

# Type 381EL 105 °C Ultra-Long Life Snap-In, Aluminum

More than 100,000 Hours Operation at 65 °C and Rated 105 °C Ripple



The new 381EL extends expected life capability to 15 years or more in typical applications. And that's with the 105 °C rated ripple current applied. With 3.5 times the life of our long-life Type 381LX, the Type 381EL is the choice for hot applications like industrial power supplies, inverter lighting systems and motor drives.

## Highlights

- High value extended life
- Withstands 7000 hours at 105 °C with rated ripple current
- Expected life more than 100,000 hours at 65 °C with rated ripple
- Rated voltage to 450 Vdc
- 50% more ripple current than 381L

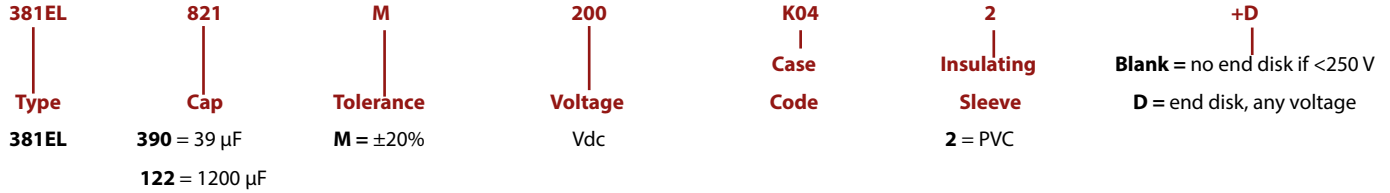
## Specifications

Temperature Range	-40 °C to + 105 °C up to 300 V, -25 °C to 105 °C ≥315 V					
Rated Voltage Range	160 to 450 Vdc					
Capacitance Range	39 µF to 2,200 µF ± 20%					
Capacitance Tolerance	± 20%					
Leakage Current	≤3 $\sqrt{CV}$ µA, at 5 minutes					
Ripple Current Multipliers	Ambient Temperature					
	45 °C	60 °C	70 °C	85 °C	105 °C	
	2.35	2.20	2.00	1.55	1.00	
Ripple Current Multipliers	Frequency					
	50 Hz	60 Hz	120 Hz	500 kHz	1 kHz	10 kHz & Up
	0.75	0.80	1.00	1.20	1.25	1.40
Load Life Test	7000 h at full load at 105 °C ΔCapacitance ±20% ESR 200% of limit DCL 100% of limit					
EIA Ripple Life	20,000 h at 85 °C, per EIA IS-749 with 105 °C ripple current. Δ Capacitance ±20% ESR 200% of limit					
Shelf Life Test	1000 h at 105 °C Δ Capacitance ±20% ESR 200% of limit DCL 100% of limit					
Vibration	10 to 55 Hz, 0.06" and 10 g max, 2 h each plane					
RoHS Compliant						

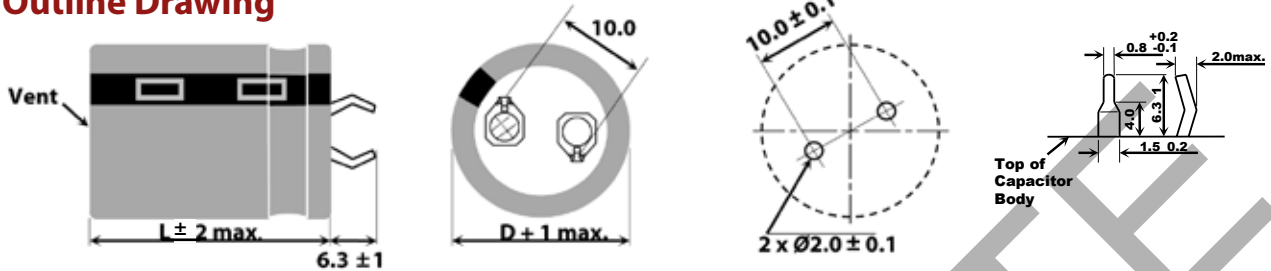
# Type 381EL 105 °C Ultra-Long Life Snap-In, Aluminum

More than 100,000 Hours Operation at 65 °C and Rated 105 °C Ripples

## Part Numbering System



## Outline Drawing



Dimensions shown are in mm

## PC Board Mounting Holes

Note that for 200 volts and under the insulating end disc is optional - If one is needed add a (+D) to the end of the part numbering system.

## Insulated Case Dimensions

Case Code	DIAMETER D		LENGTH L		Typical Weight (grams)	Case Code	DIAMETER D		LENGTH L		Typical Weight (grams)
	mm	inches	mm	inches			mm	inches	mm	inches	
H01	22	0.87	25	0.98	16	K01	30	1.18	25	0.98	30
H02	22	0.87	30	1.18	19	K02	30	1.18	30	1.18	35
H03	22	0.87	35	1.38	22	K03	30	1.18	35	1.38	40
H04	22	0.87	40	1.57	24	K04	30	1.18	40	1.57	44
H45	22	0.87	45	1.77	28	K45	30	1.18	45	1.77	49
H05	22	0.87	50	1.97	31	K05	30	1.18	50	1.97	53
J01	25	0.98	25	0.98	20	A01	35	1.38	25	0.98	42
J02	25	0.98	30	1.18	24	A02	35	1.38	30	1.18	48
J03	25	0.98	35	1.38	27	A03	35	1.38	35	1.38	54
J04	25	0.98	40	1.57	31	A04	35	1.38	40	1.57	60
J45	25	0.98	45	1.77	35	A45	35	1.38	45	1.77	67
J05	25	0.98	50	1.97	38	A05	35	1.38	50	1.97	74
						A55	35	1.38	55	2.17	80

## Ratings

Cap. (μF)	Catalog Part Number	DF Max	ESR Max @ 25° C		Ripple Amps @ 105 °C		Nominal Size D x L (mm)
			120 Hz (Ω)	20 kHz (Ω)	120 Hz (A)	20 kHz (A)	
160 Vdc (200 Vdc Surge)							
270	381EL271M160H012	0.12	0.66	0.30	1.10	1.54	22 x 25
330	381EL331M160H022	0.12	0.54	0.24	1.20	1.68	22 x 30
390	381EL391M160H022	0.12	0.45	0.20	1.30	1.82	22 x 30
390	381EL391M160J012	0.12	0.45	0.20	1.30	1.82	25 x 25
470	381EL471M160H032	0.12	0.38	0.17	1.40	1.96	22 x 35
470	381EL471M160J022	0.12	0.38	0.17	1.40	1.96	25 x 30
560	381EL561M160H042	0.12	0.32	0.14	1.50	2.10	22 x 40
560	381EL561M160J022	0.12	0.32	0.14	1.50	2.10	25 x 30
560	381EL561M160K012	0.12	0.32	0.14	1.50	2.10	30 x 25
680	381EL681M160H452	0.12	0.26	0.12	1.70	2.38	22 x 45
680	381EL681M160J032	0.12	0.26	0.12	1.70	2.38	25 x 35
680	381EL681M160K022	0.12	0.26	0.12	1.70	2.38	30 x 30
160 Vdc (200 Vdc Surge)							
820	381EL821M160J042	0.12	0.22	0.10	2.00	2.80	25 x 40
820	381EL821M160K022	0.12	0.22	0.10	2.00	2.80	30 x 30
1000	381EL102M160J452	0.12	0.18	0.08	2.20	3.08	25 x 45
1000	381EL102M160K032	0.12	0.18	0.08	2.20	3.08	30 x 35
1200	381EL122M160J052	0.13	0.16	0.08	2.30	3.22	25 x 50
1200	381EL122M160K042	0.13	0.16	0.08	2.30	3.22	30 x 40
1200	381EL122M160A032	0.13	0.16	0.08	2.30	3.22	35 x 35
1500	381EL152M160K452	0.13	0.13	0.06	2.50	3.50	30 x 45
1500	381EL152M160A032	0.13	0.13	0.06	2.50	3.50	35 x 35
1800	381EL182M160K052	0.14	0.12	0.06	2.70	3.78	30 x 50
1800	381EL182M160A042	0.14	0.12	0.06	2.70	3.78	35 x 40
2200	381EL222M160A052	0.14	0.09	0.06	2.90	4.06	35 x 50

# Type 381EL 105 °C Ultra-Long Life Snap-In, Aluminum

More than 100,000 Hours Operation at 65 °C and Rated 105 °C Ripple

Cap. (µF)	Catalog Part Number	DF Max 120 Hz	ESR Max @ 25° C		Ripple Amps @ 105 °C		Nominal Size D x L (mm)
			120 Hz (Ω)	20 kHz (Ω)	120 Hz (A)	20 kHz (A)	
<b>180 Vdc (225 Vdc Surge)</b>							
220	381EL221M180H012	0.12	0.80	0.36	1.00	1.40	22 x 25
270	381EL271M180H012	0.12	0.66	0.30	1.10	1.54	22 x 25
330	381EL331M180H022	0.12	0.54	0.24	1.20	1.68	22 x 30
330	381EL331M180J012	0.12	0.54	0.24	1.20	1.68	25 x 25
390	381EL391M180H022	0.12	0.45	0.20	1.30	1.82	22 x 30
390	381EL391M180J012	0.12	0.45	0.20	1.30	1.82	25 x 25
470	381EL471M180H032	0.12	0.38	0.17	1.40	1.96	22 x 35
470	381EL471M180J022	0.12	0.38	0.17	1.40	1.96	25 x 30
470	381EL471M180K012	0.12	0.38	0.17	1.40	1.96	30 x 25
560	381EL561M180H042	0.12	0.32	0.14	1.50	2.10	22 x 40
560	381EL561M180J032	0.12	0.32	0.14	1.50	2.10	25 x 35
560	381EL561M180K012	0.12	0.32	0.14	1.50	2.10	30 x 25
680	381EL681M180H052	0.12	0.26	0.12	1.70	2.38	22 x 50
680	381EL681M180J042	0.12	0.26	0.12	1.70	2.38	25 x 40
680	381EL681M180K022	0.12	0.26	0.12	1.70	2.38	30 x 30
820	381EL821M180J452	0.12	0.22	0.10	2.00	2.80	25 x 45
820	381EL821M180K032	0.13	0.23	0.11	2.00	2.80	30 x 35
820	381EL821M180A022	0.13	0.23	0.11	2.00	2.80	35 x 30
1000	381EL102M180K042	0.13	0.19	0.10	2.20	3.08	30 x 40
1000	381EL102M180A022	0.13	0.19	0.10	2.20	3.08	35 x 30
1200	381EL122M180K452	0.13	0.16	0.08	2.30	3.22	30 x 45
1200	381EL122M180A032	0.14	0.17	0.09	2.30	3.22	35 x 35
1500	381EL152M180K052	0.14	0.14	0.07	2.50	3.50	30 x 50
1500	381EL152M180A042	0.14	0.14	0.07	2.50	3.50	35 x 40
2200	381EL222M180A052	0.14	0.09	0.07	2.90	4.06	35 x 50
<b>200 Vdc (250 Vdc Surge)</b>							
220	381EL221M200H012	0.12	0.80	0.36	1.00	1.40	22 x 25
270	381EL271M200H022	0.12	0.66	0.30	1.10	1.54	22 x 30
270	381EL271M200J012	0.12	0.66	0.30	1.10	1.54	25 x 25
330	381EL331M200H022	0.12	0.54	0.24	1.20	1.68	22 x 30
330	381EL331M200J012	0.12	0.54	0.24	1.20	1.68	25 x 25
390	381EL391M200H032	0.12	0.45	0.20	1.30	1.82	22 x 35
390	381EL391M200J022	0.12	0.45	0.20	1.30	1.82	25 x 30
390	381EL391M200K012	0.12	0.45	0.20	1.30	1.82	30 x 25
470	381EL471M200H042	0.12	0.38	0.17	1.40	1.96	22 x 40
470	381EL471M200J032	0.12	0.38	0.17	1.40	1.96	25 x 35
470	381EL471M200K022	0.12	0.38	0.17	1.40	1.96	30 x 30
560	381EL561M200H452	0.12	0.32	0.14	1.50	2.10	22 x 45
560	381EL561M200J032	0.12	0.32	0.14	1.50	2.10	25 x 35
560	381EL561M200K022	0.12	0.32	0.14	1.50	2.10	30 x 30
680	381EL681M200J042	0.12	0.26	0.12	1.70	2.38	25 x 40
680	381EL681M200K032	0.12	0.26	0.12	1.70	2.38	30 x 35
820	381EL821M200J052	0.12	0.22	0.10	2.00	2.80	25 x 50

Cap. (µF)	Catalog Part Number	DF Max 120 Hz	ESR Max @ 25° C		Ripple Amps @ 105 °C		Nominal Size D x L (mm)
			120 Hz (Ω)	20 kHz (Ω)	120 Hz (A)	20 kHz (A)	
820	381EL821M200K042	0.12	0.22	0.10	2.00	2.80	30 x 40
820	381EL821M200A022	0.12	0.22	0.10	2.00	2.80	35 x 30
1000	381EL102M200K452	0.12	0.18	0.09	2.20	3.08	30 x 45
1000	381EL102M200A032	0.12	0.18	0.09	2.20	3.08	35 x 35
1200	381EL122M200K052	0.13	0.16	0.08	2.30	3.22	30 x 50
1200	381EL122M200A042	0.13	0.16	0.08	2.30	3.22	35 x 40
1500	381EL152M200A052	0.13	0.13	0.06	2.50	3.50	35 x 50
<b>250 Vdc (300 Vdc Surge)</b>							
180	381EL181M250H022	0.1	0.82	0.41	0.90	1.26	22 x 30
180	381EL181M250J012	0.1	0.82	0.41	0.90	1.26	25 x 25
220	381EL221M250H022	0.1	0.67	0.34	1.00	1.40	22 x 30
220	381EL221M250J012	0.1	0.67	0.34	1.00	1.40	25 x 25
270	381EL271M250H032	0.1	0.55	0.27	1.10	1.54	22 x 35
270	381EL271M250J022	0.1	0.55	0.27	1.10	1.54	25 x 30
270	381EL271M250K012	0.1	0.55	0.27	1.10	1.54	30 x 25
330	381EL331M250H042	0.1	0.45	0.22	1.20	1.68	22 x 40
330	381EL331M250J032	0.1	0.45	0.22	1.20	1.68	25 x 35
330	381EL331M250K012	0.1	0.45	0.22	1.20	1.68	30 x 25
390	381EL391M250H452	0.1	0.38	0.19	1.30	1.82	22 x 45
390	381EL391M250J032	0.1	0.38	0.19	1.30	1.82	25 x 35
390	381EL391M250K022	0.1	0.38	0.19	1.30	1.82	30 x 30
470	381EL471M250J452	0.1	0.31	0.16	1.40	1.96	25 x 45
470	381EL471M250K032	0.1	0.31	0.16	1.40	1.96	30 x 35
470	381EL471M250A022	0.1	0.31	0.16	1.40	1.96	35 x 30
560	381EL561M250J052	0.1	0.26	0.13	1.50	2.10	25 x 50
560	381EL561M250K032	0.1	0.26	0.13	1.50	2.10	30 x 35
560	381EL561M250A022	0.1	0.26	0.13	1.50	2.10	35 x 30
680	381EL681M250A032	0.1	0.22	0.12	1.70	2.38	35 x 35
820	381EL821M250K052	0.1	0.18	0.10	2.00	2.80	30 x 50
820	381EL821M250A042	0.1	0.18	0.10	2.00	2.80	35 x 40
1000	381EL102M250A452	0.12	0.18	0.10	2.20	3.08	35 x 45
1200	381EL122M250A052	0.12	0.15	0.09	2.30	3.22	35 x 50
<b>315 Vdc (365 Vdc Surge)</b>							
82	381EL820M315H012	0.1	1.80	0.90	0.64	0.90	22 x 25
100	381EL101M315H022	0.1	1.47	0.74	0.69	0.97	22 x 30
120	381EL121M315H022	0.1	1.23	0.61	0.75	1.05	22 x 30
120	381EL121M315J012	0.1	1.23	0.61	0.75	1.05	25 x 25
150	381EL151M315H032	0.1	0.98	0.49	0.82	1.15	22 x 35
150	381EL151M315J022	0.1	0.98	0.49	0.82	1.15	25 x 30
150	381EL151M315K012	0.1	0.98	0.49	0.82	1.15	30 x 25
180	381EL181M315H042	0.1	0.82	0.41	0.90	1.26	22 x 40
180	381EL181M315J032	0.1	0.82	0.41	0.90	1.26	25 x 35
180	381EL181M315K012	0.1	0.82	0.41	0.90	1.26	30 x 25
220	381EL221M315H452	0.11	0.74	0.37	1.00	1.40	22 x 45

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More than 100,000 Hours Operation at 65 °C and Rated 105 °C Ripple

Cap. (µF)	Catalog Part Number	DF Max 120 Hz	ESR Max @ 25° C		Ripple Amps @ 105 °C		Nominal Size D x L (mm)
			120 Hz (Ω)	20 kHz (Ω)	120 Hz (A)	20 kHz (A)	
220	381EL221M315J042	0.11	0.74	0.37	1.00	1.40	25 x 40
220	381EL221M315K022	0.11	0.74	0.37	1.00	1.40	30 x 30
270	381EL271M315J452	0.11	0.60	0.30	1.10	1.54	25 x 45
270	381EL271M315K032	0.11	0.60	0.30	1.10	1.54	30 x 35
270	381EL271M315A022	0.11	0.60	0.30	1.10	1.54	35 x 30
330	381EL331M315J052	0.11	0.49	0.25	1.20	1.68	25 x 50
330	381EL331M315K042	0.11	0.49	0.25	1.20	1.68	30 x 40
330	381EL331M315A022	0.11	0.49	0.25	1.20	1.68	35 x 30
390	381EL391M315K452	0.12	0.45	0.23	1.30	1.82	30 x 45
390	381EL391M315A032	0.12	0.45	0.23	1.30	1.82	35 x 35
470	381EL471M315K052	0.12	0.38	0.19	1.40	1.96	30 x 50
470	381EL471M315A042	0.12	0.38	0.19	1.40	1.96	35 x 40
560	381EL561M315A452	0.12	0.32	0.16	1.50	2.10	35 x 45
680	381EL681M315A052	0.12	0.26	0.14	1.70	2.38	35 x 50
<b>350 Vdc (400 Vdc Surge)</b>							
82	381EL820M350H012	0.1	1.80	0.90	0.64	0.90	22 x 25
100	381EL101M350H022	0.1	1.47	0.74	0.69	0.97	22 x 30
100	381EL101M350J012	0.1	1.47	0.74	0.69	0.97	25 x 25
120	381EL121M350H032	0.1	1.23	0.61	0.75	1.05	22 x 35
120	381EL121M350J022	0.1	1.23	0.61	0.75	1.05	25 x 30
150	381EL151M350H042	0.1	0.98	0.49	0.82	1.15	22 x 40
150	381EL151M350J022	0.1	0.98	0.49	0.82	1.15	25 x 30
150	381EL151M350K012	0.1	0.98	0.49	0.82	1.15	30 x 25
180	381EL181M350H452	0.1	0.82	0.41	0.90	1.26	22 x 45
180	381EL181M350J032	0.1	0.82	0.41	0.90	1.26	25 x 35
180	381EL181M350K022	0.1	0.82	0.41	0.90	1.26	30 x 30
220	381EL221M350H052	0.11	0.74	0.37	1.00	1.40	22 x 50
220	381EL221M350J042	0.11	0.74	0.37	1.00	1.40	25 x 40
220	381EL221M350K022	0.11	0.74	0.37	1.00	1.40	30 x 30
270	381EL271M350J052	0.11	0.60	0.30	1.10	1.54	25 x 50
270	381EL271M350K032	0.11	0.60	0.30	1.10	1.54	30 x 35
270	381EL271M350A022	0.11	0.60	0.30	1.10	1.54	35 x 30
330	381EL331M350K452	0.11	0.49	0.25	1.20	1.68	30 x 45
330	381EL331M350A032	0.11	0.49	0.25	1.20	1.68	35 x 35
390	381EL391M350K052	0.12	0.45	0.23	1.30	1.82	30 x 50
390	381EL391M350A042	0.12	0.45	0.23	1.30	1.82	35 x 40
470	381EL471M350A042	0.12	0.38	0.19	1.40	1.96	35 x 40
560	381EL561M350A052	0.12	0.32	0.16	1.50	2.10	35 x 50
<b>400 Vdc (450 Vdc Surge)</b>							
56	381EL560M400H012	0.1	2.63	0.92	0.51	0.71	22 x 25
68	381EL680M400H022	0.1	2.17	0.76	0.56	0.78	22 x 30
68	381EL680M400J012	0.1	2.17	0.76	0.56	0.78	25 x 25
82	381EL820M400H032	0.1	1.80	0.63	0.64	0.90	22 x 35
82	381EL820M400J012	0.1	1.80	0.63	0.64	0.90	25 x 25

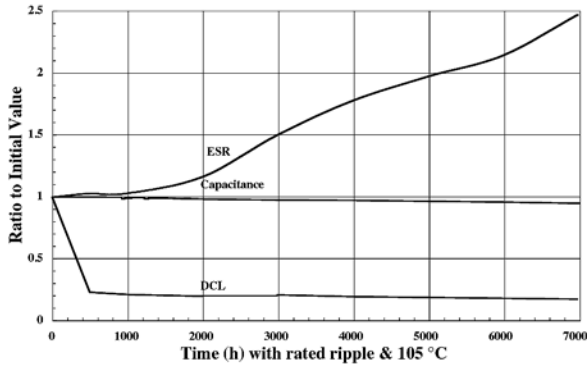
Cap. (µF)	Catalog Part Number	DF Max 120 Hz	ESR Max @ 25° C		Ripple Amps @ 105 °C		Nominal Size D x L (mm)
			120 Hz (Ω)	20 kHz (Ω)	120 Hz (A)	20 kHz (A)	
100	381EL101M400H032	0.1	1.47	0.52	0.69	0.97	22 x 35
100	381EL101M400J022	0.1	1.47	0.52	0.69	0.97	25 x 30
120	381EL121M400H042	0.1	1.23	0.43	0.75	1.05	22 x 40
120	381EL121M400J032	0.1	1.23	0.43	0.75	1.05	25 x 35
120	381EL121M400K012	0.1	1.23	0.43	0.75	1.05	30 x 25
150	381EL151M400H052	0.1	0.98	0.34	0.82	1.15	22 x 50
150	381EL151M400J042	0.1	0.98	0.34	0.82	1.15	25 x 40
150	381EL151M400K022	0.1	0.98	0.34	0.82	1.15	30 x 30
180	381EL181M400J452	0.1	0.82	0.29	0.90	1.26	25 x 45
180	381EL181M400K032	0.1	0.82	0.29	0.90	1.26	30 x 35
180	381EL181M400A022	0.1	0.82	0.29	0.90	1.26	35 x 25
220	381EL221M400J052	0.1	0.67	0.23	1.00	1.40	25 x 50
220	381EL221M400K042	0.1	0.67	0.23	1.00	1.40	30 x 40
220	381EL221M400A022	0.1	0.67	0.23	1.00	1.40	35 x 30
270	381EL271M400K452	0.1	0.55	0.19	1.10	1.54	30 x 45
270	381EL271M400A032	0.1	0.55	0.19	1.10	1.54	35 x 35
330	381EL331M400K052	0.1	0.45	0.18	1.20	1.68	30 x 50
330	381EL331M400A042	0.1	0.45	0.18	1.20	1.68	35 x 40
390	381EL391M400A452	0.1	0.38	0.15	1.30	1.82	35 x 45
470	381EL471M400A052	0.1	0.31	0.13	1.40	1.96	35 x 50
<b>450 Vdc (500 Vdc Surge)</b>							
39	381EL390M450H012	0.1	3.78	1.32	0.37	0.52	22 x 25
47	381EL470M450H022	0.1	3.14	1.10	0.40	0.56	22 x 30
56	381EL560M450H032	0.1	2.63	0.92	0.47	0.66	22 x 35
56	381EL560M450J012	0.1	2.63	0.92	0.47	0.66	25 x 25
68	381EL680M450H042	0.1	2.17	0.76	0.53	0.74	22 x 40
68	381EL680M450J022	0.1	2.17	0.76	0.53	0.74	25 x 30
82	381EL820M450H452	0.1	1.80	0.63	0.56	0.78	22 x 45
82	381EL820M450J032	0.1	1.80	0.63	0.56	0.78	25 x 35
82	381EL820M450K012	0.1	1.80	0.63	0.56	0.78	30 x 25
100	381EL101M450H052	0.1	1.47	0.52	0.64	0.90	22 x 50
100	381EL101M450J042	0.1	1.47	0.52	0.64	0.90	25 x 40
100	381EL101M450K022	0.1	1.47	0.52	0.64	0.90	30 x 30
120	381EL121M450J452	0.1	1.23	0.43	0.72	1.01	25 x 45
120	381EL121M450K022	0.1	1.23	0.43	0.72	1.01	30 x 30
150	381EL151M450J052	0.1	0.98	0.34	0.79	1.11	25 x 50
150	381EL151M450K042	0.1	0.98	0.34	0.79	1.11	30 x 40
150	381EL151M450A022	0.1	0.98	0.34	0.79	1.11	35 x 30
180	381EL181M450K452	0.1	0.82	0.29	0.87	1.22	30 x 45
180	381EL181M450A032	0.1	0.82	0.29	0.87	1.22	35 x 35
220	381EL221M450K052	0.1	0.67	0.23	1.00	1.40	30 x 50
220	381EL221M450A042	0.1	0.67	0.23	1.00	1.40	35 x 40
270	381EL271M450A452	0.1	0.55	0.19	1.19	1.67	35 x 45
330	381EL331M450A052	0.1	0.45	0.16	1.38	1.93	35 x 50

# Type 381EL 105 °C Ultra-Long Life Snap-In, Aluminum

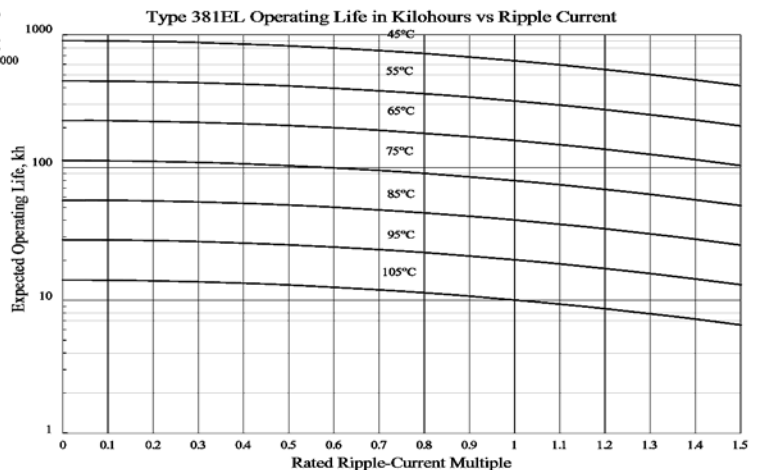
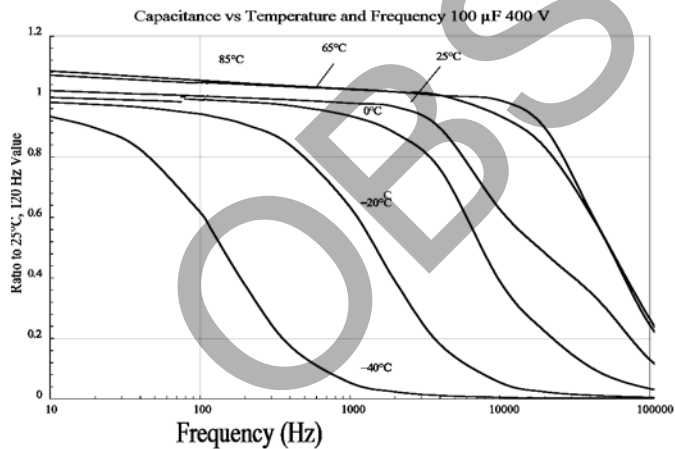
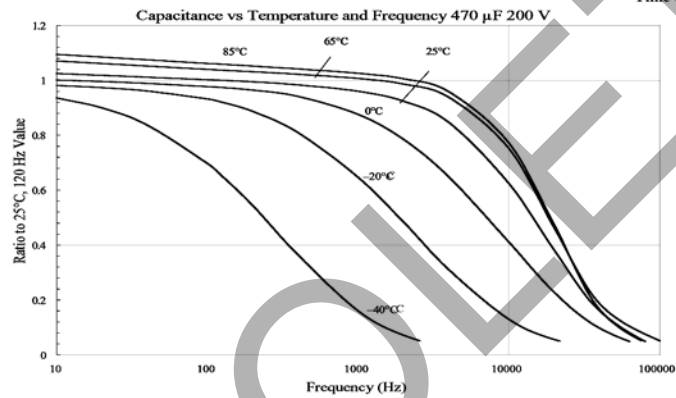
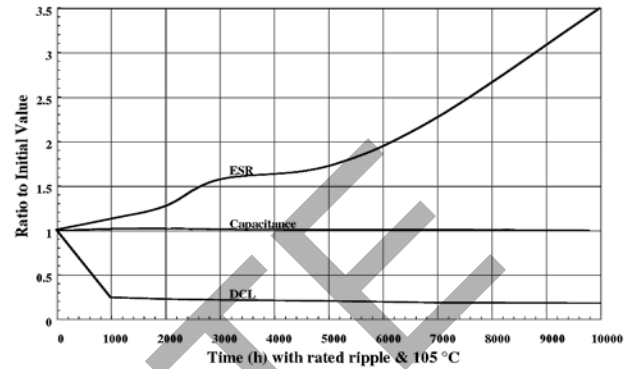
More than 100,000 Hours Operation at 65 °C and Rated 105 °C Ripple

## Typical Performance Curves

Life Test Data 1000  $\mu$ F 200 V  
Capacitance, DF, Leakage Current  
Load Life 1000  $\mu$ F 200 V



Life Test Data 180  $\mu$ F 450 V  
Capacitance, DF, Leakage Current  
Load Life 180  $\mu$ F 450 V



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OBSOLETE