

# Type 556 105 °C, Computer Grade, Axial Leaded, Aluminum

## 105 °C, Computer Grade



Type 556 capacitors are designed for data processing, telecom and instrumentation applications requiring smaller size with extended temperature range. They have longer life and up to twice the ripple capability of +85 °C capacitors.

### Highlights

- ♦ Small size
- ♦ Extended life
- ♦ Extended temperature
- ♦ Twice ripple capability of +85 °C capacitors
- ♦ Designed for data processing, telecom and instrumentation applications

### Specifications

<b>Operating Temperature Range:</b>	-40 °C to +105 °C
<b>Rated Voltage Range:</b>	6.3 to 450 Vdc
<b>Capacitance:</b>	1.5 $\mu$ F to 6,800 $\mu$ F
<b>Capacitance Tolerance:</b>	$\pm$ 20%
<b>Leakage Current:</b>	3-20 Vdc $0.1 \sqrt{CV} + 2 \mu$ A 25 Vdc & up $0.2 \sqrt{CV} + 2 \mu$ A
<b>Ripple Current:</b>	<b>Ambient Temperature</b>

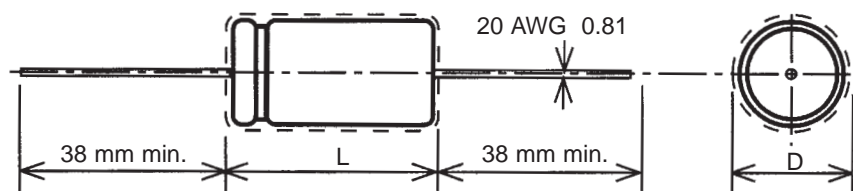
45 °C	55 °C	65 °C	75 °C	85 °C	95 °C	105 °C
1.50	1.46	1.32	1.17	1.00	0.79	0.50

#### Frequency

	50 Hz	60 Hz	120 Hz	360 Hz	1 kHz	5 kHz	10 kHz+
0-60 Vdc	0.85	1.00	1.10	1.15	1.15	1.15	1.15
61-150 Vdc	0.83	1.00	1.15	1.20	1.20	1.20	1.20

<b>Load Life:</b>	4,000 h @ +105 °C, capacitance $\pm$ 20%, ESR 200% of limit, DCL 100% of limit
<b>Shelf Life:</b>	100 h at 105 °C, capacitance, ESR & DCL, initial requirements.
<b>Vibration:</b>	10 to 55 Hz; 0.06" and 10 g max, 2 h. in each plane

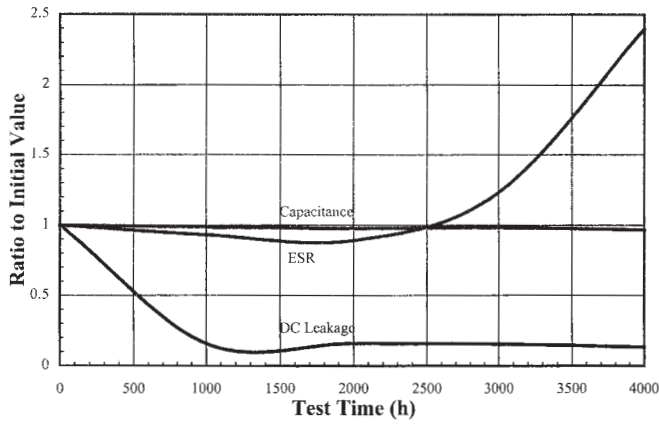
### Outline Drawings



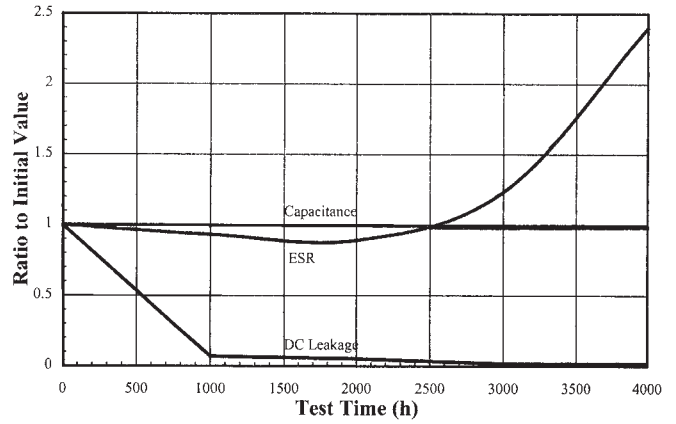
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## Typical Performance Curves

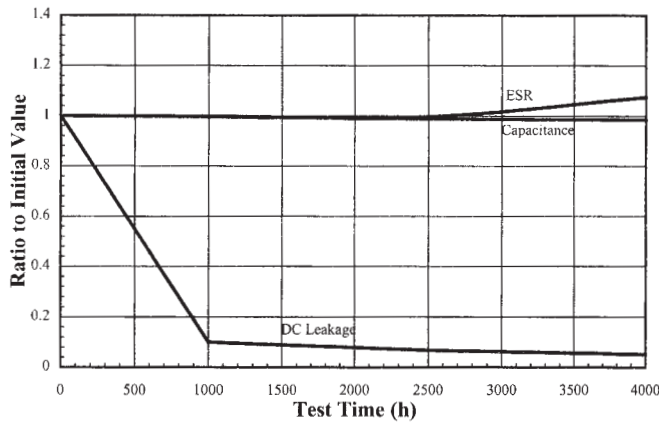
Life Test 150  $\mu$ F 16 V 105 °C, 556151U016DD2



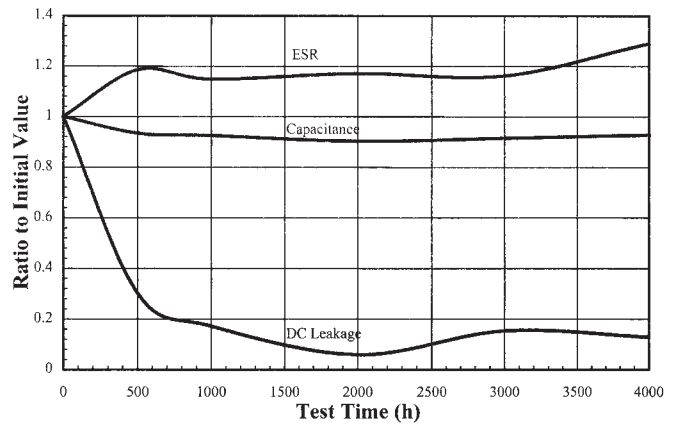
Life Test 50  $\mu$ F 50 V 105 °C, 556500U050DD2



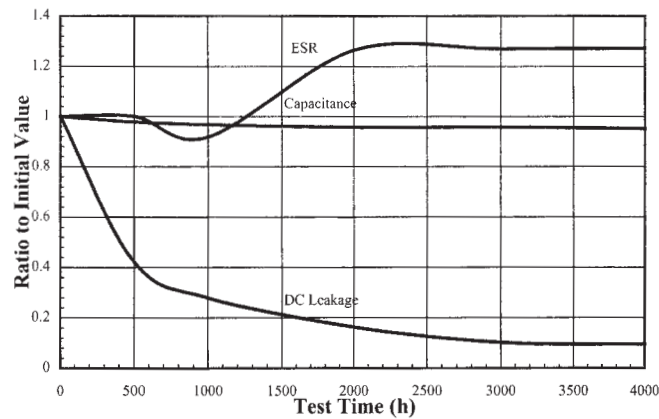
Life Test 10  $\mu$ F 150 V 105 °C, 556100U150DD2



Life Test 15  $\mu$ F 450 V 105 °C, 556150U450FH2



Life Test 22  $\mu$ F 450 V 105 °C, 556220U450LV2



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## Case Dimensions

Case Code	Millimeters					
	Nominal		Insulated		Insulated with Epoxy Endseal	
	Diameter (mm)	Length (mm)	Diameter (max)	Length (max)	Diameter (max)	Length (max)
BA	6.3	13.0	7.0	14.4	7.0	15.9
BB	6.3	17.5	7.0	19.2	7.0	20.7
CB	8.0	17.5	8.6	19.2	8.6	20.7
CC	8.0	20.5	8.6	22.3	8.6	23.8
DC	9.5	20.5	10.2	22.3	10.2	23.8
DD	9.5	24.0	10.2	25.5	10.2	27.0
DF	9.5	32.0	10.2	33.5	10.2	35.0
DH	9.5	38.0	10.2	39.8	10.2	41.3
MF	11.0	32.0	11.8	33.8	11.8	35.0
MH	11.0	38.0	11.8	39.8	13.1	41.3
EH	12.5	38.0	13.1	39.8	13.1	41.3
ER	12.5	44.0	13.1	46.5	13.1	48.0
FH	16.0	38.0	16.6	39.8	16.6	41.3
FR	16.0	44.5	16.6	46.5	16.6	48.0
LV	18.0	40.0	18.7	42.5	18.7	43.0

## Part Numbering System

<b>556</b>	<b>123</b>	<b>M</b>	<b>6R3</b>	<b>LV</b>	<b>2</b>	<b>E</b>
Type	Capacitance	Tolerance	Voltage	Case Code	Insulation	Epoxy Endseal
	6R8=6.8 μF 680=68 μF 681=680 μF 682=6800 μF 123=12,000 μF	M=±20%	6R3=6.3 Vdc 063=63 Vdc 100=100 Vdc		0=Bare Can 1=Polyester 2=PVC	E = Epoxy Endseal (blank) = No Epoxy

## Ratings

Cap. μF	Catalog Number	ESR Max.Ω 120 Hz	Ripple A @ 85 °C 120 Hz	Nominal Size (mm) D x L
<b>6.3 Vdc (8 Vdc Surge)</b>				
120	556121M6R3BA2	3.60	0.109	6.3 x 13
220	556221M6R3BB2	2.00	0.180	6.3 x 17.5
330	556331M6R3CB2	1.29	0.255	8 x 17.5
470	556471M6R3CC2	1.00	0.338	8 x 20.5
820	556821M6R3DC2	0.64	0.480	9.5 x 20.5
1200	556122M6R3DD2	0.37	0.570	9.5 x 24
1800	556182M6R3DF2	0.27	0.800	9.5 x 32
2200	556222M6R3DH2	0.23	1.080	9.5 x 38
3900	556392M6R3MH2	0.16	1.280	11 x 38
4700	556472M6R3EH2	0.13	1.640	12.5 x 38
5600	556562M6R3ER2	0.12	1.780	12.5 x 44.5
6800	556682M6R3FH2	0.10	2.000	16 x 38
10000	556103M6R3FR2	0.09	2.350	16 x 44.5
12000	556123M6R3LV2	0.08	2.580	18 x 44.5
<b>10 Vdc (12 Vdc Surge)</b>				
100	556101M010BA2	3.70	0.109	6.3 x 13
180	556181M010BB2	2.08	0.175	6.3 x 17.5
270	556271M010CB2	1.60	0.250	8 x 17.5
390	556391M010CC2	0.96	0.350	8 x 20.5
680	556681M010DC2	0.57	0.440	9.5 x 20.5

Cap. μF	Catalog Number	ESR Max.Ω 120 Hz	Ripple A @ 85 °C 120 Hz	Nominal Size (mm) D x L
<b>10 Vdc (12 Vdc Surge) (cont'd)</b>				
1000	556102M010DD2	0.41	0.560	9.5 x 24
1500	556152M010DF2	0.30	0.785	9.5 x 32
1800	556182M010DH2	0.27	1.030	9.5 x 38
2200	556222M010MF2	0.19	1.160	11 x 32
3300	556332M010EH2	0.14	1.600	12.5 x 38
3300	556332M010MH2	0.15	1.380	11 x 38
4700	556472M010ER2	0.12	1.780	12.5 x 44.5
5600	556562M010FH2	0.10	2.000	16 x 38
8200	556822M010FR2	0.09	2.340	16 x 44.5
10000	556103M010LV2	0.08	2.550	18 x 40
<b>12 Vdc (15 Vdc Surge)</b>				
100	556101M012BA2	3.71	0.108	6.3 x 13
180	556181M012BB2	2.12	0.168	6.3 x 17.5
220	556221M012CB2	1.65	0.245	8 x 17.5
390	556391M012CC2	1.00	0.330	8 x 20.5
560	556561M012DC2	0.66	0.425	9.5 x 20.5
820	556821M012DD2	0.45	0.550	9.5 x 24
1200	556122M012DF2	0.32	0.760	9.5 x 32
1500	556152M012DH2	0.28	0.955	9.5 x 38

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Cap. $\mu$ F	Catalog Number	ESR Max. $\Omega$ 120 Hz	Ripple A @ 85 °C 120 Hz	Nominal Size (mm) D x L
<b>12 Vdc (15 Vdc Surge) (cont'd)</b>				
2200	556222M012MF2	0.22	1.140	11 x 32
2700	556272M012MH2	0.15	1.380	11 x 38
3300	556332M012EH2	0.13	1.600	12.5 x 38
3900	556392M012ER2	0.12	1.780	12.5 x 44.5
6800	556682M012FR2	0.09	2.330	16 x 44.5
8200	556822M012LV2	0.08	2.550	18 x 40
<b>16 Vdc (20 Vdc Surge)</b>				
68	556680M016BA2	4.70	0.107	6.3 x 13
120	556121M016BB2	2.60	0.162	6.3 x 17.5
180	556181M016CB2	1.90	0.230	8 x 17.5
330	556331M016CC2	1.12	0.320	8 x 20.5
560	556561M016DC2	0.68	0.420	9.5 x 20.5
680	556681M016DD2	0.60	0.540	9.5 x 24
1000	556102M016DF2	0.38	0.740	9.5 x 32
1500	556152M016DH2	0.36	0.950	9.5 x 38
1800	556182M016MF2	0.24	1.070	11 x 32
2700	556272M016EH2	0.15	1.540	12.5 x 38
2700	556272M016MH2	0.16	1.380	11 x 38
3300	556332M016ER2	0.14	1.710	12.5 x 44.5
5600	556562M016FR2	0.08	2.320	16 x 44.5
6800	556682M016LV2	0.08	2.570	18 x 40
<b>20 Vdc (25 Vdc Surge)</b>				
68	556680M020BA2	4.80	0.105	6.3 x 13
120	556121M020BB2	2.60	0.161	6.3 x 17.5
150	556151M020CB2	2.10	0.218	8 x 17.5
270	556271M020CC2	1.22	0.305	8 x 20.5
470	556471M020DC2	0.7	0.405	9.5 x 20.5
680	556681M020DD2	0.50	0.500	9.5 x 24
820	556821M020DF2	0.35	0.700	9.5 x 32
1200	556122M020DH2	0.25	0.900	9.5 x 38
1500	556152M020MF2	0.22	0.990	11 x 32
2200	556222M020EH2	0.18	1.370	12.5 x 38
2200	556222M020ER2	0.18	1.460	12.5 x 44.5
4700	556472M020FR2	0.09	2.320	16 x 44.5
5600	556562M020LV2	0.07	2.400	18 x 40
<b>25 Vdc (35 Vdc Surge)</b>				
77	556470M025BA2	6.00	0.093	6.3 x 13
82	556820M025BB2	3.50	0.140	6.3 x 17.5
100	556101M025CB2	3.00	0.180	8 x 17.5
180	556181M025CC2	2.00	0.260	8 x 20.5
270	556271M025DC2	1.10	0.360	9.5 x 20.5
390	556391M025DD2	0.80	0.450	9.5 x 24
560	556561M025DF2	0.54	0.615	9.5 x 32
820	556821M025DH2	0.38	0.825	9.5 x 38
1000	556102M025MF2	0.33	1.060	11 x 32
1200	556122M025MH2	0.27	1.090	11 x 38
1500	556152M025EH2	0.22	1.230	12.5 x 38
1800	556182M025ER2	0.19	1.440	12.5 x 44.5
3300	556332M025FR2	0.15	1.990	16 x 44.5
3900	556392M025LV2	0.13	2.220	18 x 40
<b>35 Vdc (45 Vdc Surge)</b>				
33	556330M035BA2	8.18	0.080	6.3 x 13
56	556560M035BB2	4.90	0.117	6.3 x 17.5
68	556680M035CB2	3.93	0.160	8 x 17.5
120	556121M035CC2	2.26	0.225	8 x 20.5
220	556221M035DC2	1.25	0.325	9.5 x 20.5
270	556271M035DD2	1.00	0.400	9.5 x 24
470	556471M035DF2	0.58	0.590	9.5 x 32
560	556561M035DH2	0.48	0.705	9.5 x 38

Cap. $\mu$ F	Catalog Number	ESR Max. $\Omega$ 120 Hz	Ripple A @ 85 °C 120 Hz	Nominal Size (mm) D x L
<b>35 Vdc (45 Vdc Surge) (cont'd)</b>				
680	556681M035MF2	0.39	0.780	11 x 32
1000	556102M035MH2	0.28	1.020	11 x 38
1200	556122M035EH2	0.23	1.090	12.5 x 38
1500	556152M035ER2	0.19	1.400	12.5 x 44.5
2700	556272M035FR2	0.15	2.000	16 x 44.5
3300	556332M035LV2	0.14	2.180	18 x 40
<b>40 Vdc (50 Vdc Surge)</b>				
27	556270M040BA2	8.70	0.078	6.3 x 13
56	556560M040BB2	4.35	0.115	6.3 x 17.5
68	556680M040CB2	3.65	0.155	8 x 17.5
120	556121M040CC2	2.05	0.223	8 x 20.5
180	556181M040DC2	1.36	0.300	9.5 x 20.5
270	556271M040DD2	0.96	0.397	9.5 x 24
390	556391M040DF2	0.63	0.570	9.5 x 32
560	556561M040DH2	0.44	0.702	9.5 x 38
680	556681M040MF2	0.37	0.950	11 x 32
1000	556102M040EH2	0.24	1.080	12.5 x 38
1000	556102M040MH2	0.25	1.000	11 x 38
1200	556122M040ER2	0.21	1.330	12.5 x 44.5
2200	556222M040FR2	0.15	1.870	16 x 44.5
2700	556272M040LV2	0.14	2.070	18 x 40
<b>50 Vdc (65 Vdc Surge)</b>				
22	556220M050BA2	11.70	0.067	6.3 x 13
39	556390M050BB2	6.63	0.100	6.3 x 17.5
47	556470M050CB2	5.50	0.130	8 x 17.5
82	556820M050CC2	3.15	0.190	8 x 20.5
120	556121M050DC2	2.15	0.250	9.5 x 20.5
180	556181M050DD2	1.43	0.335	9.5 x 24
270	556271M050DF2	1.05	0.450	9.5 x 32
390	556391M050DH2	0.66	0.600	9.5 x 38
470	556471M050MF2	0.55	0.660	11 x 32
680	556681M050EH2	0.38	0.975	12.5 x 38
680	556681M050MH2	0.38	0.880	11 x 38
1000	556102M050ER2	0.26	1.210	12.5 x 44.5
1200	556122M050FH2	0.22	1.400	16 x 38
1500	556152M050FR2	0.18	1.670	16 x 44.5
1800	556182M050LV2	0.14	1.920	18 x 40
<b>63 Vdc (75 Vdc Surge)</b>				
18	556180M063BA2	13.60	0.060	6.3 X 13
33	556330M063BB2	7.50	0.090	6.3 X 17.5
39	556390M063CB2	6.30	0.120	8 X 17.5
68	556680M063CC2	3.50	0.175	8 X 20.5
100	556101M063DC2	2.40	0.242	9.5 X 20.5
150	556151M063DD2	1.63	0.300	9.5 X 24
220	556221M063DF2	1.08	0.420	9.5 X 32
330	556331M063DH2	0.72	0.575	9.5 X 38
390	556391M063MF2	0.63	0.652	11 X 32
470	556471M063MH2	0.51	0.750	11 X 38
560	556561M063EH2	0.42	0.880	12.5 X 38
820	556821M063ER2	0.30	1.130	12.5 X 44.5
1000	556102M063FH2	0.24	1.340	16 X 38
1200	556122M063FR2	0.20	1.560	16 X 44.5
1500	556152M063LV2	0.15	1.850	18 40
<b>80 Vdc (100 Vdc Surge)</b>				
5.6	5565R6M080BA2	28.40	0.043	6.3 x 13
10	556100M080BB2	15.80	0.070	6.3 x 17.5
15	556150M080CB2	10.60	0.097	8 x 17.5
22	556220M080CC2	7.23	0.126	8 x 20.5

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<b>80 Vdc (100 Vdc Surge) (cont'd)</b>				
47	556470M080DC2	3.38	0.205	9.5 x 20.5
68	556680M080DD2	2.34	0.260	9.5 x 24
100	556101M080DF2	1.59	0.357	9.5 x 32
120	556121M080DH2	1.33	0.435	9.5 x 38
150	556151M080MF2	1.06	0.480	11 x 32
220	556221M080EH2	0.72	0.680	12.5 x 38
220	556221M080MH2	1.06	0.527	11 x 38
270	556271M080ER2	0.58	0.850	12.5 x 44.5
390	556391M080FH2	0.41	1.030	16 x 38
470	556471M080FR2	0.34	1.210	16 x 44.5
680	556681M080LV2	0.23	1.490	18 x 44.5
<b>100 Vdc (125 Vdc Surge)</b>				
3.9	5563R9M100BA2	40.70	0.035	6.3 x 13
6.8	5566R8M100BB2	23.70	0.054	6.3 x 17.5
12	556120M100CB2	13.30	0.080	8 x 17.5
15	556150M100CC2	10.60	0.100	8 x 20.5
33	556330M100DC2	4.81	0.145	9.5 x 20.5
47	556470M100DD2	3.38	0.205	9.5 x 24
68	556680M100DF2	2.33	0.280	9.5 x 32
100	556101M100DH2	1.59	0.385	9.5 x 38
150	556151M100EH2	1.06	0.585	12.5 x 38
150	556151M100MH2	1.06	0.505	11 x 38
220	556221M100ER2	0.72	0.715	12.5 x 44.5
390	556391M100FR2	0.40	1.110	16 x 44.5
470	556471M100LV2	0.34	1.240	18 x 40
<b>150 Vdc (170 Vdc Surge)</b>				
1.5	5561R5M150BA2	110.00	0.023	6.3 x 13
2.7	5562R7M150BB2	60.00	0.036	6.3 x 17.5
3.3	5563R3M150CB2	49.00	0.045	8 x 17.5
6.8	5566R8M150CC2	24.00	0.070	8 x 20.5
12	556120M150DC2	13.30	0.100	9.5 x 20.5
15	556150M150DD2	11.00	0.120	9.5 x 24
22	556220M150DF2	7.30	0.165	9.5 x 32
33	556330M150DH2	4.90	0.225	9.5 x 38
47	556470M150MH2	3.38	0.290	11 x 38
56	556560M150EH2	3.08	0.325	12.5 x 38
68	556680M150ER2	2.34	0.380	12.5 x 44.5
120	556121M150FR2	1.34	0.580	16 x 44.5
150	556151M150LV2	1.10	0.668	18 x 40
<b>200 Vdc (250 Vdc Surge)</b>				
1.2	5561R2M200BA2	132.00	0.022	6.3 x 13
2.7	5562R7M200BB2	60.00	0.035	6.3 x 17.5
3.3	5563R3M200CB2	50.00	0.045	8 x 17.5
5.6	5565R6M200CC2	28.00	0.065	8 x 20.5
10	556100M200DC2	15.90	0.090	9.5 x 20.5
12	556120M200DD2	12.00	0.105	9.5 x 24
18	556180M200DF2	9.10	0.150	9.5 x 32
27	556270M200DH2	6.00	0.200	9.5 x 38
39	556390M200EH2	4.00	0.288	12.5 x 38
39	556390M200MH2	4.50	0.250	11 x 38
56	556560M200ER2	2.85	0.350	12.5 x 44.5
68	556680M200FH2	2.36	0.425	16 x 38
100	556101M200FR2	1.60	0.550	16 x 44.5
120	556121M200LV2	1.33	0.610	18 x 40
<b>250 Vdc (300 Vdc Surge)</b>				
1	5561R0M250BA2	161.00	0.021	6.3 x 13
1.8	5561R8M250BB2	88.00	0.031	6.3 x 17.5
2.2	5562R2M250CB2	73.00	0.037	8 x 17.5
3.3	5563R3M250CC2	48.00	0.049	8 x 20.5

Cap. $\mu$ F	Catalog Number	ESR Max. $\Omega$ 120 Hz	Ripple A @ 85 °C 120 Hz	Nominal Size (mm) D x L
<b>250 Vdc (300 Vdc Surge) (cont'd)</b>				
6.8	5566R8M250DC2	23.50	0.078	9.5 x 20.5
8.2	5568R2M250DD2	19.40	0.090	9.5 x 24
12	556120M250DF2	13.20	0.125	9.5 x 32
18	556180M250DH2	8.80	0.165	9.5 x 38
27	556270M250MH2	6.00	0.215	11 x 38
33	556330M250EH2	4.80	0.240	12.5 x 38
39	556390M250ER2	4.00	0.305	12.5 x 44.5
68	556680M250FR2	2.30	0.425	16 x 44.5
82	556820M250LV2	2.00	0.500	18 x 40
<b>300 Vdc (360 Vdc Surge)</b>				
0.68	556R68M300BA2	235.00	0.016	6.3 x 13
1.2	5561R2M300BB2	133.00	0.024	6.3 x 17.5
1.5	5561R5M300CB2	107.00	0.030	8 x 17.5
2.2	5562R2M300CC2	73.00	0.040	8 x 20.5
3.9	5563R9M300DC2	41.00	0.055	9.5 x 20.5
5.6	5565R6M300DD2	28.60	0.070	9.5 x 24
8.2	5568R2M300DF2	19.50	0.100	9.5 x 32
10	556100M300DH2	16.00	0.120	9.5 x 38
18	556180M300MH2	8.90	0.175	11 x 38
22	556220M300EH2	7.27	0.200	12.5 x 38
27	556270M300ER2	5.90	0.250	12.5 x 44.5
47	556470M300FR2	3.40	0.375	16 x 44.5
68	556680M300LV2	2.40	0.450	18 x 40
<b>350 Vdc (400 Vdc Surge)</b>				
0.56	556R56M350BA2	284.00	0.014	6.3 x 13
1	5561R0M350BB2	159.00	0.022	6.3 x 17.5
1.2	5561R2M350CB2	132.00	0.027	8 x 17.5
1.8	5561R8M350CC2	88.40	0.036	8 x 20.5
3.3	5563R3M350DC2	48.00	0.054	9.5 x 20.5
4.7	5564R7M350DD2	33.80	0.065	9.5 x 24
6.8	5566R8M350DF2	23.50	0.077	9.5 x 32
10	556100M350DH2	15.90	0.120	9.5 x 38
18	556180M350MH2	8.84	0.175	11 x 38
22	556220M350EH2	7.23	0.210	12.5 x 38
27	556270M350ER2	6.00	0.250	12.5 x 44.5
39	556390M350FR2	4.18	0.340	16 x 44.5
56	556560M350LV2	3.00	0.400	18 x 40
<b>400 Vdc (450 Vdc Surge)</b>				
1.8	5561R8M400DC2	92.00	0.038	9.5 x 20.5
2.7	5562R7M400DD2	62.00	0.050	9.5 x 24
3.9	5563R9M400DF2	42.00	0.070	9.5 x 32
4.7	5564R7M400DH2	35.00	0.082	9.5 x 38
12	556120M400MH2	13.80	0.130	11 x 38
18	556180M400EH2	9.20	0.175	12.5 x 38
22	556220M400ER2	7.60	0.220	12.5 x 44.5
27	556270M400FR2	6.10	0.250	16 x 44.5
47	556470M400LV2	3.50	0.375	18 x 40
<b>450 Vdc (500 Vdc Surge)</b>				
1.5	5561R5M450DC2	115.00	0.035	9.5 x 20.5
2.2	5562R2M450DD2	78.00	0.045	9.5 x 24
3.3	5563R3M450DF2	52.00	0.062	9.5 x 32
3.9	5563R9M450DH2	44.00	0.074	9.5 x 38
10	556100M450MH2	17.00	0.125	11 x 38
12	556120M450EH2	9.50	0.200	12.5 x 38
18	556180M450ER2	7.80	0.225	12.5 x 44.5
22	556220M450FR2	5.20	0.300	16 x 44.5
33	556330M450LV2	5.20	0.315	18 x 40