

## Aluminum Capacitors + 85 °C, Snap-In, General Purpose

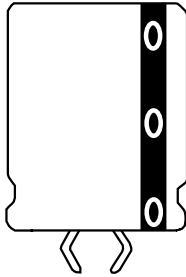


Fig. 1 Component Outlines

### FEATURES

- Economical
- General purpose design
- Wide voltage range



**RoHS**  
COMPLIANT

QUICK REFERENCE DATA	
DESCRIPTION	VALUE
Nominal case size Ø D x L in inches (mm)	1.38 x 3.15 (35.0 x 80.0)
Operating temperature	- 40 °C to + 85 °C
Rated capacitance range, C <sub>R</sub>	39 µF to 180 000 µF
Tolerance on C <sub>R</sub>	± 20 %
Rated voltage range, U <sub>R</sub>	6.3 WVDC to 450 WVDC
Termination	Snap-in
Life validation test at 85 °C	2000 h: ΔCAP ≤ 15 % from initial measurement. ΔESR ≤ 1.5 x initial specified limit. ΔDCL ≤ initial specified limit
Shelf life at 85 °C	500 h: ΔCAP ≤ 15 % from initial measurement. ΔESR ≤ 1.3 x initial specified limit. ΔDCL ≤ 2 x initial specified limit
DC leakage current	$I = K \cdot \sqrt{CV}$ K = 4.0 at + 25 °C I in µA, C in µF, V in Volts

RIPPLE CURRENT MULTIPLIERS			
TEMPERATURE			
AMBIENT TEMPERATURE		MULTIPLIERS	
- 55 °C		2.0	
- 65 °C		1.7	
- 75 °C		1.4	
- 85 °C		1.0	
FREQUENCY (Hz)			
WVDC	50 TO 60	300 TO 1000	1000 AND UP
16 to 49	0.85	1.10	1.15
50 to 199	0.83	1.15	1.20
200 to 400	0.80	1.30	1.40
ESL (TYPICAL VALUES AT 1 MHz TO 10 MHz)			
Nominal Diameter	0.98 (25.0)	1.18 (30.0)	1.38 (35.0)
Typical ESL (nH)	8.0	10.0	12.0

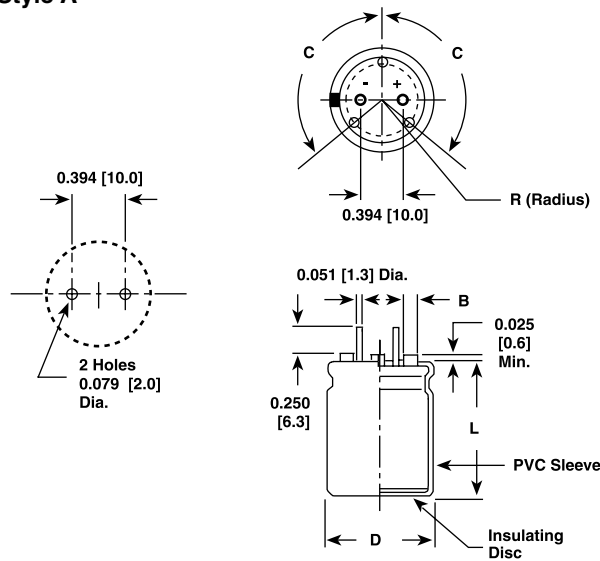
DIMENSIONS in inches (millimeters)									
CASE CODE	DIAMETER		LENGTH		CASE CODE	DIAMETER		LENGTH	
	D + 0.04 - 0 (+ 1.0 - 0)		L ± 0.08 (2.0)			D + 0.04 - 0 (+ 1.0 - 0)		L ± 0.08 (2.0)	
JA	1.00 (25.0)		1.00 (25.0)		KD	1.18 (30.0)		1.57 (40.0)	
JB	1.00 (25.0)		1.18 (30.0)		KE	1.18 (30.0)		2.00 (50.0)	
JC	1.00 (25.0)		1.38 (35.0)		MB	1.38 (35.0)		1.18 (30.0)	
JD	1.00 (25.0)		1.57 (40.0)		MC	1.38 (35.0)		1.38 (35.0)	
JE	1.00 (25.0)		2.00 (50.0)		MD	1.38 (35.0)		1.57 (40.0)	
KA	1.18 (30.0)		1.00 (25.0)		ME	1.38 (35.0)		2.00 (50.0)	
KB	1.18 (30.0)		1.18 (30.0)		MF	1.38 (35.0)		2.50 (63.0)	
KC	1.18 (30.0)		1.38 (35.0)		MG	1.38 (35.0)		3.18 (80.0)	



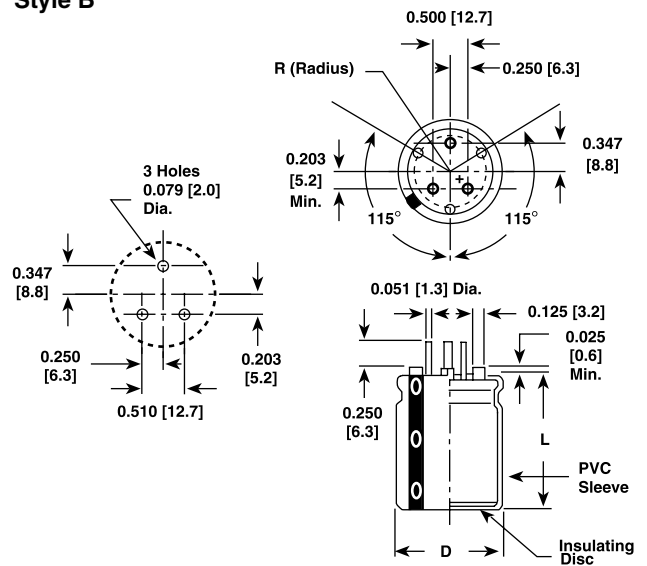
DIMENSIONS in inches (millimeters)					
CIRCUIT BOARD MOUNT TERMINAL DIMENSIONS					
DIAMETER		STYLE A			STYLE B
D	CASE CODE	B	R	C	R
1.00 (25.0)	J	0.093 (2.4)	0.301 (7.6)	140°	N/A
1.18 (30.0)	K	0.125 (3.2)	0.363 (9.2)	120°	0.391 (9.9)
1.38 (35.0)	M	0.125 (3.2)	0.458 (11.6)	120°	0.458 (11.6)

**DIMENSIONS AND AVAILABLE FORMS**

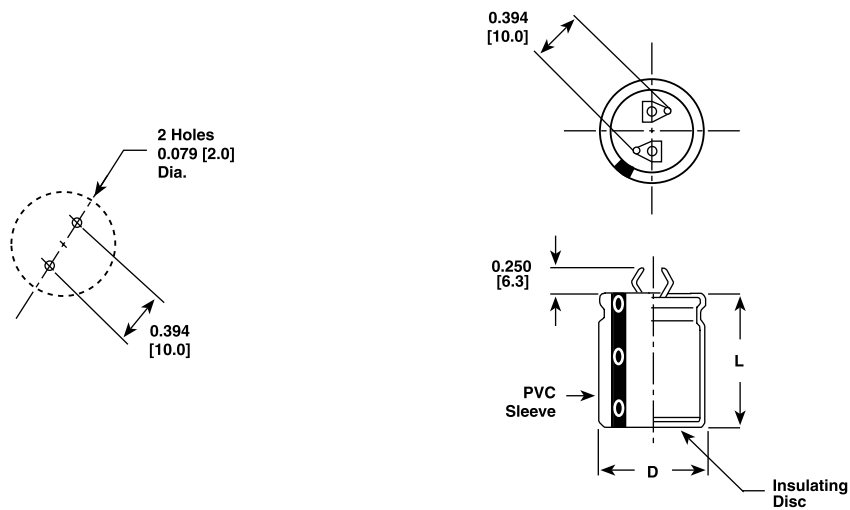
**Style A**

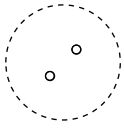
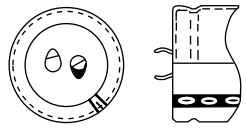
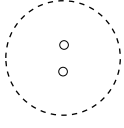
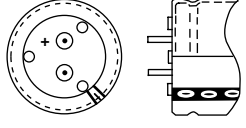
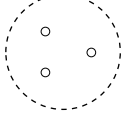
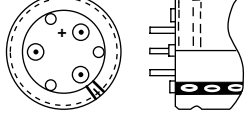


**Style B**



**Style D**



TERMINAL CONFIGURATION in inches (millimeters)					
LEAD CODE	DESCRIPTION	OUTLINE DRAWINGS		AVAILABLE DIAMETERS	AVAILABLE VOLTAGES AND TYPES
		MOUNTING CONFIGURATION	TERMINAL CONFIGURATION		
D	Standard 2 pin snap-in			0.98 (25.0) - J 1.18 (30.0) - K 1.38 (35.0) - M	All voltages 81D, 81DA 82D, 82DA
A	2 straight wire lead molded cover with standoffs			0.98 (25.0) - J 1.18 (30.0) - K 1.38 (35.0) - M	All voltages 82D, 82DA  $V \leq 250 V_{DC}$ 81D, 81DA
B	3 straight wire lead molded cover with standoffs			1.18 (30.0) - K 1.38 (35.0) - M	All voltages 82D, 82DA  $V \leq 250 V_{DC}$ 81D, 81DA

**ORDERING EXAMPLE**

Electrolytic capacitor 82D series:

82D 122 M 050 HA 2 D E3

DESCRIPTION	
CODE	EXPLANATION
82D	Product type
122	Capacitance value (1200 $\mu$ F)
M	Tolerance (M = $\pm 20$ %)
050	Voltage rating at 85 °C (50 V)
HA	Can size (see dimensions table)
2	PVC insulating sleeve
D	Terminal style (D = 2 pin snap-in)
E3	RoHS compliant

ELECTRICAL DATA AND ORDERING INFORMATION						
CAPACITANCE ( $\mu$ F)	PART NUMBER	NOMINAL CASE SIZE D x L	MAX. ESR at 25 °C (m $\Omega$ )		MAX. RIPPLE at + 85 °C (A)	
			120 Hz	20 kHz to 40 kHz	120 Hz	20 kHz to 40 kHz
<b>16 WVDC at + 85 °C, SURGE = 20 V</b>						
15 000.0	82D153M016JC2DE3	0.984 x 1.378 (25.0 x 35.0)	58.0	43.0	3.33	3.87
22 000.0	82D223M016KB2DE3	1.181 x 1.181 (30.0 x 30.0)	53.7	41.0	3.70	4.20
33 000.0	82D333M016KD2DE3	1.181 x 1.575 (30.0 x 40.0)	35.3	27.0	5.00	5.77
33 000.0	82D333M016MC2DE3	1.378 x 1.378 (35.0 x 35.0)	28.0	21.0	5.96	6.87
47 000.0	82D473M016MD2DE3	1.378 x 1.575 (35.0 x 40.0)	23.0	17.0	6.86	6.65
<b>25 WVDC at + 85 °C, SURGE = 30 V</b>						
6800.0	82D682M025JB2DE3	0.984 x 1.181 (25.0 x 30.0)	67.0	47.0	2.94	3.49
10 000.0	82D103M025JD2DE3	0.984 x 1.545 (25.0 x 40.0)	43.4	31.0	4.22	4.96
15 000.0	82D153M025JE2DE3	0.984 x 1.969 (25.0 x 50.0)	33.9	24.0	4.97	5.96

Aluminum Capacitors  
+ 85 °C, Snap-In, General Purpose

Vishay Sprague

<b>ELECTRICAL DATA AND ORDERING INFORMATION</b>						
CAPACITANCE ( $\mu$ F)	PART NUMBER	NOMINAL CASE SIZE D x L	MAX. ESR at 25 °C (m $\Omega$ )		MAX. RIPPLE at + 85 °C (A)	
			120 Hz	20 kHz to 40 kHz	120 Hz	20 kHz to 40 kHz
<b>25 WVDC at + 85 °C, SURGE = 30 V</b>						
6800.0	82D682M025KA2DE3	1.181 x 0.984 (30.0 x 25.0)	71.0	54.0	3.00	3.47
10 000.0	82D103M025KB2DE3	1.181 x 1.181 (30.0 x 30.0)	54.0	41.0	3.70	4.20
15 000.0	82D153M025KD2DE3	1.181 x 1.575 (30.0 x 40.0)	36.4	27.0	5.00	5.77
22 000.0	82D223M025MD2DE3	1.378 x 1.575 (35.0 x 40.0)	23.0	17.0	6.84	7.96
<b>35 WVDC at + 85 °C, SURGE = 40 V</b>						
4700.0	82D472M035JB2DE3	0.984 x 1.181 (25.0 x 30.0)	72.0	47.0	2.82	3.49
6800.0	82D682M035JD2DE3	0.984 x 1.575 (25.0 x 40.0)	46.6	30.0	4.08	5.08
10000.0	82D103M035JE2DE3	0.984 x 1.969 (25.0 x 50.0)	36.3	24.0	4.87	5.96
4700.0	82D472M035KA2DE3	1.181 x 0.984 (30.0 x 25.0)	75.0	54.0	2.92	3.42
12 000.0	82D123M035KD2DE3	1.181 x 1.575 (30.0 x 40.0)	37.7	27.0	4.89	5.77
10 000.0	82D103M035MB2DE3	1.378 x 1.181 (35.0 x 30.0)	36.0	24.0	4.97	6.10
15 000.0	82D153M035MD2DE3	1.378 x 1.575 (35.0 x 40.0)	25.0	16.3	6.57	8.13
<b>50 WVDC at + 85 °C, SURGE = 63 V</b>						
2200.0	82D222M050JB2DE3	0.984 x 1.181 (25.0 x 30.0)	85.0	48.0	2.61	3.49
3900.0	82D392M050JD2DE3	0.984 x 1.575 (25.0 x 40.0)	53.6	31.0	3.79	4.96
2700.0	82D272M050KA2DE3	1.181 x 0.984 (30.0 x 25.0)	85.0	54.0	2.73	3.42
4700.0	82D472M050MB2DE3	1.378 x 1.181 (35.0 x 30.0)	43.0	24.0	4.56	6.10
6800.0	82D682M050MD2DE3	1.378 x 1.575 (35.0 x 40.0)	28.0	16.0	6.21	8.21
10 000.0	82D103M050ME2DE3	1.378 x 1.969 (35.0 x 50.0)	22.0	13.0	7.60	9.87
<b>63 WVDC at + 85 °C, SURGE = 79 V</b>						
1500.0	82D152M063JA2DE3	0.984 x 0.984 (25.0 x 25.0)	121.0	63.0	2.05	2.86
2200.0	82D222M063JC2DE3	0.984 x 1.378 (25.0 x 35.0)	72.0	38.0	2.97	4.09
3300.0	82D332M063JD2DE3	0.984 x 1.575 (25.0 x 40.0)	57.0	30.0	3.69	5.08
3300.0	82D332M063KB2DE3	1.181 x 1.181 (30.0 x 30.0)	68.0	41.0	3.28	4.20
6800.0	82D682M063KE2DE3	1.181 x 1.969 (30.0 x 50.0)	34.0	22.0	5.56	6.89
4700.0	82D472M063MC2DE3	1.378 x 1.378 (35.0 x 35.0)	36.0	20.0	5.24	7.04
<b>100 WVDC at + 85 °C, SURGE = 125 V</b>						
680.0	82D681M100JB2DE3	0.984 x 1.181 (25.0 x 30.0)	188.0	86.0	1.75	2.59
1000.0	82D102M100KB2DE3	1.181 x 1.181 (30.0 x 30.0)	136.0	66.0	2.31	3.31
1500.0	82D152M100KC2DE3	1.181 x 1.378 (30.0 x 35.0)	106.0	52.0	2.75	3.95
2200.0	82D222M100KE2DE3	1.181 x 1.969 (30.0 x 50.0)	66.0	33.0	4.02	5.69
<b>200 WVDC at + 85 °C, SURGE = 250 V</b>						
220.0	82D221M200JA2DE3	0.984 x 0.984 (25.0 x 25.0)	625.0	272.0	0.967	1.46
470.0	82D471M200JD2DE3	0.984 x 1.575 (25.0 x 40.0)	271.0	121.0	1.79	2.68
330.0	82D331M200KA2DE3	1.181 x 0.984 (30.0 x 25.0)	498.0	192.0	1.21	1.96
470.0	82D471M200KB2DE3	1.181 x 1.181 (30.0 x 30.0)	294.0	136.0	1.64	2.48
680.0	82D681M200KD2DE3	1.181 x 1.575 (30.0 x 40.0)	221.0	87.0	2.14	3.41
1000.0	82D102M200KE2DE3	1.181 x 1.969 (30.0 x 50.0)	142.0	67.0	2.89	4.22
820.0	82D821M200MC2DE3	1.378 x 1.378 (35.0 x 35.0)	189.0	93.0	2.46	3.51
1000.0	82D102M200MD2DE3	1.378 x 1.575 (35.0 x 40.0)	149.0	74.0	2.88	3.41



<b>ELECTRICAL DATA AND ORDERING INFORMATION</b>						
CAPACITANCE ( $\mu$ F)	PART NUMBER	NOMINAL CASE SIZE D x L	MAX. ESR at 25 °C (m $\Omega$ )		MAX. RIPPLE at + 85 °C (A)	
			120 Hz	20 kHz to 40 kHz	120 Hz	20 kHz to 40 kHz
<b>250 WVDC at + 85 °C, SURGE = 300 V</b>						
220.0	82D221M250JB2DE3	0.984 x 1.181 (25.0 x 30.0)	513.0	189.0	1.13	1.94
330.0	82D331M250JD2DE3	0.984 x 1.575 (25.0 x 40.0)	382.0	121.0	1.51	2.79
470.0	82D471M250MB2DE3	1.378 x 1.181 (35.0 x 30.0)	281.0	117.0	1.92	3.07
680.0	82D681M250MD2DE3	1.378 x 1.575 (35.0 x 40.0)	209.0	74.0	2.43	4.26
1000.0	82D102M250ME2DE3	1.378 x 1.969 (35.0 x 50.0)	132.0	58.0	3.32	5.21
<b>400 WVDC at + 85 °C, SURGE = 450 V</b>						
68.0	82D680M400JA2DE3	0.984 x 0.984 (25.0 x 25.0)	3020.0	1720.0	0.44	0.58
100.0	82D101M400JB2DE3	0.984 x 1.181 (25.0 x 30.0)	2060.0	1176.0	0.56	0.74
150.0	82D151M400KB2DE3	1.181 x 1.181 (30.0 x 30.0)	1430.0	820.0	0.76	1.00
220.0	82D221M400KD2DE3	1.181 x 1.575 (30.0 x 40.0)	820.0	470.0	1.10	1.46
330.0	82D331M400MD2DE3	1.378 x 1.575 (35.0 x 40.0)	630.0	360.0	1.39	1.85
<b>450 WVDC at + 85 °C, SURGE = 500 V</b>						
56.0	82D560M450JA2DE3	0.984 x 0.984 (25.0 x 25.0)	3280.0	1730.0	0.42	0.58
100.0	82D101M450JC2DE3	0.984 x 1.378 (25.0 x 35.0)	1730.0	915.0	0.65	0.89
150.0	82D151M450KC2DE3	1.181 x 1.378 (30.0 x 35.0)	1150.0	610.0	0.89	1.22
220.0	82D221M450MC2DE3	1.378 x 1.378 (35.0 x 35.0)	870.0	460.0	1.14	1.56
330.0	82D331M450ME2DE3	1.378 x 1.969 (35.0 x 50.0)	510.0	274.0	1.68	2.29

**Note**

- Additional Part Numbers in stock include 82D472M050JE2DE3 and 82D681M250MD2DE3. Many other capacitance ratings and voltages are available upon request. Please call for a quotation.



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