

U92D Series



- Snap Mount
- Specific Design For Higher Ripple Current
- 350 to 550VDC Voltage Range
- RoHS Compliant
- +85°C Maximum Temperature
- 2,000 Hours Lifetime at +85°C



The U92D series is a high temperature snap-in series specifically designed for higher ripple current capability. The U92D capacitors have an endurance rating of 2,000 hours at +85°C with the rated ripple current applied. All the U92D series capacitors are RoHS compliant and offered in a variety of sizes, with or without a PPE end disk, and encased in a standard PVC sleeve or an optional PET sleeve. UL746C compliant exterior insulation material for sleeve and end disk is also available. Snap-in terminals (2, 4 or 5-pin configurations) are available as standard or optional styles depending on case size. Straight standoff terminals (5-pin configuration) are an option for the 40, 45 and 50mm can diameters.

Summary of Specifications

- PC board snap-in or straight standoff terminals available as standard or optional styles depending on pin styles and case size.
- Capacitance range: 270 to 3,300μF.
- Voltage range: 350 to 550VDC.
- Category temperature range: -40°C to +85°C.
- Leakage current: $3\sqrt{CV}$ (μA) or 3mA, whichever is smaller, after 5 minutes at +25°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D×L): 35×50mm to 50×105mm.
- Rated lifetime: 2,000 hours at +85°C with the rated ripple current applied.

U92D Series

U92D Specifications - Snap Mount

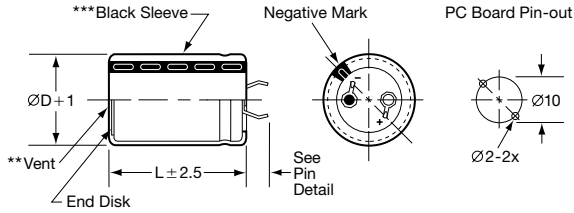
Item	Characteristics																											
Category Temperature Range	- 40 to +85°C																											
Rated Voltage Range	350 to 550VDC																											
Capacitance Range	270 to 3,300 μ F at +25°C, 120Hz																											
Capacitance Tolerance	\pm 20% (M) at +25°C, 120Hz																											
Leakage Current	$I = 3\sqrt{CV}$ (μ A) or 3mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (μ A), C = Nominal capacitance (μ F) and V = Rated voltage (V)																											
Dissipation Factor (Tan δ)	At +25°C, 120Hz <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>350-400</td> <td>450-550</td> </tr> <tr> <td>Tan δ (DF) Max.</td> <td>0.15</td> <td>0.20</td> </tr> </table>	Rated Voltage (V)	350-400	450-550	Tan δ (DF) Max.	0.15	0.20																					
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Tan δ (DF) Max.	0.15	0.20																										
Low Temperature Characteristics	At 120Hz, impedance (Z) ratio between the - 40°C value and +25°C value shall not exceed the values given below. <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>350-400</td> <td>450-550</td> </tr> <tr> <td>Z(- 40°C) / Z(+25°C)</td> <td>4</td> <td>8</td> </tr> </table>	Rated Voltage (V)	350-400	450-550	Z(- 40°C) / Z(+25°C)	4	8																					
Rated Voltage (V)	350-400	450-550																										
Z(- 40°C) / Z(+25°C)	4	8																										
Rated Ripple Current Multipliers	Ambient Temperature (°C) <table border="1"> <tr> <td>+45°C</td> <td>+65°C</td> <td>+85°C</td> </tr> <tr> <td>2.82</td> <td>1.73</td> <td>1.00</td> </tr> </table> Frequency (Hz) <table border="1"> <tr> <td>DC Rated Voltage</td> <td>50Hz</td> <td>120Hz</td> <td>300Hz</td> <td>1kHz</td> <td>10kHz</td> <td>100kHz</td> </tr> <tr> <td>350-450V</td> <td>0.77</td> <td>1.00</td> <td>1.16</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> <tr> <td>500-550V</td> <td>0.70</td> <td>1.00</td> <td>1.16</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> </table>	+45°C	+65°C	+85°C	2.82	1.73	1.00	DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz	350-450V	0.77	1.00	1.16	1.30	1.41	1.43	500-550V	0.70	1.00	1.16	1.30	1.41	1.43
+45°C	+65°C	+85°C																										
2.82	1.73	1.00																										
DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz																						
350-450V	0.77	1.00	1.16	1.30	1.41	1.43																						
500-550V	0.70	1.00	1.16	1.30	1.41	1.43																						
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 2,000 hours at +85°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan δ (DF) : $\leq 200\%$ of initial specified value Leakage current : \leq initial specified value																											
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 1,000 hours at +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan δ (DF) : $\leq 150\%$ of initial specified value Leakage current : \leq initial specified value																											
Custom Designs	Custom CV values per case size and termination type may be available upon request. Contact appropriate representative with specific requirements.																											

U92D Series

Diagram of Dimensions - Snap Mount

Snap Mount

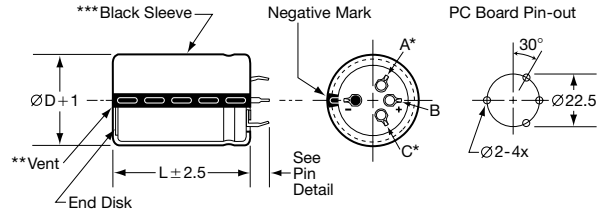
VSN Snap-in $\varnothing 35$ standard
VNN Snap-in $\varnothing 35$ optional



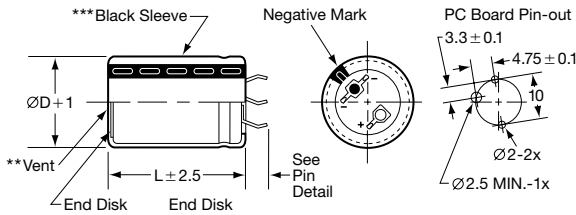
Snap Mount

Unit: mm

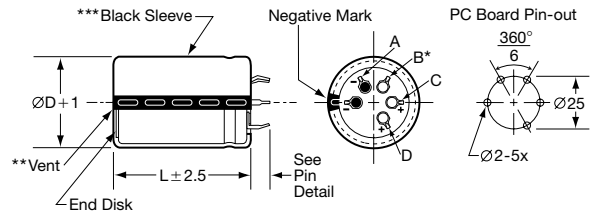
VND Snap-in $\varnothing 35$ and $\varnothing 40$ standard; $\varnothing 45$ optional
VSD Snap-in $\varnothing 35$ and $\varnothing 40$ optional



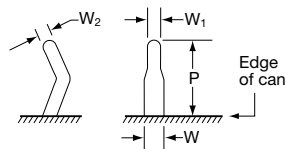
VEN Snap-in $\varnothing 35$ optional



VNT Snap-in $\varnothing 45$ and $\varnothing 50$ standard



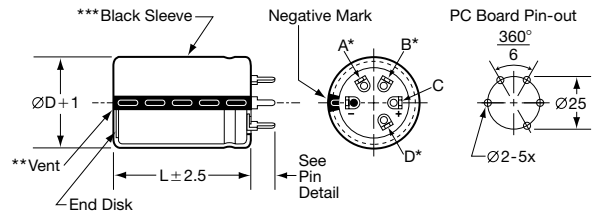
VS, VE & VN Snap-in Pin Dimensions



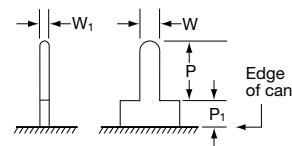
Type	P	W	W ₁	W ₂
VSN $\varnothing 35$	3.5 ± 0.5	1.5 ± 0.2	0.8 ± 0.1	0.8 ± 0.1
VNN $\varnothing 35$	5.8 ± 1.0			
VEN $\varnothing 35$	4.0 ± 0.5			
VSD $\varnothing 35-\varnothing 40$	3.5 ± 1.0			
VND $\varnothing 35-\varnothing 45$	5.8 ± 1.0			
VNT $\varnothing 45-\varnothing 50$	5.8 ± 1.0			

Straight Pin Mount

VQT Straight Standoff $\varnothing 40$, $\varnothing 45$ and $\varnothing 50$ optional



VQ Straight Standoff Pin Dimensions



Type	P	P ₁	W	W ₁
Standoff Pin (VQ)	3.75 ± 1.0	2.0 max.	1.5 ± 0.1	0.7 ± 0.2

CAUTION:

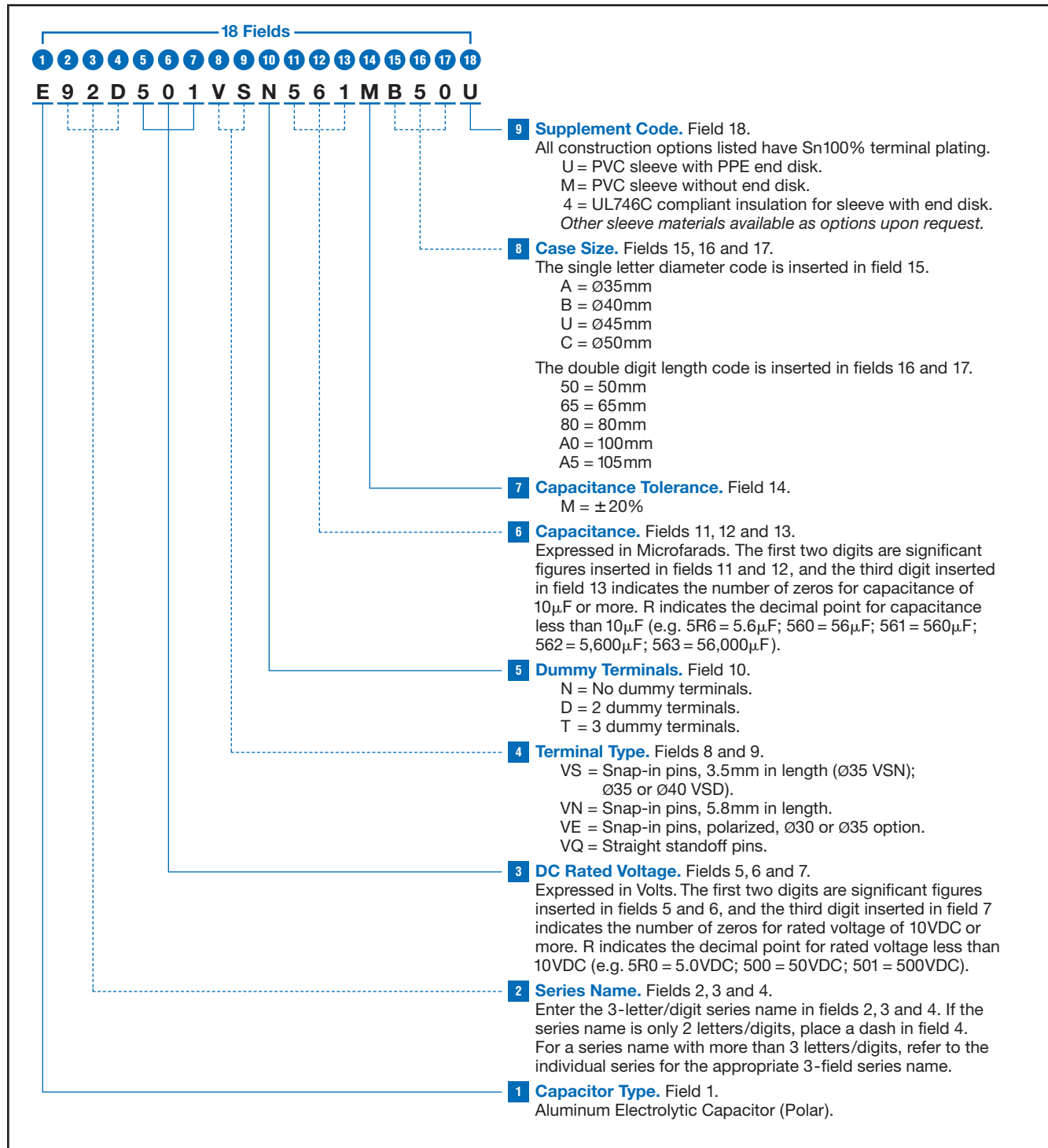
*Use the blank terminals for mechanical support only. The blank terminals must not be connected to a solder trace on the PC board but be electrically isolated from the negative and positive terminals.

**The vent may be located either on the bottom or side of the can.

***The black sleeve with gray stripe negative pin indicator is standard. Also note in some cases, the sleeve color may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

U92D Series

Part Numbering System for U92D Series When ordering, always specify complete 18-field global part number.



U92D Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
350 Volts 400 Volts Surge	1,000	E92D351VSN102MA50U	35 × 50	A50	0.092	5.0
	1,500	E92D351VSN152MA65U	35 × 65	A65	0.061	6.7
	1,800	E92D351VND182MA80U	35 × 80	A80	0.051	7.8
	2,200	E92D351VND222MAA0U	35 × 100	AA0	0.042	9.5
	1,200	E92D351VND122MB50U	40 × 50	B50	0.083	5.6
	1,800	E92D351VND182MB65U	40 × 65	B65	0.055	7.4
	2,200	E92D351VND222MB80U	40 × 80	B80	0.045	8.8
	2,700	E92D351VND272MBA0U	40 × 100	BA0	0.037	10.6
	1,200	E92D351VNT122MU50U	45 × 50	U50	0.090	5.7
	1,800	E92D351VNT182MU65U	45 × 65	U65	0.060	7.6
	2,200	E92D351VNT222MU80U	45 × 80	U80	0.049	9.0
	2,700	E92D351VNT272MUA5U	45 × 105	UA5	0.040	11.1
	1,500	E92D351VNT152MC50U	50 × 50	C50	0.080	6.3
	2,200	E92D351VNT222MC65U	50 × 65	C65	0.054	8.2
2,700	E92D351VNT272MC80U	50 × 80	C80	0.044	9.9	
3,300	E92D351VNT332MCA5U	50 × 105	CA5	0.036	12.4	
400 Volts 450 Volts Surge	820	E92D401VSN821MA50U	35 × 50	A50	0.107	4.7
	1,200	E92D401VSN122MA65U	35 × 65	A65	0.073	6.1
	1,500	E92D401VND152MA80U	35 × 80	A80	0.058	7.3
	1,800	E92D401VND182MAA0U	35 × 100	AA0	0.049	8.8
	1,000	E92D401VND102MB50U	40 × 50	B50	0.092	5.3
	1,500	E92D401VND152MB65U	40 × 65	B65	0.061	7.0
	1,800	E92D401VND182MB80U	40 × 80	B80	0.051	8.3
	2,700	E92D401VND272MBA0U	40 × 100	BA0	0.034	11.1
	1,000	E92D401VNT102MU50U	45 × 50	U50	0.100	5.4
	1,500	E92D401VNT152MU65U	45 × 65	U65	0.066	7.2
	1,800	E92D401VNT182MU80U	45 × 80	U80	0.055	8.5
	2,200	E92D401VNT222MUA5U	45 × 105	UA5	0.045	10.4
	1,200	E92D401VNT122MC50U	50 × 50	C50	0.084	6.1
	1,800	E92D401VNT182MC65U	50 × 65	C65	0.062	7.7
2,200	E92D401VNT222MC80U	50 × 80	C80	0.051	9.3	
2,700	E92D401VNT272MCA5U	50 × 105	CA5	0.041	11.6	
450 Volts 500 Volts Surge	680	E92D451VSN681MA50U	35 × 50	A50	0.123	4.3
	1,000	E92D451VSN102MA65U	35 × 65	A65	0.084	5.7
	1,200	E92D451VND122MA80U	35 × 80	A80	0.070	6.7
	1,500	E92D451VND152MAA0U	35 × 100	AA0	0.056	8.2
	820	E92D451VND821MB50U	40 × 50	B50	0.102	5.0
	1,200	E92D451VND122MB65U	40 × 65	B65	0.070	6.6
	1,500	E92D451VND152MB80U	40 × 80	B80	0.056	7.9
	1,800	E92D451VND182MBA0U	40 × 100	BA0	0.046	9.4
	820	E92D451VNT821MU50U	45 × 50	U50	0.112	5.1
	1,200	E92D451VNT122MU65U	45 × 65	U65	0.076	6.7
	1,500	E92D451VNT152MU80U	45 × 80	U80	0.061	8.1
	1,800	E92D451VNT182MUA5U	45 × 105	UA5	0.051	9.8
	1,200	E92D451VNT122MC50U	50 × 50	C50	0.083	6.1
	1,500	E92D451VNT152MC65U	50 × 65	C65	0.066	7.4
1,800	E92D451VNT182MC80U	50 × 80	C80	0.055	8.9	
2,700	E92D451VNT272MCA5U	50 × 105	CA5	0.037	12.3	
500 Volts 550 Volts Surge	470	E92D501VSN471MA50U	35 × 50	A50	0.169	3.7
	680	E92D501VSN681MA65U	35 × 65	A65	0.117	4.8
	820	E92D501VND821MA80U	35 × 80	A80	0.097	5.6
	1,000	E92D501VND102MAA0U	35 × 100	AA0	0.080	6.9
	560	E92D501VND561MB50U	40 × 50	B50	0.149	4.2
	820	E92D501VND821MB65U	40 × 65	B65	0.102	5.4
	1,000	E92D501VND102MB80U	40 × 80	B80	0.084	6.5
1,200	E92D501VND122MBA0U	40 × 100	BA0	0.070	7.7	

† For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.

U92D Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
500 Volts 550 Volts Surge	680	E92D501VNT681MU50U	45 × 50	U50	0.129	4.7
	1,000	E92D501VNT102MU65U	45 × 65	U65	0.088	6.2
	1,200	E92D501VNT122MU80U	45 × 80	U80	0.073	7.4
	1,500	E92D501VNT152MUA5U	45 × 105	UA5	0.058	9.2
	820	E92D501VNT821MC50U	50 × 50	C50	0.112	5.3
	1,200	E92D501VNT122MC65U	50 × 65	C65	0.076	6.9
	1,500	E92D501VNT152MC80U	50 × 80	C80	0.061	8.4
	2,200	E92D501VNT222MCA5U	50 × 105	CA5	0.042	11.5
550 Volts 600 Volts Surge	270	E92D551VSN271MA50U	35 × 50	A50	0.295	2.8
	390	E92D551VSN391MA65U	35 × 65	A65	0.204	3.6
	560	E92D551VND561MA80U	35 × 80	A80	0.142	4.7
	680	E92D551VND681MAA0U	35 × 100	AA0	0.117	5.7
	390	E92D551VND391MB50U	40 × 50	B50	0.214	3.5
	560	E92D551VND561MB65U	40 × 65	B65	0.149	4.5
	680	E92D551VND681MB80U	40 × 80	B80	0.123	5.3
	820	E92D551VND821MBA0U	40 × 100	BA0	0.102	6.4
	470	E92D551VNT471MU50U	45 × 50	U50	0.186	3.9
	560	E92D551VNT561MU65U	45 × 65	U65	0.156	4.7
	680	E92D551VNT681MU80U	45 × 80	U80	0.129	5.6
	1,000	E92D551VNT102MUA5U	45 × 105	UA5	0.088	7.5
	560	E92D551VNT561MC50U	50 × 50	C50	0.164	4.4
	680	E92D551VNT681MC65U	50 × 65	C65	0.135	5.2
	1,000	E92D551VNT102MC80U	50 × 80	C80	0.092	6.9
1,200	E92D551VNT122MCA5U	50 × 105	CA5	0.076	8.5	

† For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.