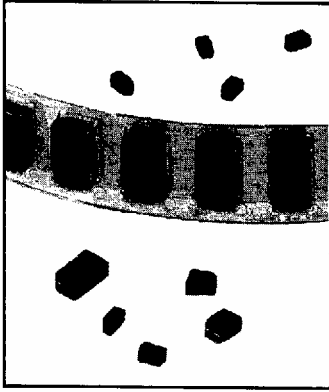


Type T491 - Chips Solid Tantalum Capacitors



- Highest Capacitance per Case
- Low DF and DC Leakage
- Temperature Stable
- Compatible with all Soldering Techniques
- Soldering Temperature up to 260°C for 10 Seconds
- Meets IECQ Standard QC300801/US0001 and EIA Standard 535BAAC
- Compatible with all Tape-Fed Automatic Pick and Place Systems

GENERAL SPECIFICATIONS

Operating Temperature: -55°C to +125°C (with proper derating)
 Voltage Range: 4 to 50 VDC
 Capacitance Range: 0.10 µF to 220 µF
 Cap Change From Initial Limit: -10% @ -55°C; +10% @ +85°C +12% @ +125°C
 DC Leakage:
 At 25°C - See P/N List
 At 85°C - 10 x 25°C Limit
 At 125°C - 12 x 25°C Limit

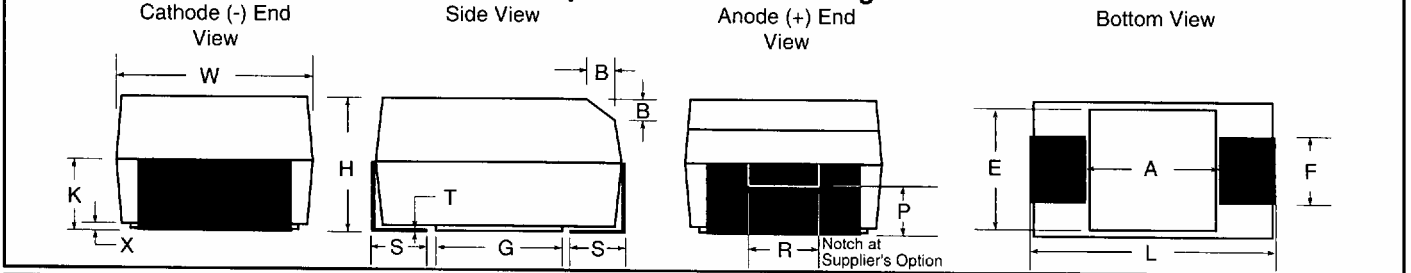
Dissipation Factor:
 .1 µF to 1.0 µF — 4%
 1.5 µF to 68 µF — 6%
 100 µF to 220 µF — 8%

Standard Packaging
 Tape & Reel per EIA RS-481-1

Case Code	EIA/IECQ	Qty per 7" Reel	Tape	
			Width	Pitch
S	3216L	2,500	8mm	4mm
T	3528L	2,500	8mm	4mm
A	3216	2,000	8mm	4mm
B	3528	2,000	8mm	4mm
C	6032	500	12mm	8mm
D	7343	500	12mm	8mm
X	7343H	500	12mm	8mm

13" Reels Available on Special Order

Capacitor Outline Drawing



Case Code		Dimensions - Millimeters (Inches)													
NACC	EIA/IECQ	L	W	H	K	F	S	B (Ref)	X (Ref)	P (Ref)	R (Ref)	T (Ref)	A (Min)	G (Ref)	E (Ref)
A	3216	3.2 ± 0.2 (.126 ± .008)	1.6 ± 0.2 (.063 ± .008)	1.6 ± 0.2 (.063 ± .008)	0.9 ± 0.2 (.035 ± .008)	1.2 ± 0.1 (.047 ± .004)	0.8 ± 0.3 (.031 ± .012)	0.4 ± 0.15 (.016 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.4 (.016)	0.4 (.016)	0.13 (.005)	0.8 (.031)	1.1 (.043)	1.3 (.051)
B	3528	3.5 ± 0.2 (.138 ± .008)	2.8 ± 0.2 (.110 ± .008)	1.9 ± 0.2 (.075 ± .008)	1.1 ± 0.2 (.043 ± .008)	2.2 ± 0.1 (.087 ± .004)	0.8 ± 0.3 (.031 ± .012)	0.4 ± 0.15 (.016 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.5 (.020)	1.0 (.039)	0.13 (.005)	1.1 (.043)	1.8 (.071)	2.2 (.087)
C	6032	6.0 ± 0.3 (.236 ± .012)	3.2 ± 0.3 (.126 ± .012)	2.5 ± 0.3 (.098 ± .012)	1.4 ± 0.2 (.055 ± .008)	2.2 ± 0.1 (.087 ± .004)	1.3 ± 0.3 (.051 ± .012)	0.5 ± 0.15 (.020 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.9 (.035)	1.0 (.039)	0.13 (.005)	2.5 (.098)	2.8 (.110)	2.9 (.114)
D	7343	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	2.8 ± 0.3 (.110 ± .012)	1.5 ± 0.2 (.059 ± .008)	2.4 ± 0.1 (.094 ± .004)	1.3 ± 0.3 (.051 ± .012)	0.5 ± 0.15 (.020 ± .006)	0.10 ± 0.10 (.004 ± .004)	0.9 (.035)	1.0 (.039)	0.13 (.005)	3.8 (.150)	3.5 (.138)	3.5 (.138)
X	7343H	7.3 ± 0.3 (.287 ± .012)	4.3 ± 0.3 (.169 ± .012)	4.0 ± 0.3 (.157 ± .012)	2.3 ± 0.2 (.091 ± .008)	2.4 ± 0.1 (.094 ± .004)	1.3 ± 0.3 (.051 ± .012)	0.5 ± 0.15 (.020 ± .006)	0.10 ± 0.10 (.004 ± .004)	1.7 (.067)	1.0 (.039)	0.13 (.005)	3.8 (.150)	3.5** (.138)	3.5** (.138)

- Notes: 1 Metric dimensions govern
 2 (Ref) - Dimensions provided for reference only
 ** Round Glue Pad 2.9 ± 0.1mm (.114 ± .004) in diameter at Supplier's option

Low Profile Capacitors

Case Code		Dimensions - Millimeters (Inches)													
NACC	EIA/IECQ	L	W	H Max.	K Min.	F	S	B (Ref)	X (Ref)	P (Ref)	R (Ref)	T (Ref)	A (Min)	G (Ref)	E (Ref)
S	3216L	3.2 ± 0.2 (.126 ± .008)	1.6 ± 0.2 (.063 ± .008)	1.2 (.047)	0.3 (.012)	1.2 ± 0.1 (.047 ± .004)	0.8 ± 0.3 (.031 ± .012)	Note 3	0.05 (.002)	Note 3	Note 3	0.13 (.005)	0.8 (.031)	1.1 (.043)	1.3 (.051)
T	3528L	3.5 ± 0.2 (.138 ± .008)	2.8 ± 0.2 (.110 ± .008)	1.2 (.047)	0.3 (.012)	2.2 ± 0.1 (.087 ± .004)	0.8 ± 0.3 (.031 ± .012)	Note 3	0.05 (.002)	Note 3	Note 3	0.13 (.005)	1.1 (.043)	1.8 (.071)	2.2 (.087)

- Notes: 1 Metric dimensions govern
 2 (Ref) - Dimensions provided for reference only
 3 No dimensions provided for B, P or R because low profile cases do not have a bevel or notch

Part Number Nomenclature

- | | | | | | | |
|--------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-----------------|
| T491
(1) | B
(2) | 105
(3) | K
(4) | 035
(5) | A
(6) | S
(7) |
|--------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-----------------|
1. T491 Series - Precision Molded Case
 T495 Series - Precision Molded Case - Low ESR
 2. Case Size Code:
 S, T, A, B, C, D, X
 3. Capacitance Code (Expressed in Picofarads)
 First 2 digits: Significant Figures
 Third digit: Number of zeros (Example: 395 = 3.9 µF)
 4. Capacitance Tolerance:
 K = ±10%, (M = ±20%, special order only)
 5. DC Voltage Rating:
 Zeros are used to precede the voltage rating where necessary to complete the three digit block
 6. Failure Rate: A = Not applicable
 7. Lead Material
 S = Standard Solder Coated
 G = Gold Plated

Type T491 - Chips Solid Tantalum Capacitors



Cap μF	Cap Tol	Case Code		Catalog Number	DC Leakage μA @+25°C Max	DF % @ +25°C 120 Hz Max
		M	EIA/ IECC			

4 WVDC @ +85°C (2.7 WVDC @ +125°C)

3.3	10%	A	3216	T491A335K004AS	0.5	6.0	
4.7	10%	A	3216	T491A475K004AS	0.5	6.0	
6.8	10%	A	3216	T491A685K004AS	0.5	6.0	
+	6.8	10%	S	3216L	T491S685K004AS	0.5	6.0
+	10	10%	A	3216	T491A106K004AS	0.5	6.0
+	10	10%	B	3528	T491B106K004AS	0.5	6.0
+	15	10%	A	3216	T491A156K004AS	0.6	6.0
+	15	10%	B	3528	T491B156K004AS	0.6	6.0
+	15	10%	T	3528L	T491T156K004AS	0.6	6.0
+	22	10%	B	3528	T491B226K004AS	0.9	6.0
+	22	10%	C	6032	T491C226K004AS	0.9	6.0
+	33	10%	B	3528	T491B336K004AS	1.3	6.0
+	33	10%	C	6032	T491C336K004AS	1.3	6.0
+	47	10%	C	6032	T491C476K004AS	1.9	6.0
+	68	10%	C	6032	T491C686K004AS	2.7	6.0
+	68	10%	D	7343	T491D686K004AS	2.7	6.0
+	100	10%	C	6032	T491C107K004AS	4.0	6.0
+	100	10%	D	7343	T491D107K004AS	4.0	6.0
+	150	10%	D	7343	T491D157K004AS	6.0	8.0

* 6 WVDC @ +85°C (4 WVDC @ +125°C)

2.2	10%	A	3216	T491A225K006AS	0.5	6.0	
3.3	10%	A	3216	T491A335K006AS	0.5	6.0	
+	4.7	10%	A	3216	T491A475K006AS	0.5	6.0
+	4.7	10%	S	3216L	T491S475K006AS	0.5	6.0
+	6.8	10%	A	3216	T491A685K006AS	0.5	6.0
+	6.8	10%	B	3528	T491B685K006AS	0.5	6.0
+	10	10%	A	3216	T491A106K006AS	0.6	6.0
+	10	10%	B	3528	T491B106K006AS	0.6	6.0
+	10	10%	T	3528L	T491T106K006AS	0.6	6.0
+	15	10%	B	3528	T491B156K006AS	0.9	6.0
+	15	10%	C	6032	T491C156K006AS	0.9	6.0
+	22	10%	B	3528	T491B226K006AS	1.4	6.0
+	22	10%	C	6032	T491C226K006AS	1.4	6.0
+	33	10%	C	6032	T491C336K006AS	2.0	6.0
+	47	10%	C	6032	T491C476K006AS	2.9	6.0
+	47	10%	D	7343	T491D476K006AS	2.9	6.0
+	68	10%	C	6032	T491C686K006AS	4.1	6.0
+	68	10%	D	7343	T491D686K006AS	4.1	6.0
+	100	10%	D	7343	T491D107K006AS	6.0	8.0
+	150	10%	D	7343	T491D157K006AS	9.0	8.0
+	220	10%	X	7343H	T491X227K006AS	13.2	8.0

10 WVDC @ +85°C (7 WVDC @ +125°C)

1.5	10%	A	3216	T491A155K010AS	0.5	6.0	
2.2	10%	A	3216	T491A225K010AS	0.5	6.0	
+	3.3	10%	A	3216	T491A335K010AS	0.5	6.0
+	3.3	10%	S	3216L	T491S335K010AS	0.5	6.0
+	4.7	10%	A	3216	T491A475K010AS	0.5	6.0
+	4.7	10%	B	3528	T491B475K010AS	0.5	6.0
+	6.8	10%	A	3216	T491A685K010AS	0.7	6.0
+	6.8	10%	B	3528	T491B685K010AS	0.7	6.0
+	6.8	10%	T	3528L	T491T685K010AS	0.7	6.0
+	10	10%	B	3528	T491B106K010AS	1.0	6.0
+	10	10%	C	6032	T491C106K010AS	1.0	6.0
+	15	10%	B	3528	T491B156K010AS	1.5	6.0
+	15	10%	C	6032	T491C156K010AS	1.5	6.0
+	22	10%	C	6032	T491C226K010AS	2.2	6.0
+	33	10%	C	6032	T491C336K010AS	3.3	6.0
+	33	10%	D	7343	T491D336K010AS	3.3	6.0
+	47	10%	C	6032	T491C476K010AS	4.7	6.0
+	47	10%	D	7343	T491D476K010AS	4.7	6.0
+	68	10%	D	7343	T491D686K010AS	6.8	6.0
+	100	10%	D	7343	T491D107K010AS	10.0	8.0
+	150	10%	X	7343H	T491X157K010AS	15.0	8.0

Note: NACC reserves the right to offer higher rated voltage substitutes within the same case size. The marking will indicate the higher voltage.

Cap μF	Cap Tol	Case Code		Catalog Number	DC Leakage μA @+25°C Max	DF % @ +25°C 120 Hz Max
		M	EIA/ IECC			

16 WVDC @ +85°C (10 WVDC @ +125°C)

1	10%	A	3216	T491A105K016AS	0.5	4.0	
1.5	10%	A	3216	T491A155K016AS	0.5	6.0	
+	2.2	10%	A	3216	T491A225K016AS	0.5	6.0
+	2.2	10%	S	3216L	T491S225K016AS	0.5	6.0
+	3.3	10%	A	3216	T491A335K016AS	0.5	6.0
+	3.3	10%	B	3528	T491B335K016AS	0.5	6.0
+	4.7	10%	A	3216	T491A475K016AS	0.8	6.0
+	4.7	10%	B	3528	T491B475K016AS	0.8	6.0
+	4.7	10%	T	3528L	T491T475K016AS	0.8	6.0
+	6.8	10%	B	3528	T491B685K016AS	1.1	6.0
+	6.8	10%	C	6032	T491C685K016AS	1.1	6.0
+	10	10%	B	3528	T491B106K016AS	1.6	6.0
+	10	10%	C	6032	T491C106K016AS	1.6	6.0
+	15	10%	C	6032	T491C156K016AS	2.4	6.0
+	22	10%	C	6032	T491C226K016AS	3.6	6.0
+	22	10%	D	7343	T491D226K016AS	3.6	6.0
+	33	10%	C	6032	T491C336K016AS	5.3	6.0
+	33	10%	D	7343	T491D336K016AS	5.3	6.0
+	47	10%	D	7343	T491D476K016AS	7.5	6.0
+	68	10%	D	7343	T491D686K016AS	10.9	6.0
+	100	10%	X	7343H	T491X107K016AS	16.0	8.0

20 WVDC @ +85°C (13 WVDC @ +125°C)

0.68	10%	A	3216	T491A684K020AS	0.5	4.0	
1	10%	A	3216	T491A105K020AS	0.5	4.0	
+	1.5	10%	A	3216	T491A155K020AS	0.5	6.0
+	1.5	10%	S	3216L	T491S155K020AS	0.5	6.0
+	2.2	10%	A	3216	T491A225K020AS	0.5	6.0
+	2.2	10%	B	3528	T491B225K020AS	0.5	6.0
+	3.3	10%	A	3216	T491A335K020AS	0.7	6.0
+	3.3	10%	B	3528	T491B335K020AS	0.7	6.0
+	3.3	10%	T	3528L	T491T335K020AS	0.7	6.0
+	4.7	10%	B	3528	T491B475K020AS	1.0	6.0
+	4.7	10%	C	6032	T491C475K020AS	1.0	6.0
+	6.8	10%	B	3528	T491B685K020AS	1.4	6.0
+	6.8	10%	C	6032	T491C685K020AS	1.4	6.0
+	10	10%	C	6032	T491C106K020AS	2.0	6.0
+	15	10%	C	6032	T491C156K020AS	3.0	6.0
+	15	10%	D	7343	T491D156K020AS	3.0	6.0
+	22	10%	C	6032	T491C226K020AS	4.4	6.0
+	22	10%	D	7343	T491D226K020AS	4.4	6.0
+	33	10%	D	7343	T491D336K020AS	6.6	6.0
+	47	10%	D	7343	T491D476K020AS	9.4	6.0
+	68	10%	X	7343H	T491X686K020AS	13.6	6.0

25 WVDC @ +85°C (17 WVDC @ +125°C)

0.33	10%	A	3216	T491A334K025AS	0.5	4.0	
0.47	10%	A	3216	T491A474K025AS	0.5	4.0	
+	0.68	10%	A	3216	T491A684K025AS	0.5	4.0
+	1	10%	A	3216	T491A105K025AS	0.5	4.0
+	1	10%	B	3528	T491B105K025AS	0.5	4.0
+	1.5	10%	B	3528	T491B155K025AS	0.5	6.0
+	2.2	10%	B	3528	T491B225K025AS	0.6	6.0
+	2.2	10%	C	6032	T491C225K025AS	0.6	6.0
+	3.3	10%	C	6032	T491C335K025AS	0.9	6.0
+	4.7	10%	C	6032	T491C475K025AS	1.2	6.0
+	6.8	10%	C	6032	T491C685K025AS	1.7	6.0
+	10	10%	C	6032	T491C106K025AS	2.5	6.0
+	10	10%	D	7343	T491D106K025AS	2.5	6.0
+	15	10%	D	7343	T491D156K025AS	3.8	6.0
+	22	10%	D	7343	T491D226K025AS	5.5	6.0
+	33	10%	X	7343H	T491X336K025AS	8.3	6.0

* - ± 20% Tolerance Available by Special Order

+ - Extended Values

- Max Capacitance Change @ 125°C = +15% (All others are +12%)

* - 6 volt product is equivalent to 6.3 volt product

Solid Tantalum Capacitors

Type T491 - Chips Solid Tantalum Capacitors



Cap μF	* Cap Tol	Case Code		Catalog Number	DC Leakage μA @+25°C Max	DF % @ +25°C 120 Hz Max
		M	EIA/ IECQ			
35 WVDC @ +85°C (23 WVDC @ +125°C)						
0.1	10%	A	3216	T491A104K035AS	0.5	4.0
+ 0.15	10%	A	3216	T491A154K035AS	0.5	4.0
0.22	10%	A	3216	T491A224K035AS	0.5	4.0
+ 0.33	10%	A	3216	T491A334K035AS	0.5	4.0
0.47	10%	A	3216	T491A474K035AS	0.5	4.0
+ 0.47	10%	B	3528	T491B474K035AS	0.5	4.0
0.68	10%	B	3528	T491B684K035AS	0.5	4.0
1.0	10%	B	3528	T491B105K035AS	0.5	4.0
1.5	10%	C	6032	T491C155K035AS	0.5	6.0
2.2	10%	C	6032	T491C225K035AS	0.8	6.0
3.3	10%	C	6032	T491C335K035AS	1.2	6.0
+ 4.7	10%	C	6032	T491C475K035AS	1.7	6.0
4.7	10%	D	7343	T491D475K035AS	1.7	6.0
6.8	10%	D	7343	T491D685K035AS	2.4	6.0
+ 10	10%	D	7343	T491D106K035AS	3.5	6.0
+ 15	10%	X	7343H	T491X156K035AS	5.3	6.0
+ 22	10%	X	7343H	T491X226K035AS	7.7	6.0

Cap μF	* Cap Tol	Case Code		Catalog Number	DC Leakage μA @+25°C Max	DF % @ +25°C 120 Hz Max
		M	EIA/ IECQ			
50 WVDC @ +85°C (33 WVDC @ +125°C)						
0.10	10%	A	3216	T491A104K050AS	0.5	4.0
+ 0.15	10%	A	3216	T491A154K050AS	0.5	4.0
0.15	10%	B	3528	T491B154K050AS	0.5	4.0
0.22	10%	B	3528	T491B224K050AS	0.5	4.0
+ 0.33	10%	B	3528	T491B334K050AS	0.5	4.0
0.47	10%	B	3528	T491B474K050AS	0.5	4.0
+ 0.47	10%	C	6032	T491C474K050AS	0.5	4.0
0.68	10%	C	6032	T491C684K050AS	0.5	4.0
1.0	10%	C	6032	T491C105K050AS	0.5	4.0
+ 1.5	10%	C	6032	T491C155K050AS	0.5	6.0
1.5	10%	D	7343	T491D155K050AS	0.8	6.0
2.2	10%	D	7343	T491D225K050AS	1.1	6.0
3.3	10%	D	7343	T491D335K050AS	1.7	6.0
+ 4.7	10%	D	7343	T491D475K050AS	2.4	6.0
+ 6.8	10%	X	7343H	T491X685K050AS	3.5	6.0

Note: NACC reserves the right to offer higher rated voltage substitutes within the same case size. The marking will indicate the higher voltage.

* - ± 20% Tolerance Available by Special Order
+ - Extended Values
- Max Capacitance Change @ 125°C = +15% (All others are +12%)

Type T495 - Chips Solid Tantalum Capacitors



- Designed for Very Low ESR
- High Ripple Current Capability
- High Surge Current Capability
- 100% Accelerated Steady-Rate Aging
- 100% In-Line Multi-Cycle Surge Current Conditioning

- Low Equivalent Series Inductance (<2nH ESL)
- New Extended Values Available
- Precision-Molded, Laser-Marked Case
- Symmetrical, Compliant Terminations
- Taped and Reeled per EIA 481-1

Cap μF	* Cap Tol	Case Code		Catalog Number	Max DC Leakage μA @+25°C	Max DF % @+25°C 120 Hz	Max ESR Ω @+25°C 100 kHz	Max Ripple Current Amps @+25°C 100 kHz
		M	EIA/ IECQ					
6 WVDC @ +85°C (4 WVDC @ +125°C)								
+ 68	10%	D	7343	T495D686K006AS	3.3	4.0	0.175	0.9
+ 150	10%	X	7343H	T495X150K006AS	7.2	6.0	0.125	1.1
10 WVDC @ +85°C (7 WVDC @ +125°C)								
47	10%	D	7343	T495D476K010AS	3.8	4.0	0.200	0.9
68	10%	X	7343H	T495X686K010AS	5.4	4.0	0.150	1.0
+ 100	10%	D	7343	T495D107K010AS	10.0	8.0	0.100	1.2
100	10%	X	7343H	T495X107K010AS	8.0	6.0	0.100	1.3
16 WVDC @ +85°C (10 WVDC @ +125°C)								
33	10%	D	7343	T495D336K016AS	4.2	4.0	0.250	0.8
+ 47	10%	D	7343	T95D476K016AS	7.5	6.0	0.200	0.9
20 WVDC @ +85°C (13 WVDC @ +125°C)								
15	10%	D	7343	T495D156K020AS	2.4	4.0	0.275	0.7
22	10%	D	7343	T495D226K020AS	3.5	4.0	0.275	0.7
47	10%	X	7343H	T495X476K020AS	7.5	4.0	0.150	1.0

Cap μF	* Cap Tol	Case Code		Catalog Number	Max DC Leakage μA @+25°C	Max DF % @+25°C 120 Hz	Max ESR Ω @+25°C 100 kHz	Max Ripple Current Amps @+25°C 100 kHz
		M	EIA/ IECQ					
25 WVDC @ +85°C (17 WVDC @ +125°C)								
+ 15	10%	D	7343	T495D156K025AS	3.8	6.0	0.275	0.7
15	10%	X	7343H	T495X156K025AS	3.0	4.0	0.200	0.9
22	10%	X	7343H	T495D226K025AS	4.4	4.0	0.225	0.9
33	10%	X	7343H	T495X336K025AS	6.6	4.0	0.175	1.0
35 WVDC @ +85°C (23 WVDC @ +125°C)								
6.8	10%	X	7343H	T495X685K035AS	1.9	4.0	0.300	0.7
10	10%	X	7343	T495X106K035AS	2.8	4.0	0.200	0.9
+ 22	10%	X	7343H	T495X226K035AS	7.7	6.0	0.300	0.7
50 WVDC @ +85°C (33 WVDC @ +125°C)								
4.7	10%	X	7343H	T495X475K050AS	1.9	4.0	0.300	0.7

* - ± 20% Tolerance Available by Special Order
+ - Extended Values

Note: NACC reserves the right to offer higher rated voltage substitutes within the same case size. The marking will indicate the higher voltage.