

Aluminum Capacitors + 85 °C, Miniature, Radial Lead

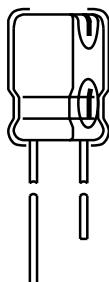


Fig.1 Component outline

FEATURES

- High CV per case size
- Low cost
- Low profile ratings


RoHS
COMPLIANT

RIPPLE CURRENT MULTIPLIERS

TEMPERATURE						
Ambient Temperature				Multipliers		
≤ + 70 °C				1.27		
+ 85 °C				1.0		
FREQUENCY (Hz)						
WVDC	Cap. (μF)	50 - 60	100 - 120	300 - 400	1 kHz	≤ 10 kHz
6.3 - 100	0 - 47	0.75	1	1.35	1.57	2.00
	100 - 470	0.80	1	1.23	1.34	1.50
	1000 - 18 000	0.85	1	1.10	1.13	1.15
160 - 450	0.47 - 220	0.80	1	1.25	1.40	1.60

LOW TEMPERATURE PERFORMANCE

MAXIMUM IMPEDANCE RATIO $Z(T)/Z(+20\text{ }^{\circ}\text{C})$		
MAXIMUM AT 120 Hz		
Rated Voltage (WVDC)	Z - 25 °C/Z + 20 °C	Z - 40 °C/Z + 20 °C
6.3	4.0	10.0
10.0	3.0	8.0
16.0	2.0	6.0
25.0	2.0	4.0
35.0 - 100.0	2.0	3.0
160.0 - 200.0	3.0	4.0
250.0	3.0	6.0
315.0 - 400.0	6.0	-
450.0	15.0	-

QUICK REFERENCE DATA

DESCRIPTION	VALUE
Nominal case size $\varnothing D \times L$ in mm	0.157" x 0.276" [4.0 x 7.0] to 0.709" x 1.575" [18.0 x 40.0]
Operating temperature	- 40 °C to + 85 °C - 25 °C to + 85 °C for 315 WVDC to 450 WVDC units
Rated Capacitance range, C_R	0.1 μF to 18 000 μF
Tolerance on C_R	$\pm 20\%$
Rated voltage range, U_R	6.3 WVDC to 450 WVDC
Termination	2 radial leads
Life validation test at 85 °C	2000 hours: $\Delta CAP \pm 20\%$ from initial measurement. $\Delta DF \leq 2 \times$ initial specified limit. $\Delta DCL \leq$ initial specified limit
Shelf life at 85 °C	1000 hours: $\Delta CAP \pm 20\%$ from initial measurement. $\Delta DF \leq 2 \times$ initial specified limit. $\Delta DCL \leq$ initial specified limit
DC leakage current	rated voltage for 1 and 2 minutes for 6.3 WVDC to 100 WVDC units: $I < 0.03\text{ CV}$ or $4\text{ }\mu\text{A}$ (whichever is greater). $I < 0.04\text{ CV}$ or $3\text{ }\mu\text{A}$ (whichever is greater). rated voltage for 1 minute for 160 WVDC to 450 WVDC units: $I < 0.1\text{ CV} + 40\text{ }\mu\text{A}$ and $CV \leq 1000$; $I < 0.04\text{ CV} + 100\text{ }\mu\text{A}$ and $CV > 1000$

DIMENSIONS in inches [millimeters]

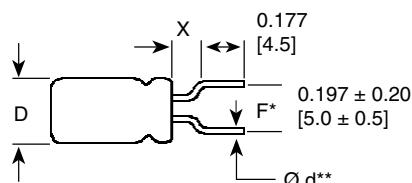
CASE CODE	NOMINAL CASE SIZE $D \times L$	LEAD SPACING S	NOMINAL LEAD DIAMETER D	TYPICAL WEIGHT (g)
HW	0.157 x 0.276 [4.0 x 7.0]	0.059 [1.5]	0.018 [0.45]	0.20
JW	0.197 x 0.276 [5.0 x 7.0]	0.079 [2.0]	0.018 [0.45]	0.30
AW	0.248 x 0.276 [6.3 x 7.0]	0.098 [2.5]	0.018 [0.45]	0.40
JA	0.197 x 0.433 [5.0 x 11.0]	0.079 [2.0]	0.020 [0.50]	0.44
AA	0.248 x 0.433 [6.3 x 11.0]	0.098 [2.5]	0.020 [0.50]	0.60
BB	0.315 x 0.453 [8.0 x 11.5]	0.138 [3.5]	0.024 [0.60]	0.95

DIMENSIONS in inches [millimeters]

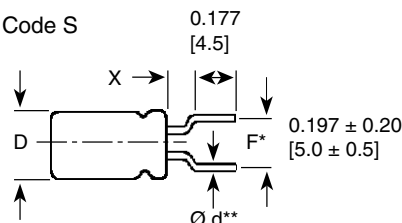
CASE CODE	NOMINAL CASE SIZE D x L	LEAD SPACING S	NOMINAL LEAD DIAMETER D	TYPICAL WEIGHT (g)
CC	0.394 x 0.492 [10.0 x 12.5]	0.197 [5.0]	0.024 [0.60]	1.48
CD	0.394 x 0.630 [10.0 x 16.0]	0.197 [5.0]	0.024 [0.60]	1.75
CG	0.394 x 0.787 [10.0 x 20.0]	0.197 [5.0]	0.024 [0.60]	2.37
DG	0.492 x 0.787 [12.5 x 20.0]	0.197 [5.0]	0.024 [0.60]	3.73
DK	0.492 x 0.984 [12.5 x 25.0]	0.197 [5.0]	0.024 [0.60]	4.85
EK	0.630 x 0.984 [16.0 x 25.0]	0.295 [7.5]	0.031 [0.80]	7.08
EN	0.630 x 1.240 [16.0 x 31.5]	0.295 [7.5]	0.031 [0.80]	8.94
ER	0.630 x 1.398 [16.0 x 35.5]	0.295 [7.5]	0.031 [0.80]	10.50
FR	0.709 x 1.398 [18.0 x 35.5]	0.295 [7.5]	0.031 [0.80]	12.53
FV	0.709 x 1.575 [18.0 x 40.0]	0.295 [7.5]	0.031 [0.80]	15.71

ELECTROLYTIC CAPACITOR WITH CUT OR FORMED LEADS in inches [millimeters]

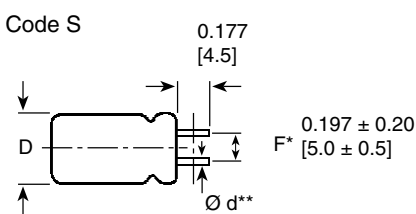
Code F



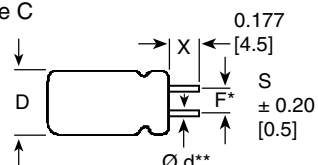
Code S



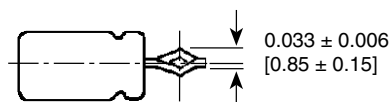
Code S



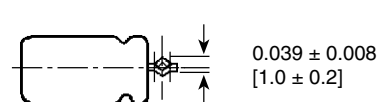
Code C



Code S



Code S

**DIMENSIONS** in inches [millimeters]

FORMING METHOD	FORMED LEAD CODE	DIMENSIONS				
		D	L.S.	P	e***	X (Max.)
Formed and Cut	F	0.157 [4.0]	0.197 [5.0]	0.059 [1.5]	-	0.059 [1.5]
		0.197 [5.0]	0.197 [5.0]	0.079 [2.0]	-	0.059 [1.5]
		0.248 [6.3]	0.197 [5.0]	0.098 [2.5]	-	0.098 [2.5]
		0.315 [8.0]	0.197 [5.0]	0.138 [3.5]	-	0.098 [2.5]
Cut	C	0.394 [10.0]	0.197 [5.0]	-	-	-
		0.492 [12.5]	0.197 [5.0]	-	-	-
		0.630 [16.0]	0.295 [7.5]	-	-	-
		0.709 [18.0]	0.295 [7.5]	-	-	-
Snap-in	S	0.157 [4.0]	0.197 [5.0]	0.059 [1.5]	0.043 [1.1]	0.059 [1.5]
		0.197 [5.0]	0.197 [5.0]	0.079 [2.0]	0.043 [1.1]	0.059 [1.5]
		0.248 [6.3]	0.197 [5.0]	0.098 [2.5]	0.043 [1.1]	0.059 [1.5]
		0.315 [8.0]	0.197 [5.0]	0.138 [3.5]	0.051 [1.3]	0.059 [1.5]
		0.394 [10.0]	0.197 [5.0]	-	0.051 [1.3]	-
		0.492 [12.5]	0.197 [5.0]	-	0.051 [1.3]	-
		0.630 [16.0]	0.295 [7.5]	-	0.051 [1.3]	-
		0.709 [18.0]	0.295 [7.5]	-	0.051 [1.3]	-

Note:

Coding of cut or formed lead to be added to the end of type number in 15th position (with position 14 coded "6").

* Formed lead. ** Lead thickness Ø d depends on capacitor specification. *** Lead protrusion at bottom of tape.

TAPED CAPACITORS FOR AUTOMATIC INSERTION SYSTEMS in inches [millimeters]					
PACKAGING	LEAD CODE 14th AND 15th DIGITS OF PN	SPECIFICATION		LEAD SPACE	CAPACITOR SIZES AVAILABLE
		LEAD STYLE	+ - LEADER		
Ammo Pack	8P	Formed Lead ⁽¹⁾	-	0.197 [5.0]	0.157 x 0.276 - 0.492 x 0.787 [4.0 x 7.0 - 12.5 x 20.0]
					CASE CODES HW, JW, AW, JA, AA, BB, CC, CD, DG

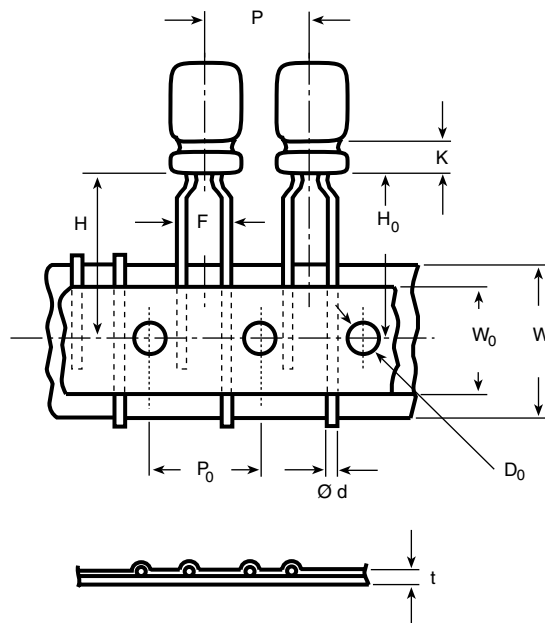
Note:

The ammo pack code is to be added at the end of part number in the 14th and 15th position as 8P. To specify formed, cut or snap-in leads and for tape and ammo, both positions 14 and 15 of the type number must be filled in with the proper codes.

⁽¹⁾ Except 0.394 [10.0 mm] and 0.492 [12.5 mm] diameter have straight unformed leads.

TAPING SPECIFICATIONS in inches [millimeters]

Formed Lead Type



DIMENSIONS in inches [millimeters]								
ITEM	CASE SIZE (Diameter x Length)							
	FORMED LEAD TYPE						STRAIGHT LEAD TYPE	
	0.157 x 0.276 [4.0 x 7.0]	0.197 x 0.276 [5.0 x 7.0]	0.197 x 0.433 [5.0 x 11.0]	0.248 x 0.276 [6.3 x 7.0]	0.248 x 0.433 [6.3 x 11.0]	0.315 x 0.453 [8.0 x 11.5]	0.394 [10.0] (Dia.)	0.492 [12.5] (Dia.)
Ø d - Lead-wire Diameter	0.018 [0.45]	0.018 [0.45]	0.020 [0.5]	0.018 [0.45]	0.020 [0.5]	0.024 [0.6]	0.024 [0.6]	0.024 [0.6]
P - Pitch of Component	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.591 [15.0]
P ₀ - Feed Hole Pitch	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.500 [12.7]	0.591 [15.0]
F - Lead-to-lead Distance	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]	0.197 [5.0]
K - Clinch Height	0.059 [1.5]	0.059 [1.5]	0.098 [2.5]	0.059 [1.5]	0.098 [2.5]	0.157 [4.0]	-	-
H - Height of Component	0.689 [17.5]	0.689 [17.5]	0.728 [18.5]	0.689 [17.5]	0.728 [18.5]	0.787 [20.0]	0.728 [18.5]	0.630 [16.0]
H ₀ - Lead-wire Clinch Height	0.630 [16.0]	0.630 [16.0]	0.630 [16.0]	0.630 [16.0]	0.630 [16.0]	0.630 [16.0]	-	-
W - Tape Width	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]	0.709 [18.0]
W ₀ - Hold Down Tape Width	0.512 [13.0]	0.512 [13.0]	0.512 [13.0]	0.512 [13.0]	0.512 [13.0]	0.512 [13.0]	0.512 [13.0]	0.512 [13.0]
D ₀ - Feed Hole Diameter	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]
t - Total Tape Thickness	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]	0.157 [4.0]

ORDERING EXAMPLE

Electrolytic capacitor 515D series:

515D 107M 6R3 JA 6A E3

DESCRIPTION	
CODE	EXPLANATION
515D	product type
107	capacitance value (100 μ F)
M	tolerance (M = $\pm$ 20 %)
6R3	voltage rating at 85 °C (6R3 = 6.3 V)
JA	can size (see dimensions table)
6	packaging (Bulk)
A	lead style (uncut)
E3	RoHS compliant indicator

PACKING AND LEAD STYLES:

6A	Bulk, uncut leads
6C	Bulk, cut leads
6F	Bulk; formed and cut leads
6S	Bulk, Snap-in leads
8P	Ammopack (case codes HW, JW, AW, JA, AA, BB, CC, CD, CG, DG only)

ELECTRICAL DATA AND ORDERING INFORMATION				
CAPACITANCE (μ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. RIPPLE at + 85 °C 120 Hz (mA)	Max. DF at + 20 °C 120 Hz
6.3 WVDC at + 85 °C, SURGE = 8 V				
22.0	515D226M6R3JA6AE3	0.197 x 0.433 [5.0 x 11.0]	34.0	0.24
33.0	515D336M6R3JA6AE3	0.197 x 0.433 [5.0 x 11.0]	42.0	0.24
47.0	515D476M6R3JA6AE3	0.197 x 0.433 [5.0 x 11.0]	50.0	0.24
100.0	515D107M6R3JA6AE3	0.197 x 0.433 [5.0 x 11.0]	77.0	0.24
220.0	515D227M6R3AA6AE3	0.248 x 0.433 [6.3 x 11.0]	215.0	0.24
330.0	515D337M6R3AA6AE3	0.248 x 0.433 [6.3 x 11.0]	265.0	0.24
470.0	515D477M6R3BB6AE3	0.315 x 0.453 [8.0 x 11.5]	360.0	0.24
1000.0	515D108M6R3CC6AE3	0.394 x 0.492 [10.0 x 12.5]	570.0	0.24
2200.0	515D228M6R3DG6AE3	0.492 x 0.787 [12.5 x 20.0]	1050.0	0.24
3300.0	515D338M6R3DG6AE3	0.492 x 0.787 [12.5 x 20.0]	1250.0	0.24
4700.0	515D478M6R3EK6AE3	0.630 x 0.984 [16.0 x 25.0]	1700.0	0.24
6800.0	515D688M6R3EK6AE3	0.630 x 0.984 [16.0 x 25.0]	1900.0	0.24
10 000.0	515D109M6R3EN6AE3	0.630 x 1.240 [16.0 x 31.5]	2250.0	0.24
15 000.0	515D159M6R3FR6AE3	0.709 x 1.398 [18.0 x 35.5]	2680.0	0.24
18 000.0	515D189M6R3FV6AE3	0.709 x 1.575 [18.0 x 40.0]	2750.0	0.24
10 WVDC at + 85 °C, SURGE = 13 V				
22.0	515D226M010JA6AE3	0.197 x 0.433 [5.0 x 11.0]	38.0	0.20
33.0	515D336M010JA6AE3	0.197 x 0.433 [5.0 x 11.0]	47.0	0.20
47.0	515D476M010JA6AE3	0.197 x 0.433 [5.0 x 11.0]	59.0	0.20
100.0	515D107M010JA6AE3	0.197 x 0.433 [5.0 x 11.0]	145.0	0.20
220.0	515D227M010AA6AE3	0.248 x 0.433 [6.3 x 11.0]	230.0	0.20
330.0	515D337M010BB6AE3	0.315 x 0.453 [8.0 x 11.5]	330.0	0.20
470.0	515D477M010BB6AE3	0.315 x 0.453 [8.0 x 11.5]	390.0	0.20
1000.0	515D108M010CD6AE3	0.394 x 0.630 [10.0 x 16.0]	630.0	0.20
2200.0	515D228M010DG6AE3	0.492 x 0.787 [12.5 x 20.0]	1100.0	0.20
3300.0	515D338M010DK6AE3	0.492 x 0.984 [12.5 x 25.0]	1400.0	0.20
4700.0	515D478M010EK6AE3	0.630 x 0.984 [16.0 x 25.0]	1800.0	0.20
6800.0	515D688M010EN6AE3	0.630 x 1.240 [16.0 x 31.5]	2150.0	0.20
10 000.0	515D109M010FR6AE3	0.709 x 1.398 [18.0 x 35.5]	2500.0	0.20
15 000.0	515D159M010FV6AE3	0.709 x 1.575 [18.0 x 40.0]	2720.0	0.20

Aluminum Capacitors
+ 85 °C, Miniature, Radial Lead

Vishay Sprague

ELECTRICAL DATA AND ORDERING INFORMATION

CAPACITANCE (μ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. RIPPLE at + 85 °C 120 Hz (mA)	Max. DF at + 20 °C 120 Hz
16 WVDC at + 85 °C, SURGE = 20 V				
10.0	515D106M016JA6AE3	0.197 x .433 [5.0 x 11.0]	28.0	0.16
22.0	515D226M016JA6AE3	0.197 x 0.433 [5.0 x 11.0]	44.0	0.16
33.0	515D336M016JA6AE3	0.197 x 0.433 [5.0 x 11.0]	57.0	0.16
47.0	515D476M016JA6AE3	0.197 x 0.433 [5.0 x 11.0]	168.0	0.16
16 WVDC at + 85 °C, SURGE = 20 V				
100.0	515D107M016AA6AE3	0.248 x 0.433 [6.3 x 11.0]	175.0	0.16
220.0	515D227M016BB6AE3	0.315 x 0.453 [8.0 x 11.5]	300.0	0.16
330.0	515D337M016BB6AE3	0.315 x 0.453 [8.0 x 11.5]	360.0	0.16
470.0	515D477M016CC6AE3	0.394 x 0.492 [10.0 x 12.5]	470.0	0.16
1000.0	515D108M016CG6AE3	0.394 x 0.787 [10.0 x 20.0]	790.0	0.16
2200.0	515D228M016DK6AE3	0.492 x 0.984 [12.5 x 25.0]	1350.0	0.16
3300.0	515D338M016EK6AE3	0.630 x 0.984 [16.0 x 25.0]	1700.0	0.16
4700.0	515D478M016EN6AE3	0.630 x 1.240 [16.0 x 31.5]	2100.0	0.16
6800.0	515D688M016FR6AE3	0.709 x 1.398 [18.0 x 35.5]	2500.0	0.16
10 000.0	515D109M016FV6AE3	0.709 x 1.575 [18.0 x 40.0]	2640.0	0.16
25 WVDC at + 85 °C, SURGE = 32 V				
4.7	515D475M025JA6AE3	0.197 x 0.433 [5.0 x 11.0]	30.0	0.14
10.0	515D106M025JA6AE3	0.197 x 0.433 [5.0 x 11.0]	33.0	0.14
22.0	515D226M025JA6AE3	0.197 x 0.433 [5.0 x 11.0]	51.0	0.14
33.0	515D336M025JA6AE3	0.197 x 0.433 [5.0 x 11.0]	63.0	0.14
47.0	515D476M025JA6AE3	0.197 x 0.433 [5.0 x 11.0]	115.0	0.14
100.0	515D107M025AA6AE3	0.248 x 0.433 [6.3 x 11.0]	185.0	0.14
220.0	515D227M025BB6AE3	0.315 x 0.453 [8.0 x 11.5]	320.0	0.14
330.0	515D337M025CC6AE3	0.394 x 0.492 [10.0 x 12.5]	420.0	0.14
470.0	515D477M025CD6AE3	0.394 x 0.630 [10.0 x 16.0]	540.0	0.14
1000.0	515D108M025DG6AE3	0.492 x 0.787 [12.5 x 20.0]	950.0	0.14
2200.0	515D228M025EK6AE3	0.630 x 0.984 [16.0 x 25.0]	1550.0	0.14
3300.0	515D338M025EN6AE3	0.630 x 1.240 [16.0 x 31.5]	1950.0	0.14
4700.0	515D478M025FR6AE3	0.709 x 1.398 [18.0 x 35.5]	2360.0	0.14
35 WVDC at + 85 °C, SURGE = 44 V				
4.7	515D475M035JA6AE3	0.197 x 0.433 [5.0 x 11.0]	24.0	0.12
10.0	515D106M035JA6AE3	0.197 x 0.433 [5.0 x 11.0]	36.0	0.12
22.0	515D226M035JA6AE3	0.197 x 0.433 [5.0 x 11.0]	57.0	0.12
33.0	515D336M035JA6AE3	0.197 x 0.433 [5.0 x 11.0]	105.0	0.12
47.0	515D476M035AA6AE3	0.248 x 0.433 [6.3 x 11.0]	140.0	0.12
100.0	515D107M035BB6AE3	0.315 x 0.453 [8.0 x 11.5]	230.0	0.12
220.0	515D227M035CC6AE3	0.394 x 0.492 [10.0 x 12.5]	370.0	0.12
330.0	515D337M035CD6AE3	0.394 x 0.630 [10.0 x 16.0]	490.0	0.12
470.0	515D477M035CG6AE3	0.394 x 0.787 [10.0 x 20.0]	640.0	0.12
1000.0	515D108M035DK6AE3	0.492 x 0.984 [12.5 x 25.0]	1100.0	0.12
2200.0	515D228M035EN6AE3	0.630 x 1.240 [16.0 x 31.5]	1850.0	0.12
3300.0	515D338M035FR6AE3	0.709 x 1.382 [18.0 x 35.5]	2220.0	0.12
4700.0	515D478M035FV6AE3	0.709 x 1.575 [18.0 x 40.0]	2490.0	0.12
50 WVDC at + 85 °C, SURGE = 63 V				
0.1	515D104M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	1.0	0.10
0.22	515D224M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	2.3	0.10
0.33	515D334M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	3.5	0.10
0.47	515D474M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	5.0	0.10
1.0	515D105M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	10.0	0.10
2.2	515D225M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	19.0	0.10
3.3	515D335M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	24.0	0.10
4.7	515D475M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	29.0	0.10

ELECTRICAL DATA AND ORDERING INFORMATION

CAPACITANCE (μ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. RIPPLE at + 85 °C 120 Hz (mA)	Max. DF at + 20 °C 120 Hz
50 WVDC at + 85 °C, SURGE = 63 V				
10.0	515D106M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	44.0	0.10
22.0	515D226M050JA6AE3	0.197 x 0.433 [5.0 x 11.0]	95.0	0.10
33.0	515D336M050AA6AE3	0.248 x 0.433 [6.3 x 11.0]	125.0	0.10
47.0	515D476M050AA6AE3	0.248 x 0.433 [6.3 x 11.0]	150.0	0.10
100.0	515D107M050BB6AE3	0.315 x 0.453 [8.0 x 11.5]	250.0	0.10
220.0	515D227M050CD6AE3	0.394 x 0.630 [10.0 x 16.0]	440.0	0.10
330.0	515D337M050CG6AE3	0.394 x 0.787 [10.0 x 20.0]	580.0	0.10
470.0	515D477M050DG6AE3	0.492 x 0.787 [12.5 x 20.0]	760.0	0.10
1000.0	515D108M050EK6AE3	0.630 x 0.984 [16.0 x 25.0]	1350.0	0.10
2200.0	515D228M050FR6AE3	0.709 x 1.398 [18.0 x 35.5]	2090.0	0.10
63 WVDC at + 85 °C, SURGE = 79 V				
4.7	515D475M063JA6AE3	0.197 x 0.433 [5.0 x 11.0]	45.0	0.08
10.0	515D106M063JA6AE3	0.197 x 0.433 [5.0 x 11.0]	70.0	0.08
22.0	515D226M063AA6AE3	0.248 x 0.433 [6.3 x 11.0]	115.0	0.08
33.0	515D336M063AA6AE3	0.248 x 0.433 [6.3 x 11.0]	140.0	0.08
47.0	515D476M063BB6AE3	0.315 x 0.453 [8.0 x 11.5]	190.0	0.08
100.0	515D107M063CC6AE3	0.394 x 0.492 [10.0 x 12.5]	300.0	0.08
220.0	515D227M063CG6AE3	0.394 x 0.787 [10.0 x 20.0]	490.0	0.08
330.0	515D337M063DG6AE3	0.492 x 0.787 [12.5 x 20.0]	680.0	0.08
470.0	515D477M063DK6AE3	0.492 x 0.984 [12.5 x 25.0]	880.0	0.08
1000.0	515D108M063EN6AE3	0.630 x 1.240 [16.0 x 31.5]	1550.0	0.08
2200.0	515D228M063FV6AE3	0.709 x 1.575 [18.0 x 40.0]	2200.0	0.08
100 WVDC at + 85 °C, SURGE = 125 V				
0.1	515D104M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	2.1	0.08
0.22	515D224M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	4.7	0.08
0.33	515D334M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	7.0	0.08
0.47	515D474M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	10.0	0.08
1.0	515D105M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	21.0	0.08
2.2	515D225M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	30.0	0.08
3.3	515D335M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	40.0	0.08
4.7	515D475M100JA6AE3	0.197 x 0.433 [5.0 x 11.0]	45.0	0.08
10.0	515D106M100AA6AE3	0.248 x 0.433 [6.3 x 11.0]	75.0	0.08
22.0	515D226M100BB6AE3	0.315 x 0.453 [8.0 x 11.5]	130.0	0.08
33.0	515D336M100CC6AE3	0.394 x 0.492 [10.0 x 12.5]	170.0	0.08
47.0	515D476M100CD6AE3	0.394 x 0.630 [10.0 x 16.0]	230.0	0.08
100.0	515D107M100DG6AE3	0.492 x 0.787 [12.5 x 20.0]	400.0	0.08
220.0	515D227M100EK6AE3	0.630 x 0.984 [16.0 x 25.0]	710.0	0.08
330.0	515D337M100EK6AE3	0.630 x 0.984 [16.0 x 25.0]	860.0	0.08
470.0	515D477M100EN6AE3	0.630 x 1.240 [16.0 x 31.5]	1100.0	0.08
1000.0	515D108M100FV6AE3	0.709 x 1.575 [18.0 x 40.0]	1690.0	0.08
160 WVDC at + 85 °C, SURGE = 200 V				
0.47	515D474M160AA6AE3	0.248 x 0.433 [6.3 x 11.0]	12.0	0.20
1.0	515D105M160AA6AE3	0.248 x 0.433 [6.3 x 11.0]	17.0	0.20
2.2	515D225M160AA6AE3	0.248 x 0.433 [6.3 x 11.0]	26.0	0.20
3.3	515D335M160BB6AE3	0.315 x 0.453 [8.0 x 11.5]	35.0	0.20
4.7	515D475M160BB6AE3	0.315 x 0.453 [8.0 x 11.5]	40.0	0.20
10.0	515D106M160CC6AE3	0.394 x 0.492 [10.0 x 12.5]	65.0	0.20
22.0	515D226M160CG6AE3	0.394 x 0.787 [10.0 x 20.0]	110.0	0.20
33.0	515D336M160DG6AE3	0.492 x 0.787 [12.5 x 20.0]	150.0	0.20
47.0	515D476M160DK6AE3	0.492 x 0.984 [12.5 x 25.0]	180.0	0.20
100.0	515D107M160EK6AE3	0.630 x 0.984 [16.0 x 25.0]	300.0	0.20
220.0	515D227M160FR6AE3	0.709 x 1.398 [18.0 x 35.5]	510.0	0.20

Aluminum Capacitors
+ 85 °C, Miniature, Radial Lead

Vishay Sprague

ELECTRICAL DATA AND ORDERING INFORMATION

CAPACITANCE (μ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. RIPPLE at + 85 °C 120 Hz (mA)	Max. DF at + 20 °C 120 Hz
200 WVDC at + 85 °C, SURGE = 250 V				
0.47	515D474M200AA6AE3	0.248 x 0.433 [6.3 x 11.0]	12.0	0.20
1.0	515D105M200AA6AE3	0.248 x 0.433 [6.3 x 11.0]	17.0	0.20
2.2	515D225M200AA6AE3	0.248 x 0.433 [6.3 x 11.0]	26.0	0.20
3.3	515D335M200BB6AE3	0.315 x 0.453 [8.0 x 11.5]	35.0	0.20
4.7	515D475M200CC6AE3	0.394 x 0.492 [10.0 x 12.5]	45.0	0.20
10.0	515D106M200CD6AE3	0.394 x 0.630 [10.0 x 16.0]	70.0	0.20
22.0	515D226M200CG6AE3	0.394 x 0.787 [10.0 x 20.0]	110.0	0.20
33.0	515D336M200DK6AE3	0.492 x 0.984 [12.5 x 25.0]	160.0	0.20
47.0	515D476M200DK6AE3	0.492 x 0.984 [12.5 x 25.0]	180.0	0.20
100.0	515D107M200EN6AE3	0.630 x 1.240 [16.0 x 31.5]	330.0	0.20
220.0	515D227M200FV6AE3	0.709 x 1.575 [18.0 x 40.0]	520.0	0.20
250 WVDC at + 85 °C, SURGE = 300 V				
0.47	515D474M250AA6AE3	0.248 x 0.433 [6.3 x 11.0]	12.0	0.20
1.0	515D105M250AA6AE3	0.248 x 0.433 [6.3 x 11.0]	17.0	0.20
2.2	515D225M250BB6AE3	0.315 x 0.453 [8.0 x 11.5]	30.0	0.20
3.3	515D335M250CC6AE3	0.394 x 0.492 [10.0 x 12.5]	35.0	0.20
4.7	515D475M250CC6AE3	0.394 x 0.492 [10.0 x 12.5]	45.0	0.20
10.0	515D106M250CG6AE3	0.394 x 0.787 [10.0 x 20.0]	70.0	0.20
33.0	515D336M250DK6AE3	0.492 x 0.984 [12.5 x 25.0]	160.0	0.20
47.0	515D476M250EK6AE3	0.630 x 1.240 [16.0 x 31.5]	210.0	0.20
100.0	515D107M250FR6AE3	0.709 x 1.575 [18.0 x 40.0]	340.0	0.20
315 WVDC at + 85 °C, SURGE = 365 V				
1.0	515D105M315AA6AE3	0.248 x 0.433 [6.3 x 11.0]	17.0	0.20
2.2	515D225M315BB6AE3	0.315 x 0.453 [8.0 x 11.5]	30.0	0.20
3.3	515D335M315CC6AE3	0.394 x 0.492 [10.0 x 12.5]	35.0	0.20
4.7	515D475M315CD6AE3	0.394 x 0.630 [10.0 x 16.0]	45.0	0.20
10.0	515D106M315CG6AE3	0.394 x 0.787 [10.0 x 20.0]	70.0	0.20
22.0	515D226M315DK6AE3	0.492 x 0.984 [12.5 x 25.0]	120.0	0.20
33.0	515D336M315EK6AE3	0.630 x 0.984 [16.0 x 25.0]	150.0	0.20
47.0	515D476M315EN6AE3	0.630 x 1.240 [16.0 x 31.5]	190.0	0.20
100.0	515D107M315FV6AE3	0.709 x 1.575 [18.0 x 40.0]	340.0	0.20
350 WVDC at + 85 °C, SURGE = 400 V				
1.0	515D105M350BB6AE3	0.315 x .453 [8.0 x 11.5]	18.0	0.25
2.2	515D225M350CC6AE3	0.394 x .492 [10.0 x 12.5]	28.0	0.25
3.3	515D335M350CD6AE3	0.394 x .630 [10.0 x 16.0]	35.0	0.25
4.7	515D475M350CD6AE3	0.394 x .630 [10.0 x 16.0]	40.0	0.25
10.0	515D106M350DG6AE3	0.492 x .787 [12.5 x 20.0]	70.0	0.25
22.0	515D226M350DK6AE3	0.492 x .984 [12.5 x 25.0]	110.0	0.25
33.0	515D336M350EN6AE3	0.630 x 1.240 [16.0 x 31.5]	140.0	0.25
47.0	515D476M350FR6AE3	0.709 x 1.398 [18.0 x 35.5]	220.0	0.25
400 WVDC at + 85 °C, SURGE = 450 V				
1.0	515D105M400BB6AE3	0.315 x 0.453 [8.0 x 11.5]	18.0	0.25
2.2	515D225M400CC6AE3	0.394 x 0.492 [10.0 x 12.5]	28.0	0.25
3.3	515D335M400CD6AE3	0.394 x 0.630 [10.0 x 16.0]	35.0	0.25
4.7	515D475M400CD6AE3	0.394 x 0.787 [10.0 x 20.0]	45.0	0.25
10.0	515D106M400DG6AE3	0.492 x 0.787 [12.5 x 20.0]	70.0	0.25
22.0	515D226M400DK6AE3	0.630 x 0.984 [16.0 x 25.0]	110.0	0.25
33.0	515D336M400EN6AE3	0.630 x 1.240 [16.0 x 31.5]	140.0	0.25
47.0	515D476M400FR6AE3	0.709 x 1.398 [18.0 x 35.5]	220.0	0.25

ELECTRICAL DATA AND ORDERING INFORMATION

CAPACITANCE (μ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. RIPPLE at + 85 °C 120 Hz (mA)	Max. DF at + 20 °C 120 Hz
450 WVDC at + 85 °C, SURGE = 500 V				
1.0	515D105M450CC6AE3	0.394 x 0.492 [10.0 x 12.5]	19.0	0.25
2.2	515D225M450CD6AE3	0.394 x 0.630 [10.0 x 16.0]	29.0	0.25
4.7	515D475M450DG6AE3	0.492 x 0.787 [12.5 x 20.0]	50.0	0.25
10.0	515D106M450EK6AE3	0.492 x 0.984 [12.5 x 25.0]	75.0	0.25
22.0	515D226M450EN6AE3	0.630 x 1.240 [16.0 x 31.5]	110.0	0.25
33.0	515D336M450FR6AE3	0.709 x 1.398 [18.0 x 35.5]	170.0	0.25

LOW PROFILE RATINGS in inches [millimeters]

CAPACITANCE (μ F)	PART NUMBER	NOMINAL CASE SIZE D x L	Max. RIPPLE at + 85 °C 120 Hz (mA)	Max. DF at + 20 °C 120 Hz
6.3 WVDC at + 85 °C, SURGE = 8 V				
22.0	515D226M6R3HW6AE3	0.157 x 0.276 [4.0 x 7.0]	34.0	0.24
33.0	515D336M6R3JW6AE3	0.197 x 0.276 [5.0 x 7.0]	42.0	0.24
47.0	515D476M6R3JW6AE3	0.197 x 0.276 [5.0 x 7.0]	50.0	0.24
100.0	515D107M6R3AW6AE3	0.248 x 0.276 [6.3 x 7.0]	77.0	0.24
10 WVDC at + 85 °C, SURGE = 13 V				
22.0	515D226M010JW6AE3	0.197 x 0.276 [5.0 x 7.0]	38.0	0.20
33.0	515D336M010JW6AE3	0.197 x 0.276 [5.0 x 7.0]	47.0	0.20
47.0	515D476M010AW6AE3	0.248 x 0.276 [6.3 x 7.0]	59.0	0.20
16 WVDC at + 85 °C, SURGE = 20 V				
10.0	515D106M016HW6AE3	0.157 x 0.276 [4.0 x 7.0]	28.0	0.16
22.0	515D226M016JW6AE3	0.197 x 0.276 [5.0 x 7.0]	44.0	0.16
33.0	515D336M016AW6AE3	0.248 x 0.276 [6.3 x 7.0]	57.0	0.16
47.0	515D476M016AW6AE3	0.248 x 0.276 [6.3 x 7.0]	68.0	0.16
25 WVDC at + 85 °C, SURGE = 32 V				
10.0	515D106M025JW6AE3	0.197 x 0.276 [5.0 x 7.0]	33.0	0.14
22.0	515D226M025AW6AE3	0.248 x 0.276 [6.3 x 7.0]	51.0	0.14
33.0	515D336M025AW6AE3	0.248 x 0.276 [6.3 x 7.0]	63.0	0.14
35 WVDC at + 85 °C, SURGE = 44 V				
4.7	515D475M035HW6AE3	0.157 x 0.276 [4.0 x 7.0]	24.0	0.12
10.0	515D106M035JW6AE3	0.197 x 0.276 [5.0 x 7.0]	36.0	0.12
22.0	515D226M035AW6AE3	0.248 x 0.276 [6.3 x 7.0]	57.0	0.12
50 WVDC at + 85 °C, SURGE = 63 V				
0.1	515D104M050JW6AE3	0.157 x 0.276 [4.0 x 7.0]	1.0	0.10
0.22	515D224M050HW6AE3	0.157 x 0.276 [4.0 x 7.0]	2.3	0.10
0.33	515D334M050HW6AE3	0.157 x 0.276 [4.0 x 7.0]	3.5	0.10
0.47	515D474M050HW6AE3	0.157 x 0.276 [4.0 x 7.0]	5.0	0.10
1.0	515D105M050HW6AE3	0.157 x 0.276 [4.0 x 7.0]	10.0	0.10
2.2	515D225M050HW6AE3	0.157 x 0.276 [4.0 x 7.0]	19.0	0.10
3.3	515D335M050HW6AE3	0.157 x 0.276 [4.0 x 7.0]	24.0	0.10
4.7	515D475M050JW6AE3	0.197 x 0.276 [5.0 x 7.0]	29.0	0.10
10.0	515D106M050AW6AE3	0.248 x 0.276 [6.3 x 7.0]	44.0	0.10



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515D106M250CG6A	515D107M010JA6A	515D107M016AA6A	515D107M025AA6A	515D107M035BB6A
515D107M050BB6A	515D225M450CD6A	515D226M016JA6A	515D226M025JA6A	515D226M035JA6A
515D226M050JA6A	515D336M025JA6A	515D336M035	515D336M050AA6A	515D336M350EN6A
515D336M450FR6A	515D337M010BB6A	515D337M016BB6A	515D476M350FR6A	515D477M010BB6A
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515D105M100JA6A	515D105M250AA6A	515D109M010FR6A	515D109M016FV6A	515D159M010FV6A
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515D336M016JA6A	515D475M450DG6A	515D476M010JA6A	515D476M016JA6A	515D476M025JA6A
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515D107M050BB8P	515D107M063CC6A	515D107M063CC8P	515D107M100DG6A	515D107M160EK6A
515D107M6R3AW6A	515D108M010CD6A	515D108M016CG6A	515D108M025DG6A	515D108M035DK6A
515D108M050EK6A	515D108M063EN6A	515D227M050CD6A	515D227M063CG6A	515D227M100EK6A
515D227M160FR6A	515D228M010DG6A	515D228M010DG8P	515D228M016DK6A	515D228M025EK6A
515D228M035EN6A	515D228M050FR6A	515D475M050JA6A	515D475M100JA6A	515D475M160BB6A
515D475M250CC6A	515D475M350CD6A	515D226M100BB6A	515D226M160CG6A	515D226M350DK6A
515D226M450EN6A	515D227M010AA6A	515D227M016BB6A	515D227M025BB6A	515D227M035CC6A