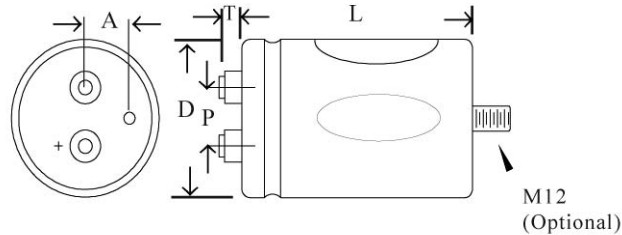


# Type 3191 Aluminum Electrolytic, Screw Terminals, Switching and Audio Output Screw Terminal Capacitors for Power Output Filtering



The low ESR of Type 3191 capacitors makes them a great choice for output filtering in switching and audio power supplies. It's available with the capacitor element potted in place for lowest cost or secured by rill, spoon shaped dimples in the side of the can. Rilled construction offers high vibration and shock withstanding and excellent heat transfer for higher ripple current.

## Outline Drawing



## Highlights

- Stud mount available
- High current application
- Industrial applications
- Smoothing and filtering
- Audio power supplies

## Specifications

**Operating Temperature:** -40 to + 85 °C  
**Rated Voltage:** 7.5 Vdc to 55 Vdc  
**Capacitance Range:** 2700 µF to 150000 µF  
**Capacitance Tolerance:** -10 to + 30%; -10 to +50%; ±20%  
**Ripple Current Multipliers**

### Ambient Temperature

Temperature	45 °C	55 °C	65 °C	75 °C	85 °C
$I_R$ Multiplier	2.24	2.00	1.73	1.41	1.00

### Frequency

Frequency	60 Hz	120 Hz	300 Hz	1000 Hz	≥10 KHz
$I_R$ Multiplier	0.90	1.00	1.05	1.10	1.15

**Life Test:** Endurance, 1500 h at rated voltage and 85 °C

Δ Capacitance: ±10%

ESR ≤ 200% of limit

DCL ≤ 100% of limit

**Shelf Life:** Storage, 500 h at 85 °C

Δ Capacitance: ±10%

ESR ≤ 175% of limit

DCL ≤ 200% of limit

**Vibration:** 10 to 500 Hz, 0.75 mm or 10 g\* if less,  
3 directions, 2 h ea

Δ Capacitance: ±5%

no visible damage or leakage

\*15 g if rilled construction



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

# Type 3191 Aluminum Electrolytic, Screw Terminals, Switching and Audio Output

## Case Dimensions, Uninsulated Bare Can

Case Code	Diameter (D)		Length (L)		Pitch (P)		Plug (A)		Typical		Optional Bracket Part No.
	±0.031 (Inches)	±0.79 (mm)	±0.062 (Inches)	±1.157 (mm)	±0.014 (Inches)	±0.356 (mm)	A (Inches)	A (mm)	Weight (oz)	Weight (g)	
<b>BA</b>	1.375	34.9	2.125	54.0	0.500	12.7	0.390	9.9	2.53	72	115058-06
<b>BB</b>	1.375	34.9	2.625	66.7	0.500	12.7	0.390	9.9	3.17	90	115058-06
<b>BC</b>	1.375	34.9	3.125	79.4	0.500	12.7	0.390	9.9	3.70	105	115058-06
<b>BD</b>	1.375	34.9	3.625	92.1	0.500	12.7	0.390	9.9	4.22	120	115058-06
<b>BE</b>	1.375	34.9	4.125	104.8	0.500	12.7	0.390	9.9	4.75	135	115058-06
<b>BF</b>	1.375	34.9	4.625	117.5	0.500	12.7	0.390	9.9	5.98	170	115058-06
<b>BG</b>	1.375	34.9	5.125	130.2	0.500	12.7	0.390	9.9	7.74	220	115058-06
<b>BH</b>	1.375	34.9	5.625	142.9	0.500	12.7	0.390	9.9	9.50	270	115058-06
<b>DA</b>	1.75	44.5	2.125	54.0	0.750	19.1	0.453	11.5	5.63	160	115058-15
<b>DB</b>	1.75	44.5	2.625	66.7	0.750	19.1	0.453	11.5	6.16	175	115058-15
<b>DC</b>	1.75	44.5	3.125	79.4	0.750	19.1	0.453	11.5	6.34	180	115058-15
<b>DD</b>	1.75	44.5	3.625	92.1	0.750	19.1	0.453	11.5	7.22	205	115058-15
<b>DE</b>	1.75	44.5	4.125	104.8	0.750	19.1	0.453	11.5	7.74	220	115058-15
<b>DF</b>	1.75	44.5	4.625	117.5	0.750	19.1	0.453	11.5	8.27	235	115058-15
<b>DG</b>	1.75	44.5	5.125	130.2	0.750	19.1	0.453	11.5	8.80	250	115058-15
<b>DH</b>	1.75	44.5	5.625	142.9	0.750	19.1	0.453	11.5	9.50	270	115058-15
<b>EA</b>	2	50.8	2.125	54.0	0.875	22.2	0.500	12.7	5.98	170	115058-09
<b>EB</b>	2	50.8	2.625	66.7	0.875	22.2	0.500	12.7	6.34	180	115058-09
<b>EC</b>	2	50.8	3.125	79.4	0.875	22.2	0.500	12.7	6.69	190	115058-09
<b>ED</b>	2	50.8	3.625	92.1	0.875	22.2	0.500	12.7	7.74	220	115058-09
<b>EE</b>	2	50.8	4.125	104.8	0.875	22.2	0.500	12.7	8.98	255	115058-09
<b>EF</b>	2	50.8	4.625	117.5	0.875	22.2	0.500	12.7	10.21	290	115058-09
<b>EG</b>	2	50.8	5.125	130.2	0.875	22.2	0.500	12.7	11.26	320	115058-09
<b>EH</b>	2	50.8	5.625	142.9	0.875	22.2	0.500	12.7	8.80	250	115058-09
<b>FB</b>	2.5	63.5	2.625	66.7	1.125	28.6	0.625	15.9	10.56	300	115058-14
<b>FC</b>	2.5	63.5	3.125	79.4	1.125	28.6	0.625	15.9	13.02	370	115058-14
<b>FD</b>	2.5	63.5	3.625	92.1	1.125	28.6	0.625	15.9	14.08	400	115058-14
<b>FE</b>	2.5	63.5	4.125	104.8	1.125	28.6	0.625	15.9	15.66	445	115058-14
<b>FF</b>	2.5	63.5	4.625	117.5	1.125	28.6	0.625	15.9	21.12	600	115058-14
<b>FG</b>	2.5	63.5	5.125	130.2	1.125	28.6	0.625	15.9	22.88	650	115058-14
<b>FH</b>	2.5	63.5	5.625	142.9	1.125	28.6	0.625	15.9	21.12	600	115058-14
<b>GC</b>	3	76.2	3.125	79.4	1.250	31.8	0.750	19.1	18.30	520	115058-11
<b>GD</b>	3	76.2	3.625	92.1	1.250	31.8	0.750	19.1	20.06	570	115058-11
<b>GE</b>	3	76.2	4.125	104.8	1.250	31.8	0.750	19.1	21.12	600	115058-11
<b>GF</b>	3	76.2	4.625	117.5	1.250	31.8	0.750	19.1	25.34	720	115058-11
<b>GG</b>	3	76.2	5.125	130.2	1.250	31.8	0.750	19.1	29.92	850	115058-11
<b>GH</b>	3	76.2	5.625	142.9	1.250	31.8	0.750	19.1	34.14	970	115058-11
<b>GJ</b>	3	76.2	5.825	148.0	1.250	31.8	0.750	19.1	36.96	1050	115058-11
<b>GN</b>	3	76.2	8.625	219.1	1.250	31.8	0.750	19.1	51.39	1460	115058-11

# Type 3191 Aluminum Electrolytic, Screw Terminals, Switching and Audio Output

## Insulation Dimensions

Code	Clamp Bracket	Insulation Type	Dimension Adders		
			D	L	H
Dimensions in Inches					
P	no	0.008" PVC	+0.02	+0.032	+0.024
H	no	0.012" PVC	+0.03	+0.062	+0.045
N	no	none	—	—	—
R	yes	0.008" PVC	+0.02	+0.032	+0.024
J	yes	0.012" PVC	+0.03	+0.062	+0.045
X	yes	none	—	—	—

## Terminal Dimensions

Terminal Style	For Case Diameters	Code	Post Diameter		H max		Thread	min Full Thread		Torque	
			in	mm	in	mm		in	mm	in-lb	N·m
Low Post	1½ to 3	B	0.314	8.0	0.094	2.4	10-32	0.218	5.5	25	2.82
High Post	1½ to 3	A	0.314	8.0	0.281	7.1	10-32	0.375	9.5	25	2.82
High Current, Low	2½ & 3	D	0.684	17.4	0.125	3.2	¼-28	0.344	8.7	60	6.78
High Current, High	2½ & 3	K	0.684	17.4	0.281	7.1	¼-28	0.469	11.9	60	6.78
M5 Post, Small	1½ to 2	M	0.314	8.0	0.281	7.1	M5	0.375	9.5	25	2.82
M6 Low Post	3	J	0.684	17.4	0.125	3.2	M6	0.344	8.7	60	6.78

Hardware & Mounting Options

## Part Numbering System

3191	BA	153	M	7R5	B	P	A1
Type	Case Code	Capacitance	Tolerance	Voltage	Terminal	Insulation	Construction*
3191	Case Code	153 = 15000 µF 223 = 22000 µF 272 = 2700 µF	M = ±20% S = -10 +30% T = -10 +50% U = -10 +75%	7R5 = 7.5 Vdc 020 = 20 Vdc	A = high post B = low post D = high current low post K = high current high post M = M5 high post J = M6 low post	P = 0.008" PVC H = 0.012" PVC N = none with mounting bracket R = 0.008" PVC R = 0.008" PVC J = 0.012" PVC X = None	A1 = potted R1 = rilled S1 = stud & potted T1 - stud & rilled**

\* Construction code is also a sequence number, e.g., A1, A2, — A9,

B1, B2, —, for customer specifications. Sequence number 1 in A1, R1

S1 and T1 denotes the standard catalog capacitor with no special requirements.

\*\* Mounting stud not available for 1.375" diameter cases, case codes BA, BC and BE

## Ratings

Cap (µF)	Type 3191 Catalog Part Number	ESR max 120 Hz 25 °C (mΩ)	Ripple max 120 Hz 85 °C pitch (A) rilled(A)	Case Size DxL (in)	Cap (µF)	Type 3191 Catalog Part Number	ESR max 120 Hz 25 °C (mΩ)	Ripple max 120 Hz 85 °C pitch (A) rilled(A)	Case Size DxL (in)
<b>7.5 Vdc (9.8 Vdc Surge)</b>									
15000	3191BA153M7R5BPA1	15.8	8.2 9.4	1.375x2.125	15000	3191BA153M010BPA1	15.6	8.3 9.5	1.375x2.125
18000	3191BB183M7R5BPA1	13.9	9.2 10.4	1.375x2.625	18000	3191BB183M010BPA1	13.6	9.6 10.9	1.375x2.625
22000	3191BC223M7R5BPA1	11.8	10.3 11.5	1.375x3.125	22000	3191BC223M010BPA1	11.1	10.9 12.2	1.375x3.125
27000	3191BC273M7R5BPA1	10.8	11.3 12.7	1.375x3.125	27000	3191BD273M010BPA1	10.1	12.5 13.9	1.375x3.625
33000	3191BD333M7R5BPA1	9.4	12.8 14.2	1.375x3.625	33000	3191BE333M010BPA1	9.1	14.0 15.5	1.375x4.125
39000	3191BE393M7R5BPA1	8.6	14.0 15.5	1.375x4.125	33000	3191EA333M010BPA1	9.1	13.6 15.5	2.00x2.125
47000	3191BG473M7R5BPA1	7.3	16.0 17.7	1.375x5.125	39000	3191BE393M010BPA1	8.6	14.1 15.7	1.375x4.125
47000	3191EA473M7R5BPA1	7.3	15.5 17.7	2.00x2.125	39000	3191EB393M010BPA1	8.6	14.0 15.7	2.00x2.625
56000	3191BH563M7R5BPA1	7.0	18.1 19.5	1.375x5.625	47000	3191BG473M010BPA1	7.4	16.9 18.1	1.375x5.125
56000	3191EB563M7R5BPA1	7.0	17.1 19.5	2.00x2.625	47000	3191EC473M010BPA1	7.4	16.2 18.1	2.00x3.125
68000	3191EC683M7R5BPA1	9.2	15.8 17.7	2.00x3.125	56000	3191BH563M010BPA1	7.1	18.1 19.5	1.375x5.625
82000	3191ED823M7R5BPA1	7.9	17.3 19.5	2.00x3.625	56000	3191EC563M010BPA1	7.1	17.1 19.5	2.00x3.125
100000	3191EE104M7R5BPA1	6.9	19.6 22.1	2.00x4.125	68000	3191ED683M010BPA1	7.7	17.3 19.6	2.00x3.625
120000	3191EF124M7R5BPA1	6.4	21.5 23.9	2.00x4.625	82000	3191EE823M010BPA1	6.9	19.7 22.3	2.00x4.125
150000	3191EG154M7R5BPA1	5.7	23.7 26.1	2.00x5.125	100000	3191EF104M010BPA1	6.0	21.9 24.3	2.00x4.625
					120000	3191EE124M010BPA1	5.7	23.0 26.0	2.00x4.125

# Type 3191 Aluminum Electrolytic, Screw Terminals, Switching and Audio Output

Cap ( $\mu$ F)	Type 3191 Catalog Part Number	ESR max 120 Hz 25 °C (m $\Omega$ )	Ripple max 120 Hz 85 °C potted (A) rilled(A)	Case Size DxL (in)	Cap ( $\mu$ F)	Type 3191 Catalog Part Number	ESR max 120 Hz 25 °C (m $\Omega$ )	Ripple max 120 Hz 85 °C potted (A) rilled(A)	Case Size DxL (in)		
<b>16 Vdc (20.8 Vdc Surge)</b>					<b>28 Vdc (36.4 Surge)</b>						
10000	3191BA103M016BPA1	16.7	8.2	9.3	1.375x2.125	18000	3191BF183M028BPA1	9.9	14.6	15.9	1.375x4.625
12000	3191BB123M016BPA1	14.2	9.2	10.4	1.375x2.625	18000	3191EB183M028BPA1	9.9	14.2	15.9	2.00x2.625
15000	3191BC153M016BPA1	11.7	10.8	12.1	1.375x3.125	22000	3191BG223M028BPA1	8.6	7.0	7.5	1.375x5.125
18000	3191BC183M016BPA1	11.3	12.1	13.5	1.375x3.125	22000	3191EC223M028BPA1	8.6	6.6	7.5	2.00x3.125
22000	3191BD223M016BPA1	9.8	12.8	14.2	1.375x3.625	27000	3191ED273M028BPA1	8.1	16.9	19.1	2.00x3.625
22000	3191EA223M016BPA1	9.8	12.5	14.2	2.00x2.125	33000	3191EE333M028BPA1	7.3	19.2	21.7	2.00x4.125
27000	3191BF273M016BPA1	8.4	15.4	16.8	1.375x4.625	39000	3191EF393M028BPA1	6.6	21.5	23.9	2.00x4.625
27000	3191EB273M016BPA1	8.4	14.7	16.8	2.00x2.625	47000	3191EG473M028BPA1	6.0	22.8	25.3	2.00x5.125
33000	3191BG333M016BPA1	7.6	17.2	18.4	1.375x5.125	<b>35 Vdc (45.5 Vdc Surge)</b>					
33000	3191EC333M016BPA1	7.6	16.1	18.4	2.00x3.125	3900	3191BA392M035BPA1	25.4	6.8	7.7	1.375x2.125
39000	3191EC393M016BPA1	9.1	15.7	17.9	2.00x3.125	4700	3191BB472M035BPA1	21.2	7.9	8.9	1.375x2.625
47000	3191ED473M016BPA1	7.8	17.4	19.7	2.00x3.625	5600	3191BB562M035BPA1	19.1	8.2	9.3	1.375x2.625
56000	3191EE563M016BPA1	7.1	19.0	21.5	2.00x4.125	6800	3191BC682M035BPA1	17.2	8.8	9.9	1.375x3.125
68000	3191EF683M016BPA1	6.4	21.2	23.5	2.00x4.625	8200	3191BD822M035BPA1	14.7	10.7	11.9	1.375x3.625
82000	3191EG823M016BPA1	5.9	22.8	25.3	2.00x5.125	10000	3191BD103M035BPA1	12.9	11.7	13	1.375x3.625
<b>20 Vdc (26 Vdc Surge)</b>					10000	3191EA103M035BPA1	12.9	11.4	13	2.00x2.125	
8200	3191BA822M020BPA1	18.2	7.8	8.9	1.375x2.125	12000	3191BF123M035BPA1	11.4	13.1	14.3	1.375x4.625
10000	3191BB103M020BPA1	15.1	8.9	10.1	1.375x2.625	12000	3191EB123M035BPA1	11.4	12.8	14.3	2.00x2.625
12000	3191BB123M020BPA1	14.2	9.6	10.8	1.375x2.625	15000	3191BG153M035BPA1	9.6	14.8	15.8	1.375x5.125
15000	3191BC153M020BPA1	11.9	11.1	12.4	1.375x3.125	15000	3191EC153M035BPA1	9.6	14.1	15.8	2.00x3.125
18000	3191BD183M020BPA1	11.0	12.5	13.9	1.375x3.625	18000	3191ED183M035BPA1	8.8	16.7	18.9	2.00x3.625
22000	3191BE223M020BPA1	9.3	13.9	15.4	1.375x4.125	22000	3191ED223M035BPA1	8.1	17.9	20.2	2.00x3.625
22000	3191EA223M020BPA1	9.3	13.5	15.4	2.00x2.125	27000	3191EF273M035BPA1	6.9	20.2	22.8	2.00x4.125
27000	3191BF273M020BPA1	8.0	16.0	17.4	1.375x4.625	33000	3191EG333M035BPA1	6.4	22.2	24.6	2.00x5.125
27000	3191EB273M020BPA1	8.0	15.5	17.4	2.00x2.625	39000	3191EH393M035BPA1	6.0	24.4	26.8	2.00x5.625
33000	3191BH333M020BPA1	7.3	18.0	19.4	1.375x5.625	<b>55 Vdc (71.5 Vdc Surge)</b>					
33000	3191EC333M020BPA1	7.3	17.0	19.4	2.00x3.125	2700	3191BA272M055BPA1	33.2	6.3	7.2	1.375x2.125
39000	3191ED393M020BPA1	7.9	16.7	18.9	2.00x3.625	3900	3191BB392M055BPA1	23.3	8.0	9	1.375x2.625
47000	3191EE473M020BPA1	7.0	19.6	21.7	2.00x4.125	4700	3191BC472M055BPA1	19.4	9.1	10.2	1.375x3.125
56000	3191EF563M020BPA1	6.4	21.9	23.9	2.00x4.625	5600	3191BD562M055BPA1	16.4	10.5	11.6	1.375x3.625
68000	3191EG683M020BPA1	5.9	22.3	24.8	2.00x5.125	6800	3191BE682M055BPA1	15.2	11.6	12.9	1.375x4.125
82000	3191EH823M020BPA1	5.6	24.6	27.1	2.00x5.625	6800	3191EA682M055BPA1	15.2	11.3	12.9	2.00x2.125
<b>28 Vdc (36.4 Surge)</b>					8200	3191BF822M055BPA1	12.7	13.5	14.7	1.375x4.625	
4700	3191BA472M028BPA1	23.4	6.6	7.5	1.375x2.125	8200	3191EB822M055BPA1	12.7	12.9	14.7	2.00x2.625
5600	3191BB562M028BPA1	22.5	7.0	7.9	1.375x2.625	10000	3191BH103M055BPA1	10.9	16.1	17.2	1.375x5.625
6800	3191BB682M028BPA1	19.0	7.5	8.5	1.375x2.625	10000	3191EC103M055BPA1	10.9	15.1	17.2	2.00x3.125
8200	3191BB822M028BPA1	17.5	8.3	9.4	1.375x2.625	12000	3191ED123M055BPA1	9.9	16.5	18.6	2.00x3.625
10000	3191BC103M028BPA1	15.0	10.1	11.3	1.375x3.125	15000	3191EE153M055BPA1	8.9	18.0	20.3	2.00x4.125
12000	3191BD123M028BPA1	12.7	11.4	12.7	1.375x3.625	18000	3191EF183M055BPA1	7.8	19.6	21.8	2.00x4.625
15000	3191BE153M028BPA1	11.2	12.7	14.1	1.375x4.125	22000	3191EG223M055BPA1	7.1	21.7	24.1	2.00x5.125
15000	3191EA153M028BPA1	11.2	12.4	14.1	2.00x2.125						