

Aluminum Capacitors + 85 °C, Miniature, Radial Lead

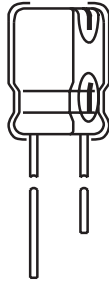


Fig.1 Component outline

FEATURES

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



RoHS
COMPLIANT

QUICK REFERENCE DATA	
DESCRIPTION	VALUE
Nominal case size Ø D x 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	± 20 %
Rated voltage range, U _R	6.3 WVDC to 450 WVDC
Termination	2 radial leads
Life validation test at 85 °C	2000 hours: ΔCAP ± 20 % from initial measurement. ΔDF 2 x initial specified limit. ΔDCL ≤ initial specified limit
Shelf life at 85 °C	1000 hours: ΔCAP ± 20 % from initial measurement. ΔDF 2 x initial specified limit. ΔDCL ≤ initial specified limit
DC leakage current	rated voltage for 1 and 2 minutes for 6.3 WVDC to 100 WVDC units: I < 0.03 CV or 4 µA (whichever is greater). I < 0.04 CV or 3 µA (whichever is greater). rated voltage for 1 minute for 160 WVDC to 450 WVDC units: I < 0.1 CV + 40 µA and CV ≤ 1000; I < 0.04 CV + 100 µA and CV > 1000

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 °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	-

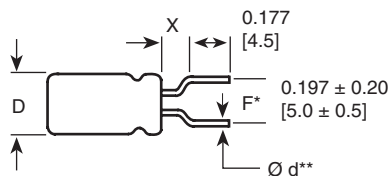
DIMENSIONS in inches [millimeters]

CASE CODE	NOMINAL CASE SIZE D x 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

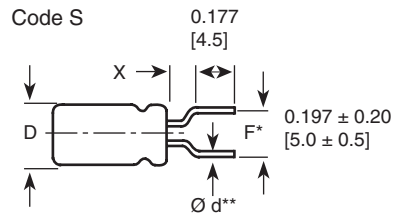
DIMENSIONS in inches [millimeters]				
CASE CODE	NOMINAL CASE SIZE D x L	LEAD SPACING S	NOMINAL LEAD DIAMETER D	TYPICAL WEIGHT (g)
CC	0.394 x 0.492 [10.0 x 12.5]	0.197 [5.0]	0.024 [0.60]	1.48
CD	0.394 x 0.630 [10.0 x 16.0]	0.197 [5.0]	0.024 [0.60]	1.75
CG	0.394 x 0.787 [10.0 x 20.0]	0.197 [5.0]	0.024 [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]

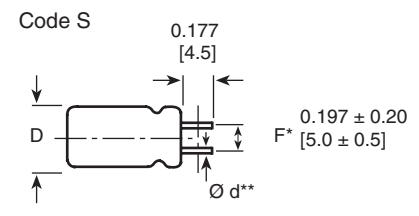
Code F



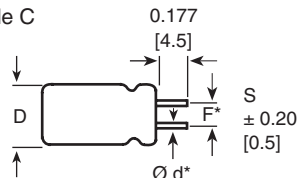
Code S



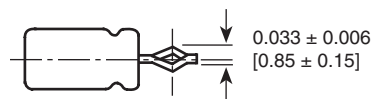
Code S



Code C

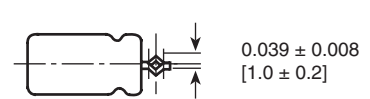


Code S



(4, 5, 6.3, 8)

Code S



(10, 12.5, 16, 18)

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

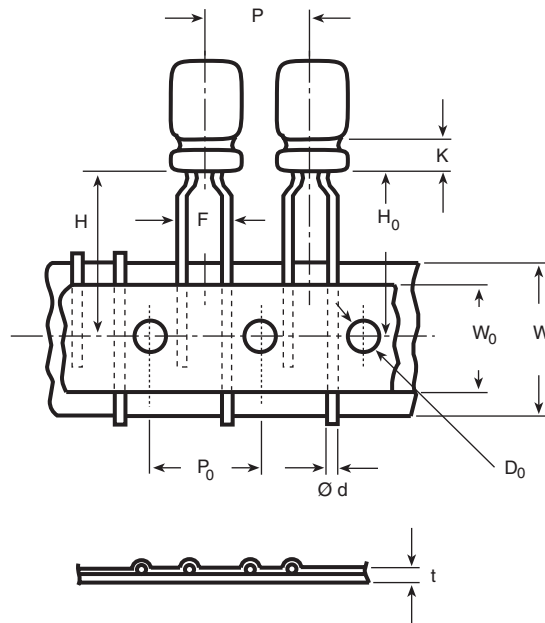
Note

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]



Aluminum Capacitors
+ 85 °C, Miniature, Radial Lead

Vishay Sprague

ORDERING EXAMPLE

Electrolytic capacitor 515D series: 515D 107 M 6R3 JA 6 A E3

DESCRIPTION	
CODE	EXPLANATION
515D	product type
107	capacitance value (100 µF)
M	tolerance (M = ± 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 (µF)	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



ELECTRICAL DATA AND ORDERING INFORMATION				
CAPACITANCE (μF)	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

Aluminum Capacitors
+ 85 °C, Miniature, Radial Lead

Vishay Sprague

ELECTRICAL DATA AND ORDERING INFORMATION				
CAPACITANCE (μF)	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

**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

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
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



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.