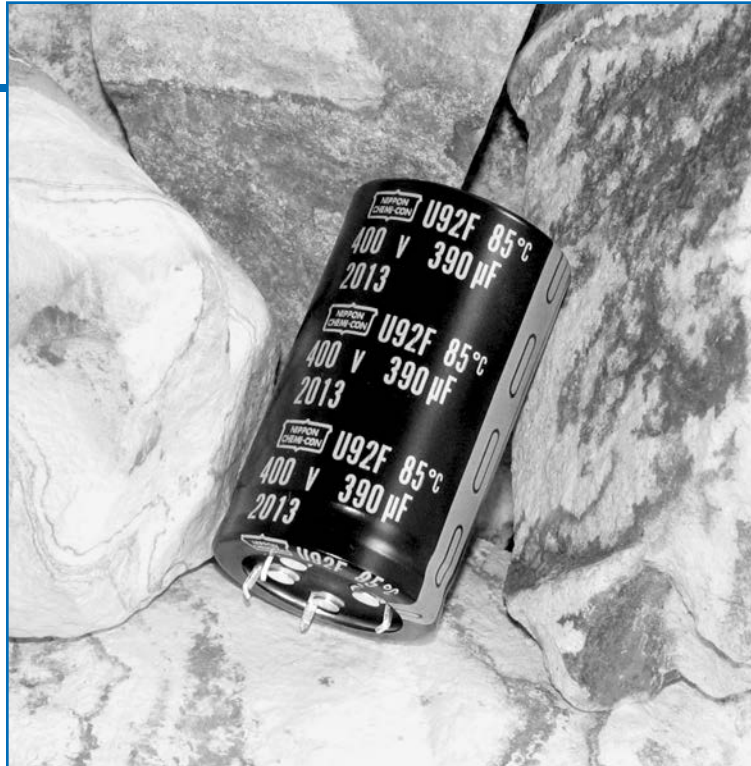


# U92F Series NEW



U92F  
SNAP MOUNT 85°C

- Snap Mount
- Specific Design For Higher Ripple Current
- 350 to 500VDC Voltage Range
- RoHS Compliant
- +85°C Maximum Temperature
- 5,000 Hours Lifetime at +85°C



The U92F series is a specifically designed series for higher ripple current capability. The U92F capacitors have an endurance rating of 5,000 hours at +85°C with the rated ripple current applied. All U92F series capacitors are RoHS compliant and available in a variety of sizes, with or without an end disk, and encased in a PET sleeve or standard Pb-free PVC sleeve. 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 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: 180 to 3,300µF.
- Voltage range: 350 to 500VDC.
- Category temperature range: -25°C to +85°C.
- Leakage current:  $3\sqrt{CV}$  (µA) or 3mA, whichever is smaller, after 5 minutes at +20°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D × L): 30 × 40mm to 50 × 105mm.
- Rated lifetime: 5,000 hours at +85°C with the rated ripple current applied.

# U92F Series

## U92F Specifications - Snap Mount

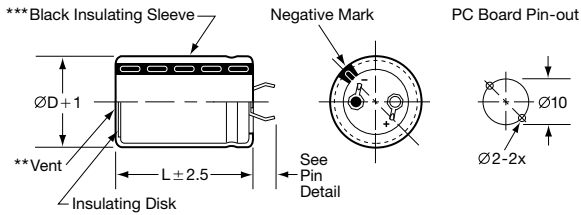
Item	Characteristics																											
Category Temperature Range	- 25 to +85°C																											
Rated Voltage Range	350 to 500VDC																											
Capacitance Range	180 to 3,300µF																											
Capacitance Tolerance	± 20% (M) at +20°C, 120Hz																											
Leakage Current	$I = 3\sqrt{CV}$ (µA) or 3mA, whichever is smaller, after 5 minutes at +20°C. Where I = Max. leakage current (µA), C = Nominal capacitance (µF) and V = Rated voltage (V)																											
Dissipation Factor (Tan δ)	At +20°C, 120Hz <table border="1" style="margin-left: 20px;"> <tr> <td>Rated Voltage (V)</td> <td>350 - 400</td> <td>420 - 500</td> </tr> <tr> <td>Tan δ (DF) Max.</td> <td>0.15</td> <td>0.20</td> </tr> </table>	Rated Voltage (V)	350 - 400	420 - 500	Tan δ (DF) Max.	0.15	0.20																					
Rated Voltage (V)	350 - 400	420 - 500																										
Tan δ (DF) Max.	0.15	0.20																										
Low Temperature Characteristics	At 120Hz, impedance (Z) ratio between the - 25°C value and +20°C value shall not exceed the values given below. <table border="1" style="margin-left: 20px;"> <tr> <td>Rated Voltage (V)</td> <td>350 - 500</td> </tr> <tr> <td>Z (-25°C) / Z (+20°C)</td> <td>8</td> </tr> </table>	Rated Voltage (V)	350 - 500	Z (-25°C) / Z (+20°C)	8																							
Rated Voltage (V)	350 - 500																											
Z (-25°C) / Z (+20°C)	8																											
Rated Ripple Current Multipliers	Ambient Temperature (°C) <table border="1" style="margin-left: 20px;"> <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" style="margin-left: 20px;"> <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>500V</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	500V	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																						
500V	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 +20°C after subjecting them to DC voltage for 5,000 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: ≤ ± 20% of initial measured value Tan δ (DF) : ≤ 200% of initial specified value Leakage current : ≤ initial specified value																											
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +20°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: ≤ ± 20% of initial measured value Tan δ (DF) : ≤ 150% of initial specified value Leakage current : ≤ initial specified value																											

# U92F Series

## Diagram of Dimensions - Snap Mount

### Snap Mount

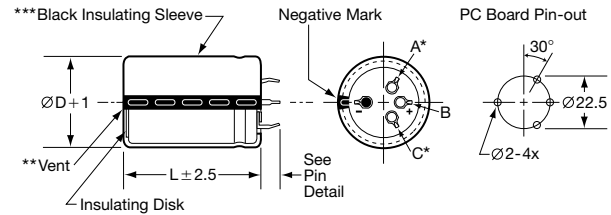
VSN Snap-in  $\varnothing 30$  and  $\varnothing 35$  standard  
VNN Snap-in  $\varnothing 30$  and  $\varnothing 35$  optional



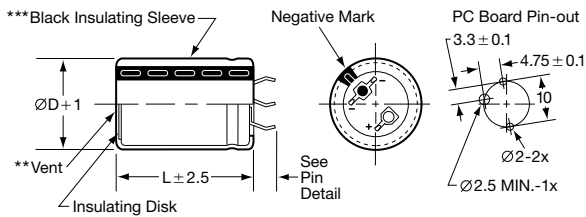
### Snap Mount

Unit: mm

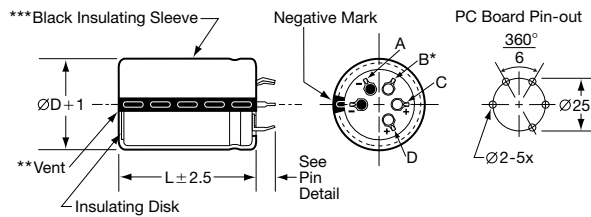
VND Snap-in  $\varnothing 35$  and  $\varnothing 40$  standard;  $\varnothing 45$  optional  
VSD Snap-in  $\varnothing 35$  and  $\varnothing 40$  optional



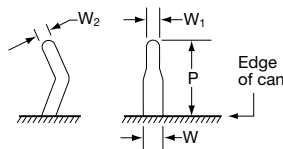
VEN Snap-in  $\varnothing 30$  and  $\varnothing 35$  optional



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



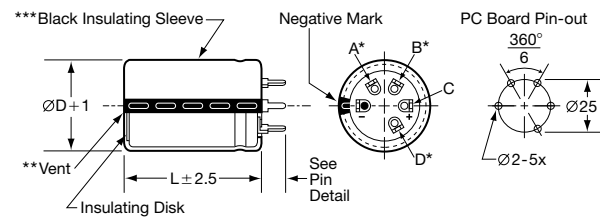
### VS, VE & VN Snap-in Pin Dimensions



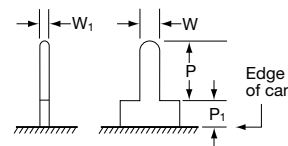
Type	P	W	W <sub>1</sub>	W <sub>2</sub>
VSN $\varnothing 30$	$4.0 \pm 0.5$			
VSN $\varnothing 35$	$3.5 \pm 0.5$			
VNN $\varnothing 30-\varnothing 35$	$5.8 \pm 1.0$			
VEN $\varnothing 30-\varnothing 35$	$4.0 \pm 0.5$	$1.5 \pm 0.2$	$0.8 \pm 0.1$	$0.8 \pm 0.1$
VSD $\varnothing 35-\varnothing 40$	$3.5 \pm 1.0$			
VND $\varnothing 35-\varnothing 45$	$5.8 \pm 1.0$			
VNT $\varnothing 45-\varnothing 50$	$5.8 \pm 1.0$			

### Straight Pin Mount

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



### VQ Straight Standoff Pin Dimensions



Type	P	P <sub>1</sub>	W	W <sub>1</sub>
Standoff Pin (VQ)	$3.75 \pm 1.0$	2.0 max.	$1.5 \pm 0.1$	$0.7 \pm 0.2$

### CAUTION:

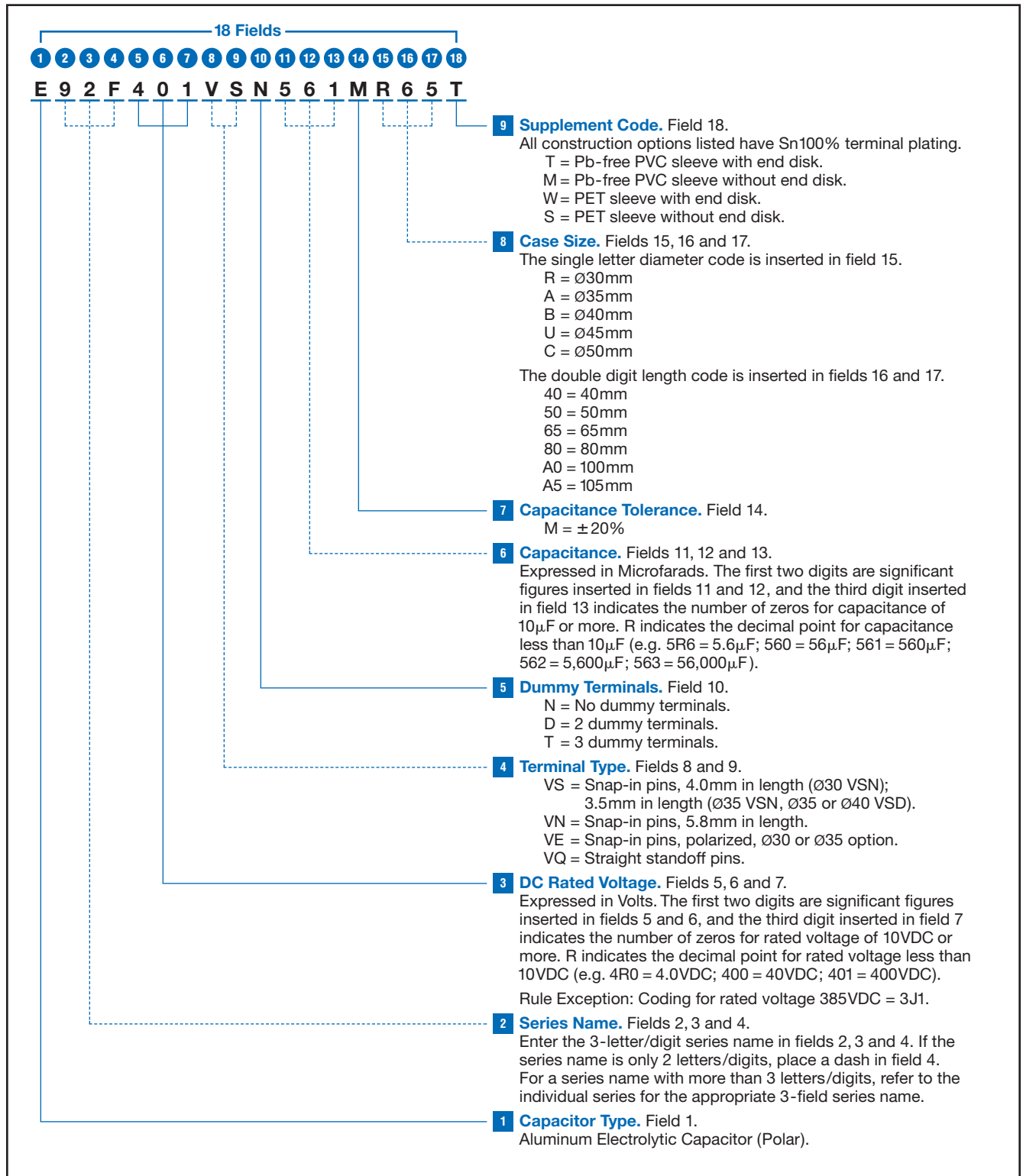
\* Use the blank terminals for mechanical support only. The blank terminals must not be connected to a solder trace on the PC board but be electrically isolated from the negative and positive terminals.

\*\* 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.

# U92F Series

**Part Numbering System for U92F Series** When ordering, always specify complete 18-field global part number.



# U92F 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 +20°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
<b>350 Volts</b> 400 Volts Surge	330	E92F351VSN331MR40T	30 × 40	R40	0.338	2.0
	470	E92F351VSN471MR50T	30 × 50	R50	0.237	2.6
	680	E92F351VSN681MR65T	30 × 65	R65	0.164	3.5
	560	E92F351VSN561MA40T	35 × 40	A40	0.192	3.2
	680	E92F351VSN681MA50T	35 × 50	A50	0.158	3.8
	1,000	E92F351VND102MA65T	35 × 65	A65	0.107	5.0
	1,200	E92F351VND122MA80T	35 × 80	A80	0.090	5.9
	1,800	E92F351VND182MAA0T	35 × 100	AA0	0.060	8.0
	820	E92F351VND821MB50T	40 × 50	B50	0.126	4.5
	1,200	E92F351VND122MB65T	40 × 65	B65	0.086	5.9
	1,500	E92F351VND152MB80T	40 × 80	B80	0.069	7.1
	2,200	E92F351VND222MBA0T	40 × 100	BA0	0.047	9.4
	1,200	E92F351VNT122MU50T	45 × 50	U50	0.093	5.6
	1,500	E92F351VNT152MU65T	45 × 65	U65	0.074	6.8
	2,200	E92F351VNT222MU80T	45 × 80	U80	0.051	8.9
	2,700	E92F351VNT272MUA5T	45 × 105	UA5	0.041	10.9
	1,500	E92F351VNT152MC50T	50 × 50	C50	0.082	6.2
	2,200	E92F351VNT222MC65T	50 × 65	C65	0.056	8.1
2,700	E92F351VNT272MC80T	50 × 80	C80	0.046	9.8	
3,300	E92F351VNT332MCA5T	50 × 105	CA5	0.037	12.2	
<b>385 Volts</b> 435 Volts Surge	330	E92F3J1VSN331MR40T	30 × 40	R40	0.302	2.1
	390	E92F3J1VSN391MR50T	30 × 50	R50	0.255	2.5
	560	E92F3J1VSN561MR65T	30 × 65	R65	0.178	3.4
	470	E92F3J1VSN471MA40T	35 × 40	A40	0.195	3.1
	560	E92F3J1VSN561MA50T	35 × 50	A50	0.164	3.8
	820	E92F3J1VND821MA65T	35 × 65	A65	0.112	4.9
	1,200	E92F3J1VND122MA80T	35 × 80	A80	0.076	6.4
	1,500	E92F3J1VND152MAA0T	35 × 100	AA0	0.061	7.9
	820	E92F3J1VND821MB50T	40 × 50	B50	0.121	4.6
	1,200	E92F3J1VND122MB65T	40 × 65	B65	0.083	6.0
	1,500	E92F3J1VND152MB80T	40 × 80	B80	0.066	7.3
	1,800	E92F3J1VND182MBA0T	40 × 100	BA0	0.055	8.7
	1,000	E92F3J1VNT102MU50T	45 × 50	U50	0.111	5.1
	1,500	E92F3J1VNT152MU65T	45 × 65	U65	0.074	6.8
	1,800	E92F3J1VNT182MU80T	45 × 80	U80	0.062	8.0
	2,200	E92F3J1VNT222MUA5T	45 × 105	UA5	0.051	9.9
	1,200	E92F3J1VNT122MC50T	50 × 50	C50	0.103	5.5
	1,800	E92F3J1VNT182MC65T	50 × 65	C65	0.069	7.3
2,200	E92F3J1VNT222MC80T	50 × 80	C80	0.056	8.8	
3,300	E92F3J1VNT332MCA5T	50 × 105	CA5	0.037	12.2	
<b>400 Volts</b> 450 Volts Surge	270	E92F401VSN271MR40T	30 × 40	R40	0.339	2.0
	390	E92F401VSN391MR50T	30 × 50	R50	0.235	2.6
	560	E92F401VSN561MR65T	30 × 65	R65	0.164	3.5
	390	E92F401VSN391MA40T	35 × 40	A40	0.225	2.9
	560	E92F401VSN561MA50T	35 × 50	A50	0.156	3.9
	820	E92F401VND821MA65T	35 × 65	A65	0.107	5.0
	1,000	E92F401VND102MA80T	35 × 80	A80	0.088	5.9
	1,200	E92F401VND122MAA0T	35 × 100	AA0	0.073	7.2
	680	E92F401VND681MB50T	40 × 50	B50	0.141	4.3
	1,000	E92F401VND102MB65T	40 × 65	B65	0.096	5.6
	1,200	E92F401VND122MB80T	40 × 80	B80	0.080	6.6
	1,800	E92F401VND182MBA0T	40 × 100	BA0	0.053	8.8
	1,000	E92F401VNT102MU50T	45 × 50	U50	0.100	5.4
	1,200	E92F401VNT122MU65T	45 × 65	U65	0.083	6.4

† 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.

# U92F 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 +20°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
<b>400 Volts</b> 450 Volts Surge	1,800	E92F401VNT182MU80T	45 × 80	U80	0.055	8.5
	2,200	E92F401VNT222MUA5T	45 × 105	UA5	0.045	10.4
	1,200	E92F401VNT122MC50T	50 × 50	C50	0.093	5.6
	1,800	E92F401VNT182MC65T	50 × 65	C65	0.062	7.7
	2,200	E92F401VNT222MC80T	50 × 80	C80	0.051	9.3
	2,700	E92F401VNT272MCA5T	50 × 105	CA5	0.041	11.6
<b>420 Volts</b> 470 Volts Surge	220	E92F421VSN221MR40T	30 × 40	R40	0.331	2.0
	330	E92F421VSN331MR50T	30 × 50	R50	0.241	2.6
	470	E92F421VSN471MR65T	30 × 65	R65	0.172	3.5
	390	E92F421VSN391MA40T	35 × 40	A40	0.213	3.0
	560	E92F421VSN561MA50T	35 × 50	A50	0.155	3.9
	680	E92F421VND681MA65T	35 × 65	A65	0.110	5.0
	1,000	E92F421VND102MA80T	35 × 80	A80	0.086	6.0
	1,200	E92F421VND122MAA0T	35 × 100	AA0	0.066	7.6
	560	E92F421VND561MB50T	40 × 50	B50	0.131	4.4
	820	E92F421VND821MB65T	40 × 65	B65	0.094	5.7
	1,200	E92F421VND122MB80T	40 × 80	B80	0.073	6.9
	1,500	E92F421VND152MBA0T	40 × 100	BA0	0.057	8.6
	820	E92F421VNT821MU50T	45 × 50	U50	0.110	5.1
	1,200	E92F421VNT122MU65T	45 × 65	U65	0.079	6.6
	1,500	E92F421VNT152MU80T	45 × 80	U80	0.062	8.0
	1,800	E92F421VNT182MUA5T	45 × 105	UA5	0.045	10.5
	1,000	E92F421VNT102MC50T	50 × 50	C50	0.093	5.6
	1,500	E92F421VNT152MC65T	50 × 65	C65	0.067	7.4
	1,800	E92F421VNT182MC80T	50 × 80	C80	0.052	9.1
	2,700	E92F421VNT272MCA5T	50 × 105	CA5	0.038	12.1
<b>450 Volts</b> 500 Volts Surge	220	E92F451VSN221MR40T	30 × 40	R40	0.340	2.0
	330	E92F451VSN331MR50T	30 × 50	R50	0.248	2.6
	390	E92F451VSN391MR65T	30 × 65	R65	0.177	3.4
	390	E92F451VSN391MA40T	35 × 40	A40	0.249	2.8
	470	E92F451VSN471MA50T	35 × 50	A50	0.159	3.8
	680	E92F451VND681MA65T	35 × 65	A65	0.113	4.9
	820	E92F451VND821MA80T	35 × 80	A80	0.088	5.9
	1,000	E92F451VND102MAA0T	35 × 100	AA0	0.068	7.5
	560	E92F451VND561MB50T	40 × 50	B50	0.135	4.4
	820	E92F451VND821MB65T	40 × 65	B65	0.097	5.6
	1,000	E92F451VND102MB80T	40 × 80	B80	0.075	6.8
	1,200	E92F451VND122MBA0T	40 × 100	BA0	0.058	8.4
	680	E92F451VNT681MU50T	45 × 50	U50	0.114	5.0
	1,000	E92F451VNT102MU65T	45 × 65	U65	0.081	6.5
	1,200	E92F451VNT122MU80T	45 × 80	U80	0.063	7.9
	1,800	E92F451VNT182MUA5T	45 × 105	UA5	0.046	10.3
	820	E92F451VNT821MC50T	50 × 50	C50	0.093	5.6
	1,200	E92F451VNT122MC65T	50 × 65	C65	0.066	7.4
	1,500	E92F451VNT152MC80T	50 × 80	C80	0.052	9.2
	2,200	E92F451VNT222MCA5T	50 × 105	CA5	0.038	12.1
<b>500 Volts</b> 550 Volts Surge	180	E92F501VSN181MR40T	30 × 40	R40	0.464	1.7
	220	E92F501VSN221MR50T	30 × 50	R50	0.380	2.1
	330	E92F501VSN331MR65T	30 × 65	R65	0.253	2.8
	270	E92F501VSN271MA40T	35 × 40	A40	0.295	2.6
	330	E92F501VSN331MA50T	35 × 50	A50	0.241	3.1
	470	E92F501VND471MA65T	35 × 65	A65	0.169	4.0

† 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.

# U92F 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 +20°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
<b>500 Volts 550 Volts Surge</b>	560	E92F501VND561MA80T	35 × 80	A80	0.142	4.7
	820	E92F501VND821MAA0T	35 × 100	AA0	0.097	6.2
	470	E92F501VND471MB50T	40 × 50	B50	0.178	3.8
	680	E92F501VND681MB65T	40 × 65	B65	0.123	5.0
	820	E92F501VND821MB80T	40 × 80	B80	0.102	5.8
	1,200	E92F501VND122MBA0T	40 × 100	BA0	0.070	7.7
	560	E92F501VNT561MU50T	45 × 50	U50	0.164	4.2
	820	E92F501VNT821MU65T	45 × 65	U65	0.112	5.5
	1,200	E92F501VNT122MU80T	45 × 80	U80	0.076	7.2
	1,500	E92F501VNT152MUA5T	45 × 105	UA5	0.061	9.0
	820	E92F501VNT821MC50T	50 × 50	C50	0.121	4.9
	1,200	E92F501VNT122MC65T	50 × 65	C65	0.083	6.6
	1,500	E92F501VNT152MC80T	50 × 80	C80	0.066	8.1
	1,800	E92F501VNT182MCA5T	50 × 105	CA5	0.055	10.0

† 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.