

LEAD STYLE CONFIGURATIONS AND CODES				
STRAIGHT UNEVEN LEADS CODES 1, 3, AND Y	STRAIGHT EVEN LEADS CODES 2, 4, AND 5	“OUTSIDE HOCKEY STICK” CODES 6 AND 7	“SNAP-IN” CODE 9	“HAIRPIN” CODES X, Z

Notes

- Wire diameter (nominal) 0.020" (0.51 mm)
- L = lead length
- P = pitch or lead spacing

AVAILABLE LEAD STYLES AND PACKAGING TYPES PER CASE SIZE											
LEAD STYLE / CASE	1	2	3	4	5	6	7	9	X	Y	Z
A	Bulk	Bulk Reel Ammo	-	-	Bulk Reel Ammo	Bulk Reel Ammo	Bulk Reel Ammo	Bulk Reel Ammo	Bulk Reel Ammo	Bulk	Bulk Reel Ammo
B											
C											
D											
E	-	-	Bulk	Bulk / Reel Ammo	-	-	-	-	-	-	-
F	-	-	Bulk	Bulk / Reel Ammo	-	-	-	-	-	-	-

DIMENSIONS FOR LEAD STYLES 1, 2, 3, 4, 5, Y, 6 in inches [millimeters]										
LEAD STYLE		1, 2, 3, 4		1, 3	2, 4	5, Y		6		
CASE	D (max.)	P ⁽¹⁾ ± 0.024 [0.60]	H (max.)	L ⁽²⁾ (min.)	L ⁽²⁾ ± 0.118 [3.0]	P ⁽¹⁾ ± 0.03 [0.76]	L ⁽²⁾ ± 0.118 [3.0]	P ⁽¹⁾ ± 0.024 [0.60]	H ₁ (max.)	L ⁽²⁾
A	0.173 [4.40]	0.100 [2.54]	0.280 [7.11]	0.591 [15.0]	0.748 [19.0]	0.125 [3.18]	0.748 [19.0]	0.200 [5.08]	0.378 [9.61]	0.240 ± 0.030 [6.1 ± 0.76]
B	0.197 [5.00]	0.100 [2.54]	0.300 [7.62]	0.591 [15.0]	0.748 [19.0]	0.125 [3.18]	0.748 [19.0]	0.200 [5.08]	0.398 [10.11]	0.240 ± 0.030 [6.1 ± 0.76]
C	0.217 [5.50]	0.100 [2.54]	0.360 [9.14]	0.591 [15.0]	0.748 [19.0]	0.125 [3.18]	0.748 [19.0]	0.200 [5.08]	0.458 [11.64]	0.240 ± 0.030 [6.1 ± 0.76]
D	0.236 [6.00]	0.100 [2.54]	0.400 [10.16]	0.591 [15.0]	0.748 [19.0]	0.125 [3.18]	0.748 [19.0]	0.200 [5.08]	0.498 [12.66]	0.240 ± 0.030 [6.1 ± 0.76]
E	0.339 [8.60]	0.200 [5.08]	0.492 [12.50]	0.591 [15.0]	0.748 [19.0]	n/a	n/a	0.200 [5.08]	0.591 [15.00]	1.0 ± 0.122 [25.4 ± 3.1]
F	0.378 [9.60]	0.200 [5.08]	0.650 [16.50]	0.591 [15.0]	0.748 [19.0]	n/a	n/a	0.200 [5.08]	0.748 [19.00]	1.0 ± 0.122 [25.4 ± 3.1]

Notes

- (1) Pitch or lead spacing P measured within 0.05" [1.27 mm] of the body of the capacitor or from the bottom of the crimp
- (2) Lead length L is for bulk packaging



DIMENSIONS FOR LEAD STYLES 7, 9, X, Z in inches [millimeters]													
LEAD STYLE		7			9			X, Z				X	Z
CASE	D max.	P ⁽¹⁾ ± 0.024 [0.60]	H ₁ max.	L ⁽²⁾ ± 0.03 [0.76]	P ⁽¹⁾ ± 0.024 [0.60]	H ₁ max.	L ⁽²⁾ ± 0.03 [0.76]	D max.	H max.	H ₁ max.	L ⁽²⁾ ± 0.125 [3.175]	P ⁽¹⁾ ± 0.024 [0.60]	P ⁽¹⁾ ± 0.024 [0.60]
A	0.173 [4.40]	0.25 [6.35]	0.378 [9.61]	0.240 ± 0.030 [6.1 ± 0.76]	0.200 [5.08]	0.398 [10.11]	0.240 [6.10]	0.173 [4.40]	0.280 [7.11]	0.340 [8.64]	0.750 [19.05]	0.100 [2.54]	0.125 [3.175]
B	0.197 [5.00]	0.25 [6.35]	0.398 [10.12]	0.240 ± 0.030 [6.1 ± 0.76]	0.200 [5.08]	0.418 [10.62]	0.240 [6.10]	0.197 [5.00]	0.300 [7.62]	0.360 [9.14]	0.750 [19.05]	0.100 [2.54]	0.125 [3.175]
C	0.217 [5.50]	0.25 [6.35]	0.458 [11.64]	0.240 ± 0.030 [6.1 ± 0.76]	0.200 [5.08]	0.478 [12.14]	0.240 [6.10]	0.217 [5.50]	0.360 [9.14]	0.420 [10.67]	0.750 [19.05]	0.100 [2.54]	0.125 [3.175]
D	0.236 [6.00]	0.25 [6.35]	0.498 [12.66]	0.240 ± 0.030 [6.1 ± 0.76]	0.200 [5.08]	0.518 [13.16]	0.240 [6.10]	0.236 [6.00]	0.400 [10.16]	0.460 [11.68]	0.750 [19.05]	0.100 [2.54]	0.125 [3.175]

Notes

- (1) Pitch or lead spacing P measured within 0.05" [1.27 mm] of the body of the capacitor or from the bottom of the crimp
- (2) Lead length L is for bulk packaging

199D OBSOLETE VS. CURRENT ORDERING CROSS REFERENCE		
OBSOLETE	NEW	DESCRIPTION
A1	1V1	PITCH 0.100, UNEVEN STRAIGHT LEADS, BULK CASES A - D
A1	3V1	PITCH 0.200, UNEVEN STRAIGHT LEADS, BULK, CASES E, F
A1	2V1	PITCH 0.100, EVEN STRAIGHT LEADS, BULK, CASES A - D
A6	2B1	PITCH 0.100, EVEN STRAIGHT LEADS, REEL POSITIVE LEADER, CASES A - D
A6	2A1	PITCH 0.100, EVEN STRAIGHT LEADS, AMMO, CASES A - D
A1	4V1	PITCH 0.200, EVEN STRAIGHT LEADS, BULK, CASES E, F
A6	4B1	PITCH 0.200, EVEN STRAIGHT LEADS, REEL POSITIVE LEADER, CASES E, F
A6	4A1	PITCH 0.200, EVEN STRAIGHT LEADS, AMMO, CASES E, F
A2	5V1	PITCH 0.125, EVEN STRAIGHT LEADS, BULK, CASES A - D
A7	5B1	PITCH 0.125, EVEN STRAIGHT LEADS, REEL POSITIVE LEADER, CASES A - D
A7	5A1	PITCH 0.125, EVEN STRAIGHT LEADS, AMMO, CASES A - D
A2	YV1	PITCH 0.125, UNEVEN STRAIGHT LEADS, BULK, CASES A - D
B1	XV1	PITCH 0.100, HAIRPIN LEADS, BULK CASES A - D
B6	XB1	PITCH 0.100, HAIRPIN LEADS, REEL POSITIVE LEADER, CASES A - D
B6	XA1	PITCH 0.100, HAIRPIN LEADS, AMMO, CASES A - D
B2	ZV1	PITCH 0.125, HAIRPIN LEADS, BULK, CASES A - D
B7	ZB1	PITCH 0.125, HAIRPIN LEADS, REEL POSITIVE LEADER, CASES A - D
B7	ZA1	PITCH 0.125, HAIRPIN LEADS, AMMO, CASES A - D
E2	6V1	PITCH 0.200, HOCKEY STICK LEADS, BULK, CASES A - F
E7	6B1	PITCH 0.200, HOCKEY STICK LEADS, REEL POSITIVE LEADER, CASES A - F
E7	6A1	PITCH 0.200, HOCKEY STICK LEADS, AMMO, CASES A - F
E3	7V1	PITCH 0.250, HOCKEY STICK LEADS, BULK, CASES A - D
E8	7B1	PITCH 0.250, HOCKEY STICK LEADS, REEL POSITIVE LEADER, CASES A - D
E8	7A1	PITCH 0.250, HOCKEY STICK LEADS, AMMO, CASES A - D
E4		OBSOLETE
G2	9V1	PITCH 0.200, SNAP-IN LEADS, BULK, CASES A - D
G7	9B1	PITCH 0.200, SNAP-IN LEADS, REEL POSITIVE LEADER, CASES A - D
G7	9A1	PITCH 0.200, SNAP-IN LEADS, AMMO, CASES A - D



STANDARD RATINGS				
CAPACITANCE (μF)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (μA)	MAX. DF AT +25 °C 120 Hz (%)
3 V_{DC} AT +85 °C, SURGE = 3.6 V; 2 V_{DC} AT +125 °C, SURGE = 2.4 V				
4.7	A	199D475(1)003A(2)(3)	0.5	6
6.8	A	199D685(1)003A(2)(3)	0.5	6
10	A	199D106(1)003A(2)(3)	0.5	8
15	A	199D156(1)003A(2)(3)	0.5	8
22	B	199D226(1)003B(2)(3)	0.6	8
33	B	199D336(1)003B(2)(3)	1.0	8
47	C	199D476(1)003C(2)(3)	1.4	8
68	C	199D686(1)003C(2)(3)	2.0	8
100	D	199D107(1)003D(2)(3)	3.0	10
150	D	199D157(1)003D(2)(3)	4.0	10
220	E	199D227(1)003E(2)(3)	5.0	10
330	E	199D337(1)003E(2)(3)	6.0	10
470	F	199D477(1)003F(2)(3)	8.0	10
680	F	199D687(1)003F(2)(3)	10.0	10
6.3 V_{DC} AT +85 °C, SURGE = 8 V; 4 V_{DC} AT +125 °C, SURGE = 5 V				
4.7	A	199D475(1)6R3A(2)(3)	0.5	6
6.8	A	199D685(1)6R3A(2)(3)	0.5	6
10	B	199D106(1)6R3B(2)(3)	0.6	8
15	B	199D156(1)6R3B(2)(3)	0.9	8
22	C	199D226(1)6R3C(2)(3)	1.3	8
33	C	199D336(1)6R3C(2)(3)	2.0	8
47	D	199D476(1)6R3D(2)(3)	2.9	8
68	D	199D686(1)6R3D(2)(3)	4.0	8
100	D	199D107(1)6R3D(2)(3)	5.0	10
150	E	199D157(1)6R3E(2)(3)	6.0	10
220	E	199D227(1)6R3E(2)(3)	7.0	10
330	F	199D337(1)6R3F(2)(3)	8.0	10
10 V_{DC} AT +85 °C, SURGE = 13 V; 7 V_{DC} AT +125 °C, SURGE = 9 V				
3.3	A	199D335(1)010A(2)(3)	0.5	6
4.7	A	199D475(1)010A(2)(3)	0.5	6
6.8	B	199D685(1)010B(2)(3)	0.6	6
10	B	199D106(1)010B(2)(3)	1.0	8
15	C	199D156(1)010C(2)(3)	1.5	8
22	C	199D226(1)010C(2)(3)	2.0	8
33	D	199D336(1)010D(2)(3)	3.0	8
39	D	199D396(1)010D(2)(3)	3.9	8
47	D	199D476(1)010D(2)(3)	4.0	8
68	D	199D686(1)010D(2)(3)	5.0	8
100	E	199D107(1)010E(2)(3)	6.0	10
150	E	199D157(1)010E(2)(3)	7.0	10
220	F	199D227(1)010F(2)(3)	8.0	10

Note

- Part number definitions:
 - For capacitance tolerance: X0 = \pm 20 %, X9 = \pm 10 % or X5 = 5 %
 - To specify lead style / spacing / packaging insert the last three characters in the part number. Use the appropriate code shown in the Current Ordering Cross Reference table and explained in the Ordering Information and Lead Styles table
 - E3 = RoHS-compliant 100 % tin leads. Blank or no suffix = standard tin / lead termination



STANDARD RATINGS				
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (μ A)	MAX. DF AT +25 °C 120 Hz (%)
16 V_{DC} AT +85 °C, SURGE = 20 V; 10 V_{DC} AT +125 °C, SURGE = 12 V				
2.2	A	199D225(1)016A(2)(3)	0.5	6
3.3	A	199D335(1)016A(2)(3)	0.5	6
4.7	B	199D475(1)016B(2)(3)	0.7	6
6.8	B	199D685(1)016B(2)(3)	1.0	6
10	C	199D106(1)016C(2)(3)	1.5	8
15	C	199D156(1)016C(2)(3)	2.4	8
22	D	199D226(1)016D(2)(3)	3.5	8
33	D	199D336(1)016D(2)(3)	4.0	8
47	E	199D476(1)016E(2)(3)	5.0	8
68	E	199D686(1)016E(2)(3)	6.0	8
100	F	199D107(1)016F(2)(3)	7.0	10
150	F	199D157(1)016F(2)(3)	8.0	10
20 V_{DC} AT +85 °C, SURGE = 26 V; 13 V_{DC} AT +125 °C, SURGE = 16 V				
1.0	A	199D105(1)020A(2)(3)	0.5	4
2.7	B	199D275(1)020B(2)(3)	0.7	6
3.3	B	199D335(1)020B(2)(3)	0.8	6
4.7	B	199D475(1)020B(2)(3)	1.0	6
6.8	C	199D685(1)020C(2)(3)	1.5	6
10	C	199D106(1)020C(2)(3)	2.0	8
15	D	199D156(1)020D(2)(3)	2.5	8
22	D	199D226(1)020D(2)(3)	3.0	8
33	E	199D336(1)020E(2)(3)	4.0	8
47	E	199D476(1)020E(2)(3)	5.0	8
68	F	199D686(1)020F(2)(3)	6.0	8
100	F	199D107(1)020F(2)(3)	7.0	10
25 V_{DC} AT +85 °C, SURGE = 33 V; 17 V_{DC} AT +125 °C, SURGE = 21 V				
1.0	A	199D105(1)025A(2)(3)	0.5	4
1.5	A	199D155(1)025A(2)(3)	0.5	6
2.2	A	199D225(1)025A(2)(3)	0.5	6
3.3	B	199D335(1)025B(2)(3)	0.8	6
4.7	B	199D475(1)025B(2)(3)	1.0	6
6.8	C	199D685(1)025C(2)(3)	1.5	6
10	C	199D106(1)025C(2)(3)	2.5	8
15	D	199D156(1)025D(2)(3)	3.0	8
22	D	199D226(1)025D(2)(3)	4.0	8
33	E	199D336(1)025E(2)(3)	5.0	8
47	E	199D476(1)025E(2)(3)	6.0	8
68	F	199D686(1)025F(2)(3)	7.0	8

Note

- Part number definitions:
 - For capacitance tolerance: X0 = \pm 20 %, X9 = \pm 10 % or X5 = 5 %
 - To specify lead style / spacing / packaging insert the last three characters in the part number. Use the appropriate code shown in the Current Ordering Cross Reference table and explained in the Ordering Information and Lead Styles table
 - E3 = RoHS-compliant 100 % tin leads. Blank or no suffix = standard tin / lead termination



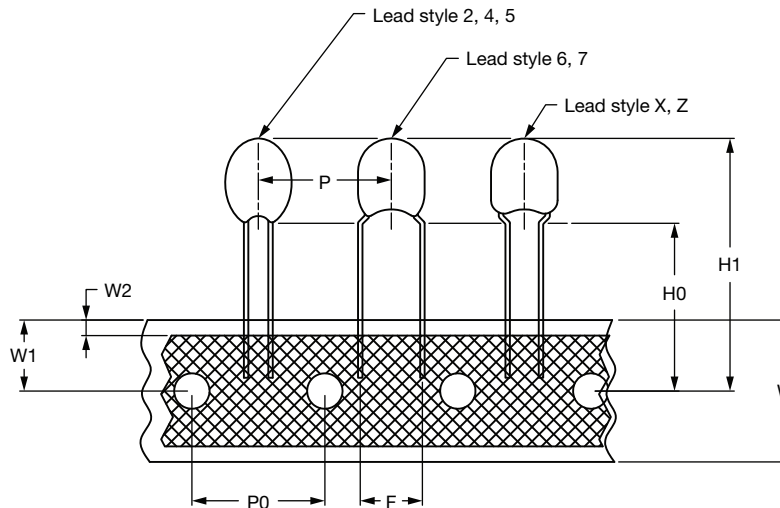
STANDARD RATINGS					
CAPACITANCE (μ F)	CASE CODE	PART NUMBER	MAX. DCL AT +25 °C (μ A)	MAX. DF AT +25 °C 120 Hz (%)	
35 V_{DC} AT +85 °C, SURGE = 46 V; 23 V_{DC} AT +125 °C, SURGE = 28 V					
0.10	A	199D104(1)035A(2)(3)	0.5	4	
0.15	A	199D154(1)035A(2)(3)	0.5	4	
0.22	A	199D224(1)035A(2)(3)	0.5	4	
0.33	A	199D334(1)035A(2)(3)	0.5	4	
0.47	A	199D474(1)035A(2)(3)	0.5	4	
0.68	A	199D684(1)035A(2)(3)	0.5	4	
1.0	A	199D105(1)035A(2)(3)	0.5	4	
1.5	A	199D155(1)035A(2)(3)	0.5	6	
1.8	B	199D185(1)035B(2)(3)	0.7	6	
2.2	B	199D225(1)035B(2)(3)	0.7	6	
3.3	B	199D335(1)035B(2)(3)	1.0	6	
4.7	C	199D475(1)035C(2)(3)	1.5	6	
5.6	D	199D565(1)035D(2)(3)	1.9	6	
6.8	D	199D685(1)035D(2)(3)	2.3	6	
10	D	199D106(1)035D(2)(3)	3.5	8	
15	E	199D156(1)035E(2)(3)	4.0	8	
22	E	199D226(1)035E(2)(3)	5.0	8	
33	F	199D336(1)035F(2)(3)	6.0	8	
47	F	199D476(1)035F(2)(3)	7.0	8	
50 V_{DC} AT +85 °C, SURGE = 65 V; 33 V_{DC} AT +125 °C, SURGE = 40 V					
0.10	A	199D104(1)050A(2)(3)	0.5	4	
0.15	A	199D154(1)050A(2)(3)	0.5	4	
0.22	A	199D224(1)050A(2)(3)	0.5	4	
0.33	A	199D334(1)050A(2)(3)	0.5	4	
0.47	A	199D474(1)050A(2)(3)	0.5	4	
0.68	A	199D684(1)050A(2)(3)	0.5	4	
50 V_{DC} AT +85 °C, SURGE = 65 V; 33 V_{DC} AT +125 °C, SURGE = 40 V					
1.0	B	199D105(1)050B(2)(3)	0.5	4	
1.5	C	199D155(1)050C(2)(3)	0.7	6	
2.2	C	199D225(1)050C(2)(3)	1.1	6	
3.3	D	199D335(1)050D(2)(3)	1.5	6	
4.7	D	199D475(1)050D(2)(3)	2.0	6	
6.8	F	199D685(1)050F(2)(3)	3.0	6	
10	F	199D106(1)050F(2)(3)	4.0	8	
15	F	199D156(1)050F(2)(3)	5.0	8	
22	F	199D226(1)050F(2)(3)	6.0	8	

Note

- Part number definitions:
 - For capacitance tolerance: X0 = \pm 20 %, X9 = \pm 10 % or X5 = 5 %
 - To specify lead style / spacing / packaging insert the last three characters in the part number. Use the appropriate code shown in the Current Ordering Cross Reference table and explained in the Ordering Information and Lead Styles table
 - E3 = RoHS-compliant 100 % tin leads. Blank or no suffix = standard tin / lead termination

STANDARD TAPE AND REEL / AMMO BOX PACKAGING DIMENSIONS PER EIA-468

in inches [millimeters]



SYMBOL	DESCRIPTION	DIMENSIONS	TOLERANCE
P	Component pitch	0.500 [12.7]	± 0.039 [± 1.0]
P0	Feed hole pitch	0.500 [12.7]	± 0.012 [± 0.3]
W	Tape width	0.709 [18.0]	+0.039 / -0.020 [$+1.0$ / -0.5]
W0	Hold down tape width	0.20 [5.0]	Minimum
W1	Feed hole position	0.354 [9.0]	+0.030 / -0.020 [$+0.075$ / -0.5]
W2	Hold down tape position	0.118 [3.0]	Maximum
H1	Overall component height above tape central line	1.27 [32.26]	Maximum
D0	Feed hole diameter	0.157 [4.0]	± 0.012 [± 0.3]
t	Tape thickness	0.028 [0.7]	Maximum
H0	Height to seating plane	0.63 [16.0]	± 0.02 [± 0.5]
F	Pitch or lead wire spacing	See "Dimensions for Lead Styles" tables	

Tape and Reel Packaging: type 199D radial-leaded tantalum capacitors, all lead styles except 1, 3, and Y are available taped and reeled per EIA-468.

CASE CODE	A	B	C	D	E	F
Quantity per box bulk	1000		500		100	
Quantity per box ammpack	2500	2000	1500	1000	500	
Quantity per reel	1000				500	



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

单击下面可查看定价，库存，交付和生命周期等信息

[>>Vishay\(威世\)](#)

[>>点击查看相关商品](#)