	20	125	TE4R7M400F200A □
	4.7	10	16	125	TE4R7M400G160A □

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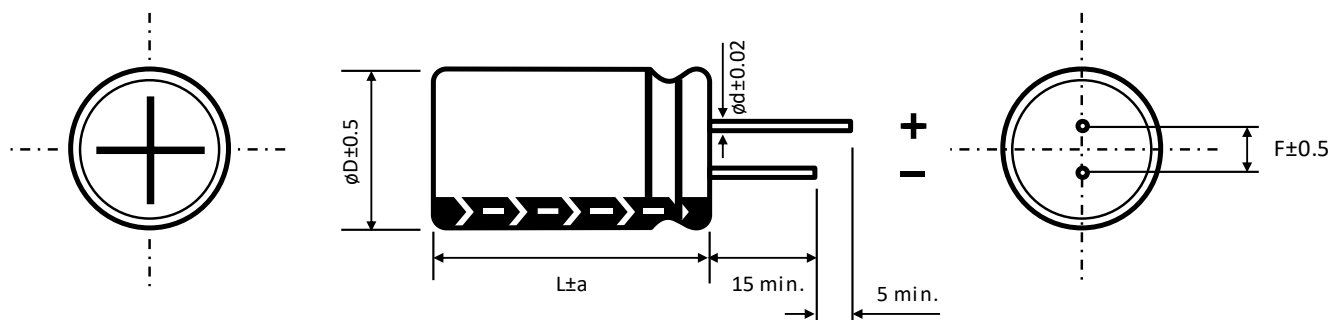
V _R (V)	C _R (μF)	ø D (mm)	L (mm)	I _R • Max. Ripple Current +130°C • 100kHz (mA rms)	CapXon Part Number
400	5.6	8	20	135	TE5R6M400F200A
	5.6	10	16	135	TE5R6M400G160A
	5.6	10	20	150	TE5R6M400G200A
	6.8	8	20	150	TE6R8M400F200A
	6.8	10	16	150	TE6R8M400G160A
	6.8	10	20	165	TE6R8M400G200A
	8.2	10	16	170	TE8R2M400G160A
	8.2	10	20	190	TE8R2M400G200A
	10	10	16	190	TE100M400G160A
	10	10	20	200	TE100M400G200A
	10	10	25	215	TE100M400G250A
	15	13	20	260	TE150M400I200A
	22	13	25	345	TE220M400I250A
	33	16	25	460	TE330M400J250A
	47	13	40	520	TE470M400I400A
	47	16	31.5	610	TE470M400J315A
	47	18	25	579	TE470M400K250A
	68	13	55	745	TE680M400I550A
	68	18	31.5	660	TE680M400K315A
	100	18	40	880	TE101M400K400A
450	1	8	11.5	65	TE010M450F115A
	2.2	8	16	95	TE2R2M450F160A
	3.3	8	16	100	TE3R3M450F160A
	4.7	8	20	125	TE4R7M450F200A
	5.6	10	16	135	TE5R6M450G160A
	6.8	10	20	165	TE6R8M450G200A
	8.2	10	20	190	TE8R2M450G200A
	10	10	25	215	TE100M450G250A
	10	13	20	215	TE100M450I200A
	15	13	20	260	TE150M450I200A
	22	10	40	350	TE220M450G400A
	22	16	20	345	TE220M450J200A
	22	16	25	385	TE220M450J250A
	33	10	50	450	TE330M450G500A
	33	16	25	485	TE330M450J250A
	33	16	31.5	545	TE330M450J315A
	47	13	45	565	TE470M450I450A
	47	16	35.5	600	TE470M450J355A
	68	18	31.5	660	TE680M450K315A
	100	18	40	880	TE101M450K400A

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DIMENSIONS • All dimensions in mm



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

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

10 ~ 100V

C_R (μF) / Frequency (Hz)	50/60	100/120	1k	10k	50k ~ 100k
$C_R < 10$	0.35	0.42	0.6	0.8	1
10 ~ 33	0.45	0.55	0.75	0.9	1
47 ~ 330	0.6	0.7	0.85	0.95	1
470 ~ 1500	0.65	0.75	0.9	0.98	1
$1500 \leq C_R$	0.75	0.8	0.95	1	1

160 ~ 450V

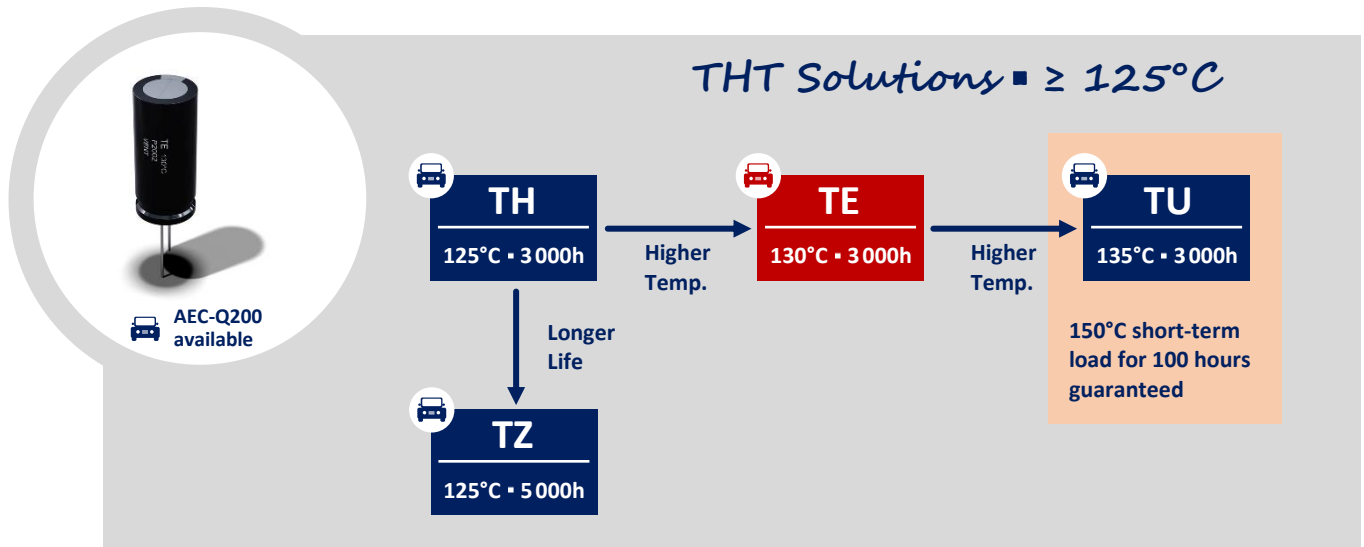
C_R (μF) / Frequency (Hz)	100/120	400	1k	10k	50k ~ 100k
$C_R < 33$	0.4	0.6	0.75	0.9	1
$C_R \geq 33$	0.45	0.65	0.8	0.95	1

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.

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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