

Type TYAV Series



Tyco Electronics axial leaded aluminum electrolytic capacitors are designed for through-hole PCB population where mounting height is restricted.

The TYAV series offers a wide capacitance range at voltages from 6.3 to 450Vd.c.

Suitable for a broad range of general purpose filtering, bypassing, power supply coupling/decoupling, telecommunications and audio-video applications.

Key Features

- General purpose polarized aluminum foil electrolytic capacitors
- Axial leads
- Aluminum case with insulating sleeve
- 85°C temperature rating
- 2000 hours load life assured
- RoHS Compliant

Standard Product Table

Rated Voltage V.DC	Capacitance μ F	Capacitance Code	Case Size Dia x L	Case Code	Dissipation Factor (%)*	Ripple Current (mA)*	Part Number
6.3	47	476	5 x 12	A12	23	87	TYAV0J476A12ML
6.3	100	107	6.3 x 13	B13	23	121	TYAV0J107B13ML
6.3	220	227	6.3 x 13	B13	23	215	TYAV0J227B13ML
6.3	330	337	8 x 16	C16	23	305	TYAV0J337C16ML
6.3	470	477	8 x 16	C16	23	364	TYAV0J477C16ML
6.3	1000	108	10 x 17	D17	23	662	TYAV0J108D17ML
6.3	2200	228	13 x 22	E22	23	929	TYAV0J228E22ML
6.3	3300	338	13 x 27	E27	23	1150	TYAV0J338E27ML
6.3	4700	478	13 x 27	E27	23	1354	TYAV0J478E27ML
6.3	6800	688	16 x 28	F28	23	1762	TYAV0J688F28ML
6.3	10000	109	16 x 36	F36	23	2062	TYAV0J109F36ML
6.3	22000	229	22 x 43	H43	23	3097	TYAV0J229H43ML
10	33	336	5 x 12	A12	20	78	TYAV1A336A12ML
10	47	476	5 x 12	A12	20	94	TYAV1A476A12ML
10	100	107	6.3 x 13	B13	20	145	TYAV1A107B13ML
10	220	227	8 x 13	C13	20	231	TYAV1A227C13ML
10	330	337	8 x 16	C16	20	327	TYAV1A337C16ML
10	470	477	8 x 16	C16	20	390	TYAV1A477C16ML
10	1000	108	10 x 17	D17	20	671	TYAV1A108D17ML
10	2200	228	13 x 22	E22	20	1051	TYAV1A228E22ML
10	3300	338	13 x 27	E27	20	1288	TYAV1A338E27ML
10	4700	478	16 x 28	F28	20	1552	TYAV1A478F28ML
10	6800	688	16 x 33	F33	20	1930	TYAV1A688F33ML
10	10000	109	18 x 36	G36	20	2122	TYAV1A109G36ML
16	22	226	5 x 12	A12	17	71	TYAV1C226A12ML
16	33	336	5 x 12	A12	17	85	TYAV1C336A12ML
16	47	476	6.3 x 13	B13	17	88	TYAV1C476B13ML
16	100	107	6.3 x 13	B13	17	160	TYAV1C107B13ML
16	220	227	8 x 13	C13	17	298	TYAV1C227C13ML
16	330	337	8 x 16	C16	17	365	TYAV1C337C16ML
16	470	477	8 x 16	C16	17	460	TYAV1C477C16ML
16	1000	108	10 x 21	D21	17	775	TYAV1C108D21ML
16	2200	228	13 x 24	E24	17	1125	TYAV1C228E24ML
16	3300	338	16 x 28	F28	17	1454	TYAV1C338F28ML
16	4700	478	16 x 33	F33	17	1650	TYAV1C478F33ML
16	6800	688	18 x 36	G36	17	2040	TYAV1C688G36ML
16	10000	109	18 x 42	G42	17	2503	TYAV1C109G42ML
25	10	106	5 x 12	A12	15	40	TYAV1E106A12ML
25	22	226	5 x 12	A12	15	76	TYAV1E226A12ML
25	33	336	5 x 12	A12	15	80	TYAV1E336A12ML
25	47	476	6.3 x 13	B13	15	100	TYAV1E476B13ML
25	100	107	8 x 13	C13	15	215	TYAV1E107C13ML
25	220	227	8 x 16	C16	15	319	TYAV1E227C16ML
25	330	337	10 x 17	D17	15	454	TYAV1E337D17ML
25	470	477	10 x 21	D21	15	524	TYAV1E477D21ML
25	1000	108	13 x 22	E22	15	873	TYAV1E108E22ML
25	2200	228	16 x 28	F28	15	1344	TYAV1E228F28ML
25	3300	338	16 x 33	F33	15	1611	TYAV1E338F33ML
25	4700	478	18 x 36	G36	15	1881	TYAV1E478G36ML
25	6800	688	18 x 42	G42	15	2170	TYAV1E688G42ML
25	10000	109	22 x 43	H43	15	2893	TYAV1E109H43ML

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Standard Product Table (continued)

Rated Voltage V.DC	Capacitance μ F	Capacitance Code	Case Size Dia x L	Case Code	Dissipation Factor (%)*	Ripple Current (mA)*	Part Number
35	10	106	5 x 12	A12	12	55	TYAV1V106A12ML
35	22	226	6.3 x 13	B13	12	70	TYAV1V226B13ML
35	33	336	6.3 x 13	B13	12	115	TYAV1V336B13ML
35	47	476	6.3 x 13	B13	12	138	TYAV1V476B13ML
35	100	107	8 x 16	C16	12	232	TYAV1V107C16ML
35	220	227	10 x 17	D17	12	401	TYAV1V227D17ML
35	330	337	10 x 21	D21	12	514	TYAV1V337D21ML
35	470	477	13 x 22	E22	12	613	TYAV1V477E22ML
35	1000	108	13 x 27	E27	12	955	TYAV1V108E27ML
35	2200	228	16 x 33	F33	12	1421	TYAV1V228F33ML
35	3300	338	18 x 36	G36	12	1640	TYAV1V338G36ML
35	4700	478	22 x 43	H43	12	2280	TYAV1V478H43ML
35	6800	688	22 x 43	H43	12	2470	TYAV1V688H43ML
35	10000	109	25 x 52	J52	12	3180	TYAV1V109J52ML
50	0.1	104	5 x 12	A12	10	1.5	TYAV1H104A12ML
50	0.22	224	5 x 12	A12	10	3.5	TYAV1H224A12ML
50	0.33	334	5 x 12	A12	10	5.0	TYAV1H334A12ML
50	0.47	474	5 x 12	A12	10	6.0	TYAV1H474A12ML
50	1.0	105	5 x 12	A12	10	10	TYAV1H105A12ML
50	2.2	225	5 x 12	A12	10	20	TYAV1H225A12ML
50	3.3	335	5 x 12	A12	10	30	TYAV1H335A12ML
50	4.7	475	5 x 12	A12	10	42	TYAV1H475A12ML
50	10	106	5 x 12	A12	10	50	TYAV1H106A12ML
50	22	226	6.3 x 13	B13	10	85	TYAV1H226B13ML
50	33	336	6.3 x 13	B13	10	126	TYAV1H336B13ML
50	47	476	8 x 13	C13	10	174	TYAV1H476C13ML
50	100	107	10 x 17	D17	10	296	TYAV1H107D17ML
50	220	227	10 x 21	D21	10	459	TYAV1H227D21ML
50	330	337	13 x 22	E22	10	613	TYAV1H337E22ML
50	470	477	13 x 22	E22	10	731	TYAV1H477E22ML
50	1000	108	16 x 33	F33	10	1111	TYAV1H108F33ML
50	2200	228	18 x 36	G36	10	1699	TYAV1H228G36ML
50	3300	338	22 x 43	H43	10	2027	TYAV1H338H43ML
50	4700	478	25 x 43	J43	10	2347	TYAV1H478J43ML
50	6800	688	25 x 52	J52	10	2650	TYAV1H688J52ML
50	10000	109	25 x 52	J52	10	2650	TYAV1H109J52ML
63	0.1	104	5 x 12	A12	9	3.0	TYAV1J104A12ML
63	0.22	224	5 x 12	A12	9	4.5	TYAV1J224A12ML
63	0.33	334	5 x 12	A12	9	7.5	TYAV1J334A12ML
63	0.47	474	5 x 12	A12	9	9.0	TYAV1J474A12ML
63	1.0	105	5 x 12	A12	9	15	TYAV1J105A12ML
63	2.2	225	5 x 12	A12	9	30	TYAV1J225A12ML
63	3.3	335	5 x 12	A12	9	36	TYAV1J335A12ML
63	4.7	475	5 x 12	A12	9	44	TYAV1J475A12ML
63	10	106	6.3 x 13	B13	9	55	TYAV1J106B13ML
63	22	226	6.3 x 13	B13	9	109	TYAV1J226B13ML
63	33	336	8 x 13	C13	9	154	TYAV1J336C13ML
63	47	476	8 x 16	C16	9	214	TYAV1J476C16ML
63	100	107	10 x 17	D17	9	326	TYAV1J107D17ML
63	220	227	13 x 22	E22	9	527	TYAV1J227E22ML
63	330	337	13 x 22	E22	9	675	TYAV1J337E22ML
63	470	477	13 x 27	E27	9	780	TYAV1J477E27ML
63	1000	108	16 x 36	F36	9	1249	TYAV1J108F36ML

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Standard Product Table (continued)

Rated Voltage V.DC	Capacitance μ F	Capacitance Code	Case Size Dia x L	Case Code	Dissipation Factor (%)*	Ripple Current (mA)*	Part Number
63	2200	228	22 x 43	H43	9	1744	TYAV1J228H43ML
63	3300	338	25 x 52	J52	9	2309	TYAV1J338J52ML
63	4700	478	25 x 52	J52	9	2710	TYAV1J478J52ML
63	6800	688	25 x 52	J52	9	2710	TYAV1J688J52ML
100	0.1	104	5 x 12	A12	8	3.0	TYAV2A104A12ML
100	0.22	224	5 x 12	A12	8	5.0	TYAV2A224A12ML
100	0.33	334	5 x 12	A12	8	8.0	TYAV2A334A12ML
100	0.47	474	5 x 12	A12	8	9.0	TYAV2A474A12ML
100	1.0	105	5 x 12	A12	8	15	TYAV2A105A12ML
100	2.2	225	5 x 12	A12	8	30	TYAV2A225A12ML
100	3.3	335	5 x 12	A12	8	41	TYAV2A335A12ML
100	4.7	475	6.3 x 13	B13	8	40	TYAV2A475B13ML
100	10	106	6.3 x 13	B13	8	72	TYAV2A106B13ML
100	22	226	8 x 16	C16	8	133	TYAV2A226C16ML
100	33	336	10 x 17	D17	8	190	TYAV2A336D17ML
100	47	476	10 x 21	D21	8	237	TYAV2A476D21ML
100	100	107	13 x 22	E22	8	377	TYAV2A107E22ML
100	220	227	16 x 28	F28	8	625	TYAV2A227F28ML
100	330	337	16 x 33	F33	8	793	TYAV2A337F33ML
100	470	477	16 x 36	F36	8	942	TYAV2A477F36ML
100	1000	108	18 x 42	G42	8	1359	TYAV2A108G42ML
100	2200	228	25 x 52	J52	8	2430	TYAV2A228J52ML
160	1.0	105	6.3 x 13	B13	12	7.0	TYAV2C105B13ML
160	2.2	225	6.3 x 13	B13	12	15	TYAV2C225B13ML
160	3.3	335	8 x 13	C13	12	21	TYAV2C335C13ML
160	4.7	475	8 x 16	C16	12	31	TYAV2C475C16ML
160	10	106	10 x 17	D17	12	60	TYAV2C106D17ML
160	22	226	10 x 21	D21	12	121	TYAV2C226D21ML
160	33	336	13 x 22	E22	12	154	TYAV2C336E22ML
160	47	476	13 x 27	E27	12	198	TYAV2C476E27ML
160	100	107	16 x 33	F33	12	345	TYAV2C107F33ML
160	220	227	18 x 42	G42	12	586	TYAV2C227G42ML
160	330	337	22 x 43	H43	12	632	TYAV2C337H43ML
200	1.0	105	6.3 x 13	B13	14	9.0	TYAV2D105B13ML
200	2.2	225	8 x 13	C13	14	16	TYAV2D225C13ML
200	3.3	335	8 x 16	C16	14	26	TYAV2D335C16ML
200	4.7	475	10 x 17	D17	14	33	TYAV2D475D17ML
200	10	106	10 x 21	D21	14	66	TYAV2D106D21ML
200	22	226	13 x 22	E22	14	121	TYAV2D226E22ML
200	33	336	13 x 27	E27	14	167	TYAV2D336E27ML
200	47	476	16 x 33	F33	14	214	TYAV2D476F33ML
200	100	107	16 x 36	F36	14	368	TYAV2D107F36ML
200	220	227	22 x 43	H43	14	609	TYAV2D227H43ML
250	1.0	105	6.3 x 13	B13	17	12	TYAV2E105B13ML
250	2.2	225	8 x 16	C16	17	17	TYAV2E225C16ML
250	3.3	335	8 x 21	C21	17	31	TYAV2E335C21ML
250	4.7	475	10 x 17	D17	17	38	TYAV2E475D17ML
250	10	106	10 x 21	D21	17	72	TYAV2E106D21ML
250	22	226	13 x 27	E27	17	126	TYAV2E226E27ML
250	33	336	16 x 28	F28	17	178	TYAV2E336F28ML
250	47	476	16 x 33	F33	17	241	TYAV2E476F33ML
250	100	107	16 x 42	F42	17	391	TYAV2E107F42ML
250	220	227	22 x 43	H43	17	632	TYAV2E227H43ML

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Standard Product Table (continued)

Rated Voltage V.DC	Capacitance μ F	Capacitance Code	Case Size Dia x L	Case Code	Dissipation Factor (%)*	Ripple Current (mA)*	Part Number
350	1.0	105	8 x 16	C16	20	13	TYAV2V105C16ML
350	2.2	225	8 x 21	C21	20	19	TYAV2V225C21ML
350	3.3	335	8 x 21	C21	20	33	TYAV2V335C21ML
350	4.7	475	10 x 21	D21	20	44	TYAV2V475D21ML
350	10	106	13 x 22	E22	20	72	TYAV2V106E22ML
350	22	226	13 x 27	E27	20	132	TYAV2V226E27ML
350	33	336	16 x 33	F33	20	186	TYAV2V336F33ML
350	47	476	16 x 42	F42	20	253	TYAV2V476F42ML
350	100	107	22 x 43	H43	20	402	TYAV2V107H43ML
400	1.0	105	8 x 16	C16	24	14	TYAV2G105C16ML
400	2.2	225	10 x 17	D17	24	21	TYAV2G225D17ML
400	3.3	335	10 x 17	D17	24	34	TYAV2G335D17ML
400	4.7	475	10 x 26	D26	24	45	TYAV2G475D26ML
400	10	106	13 x 22	E22	24	80	TYAV2G106E22ML
400	22	226	16 x 33	F33	24	137	TYAV2G226F33ML
400	33	336	16 x 36	F36	24	192	TYAV2G336F36ML
400	47	476	18 x 42	G42	24	339	TYAV2G476G42ML
400	100	107	25 x 43	J43	24	424	TYAV2G107J43ML
450	1.0	105	8 x 16	C16	24	15	TYAV2W105C16ML
450	2.2	225	10 x 21	D21	24	23	TYAV2W225D21ML
450	3.3	335	10 x 21	D21	24	36	TYAV2W335D21ML
450	4.7	475	10 x 26	D26	24	46	TYAV2W475D26ML
450	10	106	13 x 27	E27	24	82	TYAV2W106E27ML
450	22	226	16 x 36	F36	24	143	TYAV2W226F36ML
450	33	336	16 x 42	F42	24	201	TYAV2W336F42ML
450	47	476	18 x 42	G42	24	339	TYAV2W476G42ML
450	100	107	25 x 52	J52	24	448	TYAV2W107J52ML

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

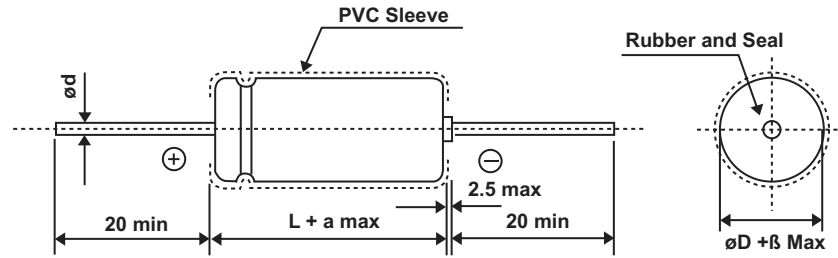
Characteristics - Electrical

																Test Cond. JIS C5101-4, Characteristic W	
Operating Temp. Range	-40°C ~ +85°C															—	
Rated Voltage	DC 6.3 ~ 450V															85°C	
Capacitance	0.1 ~ 22000µF															85°C	
Capacitance Tolerance	±20%															120Hz, 20°C	
Leakage Current	Rated Voltage	≤100V					>100V									C = rated capacitance (µF) V = rated DC working voltage (V) Temperature = 20°C	
	Time	after 2 minutes					after 5 minutes										
	Leakage Current	I = 0.02CV or 3 (µA) whichever is greater			CV ≤1000 I = 0.03CV + 15 (µA)			CV >1000 I = 0.02CV + 25 (µA)									
Dissipation Factor (Tanδ)	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	120Hz, 20°C	
	Tanδ max	0.23	0.20	0.17	0.15	0.12	0.10	0.09	0.08	0.12	0.14	0.17	0.20	0.24	0.24		
Low Temperature Characteristics	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	120Hz	
	Impedance Ratio																
	Z(-25°C)/ Z(+20°C)	∅D<16	6	4	3	3	2	2	2	2	3	6	8	12	14		16
	Z(-40°C)/ Z(+20°C)	∅D<16	10	8	6	6	4	3	3	3	4	8	10	—	—		—
Load Life Test	Test Time	2000 Hrs														Specification satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2000 hrs at 85°C	
	Capacitance Change	Within ±20% of initial value															
	Dissipation Factor	Less than 200% of specified value															
	Leakage Current	Within specified value															
Shelf Life Test	Test Time	1000 hrs														Specifications satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5102)	
	Capacitance Change	Within ±20% of initial value															
	Dissipation Factor	Less than 200% of specified value															
	Leakage Current	Within specified value															
Ripple Current & Multipliers Frequency	Frequency (Hz)	60(50)			120			500			1k			≥10k			—
	C (µF) < 100	0.70			1.00			1.30			1.40			1.50			
	C (µF) 100 ~ 1000	0.75			1.00			1.20			1.30			1.35			
	C (µF) > 1000	0.80			1.00			1.10			1.12			1.15			

Product Availability Chart

Capacitance		Rated Voltage (V.DC)													
		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
µF	Code	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L	Dia x L
0.1	104						5x12	5x12	5x12						
0.22	224						5x12	5x12	5x12						
0.33	334						5x12	5x12	5x12						
0.47	474						5x12	5x12	5x12						
1.0	105						5x12	5x12	5x12	6.3x13	6.3x13	6.3x13	8x16	8x16	8x16
2.2	225						5x12	5x12	5x12	6.3x13	8x13	8x16	8x21	10x17	10x21
3.3	335						5x12	5x12	5x12	8x13	8x16	8x21	8x21	10x17	10x21
4.7	475						5x12	5x12	6.3x13	8x16	10x17	10x17	10x21	10x26	10x26
10	106				5x12	5x12	5x12	6.3x13	6.3x13	10x17	10x21	10x21	13x22	13x22	13x27
22	226			5x12	5x12	6.3x13	6.3x13	6.3x13	8x16	10x21	13x22	13x27	16x33	16x33	16x36
33	336		5x12	5x12	5x12	6.3x13	6.3x13	8x13	10x17	13x22	13x27	16x28	16x33	16x36	16x42
47	476	5x12	5x12	6.3x13	6.3x13	6.3x13	8x13	8x16	10x21	13x27	16x33	16x33	16x42	18x42	18x42
100	107	6.3x13	6.3x13	6.3x13	8x13	8x16	10x17	10x17	13x22	16x33	16x36	16x42	22x43	25x43	25x52
220	227	6.3x13	8x13	8x13	8x16	10x17	10x21	13x22	16x28	18x42	22x43	22x43			
330	337	8x16	8x16	8x16	10x17	10x21	13x22	13x22	16x33	22x43					
470	477	8x16	8x16	8x16	10x21	13x22	13x22	13x27	16x36						
1000	108	10x17	10x17	10x21	13x22	13x27	16x33	16x36	18x42						
2200	228	13x22	13x22	13x24	16x28	16x33	18x36	22x43	25x52						
3300	338	13x27	13x27	16x28	16x33	18x36	22x43	25x52							
4700	478	13x27	16x28	16x33	18x36	22x43	25x43	25x52							
6800	688	16x28	16x33	18x36	18x42	22x43	25x52	25x52							
10000	109	16x36	18x36	18x42	22x43	25x52	25x52								
22000	229	22x43													

Dimensions



Case Code	Dimensions (mm)		
	Dia + βmax	L + a max	Lead dia +0.1max
A12	5.0 +0.5	12 +1.5	0.6
B13	6.3 +0.5	13 +1.5	0.6
C13	8.0 +0.5	13 +1.5	0.6
C16	8.0 +0.5	16 +1.5	0.6
C21	8.0 +0.5	21 +1.5	0.6
D17	10 +1.0	17 +2.0	0.6
D21	10 +1.0	21 +2.0	0.6
D26	10 +1.0	26 +2.0	0.6
E22	13 +1.0	22 +2.0	0.6
E24	13 +1.0	24 +2.0	0.6
E27	13 +1.0	27 +2.0	0.6
F28	16 +1.0	28 +2.0	0.8
F33	16 +1.0	33 +2.0	0.8
F36	16 +1.0	36 +2.0	0.8
F42	16 +1.0	42 +2.0	0.8
G36	18 +1.0	36 +2.0	0.8
G42	18 +1.0	42 +2.0	0.8
H43	22 +1.0	43 +2.0	0.8
J43	25 +1.0	43 +2.0	0.8
J52	25 +1.0	52 +2.0	0.8

How to Order

TYAV	0J	476	A12	M	L
Common Part	Voltage Code	Capacitance	Case Code	Tolerance	Packaging
TYAV	0J (6.3V) 1A (10V) 1C (16V) 1E (25V) 1V (35V) 1H (50V) 1J (63V) 2A (100V) 2C (160V) 2D (200V) 2E (250V) 2V (350V) 2G (400V) 2W (450V)	e.g. 476	e.g. A12	M (20%)	L = Loose (bulk)