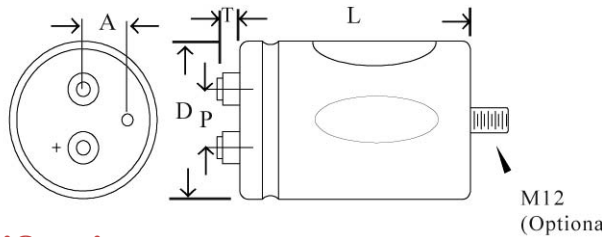


# Type 3199 Aluminum Electrolytic, Screw Terminals, Switching and Audio Output Screw Terminal Capacitors for Power Output Filtering



With twice the capacitance of Type 3191 capacitor, Type 3199 extends output filtering performance into higher power, especially with cold temperature requirements. It's available with the capacitor element potted in place for lowest cost or secured by rills, 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:** -55 to + 85 °C  
**Rated Voltage:** 7.5 Vdc to 75 Vdc  
**Capacitance Range:** 3900 µF to 1.2 F  
**Capacitance Tolerance:** -10 to + 30%; -10 to +50%; ±20%  
**Ripple Current Multiplier:** **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, 5000 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 3199 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 3199 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

[Click here to see Hardware & Mounting Options](#)

## Part Numbering System

3199	BA	393	M	7R5	B	P	A1
Type	Case Code	Capacitance	Tolerance	Voltage	Terminal	Insulation	Construction*
3199	Case Code	393 = 39000 µF 125 = 1.2 F	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 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 3199 Catalog Part Number	ESR max 120 Hz 25 °C (mΩ)			Ripple max 120 Hz 85 °C		Case Size DxL (in)
		potted(A)	rilled(A)	potted(A)	rilled(A)		
7.5 Vdc (9 Volts Surge)							
39000	3199BA393M7R5APA1	9.4	8.1	8.8	1.375x2.125		
47000	3199BB473M7R5APA1	9.6	8.8	9.5	1.375x2.625		
56000	3199BC563M7R5APA1	7.9	10.4	11.2	1.375x3.125		
68000	3199BD683M7R5APA1	6.8	11.8	12.7	1.375x3.625		
82000	3199BD823M7R5APA1	6.0	12.7	13.7	1.375x3.625		
100000	3199BF104M7R5APA1	5.2	15.1	16.3	1.375x4.625		
120000	3199BG124M7R5APA1	4.4	17.1	18.5	1.375x4.125		
150000	3199DD154M7R5APA1	4.6	16.6	18.1	1.75x3.625		
180000	3199DE184M7R5APA1	4.2	18.3	20.0	1.75x4.125		
220000	3199DG224M7R5APA1	3.4	22.3	24.4	1.75x5.125		
270000	3199EF274M7R5APA1	3.8	21.5	23.6	2.00x4.625		
330000	3199EH334M7R5APA1	3.9	23.3	25.5	2.00x5.625		
390000	3199FE394M7R5APA1	2.6	28.6	31.7	2.50x4.125		
470000	3199FG474M7R5APA1	2.5	31.3	34.7	2.50x5.125		
560000	3199FH564M7R5APA1	2.2	35.3	39.2	2.50x5.625		
680000	3199GF684M7R5APA1	2.2	37.6	40.5	3.00x4.625		
820000	3199GH824M7R5APA1	2.2	40.2	43.3	3.00x5.625		
1200000	3199GN125M7R5APA1	1.9	46.4	50.0	3.00x8.625		

Cap (µF)	Type 3199 Catalog Part Number	ESR max 120 Hz 25 °C (mΩ)			Ripple max 120 Hz 85 °C		Case Size DxL (in)
		potted(A)	rilled(A)	potted(A)	rilled(A)		
10 Vdc (12 Volts Surge)							
33000	3199BA333M010APA1	9.6	8.1	8.8	1.375x2.125		
39000	3199BB393M010APA1	8.4	9.4	10.2	1.375x2.625		
47000	3199BC473M010APA1	7.5	10.3	11.1	1.375x3.125		
56000	3199BC563M010APA1	6.9	11.1	12.0	1.375x3.125		
68000	3199BD683M010APA1	6.1	12.6	13.6	1.375x3.625		
82000	3199BE823M010APA1	5.5	4.7	5.1	1.375x4.125		
100000	3199BG104M010APA1	4.5	17.1	18.5	1.375x5.125		
120000	3199DD124M010APA1	4.6	16.5	18.0	1.75x3.625		
150000	3199DE154M010APA1	4.2	18.2	19.9	1.75x4.125		
180000	3199DG184M010APA1	3.8	12.0	13.1	1.75x5.125		
220000	3199DH224M010APA1	3.2	23.8	26.0	1.75x5.625		
270000	3199EG274M010APA1	3.6	23.2	25.4	2.00x5.125		
330000	3199FE334M010APA1	2.6	28.5	31.6	2.50x4.125		
390000	3199FF394M010APA1	2.4	30.9	34.3	2.50x4.625		
470000	3199FH474M010APA1	2.4	33.3	37.0	2.50x5.625		
560000	3199GF564M010APA1	2.2	37.5	40.4	3.00x4.625		
680000	3199GH684M010APA1	2.2	40.1	43.2	3.00x5.625		
1200000	3199GN125M010APA1	1.7	46.4	50.0	3.00x8.625		

# Type 3199 Aluminum Electrolytic, Screw Terminals, Switching and Audio Output

## Ratings

Cap (µF)	Type 3199 Catalog Part Number	ESR max 120 Hz 25 °C (mΩ)	Ripple max 120 Hz 85 °C potted(A) rilled(A)		Case Size DxL (in)
<b>16 Vdc (20 Volts Surge)</b>					
22000	3199BA223M016APA1	24.6	5.0	5.4	1.375x2.125
27000	3199BB273M016APA1	21.3	5.9	6.4	1.375x2.625
39000	3199BC393M016APA1	17.1	7.0	7.6	1.375x3.125
47000	3199BD473M016APA1	14.8	8.1	8.7	1.375x3.625
56000	3199BE563M016APA1	13.3	9.0	9.7	1.375x4.125
68000	3199BG683M016APA1	10.3	11.2	12.1	1.375x5.125
82000	3199BH823M016APA1	9.8	12.0	13.0	1.375x5.625
100000	3199DE104M016APA1	7.0	14.1	15.4	1.75x4.125
120000	3199DF124M016APA1	5.8	16.2	17.7	1.75x4.625
150000	3199DH154M016APA1	5.2	18.7	20.4	1.75x5.125
180000	3199EG184M016APA1	3.7	23.0	25.2	2.00x5.125
220000	3199FE224M016APA1	3.5	24.4	27.1	2.50x4.125
270000	3199FF274M016APA1	3.2	26.7	29.6	2.50x4.625
330000	3199GE334M016APA1	3.1	30.2	32.5	3.00x4.125
390000	3199GF394M016APA1	2.8	32.9	35.5	3.00x4.625
470000	3199GH474M016APA1	2.5	37.7	40.6	3.00x5.625
820000	3199GN824M016APA1	2.2	46.4	50.0	3.00x8.625
<b>25 Vdc (30 Volts Surge)</b>					
18000	3199BA183M025APA1	24.8	5.0	5.4	1.375x2.125
27000	3199BC273M025APA1	17.4	6.9	7.5	1.375x3.125
33000	3199BD333M025APA1	15.0	8.0	8.6	1.375x3.625
39000	3199BE393M025APA1	13.5	8.9	9.6	1.375x4.125
47000	3199BG473M025APA1	10.5	11.1	12.0	1.375x5.125
56000	3199BH563M025APA1	9.9	2.7	2.9	1.375x5.625
68000	3199DE683M025APA1	7.1	14.0	15.3	1.75x4.125
82000	3199DF823M025APA1	5.9	16.0	17.5	1.75x4.625
100000	3199DG104M025APA1	5.5	17.4	19.0	1.75x5.125
120000	3199EF124M025APA1	4.0	21.3	23.3	2.00x4.625
150000	3199EH154M025APA1	3.5	24.4	26.7	2.00x5.625
180000	3199FF184M025APA1	3.3	26.4	29.3	2.50x4.625
220000	3199FG224M025APA1	3.0	28.5	31.6	2.50x5.125
270000	3199FG274M025APA1	2.8	31.7	35.2	2.50x5.125
330000	3199GG334M025APA1	2.6	35.3	38.0	3.00x5.125
560000	3199GN564M025APA1	2.2	46.4	50.0	3.00x8.625
<b>40 Vdc (50 Volts Surge)</b>					
10000	3199BA103M040APA1	32.0	4.4	4.8	1.375x2.125
12000	3199BB123M040APA1	27.4	5.2	5.6	1.375x2.625
15000	3199BC153M040APA1	18.2	6.8	7.4	1.375x3.125
18000	3199BD183M040APA1	15.7	7.9	8.5	1.375x3.625
22000	3199BE223M040APA1	14.0	8.7	9.4	1.375x4.125
27000	3199BF273M040APA1	13.5	9.3	10.1	1.375x4.625
33000	3199BH333M040APA1	11.8	10.9	11.8	1.375x5.625
39000	3199DD393M040APA1	9.4	11.5	12.6	1.75x3.625
47000	3199DE473M040APA1	8.4	12.9	14.1	1.75x4.125
56000	3199DG563M040APA1	6.6	15.9	17.4	1.75x5.125
68000	3199DH683M040APA1	6.1	17.2	18.8	1.75x5.625
82000	3199EG823M040APA1	4.3	21.2	23.2	2.00x5.125
100000	3199FE104M040APA1	4.3	22.2	24.6	2.50x4.125
120000	3199FF124M040APA1	3.9	24.3	27.0	2.50x4.625
150000	3199FH154M040APA1	3.4	28.1	31.2	2.50x5.625
180000	3199GG184M040APA1	3.1	32.3	34.8	3.00x5.125
220000	3199GH224M040APA1	2.9	34.6	37.3	3.00x5.625
330000	3199GN334M040APA1	2.2	46.4	50.0	3.00x8.625

Cap (µF)	Type 3199 Catalog Part Number	ESR max 120 Hz 25 °C (mΩ)	Ripple max 120 Hz 85 °C potted(A) rilled(A)		Case Size DxL (in)
<b>50 Vdc (65 Volts Surge)</b>					
8200	3199BA822M050APA1	41.0	3.9	4.2	1.375x2.125
10000	3199BB103M050APA1	34.9	4.6	5.0	1.375x2.625
12000	3199BC123M050APA1	27.6	5.6	6.0	1.375x3.125
15000	3199BD153M050APA1	23.2	6.4	6.9	1.375x3.625
18000	3199BE183M050APA1	20.3	7.2	7.8	1.375x4.125
22000	3199BF223M050APA1	16.6	8.4	9.1	1.375x4.625
27000	3199BH273M050APA1	14.2	9.9	10.7	1.375x5.625
33000	3199DE333M050APA1	9.8	11.9	13.0	1.75x4.125
39000	3199DF393M050APA1	8.2	13.6	14.9	1.75x4.625
47000	3199DG473M050APA1	7.5	14.9	16.3	1.75x5.125
56000	3199EF563M050APA1	9.6	13.6	14.9	2.00x4.625
68000	3199EH683M050APA1	8.1	16.1	17.6	2.00x5.625
82000	3199FF823M050APA1	6.6	18.6	20.6	2.50x4.625
100000	3199FH104M050APA1	5.6	21.7	24.1	2.50x5.625
120000	3199GF124M050APA1	5.3	23.8	25.7	3.00x4.625
150000	3199GH154M050APA1	4.5	27.9	30.1	3.00x5.625
220000	3199GN224M050APA1	3.5	37.7	40.6	3.00x8.625
<b>63 Vdc (85 Volts Surge)</b>					
4700	3199BA472M063APA1	41.5	3.9	4.2	1.375x2.125
5600	3199BB562M063APA1	35.4	4.5	4.9	1.375x2.625
6800	3199BB682M063APA1	32.4	5.0	5.4	1.375x2.625
8200	3199BC822M063APA1	27.5	5.6	6.0	1.375x3.125
10000	3199BD103M063APA1	23.2	6.5	7.0	1.375x3.625
12000	3199BE123M063APA1	20.3	7.3	7.9	1.375x4.125
15000	3199BG153M063APA1	15.5	9.2	9.9	1.375x5.125
18000	3199BH183M063APA1	14.3	9.9	10.7	1.375x5.625
22000	3199DE223M063APA1	10.0	11.8	12.9	1.75x4.125
27000	3199DG273M063APA1	7.8	14.7	16.0	1.75x5.125
33000	3199DH333M063APA1	7.2	15.8	17.3	1.75x5.625
39000	3199EG393M063APA1	8.6	15.0	16.4	2.00x5.125
47000	3199FE473M063APA1	7.5	16.6	18.4	2.50x4.125
56000	3199FF563M063APA1	6.7	18.4	20.4	2.50x4.625
68000	3199FH683M063APA1	5.7	21.5	23.9	2.50x5.625
82000	3199GF823M063APA1	5.3	23.8	25.6	3.00x4.625
100000	3199GH104M063APA1	4.5	27.7	29.9	3.00x5.625
150000	3199GN154M063APA1	3.6	37.4	40.3	3.00x8.625
<b>75 Vdc (95 Volts Surge)</b>					
3900	3199BA392M075APA1	42.5	3.8	4.1	1.375x2.125
4700	3199BB472M075APA1	36.2	4.5	4.9	1.375x2.625
5600	3199BB562M075APA1	32.6	5.0	5.4	1.375x2.625
6800	3199BC682M075APA1	28.1	5.5	5.9	1.375x3.125
8200	3199BD822M075APA1	23.7	6.4	6.9	1.375x3.625
10000	3199BE103M075APA1	20.7	7.2	7.8	1.375x4.125
12000	3199BG123M075APA1	15.8	9.1	9.8	1.375x5.125
15000	3199DD153M075APA1	11.6	10.4	11.3	1.75x3.625
18000	3199DE183M075APA1	10.2	11.6	12.7	1.75x4.125
22000	3199DG223M075APA1	8.0	14.5	15.8	1.75x5.125
27000	3199EF273M075APA1	9.6	13.6	14.9	2.00x4.625
33000	3199EH333M075APA1	8.2	16.0	17.5	2.00x5.625
39000	3199FF393M075APA1	6.9	18.1	20.1	2.50x4.625
47000	3199FG473M075APA1	6.3	19.7	21.9	2.50x5.125
56000	3199FH563M075APA1	5.8	21.3	23.7	2.50x5.625
68000	3199GG683M075APA1	5.0	25.5	27.5	3.00x5.125
82000	3199GH823M075APA1	4.6	27.6	29.7	3.00x5.625
120000	3199GN124M075APA1	3.6	37.2	40.1	3.00x8.625