

# +85°C Large Tubular Axial Lead Aluminum Capacitors

## Features-

- General Purpose
- High Capacitance Ratings
- Rugged Construction
- Strobe Designs Available

## General Specifications-

### Operating Temperature:

-40 to +85°C

### Voltage Range:

6.3 – 450 VDC

### Capacitance Range:

15μF to 220,000μF

### Capacitance Tolerance:

-10%/+50% (Std.)

### Case Size Range:

0.750" X 1.125" – 1.375" X 4.125"

### Termination:

Axial Leads.

### Life Validation Test: 1,000hrs @ +85°C

Δ CAP ≤ 15% From initial measurement.

Δ ESR ≤ 1.50X Initial specified limit.

Δ DCL ≤ Initial specified limit.

### Shelf Test: 500hrs @ +85°C

Δ CAP ≤ 10% From initial measurement.

Δ ESR ≤ 1.30X Initial specified limit.

Δ DCL ≤ 2.0X Initial specified limit.

### DC Leakage Current: (After 5 min. charge)

$$I = k\sqrt{CV}$$

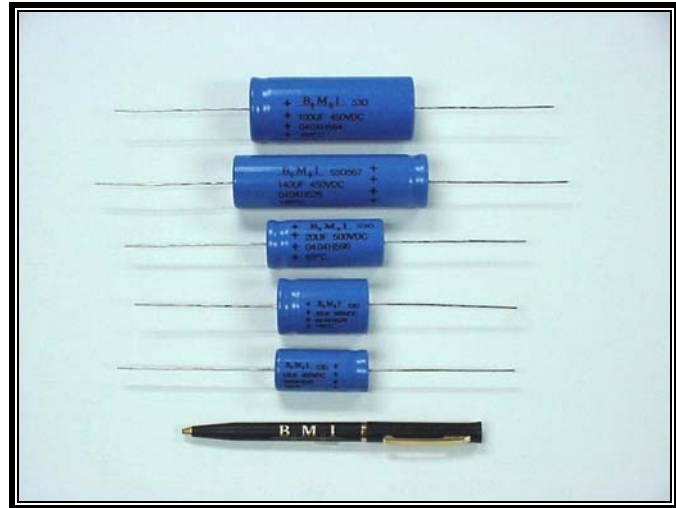
$$k = 6.0@+25^{\circ}\text{C}; k = 36.0@+85^{\circ}\text{C}$$

Where:

I is in μA

C is in μF

V is in Volts



## Ripple Current Multipliers:

Ambient Temperature:

≤+45°C	+65°C	+75°C	+85°C
2.0	1.7	1.4	1.0

Frequency (Hz):

VDC	50–60	300–400	>1,000
0 – 50	0.85	1.10	1.15
51 – 299	0.85	1.15	1.20
≥ 300	0.80	1.30	1.40

## Low Temperature Performance:

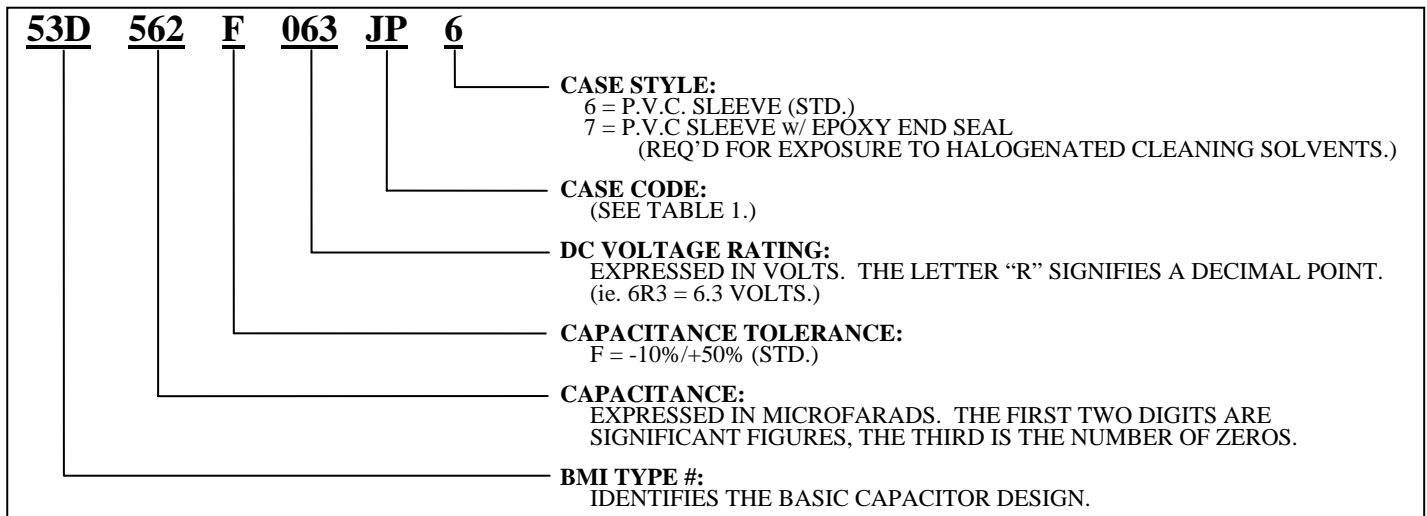
Capacitance Ratio  $C^{-40^{\circ}\text{C}}/C^{+25^{\circ}\text{C}}$  min. @ 120Hz.

Rated Voltage (VDC)	Capacitance Remaining
0 – 40	35%
41 – 63	45%
64 – 100	60%
101 – 350	20%
351 – 450	15%

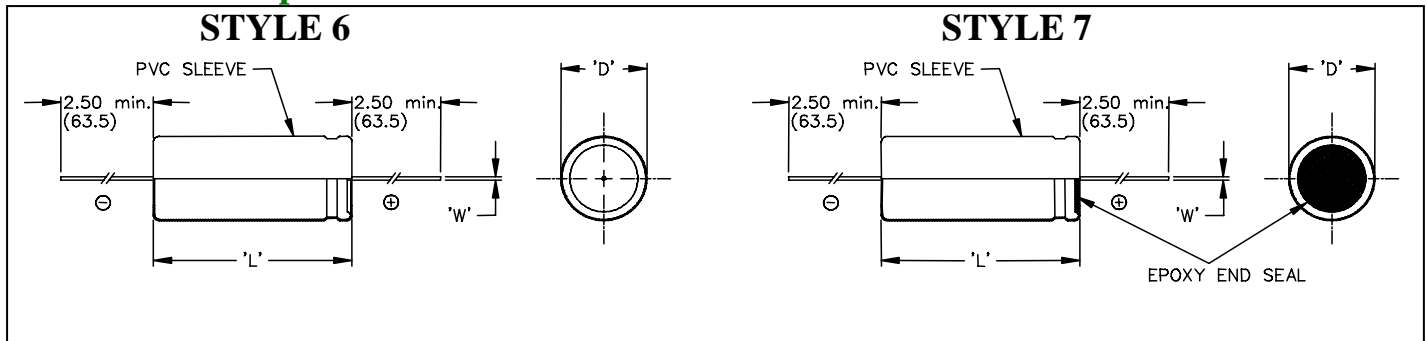
ESR Ratio  $\text{ESR}^{-40^{\circ}\text{C}}/\text{ESR}^{+25^{\circ}\text{C}}$  min. @ 120Hz

Rated Voltage (VDC)	Multiplier
0 – 40	60X
41 – 63	55X
64 – 100	65X
101 – 350	180X
351 – 450	190X

## PART NUMBER BREAK-DOWN:



## Axial-Leaded Capacitor Dimensions



**Table 1. Case Dimensions mm(in.)**

CASE CODE	NOMINAL		STYLE 6		STYLE 7 (w/epoxy end-seal)		WIRE GAUGE 'W'
	'D'	'L'	'D' ± 0.020	'L' ± 0.062	'D' ± 0.020	'L' ± 0.062	
GE	19.05 (0.750)	28.58 (1.125)	19.30 (0.760)	28.98 (1.141)	19.30 (0.760)	30.15 (1.187)	No. 18 AWG (0.040")
GJ	19.05 (0.750)	41.28 (1.625)	19.30 (0.760)	41.68 (1.641)	19.30 (0.760)	42.85 (1.687)	No. 18 AWG (0.040")
GL	19.05 (0.750)	53.98 (2.125)	19.30 (0.760)	54.38 (2.141)	19.30 (0.760)	55.55 (2.187)	No. 18 AWG (0.040")
GP	19.05 (0.750)	66.68 (2.625)	19.30 (0.760)	67.08 (2.641)	19.30 (0.760)	68.25 (2.687)	No. 18 AWG (0.040")
GS	19.05 (0.750)	79.38 (3.125)	19.30 (0.760)	79.78 (3.141)	19.30 (0.760)	80.95 (3.187)	No. 18 AWG (0.040")
GT	19.05 (0.750)	92.08 (3.625)	19.30 (0.760)	92.48 (3.641)	19.30 (0.760)	93.65 (3.687)	No. 18 AWG (0.040")
HE	22.23 (0.875)	28.58 (1.125)	22.50 (0.885)	28.98 (1.141)	22.50 (0.885)	30.15 (1.187)	No. 18 AWG (0.040")
HJ	22.23 (0.875)	41.28 (1.625)	22.50 (0.885)	41.68 (1.641)	22.50 (0.885)	42.85 (1.687)	No. 18 AWG (0.040")
HL	22.23 (0.875)	53.98 (2.125)	22.50 (0.885)	54.38 (2.141)	22.50 (0.885)	55.55 (2.187)	No. 18 AWG (0.040")
HP	22.23 (0.875)	66.68 (2.625)	22.50 (0.885)	67.08 (2.641)	22.50 (0.885)	68.25 (2.687)	No. 18 AWG (0.040")
HS	22.23 (0.875)	79.38 (3.125)	22.50 (0.885)	79.78 (3.141)	22.50 (0.885)	80.95 (3.187)	No. 18 AWG (0.040")
HT	22.23 (0.875)	92.08 (3.625)	22.50 (0.885)	92.48 (3.641)	22.50 (0.885)	93.65 (3.687)	No. 18 AWG (0.040")
JE	25.40 (1.000)	28.58 (1.125)	25.65 (1.010)	28.98 (1.141)	25.65 (1.010)	30.15 (1.187)	No. 18 AWG (0.040")
JJ	25.40 (1.000)	41.28 (1.625)	25.65 (1.010)	41.68 (1.641)	25.65 (1.010)	42.85 (1.687)	No. 18 AWG (0.040")
JL	25.40 (1.000)	53.98 (2.125)	25.65 (1.010)	54.38 (2.141)	25.65 (1.010)	55.55 (2.187)	No. 18 AWG (0.040")
JP	25.40 (1.000)	66.68 (2.625)	25.65 (1.010)	67.08 (2.641)	25.65 (1.010)	68.25 (2.687)	No. 18 AWG (0.040")
JS	25.40 (1.000)	79.38 (3.125)	25.65 (1.010)	79.78 (3.141)	25.65 (1.010)	80.95 (3.187)	No. 18 AWG (0.040")
JT	25.40 (1.000)	92.08 (3.625)	25.65 (1.010)	92.48 (3.641)	25.65 (1.010)	93.65 (3.687)	No. 18 AWG (0.040")
KE	28.58 (1.125)	28.58 (1.125)	28.83 (1.135)	28.98 (1.141)	28.83 (1.135)	30.15 (1.187)	No. 18 AWG (0.040")
KJ	28.58 (1.125)	41.28 (1.625)	28.83 (1.135)	41.68 (1.641)	28.83 (1.135)	42.85 (1.687)	No. 18 AWG (0.040")
KL	28.58 (1.125)	53.98 (2.125)	28.83 (1.135)	54.38 (2.141)	28.83 (1.135)	55.55 (2.187)	No. 18 AWG (0.040")
KP	28.58 (1.125)	66.68 (2.625)	28.83 (1.135)	67.08 (2.641)	28.83 (1.135)	68.25 (2.687)	No. 18 AWG (0.040")
KS	28.58 (1.125)	79.38 (3.125)	28.83 (1.135)	79.78 (3.141)	28.83 (1.135)	80.95 (3.187)	No. 18 AWG (0.040")
KT	28.58 (1.125)	92.08 (3.625)	28.83 (1.135)	92.48 (3.641)	28.83 (1.135)	93.65 (3.687)	No. 18 AWG (0.040")
KD	28.58 (1.125)	104.78 (4.125)	28.83 (1.135)	105.18 (4.141)	28.83 (1.135)	106.35 (4.187)	No. 18 AWG (0.040")
LE	31.75 (1.250)	28.58 (1.125)	32.00 (1.260)	28.98 (1.141)	32.00 (1.260)	30.15 (1.187)	No. 18 AWG (0.040")
LJ	31.75 (1.250)	41.28 (1.625)	32.00 (1.260)	41.68 (1.641)	32.00 (1.260)	42.85 (1.687)	No. 18 AWG (0.040")
LL	31.75 (1.250)	53.98 (2.125)	32.00 (1.260)	54.38 (2.141)	32.00 (1.260)	55.55 (2.187)	No. 18 AWG (0.040")
LP	31.75 (1.250)	66.68 (2.625)	32.00 (1.260)	67.08 (2.641)	32.00 (1.260)	68.25 (2.687)	No. 18 AWG (0.040")
LS	31.75 (1.250)	79.38 (3.125)	32.00 (1.260)	79.78 (3.141)	32.00 (1.260)	80.95 (3.187)	No. 18 AWG (0.040")
LT	31.75 (1.250)	92.08 (3.625)	32.00 (1.260)	92.48 (3.641)	32.00 (1.260)	93.65 (3.687)	No. 18 AWG (0.040")
LD	31.75 (1.250)	104.78 (4.125)	32.00 (1.260)	105.18 (4.141)	32.00 (1.260)	106.35 (4.187)	No. 18 AWG (0.040")
ME	34.93 (1.375)	28.58 (1.125)	35.18 (1.385)	28.98 (1.141)	35.18 (1.385)	30.15 (1.187)	No. 18 AWG (0.040")
MJ	34.93 (1.375)	41.28 (1.625)	35.18 (1.385)	41.68 (1.641)	35.18 (1.385)	42.85 (1.687)	No. 18 AWG (0.040")
ML	34.93 (1.375)	53.98 (2.125)	35.18 (1.385)	54.38 (2.141)	35.18 (1.385)	55.55 (2.187)	No. 18 AWG (0.040")
MP	34.93 (1.375)	66.68 (2.625)	35.18 (1.385)	67.08 (2.641)	35.18 (1.385)	68.25 (2.687)	No. 18 AWG (0.040")
MS	34.93 (1.375)	79.38 (3.125)	35.18 (1.385)	79.78 (3.141)	35.18 (1.385)	80.95 (3.187)	No. 18 AWG (0.040")
MT	34.93 (1.375)	92.08 (3.625)	35.18 (1.385)	92.48 (3.641)	35.18 (1.385)	93.65 (3.687)	No. 18 AWG (0.040")
MD	34.93 (1.375)	104.78 (4.125)	35.18 (1.385)	105.18 (4.141)	35.18 (1.385)	106.35 (4.187)	No. 18 AWG (0.040")

## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu$ F)	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz (A <sub>rms</sub> )	Current +85°C 20-100kHz (A <sub>rms</sub> )
<b>6.3 VOLTS DC WORKING; 8 VOLTS DC SURGE</b>						
5,600	53D562F6R3GE6	0.750 x 1.125	0.108	0.082	1.41	1.61
18,000	53D183F6R3GJ6	0.750 x 1.625	0.077	0.058	1.92	2.21
33,000	53D333F6R3GP6	0.750 x 2.625	0.042	0.032	3.19	3.64
39,000	53D393F6R3GS6	0.750 x 3.125	0.035	0.026	3.76	4.30
47,000	53D473F6R3GT6	0.750 x 3.625	0.030	0.022	4.34	4.97
8,200	53D822F6R3HE6	0.875 x 1.125	0.080	0.061	1.80	2.05
27,000	53D273F6R3HJ6	0.875 x 1.625	0.054	0.041	2.51	2.87
47,000	53D473F6R3HP6	0.875 x 2.625	0.031	0.023	4.04	4.60
56,000	53D563F6R3HS6	0.875 x 3.125	0.026	0.020	4.74	5.39
68,000	53D683F6R3HT6	0.875 x 3.625	0.023	0.017	5.42	6.15
12,000	53D123F6R3JE6	1.000 x 1.125	0.069	0.053	2.11	2.39
39,000	53D393F6R3JJ6	1.000 x 1.625	0.044	0.033	3.03	3.44
68,000	53D683F6R3JP6	1.000 x 2.625	0.026	0.019	4.80	5.44
82,000	53D823F6R3JS6	1.000 x 3.125	0.022	0.017	5.61	6.32
100,000	53D104F6R3JT6	1.000 x 3.625	0.020	0.015	6.27	7.06
15,000	53D153F6R3KE6	1.125 x 1.125	0.062	0.048	2.41	2.72
47,000	53D473F6R3KJ6	1.125 x 1.625	0.039	0.031	3.45	3.90
82,000	53D823F6R3KP6	1.125 x 2.625	0.023	0.018	5.41	6.11
100,000	53D104F6R3KS6	1.125 x 3.125	0.020	0.016	6.24	7.04
120,000	53D124F6R3KT6	1.125 x 3.625	0.018	0.014	7.08	7.96
150,000	53D154F6R3KD6	1.125 x 4.125	0.016	0.013	7.86	8.81
22,000	53D223F6R3ME6	1.375 x 1.125	0.067	0.054	2.65	2.94
68,000	53D683F6R3MJ6	1.375 x 1.625	0.037	0.030	4.02	4.46
120,000	53D124F6R3MP6	1.375 x 2.625	0.022	0.018	6.23	6.91
150,000	53D154F6R3MS6	1.375 x 3.125	0.018	0.015	7.25	8.01
180,000	53D184F6R3MT6	1.375 x 3.625	0.016	0.013	8.18	9.03
220,000	53D224F6R3MD6	1.375 x 4.125	0.015	0.012	9.06	10.00
<b>10 VOLTS DC WORKING; 12 VOLTS DC SURGE</b>						
4,700	53D472F010GE6	0.750 x 1.125	0.115	0.085	1.36	1.57
12,000	53D123F010GJ6	0.750 x 1.625	0.085	0.063	1.83	2.12
27,000	53D273F010GP6	0.750 x 2.625	0.045	0.033	3.07	3.54
33,000	53D333F010GS6	0.750 x 3.125	0.038	0.028	3.63	4.19
39,000	53D393F010GT6	0.750 x 3.625	0.032	0.024	4.17	4.82
6,800	53D682F010HE6	0.875 x 1.125	0.085	0.063	1.74	2.02
18,000	53D183F010HJ6	0.875 x 1.625	0.060	0.044	2.39	2.75
39,000	53D393F010HP6	0.875 x 2.625	0.033	0.025	3.90	4.49
47,000	53D473F010HS6	0.875 x 3.125	0.028	0.021	4.58	5.25
56,000	53D563F010HT6	0.875 x 3.625	0.024	0.018	5.24	6.00
10,000	53D103F010JE6	1.000 x 1.125	0.072	0.055	2.05	2.36
27,000	53D273F010JJ6	1.000 x 1.625	0.047	0.036	2.91	3.34
47,000	53D473F010JP6	1.000 x 2.625	0.027	0.020	4.66	5.32
68,000	53D683F010JS6	1.000 x 3.125	0.022	0.017	5.46	6.21
82,000	53D823F010JT6	1.000 x 3.625	0.020	0.015	6.21	7.06
12,000	53D123F010KE6	1.125 x 1.125	0.064	0.050	2.36	2.68
33,000	53D333F010KJ6	1.125 x 1.625	0.041	0.032	3.36	3.83
68,000	53D683F010KP6	1.125 x 2.625	0.024	0.019	5.29	6.01
82,000	53D823F010KS6	1.125 x 3.125	0.021	0.016	6.16	6.99
100,000	53D104F010KT6	1.125 x 3.625	0.018	0.014	6.99	7.91
120,000	53D124F010KD6	1.125 x 4.125	0.017	0.013	7.69	8.71

## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu\text{F}$ )	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz ( $\text{A}_{\text{rms}}$ )	Current +85°C 20-100kHz ( $\text{A}_{\text{rms}}$ )
<b>10 VOLTS DC WORKING; 12 VOLTS DC SURGE (CONTINUED)</b>						
18,000	53D183F010ME6	1.375 x 1.125	0.067	0.053	2.64	2.94
56,000	53D563F010MJ6	1.375 x 1.625	0.038	0.030	4.00	4.46
100,000	53D104F010MP6	1.375 x 2.625	0.022	0.018	6.22	6.91
120,000	53D124F010MS6	1.375 x 3.125	0.019	0.015	7.19	8.01
150,000	53D154F010MT6	1.375 x 3.625	0.016	0.013	8.16	9.03
180,000	53D184F010MD6	1.375 x 4.125	0.015	0.012	9.03	10.0
<b>16 VOLTS DC WORKING; 20 VOLTS DC SURGE</b>						
3,900	53D392F016GE6	0.750 x 1.125	0.119	0.085	1.33	1.58
10,000	53D103F016GJ6	0.750 x 1.625	0.082	0.059	1.86	2.19
18,000	53D183F016GP6	0.750 x 2.625	0.046	0.033	3.04	3.57
22,000	53D223F016GS6	0.750 x 3.125	0.038	0.028	3.59	4.21
27,000	53D273F016GT6	0.750 x 3.625	0.033	0.024	4.12	4.82
5,600	53D562F016HE6	0.875 x 1.125	0.088	0.064	1.71	2.00
15,000	53D153F016HJ6	0.875 x 1.625	0.061	0.043	2.37	2.78
27,000	53D273F016HP6	0.875 x 2.625	0.033	0.024	3.87	4.51
33,000	53D333F016HS6	0.875 x 3.125	0.028	0.021	4.53	5.27
39,000	53D292F016HT6	0.875 x 3.625	0.024	0.018	5.22	6.05
8,200	53D822F016JE6	1.000 x 1.125	0.072	0.053	2.07	2.40
18,000	53D183F016JJ6	1.000 x 1.625	0.047	0.034	2.91	3.39
39,000	53D393F016JP6	1.000 x 2.625	0.027	0.020	4.65	5.37
47,000	53D473F016JS6	1.000 x 3.125	0.023	0.017	5.43	6.27
56,000	53D563F016JT6	1.000 x 3.625	0.020	0.015	6.19	7.11
10,000	53D103F016KE6	1.125 x 1.125	0.065	0.049	2.35	2.71
22,000	53D223F016KJ6	1.125 x 1.625	0.042	0.031	3.33	3.86
47,000	53D473F016KP6	1.125 x 2.625	0.024	0.018	5.26	6.06
56,000	53D563F016KS6	1.125 x 3.125	0.021	0.016	6.13	7.04
68,000	53D683F016KT6	1.125 x 3.625	0.018	0.014	6.95	7.96
82,000	53D823F016KD6	1.125 x 4.125	0.017	0.013	7.74	8.81
15,000	53D153F016ME6	1.375 x 1.125	0.068	0.054	2.62	2.94
39,000	53D393F016MJ6	1.375 x 1.625	0.038	0.030	3.97	4.46
68,000	53D683F016MP6	1.375 x 2.625	0.022	0.018	6.18	6.91
82,000	53D823F016MS6	1.375 x 3.125	0.019	0.015	7.17	8.01
100,000	53D104F016MT6	1.375 x 3.625	0.017	0.013	8.09	9.03
120,000	53D124F016MD6	1.375 x 4.125	0.015	0.012	9.00	10.0
<b>25 VOLTS DC WORKING; 35 VOLTS DC SURGE</b>						
1,800	53D182F025GE6	0.750 x 1.125	0.141	0.091	1.23	1.52
3,900	53D392F025GJ6	0.750 x 1.625	0.081	0.053	1.86	2.30
6,800	53D682F025GP6	0.750 x 2.625	0.044	0.029	3.08	3.77
8,200	53D822F025GS6	0.750 x 3.125	0.037	0.025	3.63	4.44
10,000	53D103F025GT6	0.750 x 3.625	0.032	0.022	4.18	5.09
2,700	53D272F025HE6	0.875 x 1.125	0.101	0.067	1.59	1.96
5,600	53D562F025HJ6	0.875 x 1.625	0.059	0.040	2.39	2.92
10,000	53D103F025HP6	0.875 x 2.625	0.033	0.022	3.83	4.71
12,000	53D123F025HS6	0.875 x 3.125	0.028	0.019	4.53	5.46
15,000	53D153F025HT6	0.875 x 3.625	0.025	0.017	5.16	6.19
3,900	53D392F025JE6	1.000 x 1.125	0.081	0.055	1.93	2.35
8,200	53D822F025JJ6	1.000 x 1.625	0.048	0.032	2.87	3.49
15,000	53D153F025JP6	1.000 x 2.625	0.028	0.019	4.55	5.44
18,000	53D183F025JS6	1.000 x 3.125	0.023	0.016	5.42	6.44
22,000	53D223F025JT6	1.000 x 3.625	0.020	0.014	6.14	7.30

## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu\text{F}$ )	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz ( $A_{\text{rms}}$ )	Current +85°C 20-100kHz ( $A_{\text{rms}}$ )
<b>25 VOLTS DC WORKING; 35 VOLTS DC SURGE (CONTINUED)</b>						
4,700	53D472F025KE6	1.125 x 1.125	0.072	0.050	2.23	2.67
10,000	53D103F025KJ6	1.125 x 1.625	0.042	0.029	3.31	3.95
18,000	53D183F025KP6	1.125 x 2.625	0.025	0.017	5.19	6.15
22,000	53D223F025KS6	1.125 x 3.125	0.021	0.015	6.06	7.13
27,000	53D273F025KT6	1.125 x 3.625	0.018	0.013	6.89	8.08
33,000	53D333F025KD6	1.125 x 4.125	0.016	0.012	7.67	8.95
6,800	53D682F025ME6	1.375 x 1.125	0.071	0.055	2.56	2.92
15,000	53D153F025MJ6	1.375 x 1.625	0.041	0.032	3.80	4.32
27,000	53D273F025MP6	1.375 x 2.625	0.024	0.019	5.94	6.72
33,000	53D333F025MS6	1.375 x 3.125	0.020	0.016	6.89	7.81
39,000	53D393F025MT6	1.375 x 3.625	0.018	0.014	7.82	8.84
47,000	53D473F025MD6	1.375 x 4.125	0.016	0.013	8.67	9.76
<b>35 VOLTS DC WORKING; 45 VOLTS DC SURGE</b>						
1,500	53D152F035GE6	0.750 x 1.125	0.152	0.092	1.18	1.52
2,700	53D273F035GJ6	0.750 x 1.625	0.086	0.053	1.80	2.31
5,600	53D562F035GP6	0.750 x 2.625	0.048	0.030	2.97	3.76
6,800	53D682F035GS6	0.750 x 3.125	0.040	0.025	3.52	4.44
8,200	53D822F035GT6	0.750 x 3.625	0.034	0.021	4.07	5.11
2,200	53D222F035HE6	0.875 x 1.125	0.109	0.067	1.54	1.95
3,900	53D392F035HJ6	0.875 x 1.625	0.063	0.039	2.32	2.93
6,800	53D682F035HP6	0.875 x 2.625	0.035	0.022	3.78	4.72
10,000	53D103F035HS6	0.875 x 3.125	0.029	0.019	4.45	5.52
12,000	53D123F035HT6	0.875 x 3.625	0.026	0.017	5.06	6.24
3,300	53D332F035JE6	1.000 x 1.125	0.087	0.055	1.87	2.34
5,600	53D562F035JJ6	1.000 x 1.625	0.050	0.032	2.82	3.50
10,000	53D103F035JP6	1.000 x 2.625	0.030	0.019	4.43	5.45
12,000	53D123F035JS6	1.000 x 3.125	0.024	0.016	5.27	6.44
15,000	53D153F035JT6	1.000 x 3.625	0.021	0.014	5.97	7.22
3,900	53D392F035KE6	1.125 x 1.125	0.076	0.050	2.17	2.67
6,800	53D682F035KJ6	1.125 x 1.625	0.044	0.029	3.23	3.95
12,000	53D123F035KP6	1.125 x 2.625	0.026	0.017	5.08	6.15
15,000	53D153F035KS6	1.125 x 3.125	0.022	0.015	5.92	7.13
18,000	53D183F035KT6	1.125 x 3.625	0.019	0.013	6.73	8.05
22,000	53D223F035KD6	1.125 x 4.125	0.017	0.012	7.49	8.95
5,600	53D562F035ME6	1.375 x 1.125	0.073	0.055	2.52	2.92
10,000	53D103F035MJ6	1.375 x 1.625	0.042	0.032	3.75	4.32
18,000	53D183F035MP6	1.375 x 2.625	0.025	0.019	5.86	6.72
22,000	53D223F035MS6	1.375 x 3.125	0.021	0.016	6.83	7.81
27,000	53D273F035MT6	1.375 x 3.625	0.018	0.014	7.73	8.84
33,000	53D333F035MD6	1.375 x 4.125	0.016	0.013	8.61	9.76
<b>50 VOLTS DC WORKING; 70 VOLTS DC SURGE</b>						
1,000	53D102F050GE6	0.750 x 1.125	0.178	0.093	1.09	1.51
1,800	53D182F050GJ6	0.750 x 1.625	0.103	0.054	1.66	2.28
3,300	53D332F050GP6	0.750 x 2.625	0.055	0.030	2.77	3.75
3,900	53D392F050GS6	0.750 x 3.125	0.046	0.025	3.26	4.40
4,700	53D472F050GT6	0.750 x 3.625	0.039	0.022	3.78	5.06
1,500	53D152F050HE6	0.875 x 1.125	0.133	0.071	1.39	1.90
2,700	53D272F050HJ6	0.875 x 1.625	0.072	0.039	2.16	2.92
4,700	53D472F050HP6	0.875 x 2.625	0.040	0.023	3.53	4.69
5,600	53D562F050HS6	0.875 x 3.125	0.033	0.019	4.18	5.49

## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu$ F)	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz (A <sub>rms</sub> )	Current +85°C 20-100kHz (A <sub>rms</sub> )
<b>50 VOLTS DC WORKING; 70 VOLTS DC SURGE (CONTINUED)</b>						
6,800	53D682F050HT6	0.875 x 3.625	0.029	0.017	4.78	6.24
1,800	53D182F050JE6	1.000 x 1.125	0.110	0.056	1.75	2.32
3,900	53D392F050JJ6	1.000 x 1.625	0.058	0.033	2.62	3.46
6,800	53D682F050JP6	1.000 x 2.625	0.032	0.019	4.25	5.50
8,200	53D822F050JS6	1.000 x 3.125	0.027	0.016	4.99	6.42
10,000	53D103F050JT6	1.000 x 3.625	0.024	0.014	5.69	7.30
2,200	53D222F050KE6	1.125 x 1.125	0.086	0.050	2.03	2.65
4,700	53D472F050KJ6	1.125 x 1.625	0.050	0.030	3.04	3.93
8,200	53D822F050KP6	1.125 x 2.625	0.028	0.017	4.85	6.16
10,000	53D103F050KS6	1.125 x 3.125	0.025	0.015	5.59	7.08
12,000	53D123F050KT6	1.125 x 3.625	0.021	0.013	6.38	8.02
15,000	53D153F050KD6	1.125 x 4.125	0.019	0.012	7.16	8.92
3,900	53D392F050ME6	1.375 x 1.125	0.078	0.055	2.46	2.92
6,800	53D682F050MJ6	1.375 x 1.625	0.045	0.032	3.64	4.32
12,000	53D123F050MP6	1.375 x 2.625	0.026	0.019	5.71	6.70
15,000	53D153F050MS6	1.375 x 3.125	0.022	0.016	6.66	7.81
18,000	53D183F050MT6	1.375 x 3.625	0.019	0.014	7.55	8.81
22,000	53D223F050MD6	1.375 x 4.125	0.017	0.013	8.40	9.76
<b>63 VOLTS DC WORKING; 80 VOLTS DC SURGE</b>						
680	53D681F063GE6	0.750 x 1.125	0.188	0.106	1.23	1.63
1,500	53D152F063GJ6	0.750 x 1.625	0.109	0.053	1.61	2.31
2,700	53D273F063GP6	0.750 x 2.625	0.060	0.030	2.64	3.74
3,300	53D332F063GS6	0.750 x 3.125	0.050	0.025	3.14	4.41
3,900	53D392F063GT6	0.750 x 3.625	0.042	0.021	3.66	5.09
1,200	53D122F063HE6	0.875 x 1.125	0.140	0.069	1.36	1.93
2,200	53D222F063HJ6	0.875 x 1.625	0.078	0.039	2.09	2.94
3,900	53D392F063HP6	0.875 x 2.625	0.044	0.023	3.38	4.69
4,700	53D472F063HS6	0.875 x 3.125	0.036	0.019	4.03	5.50
5,600	53D562F063HT6	0.875 x 3.625	0.031	0.017	4.63	6.26
1,500	53D152F063JE6	1.000 x 1.125	0.110	0.057	1.66	2.32
2,700	53D272F063JJ6	1.000 x 1.625	0.063	0.033	2.52	3.47
5,600	53D562F063JP6	1.000 x 2.625	0.035	0.019	4.09	5.50
6,800	53D682F063JS6	1.000 x 3.125	0.029	0.016	4.83	6.42
8,200	53D822F063JT6	1.000 x 3.625	0.025	0.014	5.52	7.30
1,800	53D182F063KE6	1.125 x 1.125	0.094	0.051	1.95	2.64
3,900	53D392F063KJ6	1.125 x 1.625	0.053	0.029	2.94	3.94
6,800	53D682F063KP6	1.125 x 2.625	0.030	0.017	4.70	6.16
8,200	53D822F063KS6	1.125 x 3.125	0.025	0.015	5.51	7.15
10,000	53D103F063KT6	1.125 x 3.625	0.022	0.013	6.25	8.08
12,000	53D123F063KD6	1.125 x 4.125	0.020	0.012	6.91	8.92
2,700	53D272F063ME6	1.375 x 1.125	0.081	0.055	2.40	2.92
5,600	53D562F063MJ6	1.375 x 1.625	0.047	0.032	3.57	4.32
10,000	53D103F063MP6	1.375 x 2.625	0.027	0.019	5.62	6.70
12,000	53D123F063MS6	1.375 x 3.125	0.023	0.016	6.54	7.81
15,000	53D153F063MT6	1.375 x 3.625	0.020	0.014	7.44	8.81
18,000	53D183F063MD6	1.375 x 4.125	0.018	0.013	8.28	9.76
<b>100 VOLTS DC WORKING; 135 VOLTS DC SURGE</b>						
270	53D271F100GE6	0.750 x 1.125	0.452	0.127	0.69	1.05
470	53D471F100GJ6	0.750 x 1.625	0.250	0.107	1.06	1.62
1,000	53D102F100GP6	0.750 x 2.625	0.132	0.058	1.79	2.70

## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu\text{F}$ )	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz ( $A_{\text{rms}}$ )	Current +85°C 20-100kHz ( $A_{\text{rms}}$ )
<b>100 VOLTS DC WORKING; 135 VOLTS DC SURGE (CONTINUED)</b>						
1,200	53D122F100GS6	0.750 x 3.125	0.112	0.049	2.09	3.16
1,500	53D152F100GT6	0.750 x 3.625	0.096	0.042	2.43	3.64
390	53D391F100HE6	0.875 x 1.125	0.312	0.135	0.91	1.38
680	53D681F100HJ6	0.875 x 1.625	0.171	0.075	1.41	2.13
1,500	53D152F100HP6	0.875 x 2.625	0.091	0.041	2.34	3.49
1,800	53D182F100HS6	0.875 x 3.125	0.076	0.034	2.77	4.11
2,200	53D222F100HT6	0.875 x 3.625	0.065	0.030	3.19	1.71
560	53D561F100JE6	1.000 x 1.125	0.235	0.104	1.14	1.71
1,000	53D102F100JJ6	1.000 x 1.625	0.131	0.059	1.75	2.60
1,800	53D182F100JP6	1.000 x 2.625	0.071	0.033	2.88	4.21
2,200	53D222F100JS6	1.000 x 3.125	0.059	0.028	3.40	4.93
2,700	53D272F100JT6	1.000 x 3.625	0.049	0.024	3.96	5.69
680	53D681F100KE6	1.125 x 1.125	0.192	0.088	1.36	2.01
1,200	53D122F100KJ6	1.125 x 1.625	0.112	0.052	2.03	2.98
2,200	53D222F100KP6	1.125 x 2.625	0.059	0.028	3.38	4.85
2,700	53D272F100KS6	1.125 x 3.125	0.048	0.023	4.02	5.72
3,300	53D332F100KT6	1.125 x 3.625	0.042	0.021	4.60	6.49
3,900	53D392F100KD6	1.125 x 4.125	0.036	0.018	5.20	7.31
1,000	53D102F100ME6	1.375 x 1.125	0.148	0.073	1.78	2.53
1,800	53D182F100MJ6	1.375 x 1.625	0.081	0.041	2.71	3.81
3,900	53D392F100MP6	1.375 x 2.625	0.045	0.023	4.36	5.99
4,700	53D472F100MS6	1.375 x 3.125	0.037	0.020	5.15	7.01
5,600	53D562F100MT6	1.375 x 3.625	0.032	0.017	5.88	7.94
6,800	53D682F100MD6	1.375 x 4.125	0.028	0.015	6.62	8.89
<b>200 VOLTS DC WORKING; 250 VOLTS DC SURGE</b>						
68	53D680F200GE6	0.750 x 1.125	1.661	0.580	0.36	0.60
120	53D121F200GJ6	0.750 x 1.625	0.915	0.321	0.56	0.94
220	53D221F200GP6	0.750 x 2.625	0.454	0.161	0.97	1.62
280	53D281F200GS6	0.750 x 3.125	0.378	0.134	1.14	1.92
330	53D331F200GT6	0.750 x 3.625	0.314	0.112	1.34	2.25
100	53D101F200HE6	0.875 x 1.125	1.110	0.391	0.48	0.81
180	53D181F200HJ6	0.875 x 1.625	0.579	0.205	0.77	1.29
330	53D331F200HP6	0.875 x 2.625	0.307	0.110	1.28	2.14
390	53D391F200HS6	0.875 x 3.125	0.249	0.090	1.53	2.56
470	53D471F200HT6	0.875 x 3.625	0.210	0.076	1.79	2.96
150	53D151F200JE6	1.000 x 1.125	0.804	0.286	0.62	1.03
270	53D271F200JJ6	1.000 x 1.625	0.426	0.153	0.97	1.62
470	53D471F200JP6	1.000 x 2.625	0.228	0.083	1.61	2.66
680	53D681F200JS6	1.000 x 3.125	0.183	0.067	1.93	3.18
820	53D821F200JT6	1.000 x 3.625	0.154	0.057	2.24	3.68
180	53D181F200KE6	1.125 x 1.125	0.649	0.234	0.74	1.24
330	53D331F200KJ6	1.125 x 1.625	0.338	0.123	1.17	1.94
560	53D561F200KP6	1.125 x 2.625	0.182	0.067	1.92	3.16
680	53D681F200KS6	1.125 x 3.125	0.146	0.055	2.31	3.76
1,000	53D102F200KT6	1.125 x 3.625	0.124	0.047	2.67	4.34
1,200	53D122F200KD6	1.125 x 4.125	0.107	0.041	3.04	4.92
270	53D271F200ME6	1.375 x 1.125	0.455	0.169	1.02	1.66
470	53D471F200MJ6	1.375 x 1.625	0.234	0.089	1.60	2.59
820	53D821F200MP6	1.375 x 2.625	0.125	0.049	2.62	4.19



## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu\text{F}$ )	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz ( $\text{A}_{\text{rms}}$ )	Current +85°C 20-100kHz ( $\text{A}_{\text{rms}}$ )
<b>200 VOLTS DC WORKING; 250 VOLTS DC SURGE (CONTINUED)</b>						
1,000	53D102F200MS6	1.375 x 3.125	0.101	0.040	3.11	4.95
1,200	53D122F200MT6	1.375 x 3.625	0.090	0.036	3.51	5.72
1,800	53D182F200MD6	1.375 x 4.125	0.077	0.031	4.01	6.32
<b>250 VOLTS DC WORKING; 300 VOLTS DC SURGE</b>						
56	53D560F250GE6	0.750 x 1.125	1.959	0.636	0.33	0.58
100	53D101F250GJ6	0.750 x 1.625	1.015	0.331	0.53	0.92
180	53D181F250GP6	0.750 x 2.625	0.541	0.178	0.89	1.54
220	53D221F250GS6	0.750 x 3.125	0.433	0.143	1.07	1.86
270	53D271F250GT6	0.750 x 3.625	0.361	0.119	1.25	2.17
82	53D820F250HE6	0.875 x 1.125	1.299	0.425	0.45	0.78
150	53D151F250HJ6	0.875 x 1.625	0.733	0.241	0.68	1.19
270	53D271F250HP6	0.875 x 2.625	0.365	0.121	1.18	2.04
330	53D331F250HS6	0.875 x 3.125	0.292	0.098	1.42	2.45
390	53D391F250HT6	0.875 x 3.625	0.244	0.082	1.66	2.85
120	53D121F250JE6	1.000 x 1.125	0.945	0.312	0.57	0.99
220	53D221F250JJ6	1.000 x 1.625	0.523	0.174	0.88	1.52
390	53D391F250JP6	1.000 x 2.625	0.268	0.090	1.48	2.55
470	53D471F250JS6	1.000 x 3.125	0.216	0.074	1.78	3.04
560	53D561F250JT6	1.000 x 3.625	0.182	0.062	2.07	3.53
150	53D151F250KE6	1.125 x 1.125	0.770	0.274	0.68	0.45
270	53D271F250KJ6	1.125 x 1.625	0.408	0.137	1.07	1.83
470	53D471F250KP6	1.125 x 2.625	0.214	0.073	1.78	3.03
560	53D561F250KS6	1.125 x 3.125	0.170	0.059	2.14	3.63
820	53D821F250KT6	1.125 x 3.625	0.143	0.050	2.48	4.19
1,000	53D102F250KD6	1.125 x 4.125	0.124	0.044	2.82	4.74
220	53D221F250ME6	1.375 x 1.125	0.525	0.181	0.95	1.61
390	53D391F250MJ6	1.375 x 1.625	0.272	0.095	1.48	2.50
680	53D681F250MP6	1.375 x 2.625	0.145	0.052	2.43	4.09
820	53D821F250MS6	1.375 x 3.125	0.118	0.043	2.89	4.78
1,000	53D102F250MT6	1.375 x 3.625	0.100	0.037	3.34	5.50
1,500	53D152F250MD6	1.375 x 4.125	0.094	0.034	3.64	6.00
<b>350 VOLTS DC WORKING; 400 VOLTS DC SURGE</b>						
22	53D220F350GE6	0.750 x 1.125	6.680	3.570	0.17	0.24
47	53D470F350GJ6	0.750 x 1.625	3.390	1.810	0.28	0.39
82	53D820F350GP6	0.750 x 2.625	1.710	0.918	0.49	0.68
100	53D101F350GS6	0.750 x 3.125	1.470	0.787	0.58	0.79
120	53D121F350GT6	0.750 x 3.625	1.220	0.655	0.68	0.93
39	53D390F350HE6	0.875 x 1.125	4.180	2.240	0.24	0.34
68	53D680F350HJ6	0.875 x 1.625	2.140	1.150	0.39	0.55
120	53D121F350HP6	0.875 x 2.625	1.140	0.612	0.66	0.91
150	53D151F350HS6	0.875 x 3.125	0.924	0.497	0.79	1.09
180	53D181F350HT6	0.875 x 3.625	0.777	0.418	0.92	1.27
47	53D470F350JE6	1.000 x 1.125	3.170	1.700	0.31	0.42
100	53D101F350JJ6	1.000 x 1.625	1.600	0.860	0.50	0.68
180	53D181F350JP6	1.000 x 2.625	0.828	0.455	0.84	1.15
220	53D221F350JS6	1.000 x 3.125	0.676	0.364	1.00	1.37
270	53D271F350JT6	1.000 x 3.625	0.571	0.308	1.17	1.59
56	53D560F350KE6	1.125 x 1.125	2.510	1.340	0.38	0.52
120	53D121F350KJ6	1.125 x 1.625	1.260	0.678	0.61	0.83
220	53D221F350KP6	1.125 x 2.625	0.680	0.367	1.00	1.36

## STANDARD RATINGS FOR TYPE 53D

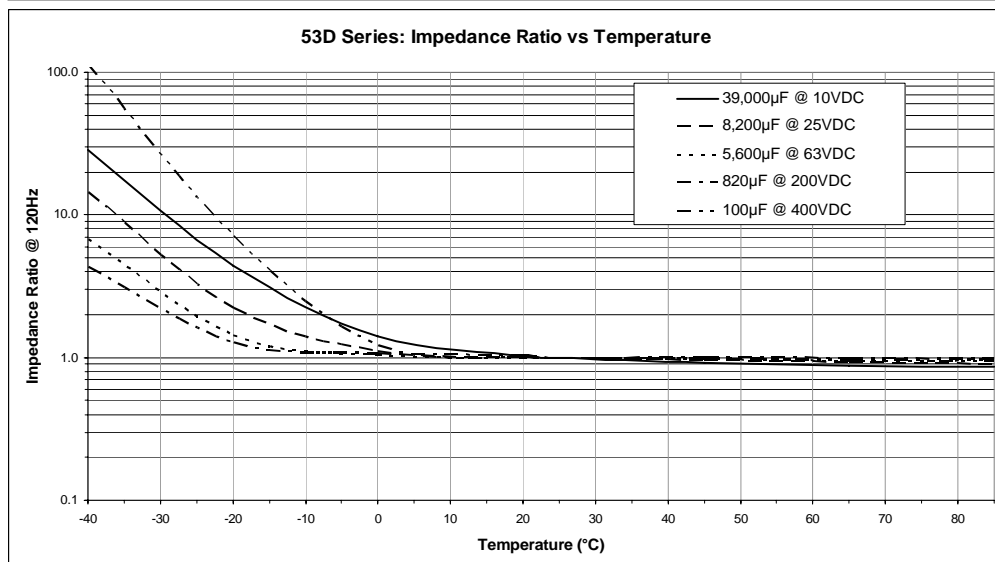
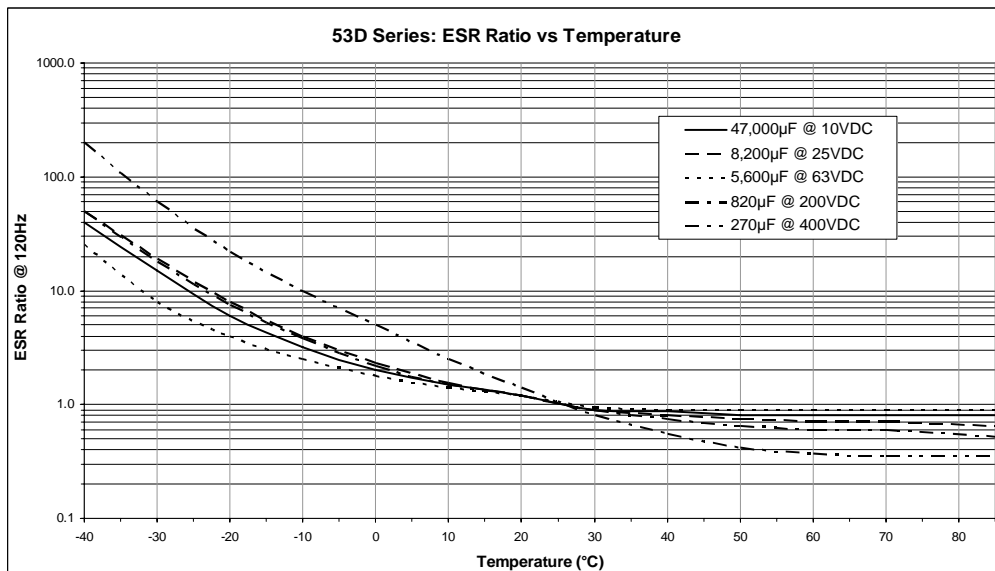
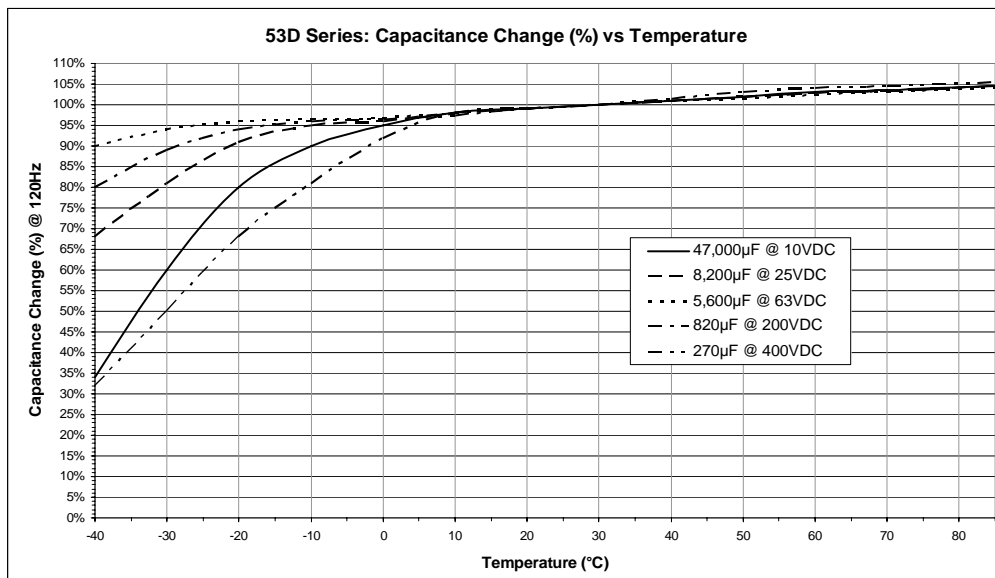
Rated Capacitance ( $\mu$ F)	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR	Max. ESR	Max. Ripple	Max. Ripple
			+25°C 120Hz ( $\Omega$ )	+25°C 20-100kHz ( $\Omega$ )	Current +85°C 120Hz (A <sub>rms</sub> )	Current +85°C 20-100kHz (A <sub>rms</sub> )
<b>350 VOLTS DC WORKING; 400 VOLTS DC SURGE (CONTINUED)</b>						
270	53D271F350KS6	1.125 x 3.125	0.534	0.288	1.21	1.65
330	53D331F350KT6	1.125 x 3.625	0.453	0.245	1.40	1.91
390	53D391F350KD6	1.125 x 4.125	0.384	0.207	1.61	2.19
100	53D101F350ME6	1.375 x 1.125	1.640	0.883	0.53	0.72
180	53D181F350MJ6	1.375 x 1.625	0.848	0.458	0.84	1.14
330	53D331F350MP6	1.375 x 2.625	0.445	0.241	1.39	1.89
390	53D391F350MS6	1.375 x 3.125	0.352	0.192	1.68	2.27
470	53D471F350MT6	1.375 x 3.625	0.297	0.162	1.94	2.63
560	53D561F350MD6	1.375 x 4.125	0.257	0.140	2.20	2.98
<b>400 VOLTS DC WORKING; 450 VOLTS DC SURGE</b>						
18	53D180F400GE6	0.750 x 1.125	9.718	5.384	0.15	0.20
39	53D390F400GJ6	0.750 x 1.625	4.546	2.519	0.25	0.34
68	53D680F400GP6	0.750 x 2.625	2.209	1.225	0.44	0.59
82	53D820F400GS6	0.750 x 3.125	1.756	0.974	0.53	0.71
100	53D101F400GT6	0.750 x 3.625	1.559	0.865	0.60	0.81
27	53D270F400HE6	0.875 x 1.125	6.156	3.413	0.21	0.28
56	53D560F400HJ6	0.875 x 1.625	2.91	1.614	0.34	0.46
120	53D121F400HP6	0.875 x 2.625	1.435	0.796	0.59	0.80
150	53D151F400HS6	0.875 x 3.125	1.210	0.672	0.70	0.94
180	53D181F400HT6	0.875 x 3.625	0.982	0.546	0.83	1.11
39	53D390F400JE6	1.000 x 1.125	4.634	2.570	0.26	0.35
68	53D680F400JJ6	1.000 x 1.625	2.171	1.205	0.43	0.58
150	53D151F400JP6	1.000 x 2.625	1.131	0.628	0.72	0.97
180	53D181F400JS6	1.000 x 3.125	0.878	0.488	0.88	1.18
220	53D221F400JT6	1.000 x 3.625	0.718	0.400	1.04	1.39
47	53D470F400KE6	1.125 x 1.125	3.717	2.063	0.31	0.42
100	53D101F400KJ6	1.125 x 1.625	1.697	0.943	0.52	0.70
180	53D181F400KP6	1.125 x 2.625	0.838	0.466	0.90	1.20
220	53D221F400KS6	1.125 x 3.125	0.691	0.384	1.06	1.43
270	53D271F400KT6	1.125 x 3.625	0.567	0.316	1.25	1.68
330	53D331F400KD6	1.125 x 4.125	0.481	0.268	1.44	1.92
68	53D680F400ME6	1.375 x 1.125	2.408	1.340	0.44	0.59
150	53D151F400MJ6	1.375 x 1.625	1.160	0.647	0.72	0.96
270	53D271F400MP6	1.375 x 2.625	0.574	0.320	1.22	1.64
330	53D331F400MS6	1.375 x 3.125	0.446	0.250	1.49	1.99
390	53D391F400MT6	1.375 x 3.625	0.373	0.209	1.73	2.31
470	53D471F400MD6	1.375 x 4.125	0.321	0.180	1.97	2.63

## STANDARD RATINGS FOR TYPE 53D

Rated Capacitance ( $\mu$ F)	Catalog Number	Nominal Case Size D x L (in.)	Max. ESR +25°C 120Hz ( $\Omega$ )	Max. ESR +25°C 20-100kHz ( $\Omega$ )	Max. Ripple	Max. Ripple
					Current +85°C 120Hz (A <sub>rms</sub> )	Current +85°C 20-100kHz (A <sub>rms</sub> )
<b>450 VOLTS DC WORKING; 500 VOLTS DC SURGE</b>						
15	53D150F450GE6	0.750 x 1.125	10.28	5.483	0.14	0.20
33	53D330F450GJ6	0.750 x 1.625	4.789	2.556	0.24	0.33
68	53D680F450GP6	0.750 x 2.625	2.322	1.240	0.43	0.59
82	53D820F450GS6	0.750 x 3.125	1.848	0.987	0.52	0.71
100	53D101F450GT6	0.750 x 3.625	1.534	0.820	0.61	0.83
22	53D220F450HE6	0.875 x 1.125	6.463	3.450	0.20	0.27
47	53D470F450HJ6	0.875 x 1.625	3.049	1.628	0.33	0.46
100	53D101F450HP6	0.875 x 2.625	1.488	0.796	0.58	0.80
120	53D121F450HS6	0.875 x 3.125	1.224	0.655	0.69	0.95
150	53D151F450HT6	0.875 x 3.625	1.047	0.560	0.80	1.09
33	53D330F450JE6	1.000 x 1.125	4.863	2.598	0.25	0.34
68	53D680F450JJ6	1.000 x 1.625	2.238	1.197	0.42	0.58
120	53D121F450JP6	1.000 x 2.625	1.138	0.609	0.72	0.98
150	53D151F450JS6	1.000 x 3.125	0.922	0.494	0.86	1.18
180	53D181F450JT6	1.000 x 3.625	0.738	0.395	1.03	1.40
39	53D390F450KE6	1.125 x 1.125	3.901	2.086	0.30	0.41
82	53D820F450KJ6	1.125 x 1.625	1.770	0.948	0.51	0.70
180	53D181F450KP6	1.125 x 2.625	0.874	0.468	0.88	1.20
220	53D221F450KS6	1.125 x 3.125	0.706	0.379	1.05	1.44
270	53D271F450KT6	1.125 x 3.625	0.593	0.318	1.22	1.67
330	53D331F450KD6	1.125 x 4.125	0.511	0.274	1.39	1.90
68	53D680F450ME6	1.375 x 1.125	2.495	1.338	0.43	0.59
120	53D121F450MJ6	1.375 x 1.625	1.262	0.677	0.69	0.94
270	53D271F450MP6	1.375 x 2.625	0.559	0.322	1.20	1.63
330	53D331F450MS6	1.375 x 3.125	0.468	0.252	1.45	1.98
390	53D391F450MT6	1.375 x 3.625	0.394	0.213	1.68	2.29
470	53D471F450MD6	1.375 x 4.125	0.333	0.180	1.93	2.63

# 53D TYPICAL PERFORMANCE PROFILES

## TEMPERATURE CHARACTERISTICS



# 53D TYPICAL PERFORMANCE PROFILES

## FREQUENCY CHARACTERISTICS

