

# SMH Series

**SMH SERIES**  
Engineering Bulletin Mar 07



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

- Snap Mount
- Large Capacitance
- High CV
- High Ripple
- RoHS Compliant
- +85°C Maximum Temperature



The SMH series capacitors are the standard +85°C, large capacitance, snap-in capacitors from United Chemi-Con. The load life for the SMH series is 2,000 hours at +85°C with the rated ripple current applied. The very high CV values and ripple current capabilities make these capacitors ideal for use in power supply filter circuits. The SMH capacitors are available in 2 or 4-pin snap-in styles and 4 or 5-pin straight terminals. The SMH series is RoHS compliant offering Pb-free construction.

The standard SMH series capacitors are *not* solvent proof. Refer to guidelines and precautions on the website for usage and installation conditions recommended for United Chemi-Con products.

## Summary of Specifications

- PC board 2 or 4-pin snap-in; optional 4 or 5-pin straight terminals.
- Capacitance range: 56 to 270,000µF.
- Voltage range: 6.3 to 450VDC.
- Category temperature range: -40°C to +85°C for 6.3 to 100V; -25°C to +85°C for 160 to 450V.
- Leakage current: 0.02CV(µA) or 3mA, whichever is smaller, after 5 minutes at +20°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D×L): 22×20mm to 40×80mm.
- Rated lifetime: 2,000 hours at +85°C with the rated ripple current applied.

SMH  
SNAP MOUNT 85°C

## SMH Specifications - Snap Mount

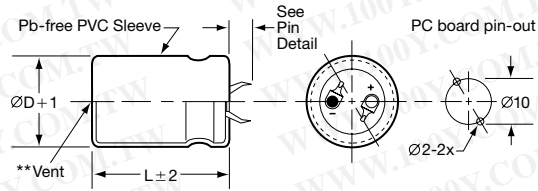
Item	Characteristics																																											
Category Temperature Range	- 40 to +85°C for 6.3 to 100VDC; - 25 to +85°C for 160 to 450VDC																																											
Rated Voltage Range	6.3 to 450VDC																																											
Capacitance Range	56 to 270,000 $\mu$ F																																											
Capacitance Tolerance	$\pm$ 20% (M) at +20°C, 120Hz																																											
Leakage Current	I = 0.02CV ( $\mu$ A) or 3mA, whichever is smaller, after 5 minutes at +20°C. Where I = Max. leakage current ( $\mu$ A), C = Nominal capacitance ( $\mu$ F) and V = Rated voltage (V)																																											
Dissipation Factor (Tan $\delta$ )	At +20°C, 120Hz <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63-100</th> <th>160-250</th> <th>315-450</th> </tr> </thead> <tbody> <tr> <td>Tan <math>\delta</math> (DF) Max.†</td> <td>0.60</td> <td>0.50</td> <td>0.40</td> <td>0.30</td> <td>0.25</td> <td>0.20</td> <td>0.15</td> <td>0.10*</td> <td>0.15</td> </tr> </tbody> </table> <p>*0.15 maximum for 35mm and 40mm diameter. † For rated voltages <math>\leq</math>63V, values are not valid for case sizes &gt;35mm in diameter or &gt;50mm in length.</p>	Rated Voltage (V)	6.3	10	16	25	35	50	63-100	160-250	315-450	Tan $\delta$ (DF) Max.†	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.10*	0.15																							
Rated Voltage (V)	6.3	10	16	25	35	50	63-100	160-250	315-450																																			
Tan $\delta$ (DF) Max.†	0.60	0.50	0.40	0.30	0.25	0.20	0.15	0.10*	0.15																																			
Low Temperature Characteristics	At 120Hz, impedance (Z) ratio between the -25°C or -40°C value and +20°C value shall not exceed the values given below. <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3-16</th> <th>25</th> <th>35</th> <th>50, 63</th> <th>80, 100</th> <th>160-400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>Z (-25°C)/Z (+20°C)</td> <td>4</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>4</td> <td>8</td> </tr> <tr> <td>Z (-40°C)/Z (+20°C)</td> <td>15</td> <td>10</td> <td>8</td> <td>6</td> <td>5</td> <td>—</td> <td>—</td> </tr> </tbody> </table>	Rated Voltage (V)	6.3-16	25	35	50, 63	80, 100	160-400	450	Z (-25°C)/Z (+20°C)	4	3	3	2	2	4	8	Z (-40°C)/Z (+20°C)	15	10	8	6	5	—	—																			
Rated Voltage (V)	6.3-16	25	35	50, 63	80, 100	160-400	450																																					
Z (-25°C)/Z (+20°C)	4	3	3	2	2	4	8																																					
Z (-40°C)/Z (+20°C)	15	10	8	6	5	—	—																																					
Rated Ripple Current Multipliers	Ambient Temperature (°C) <table border="1"> <thead> <tr> <th>+45°C</th> <th>+60°C</th> <th>+70°C</th> <th>+85°C</th> </tr> </thead> <tbody> <tr> <td>1.73</td> <td>1.50</td> <td>1.32</td> <td>1.00</td> </tr> </tbody> </table> Frequency (Hz) <table border="1"> <thead> <tr> <th>DC Rated Voltage</th> <th>50Hz</th> <th>120Hz</th> <th>300Hz</th> <th>1kHz</th> <th>10kHz</th> <th>100kHz</th> </tr> </thead> <tbody> <tr> <td>6.3-50V</td> <td>0.95</td> <td>1.00</td> <td>1.03</td> <td>1.05</td> <td>1.08</td> <td>1.08</td> </tr> <tr> <td>63-100V</td> <td>0.92</td> <td>1.00</td> <td>1.07</td> <td>1.13</td> <td>1.19</td> <td>1.20</td> </tr> <tr> <td>160-250V</td> <td>0.81</td> <td>1.00</td> <td>1.17</td> <td>1.32</td> <td>1.45</td> <td>1.50</td> </tr> <tr> <td>315-450V</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> </tbody> </table>	+45°C	+60°C	+70°C	+85°C	1.73	1.50	1.32	1.00	DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz	6.3-50V	0.95	1.00	1.03	1.05	1.08	1.08	63-100V	0.92	1.00	1.07	1.13	1.19	1.20	160-250V	0.81	1.00	1.17	1.32	1.45	1.50	315-450V	0.77	1.00	1.16	1.30	1.41	1.43
+45°C	+60°C	+70°C	+85°C																																									
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63-100V	0.92	1.00	1.07	1.13	1.19	1.20																																						
160-250V	0.81	1.00	1.17	1.32	1.45	1.50																																						
315-450V	0.77	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 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 $\delta$ (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 +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: $\leq \pm$ 20% of initial measured value Tan $\delta$ (DF) : $\leq$ 150% of initial specified value Leakage current : $\leq$ initial specified value																																											

## Diagram of Dimensions - Snap Mount

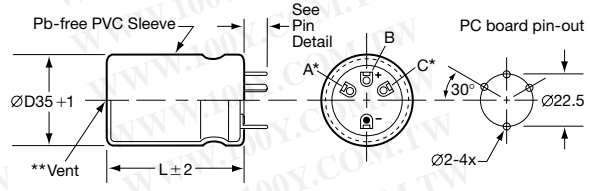
### Snap Mount

Unit: mm

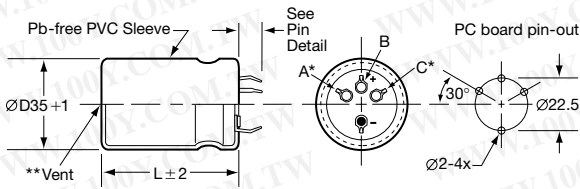
#### Types VSN & VNN $\varnothing 22\text{--}\varnothing 35$



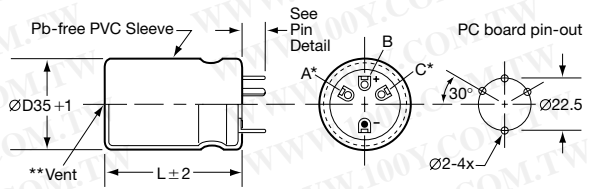
#### Type VRD $\varnothing 35$



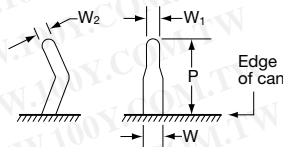
#### Type VND $\varnothing 35$ & $\varnothing 40$



#### Type VQD $\varnothing 35$

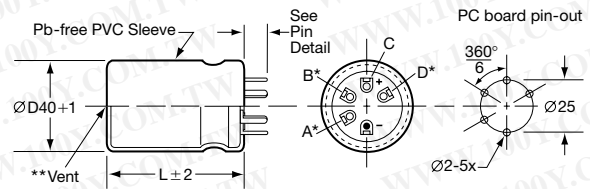


#### VS & VN Pin Dimensions



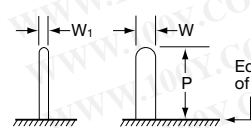
Type	P	W	W <sub>1</sub>	W <sub>2</sub>
VSN $\varnothing 22\text{--}\varnothing 30$	$4.0 \pm 0.5$	$1.5 \pm 0.2$	1.0	1.0
VSN $\varnothing 35$	$3.5 \pm 0.5$			
VNN $\varnothing 22\text{--}\varnothing 35$	$5.8 \pm 1.0$			
VND $\varnothing 35\text{--}\varnothing 40$	$5.8 \pm 1.0$			

#### Type VQT $\varnothing 40$

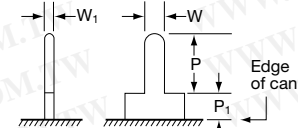


#### VR & VQ Pin Dimensions

##### VR Straight Pin



##### VQ Standoff Pin



Type	P	P <sub>1</sub>	W	W <sub>1</sub>
Straight Pin (VR)	$5.50 \pm 1.0$	—	$1.5 \pm 0.1$	0.7
Standoff Pin (VQ)	$3.75 \pm 1.0$	2.0 max.	$1.5 \pm 0.1$	0.7

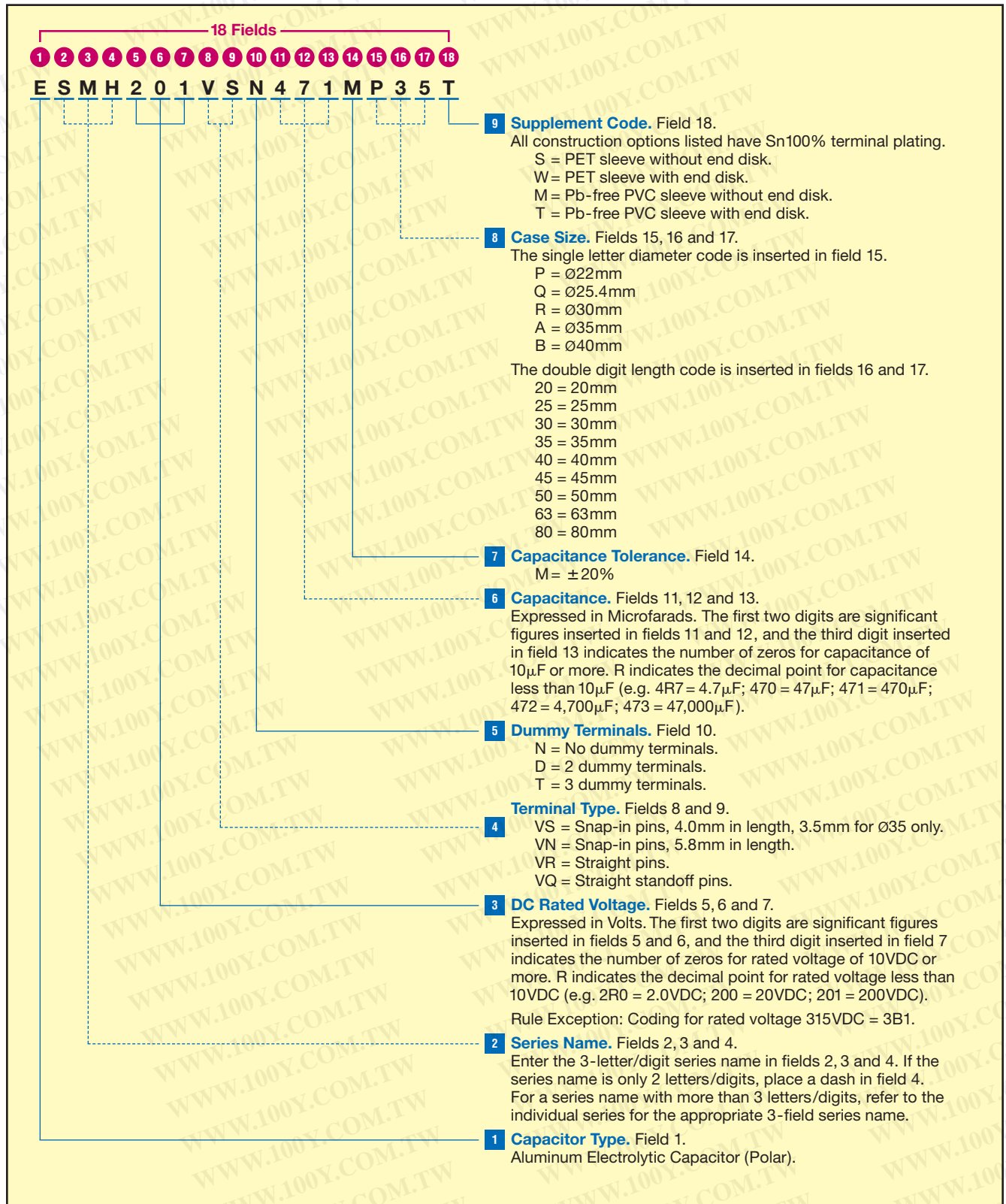
#### CAUTION:

\* 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 or positive terminal.

\*\* Vent may be located either on the bottom or side of the can.

## Part Numbering System for SMH Series

When ordering, always specify complete 18-field global part number.



SMH  
SNAP MOUNT 85°C

## 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>6.3 Volts 8 Volts Surge</b>	15,000	ESMH6R3VSN153MP25T	22 × 25	P25	0.066	2.44
	18,000	ESMH6R3VSN183MP30T	22 × 30	P30	0.055	2.67
	22,000	ESMH6R3VSN223MP30T	22 × 30	P30	0.045	3.06
	27,000	ESMH6R3VSN273MP35T	22 × 35	P35	0.037	3.49
	33,000	ESMH6R3VSN333MP40T	22 × 40	P40	0.03	3.97
	39,000	ESMH6R3VSN393MP50T	22 × 50	P50	0.026	4.55
	18,000	ESMH6R3VSN183MQ25T	25.4 × 25	Q25	0.055	2.7
	22,000	ESMH6R3VSN223MQ25T	25.4 × 25	Q25	0.045	3.07
	27,000	ESMH6R3VSN273MQ30T	25.4 × 30	Q30	0.037	3.52
	33,000	ESMH6R3VSN333MQ35T	25.4 × 35	Q35	0.03	4.02
	39,000	ESMH6R3VSN393MQ40T	25.4 × 40	Q40	0.026	4.5
	47,000	ESMH6R3VSN473MQ45T	25.4 × 45	Q45	0.021	5.09
	56,000	ESMH6R3VSN563MQ50T	25.4 × 50	Q50	0.018	5.71
	27,000	ESMH6R3VSN273MR25T	30 × 25	R25	0.037	3.57
	33,000	ESMH6R3VSN333MR25T	30 × 25	R25	0.03	3.95
	39,000	ESMH6R3VSN393MR30T	30 × 30	R30	0.026	4.45
	47,000	ESMH6R3VSN473MR35T	30 × 35	R35	0.021	5.06
	56,000	ESMH6R3VSN563MR40T	30 × 40	R40	0.018	5.7
	68,000	ESMH6R3VSN683MR45T	30 × 45	R45	0.015	6.48
	82,000	ESMH6R3VSN823MR50T	30 × 50	R50	0.012	7.32
	39,000	ESMH6R3VSN393MA25T	35 × 25	A25	0.026	4.51
	47,000	ESMH6R3VSN473MA30T	35 × 30	A30	0.021	5.01
	56,000	ESMH6R3VSN563MA30T	35 × 30	A30	0.018	5.77
	68,000	ESMH6R3VSN683MA35T	35 × 35	A35	0.015	6.42
	82,000	ESMH6R3VSN823MA40T	35 × 40	A40	0.012	7.29
	100,000	ESMH6R3VSN104MA45T	35 × 45	A45	0.01	8.31
	150,000	ESMH6R3VSN154MA63T	35 × 63	A63	0.01	10.91
	180,000	ESMH6R3VSN184MA80T	35 × 80	A80	0.009	12.78
	56,000	ESMH6R3VQT563MB25T	40 × 25	B25	0.027	5.48
	82,000	ESMH6R3VQT823MB30T	40 × 30	B30	0.02	6.94
	100,000	ESMH6R3VQT104MB35T	40 × 35	B35	0.017	7.95
	120,000	ESMH6R3VQT124MB40T	40 × 40	B40	0.014	8.97
150,000	ESMH6R3VQT154MB50T	40 × 50	B50	0.012	10.66	
220,000	ESMH6R3VQT224MB63T	40 × 63	B63	0.009	13.79	
270,000	ESMH6R3VQT274MB80T	40 × 80	B80	0.008	16.62	
<b>10 Volts 13 Volts Surge</b>	12,000	ESMH100VSN123MP25T	22 × 25	P25	0.069	2.39
	15,000	ESMH100VSN153MP30T	22 × 30	P30	0.055	2.76
	18,000	ESMH100VSN183MP35T	22 × 35	P35	0.046	3.12
	22,000	ESMH100VSN223MP40T	22 × 40	P40	0.038	3.55
	27,000	ESMH100VSN273MP45T	22 × 45	P45	0.031	4.04
	33,000	ESMH100VSN333MP50T	22 × 50	P50	0.025	4.58
	15,000	ESMH100VSN153MQ25T	25.4 × 25	Q25	0.055	2.77
	18,000	ESMH100VSN183MQ25T	25.4 × 25	Q25	0.046	3.04
	22,000	ESMH100VSN223MQ30T	25.4 × 30	Q30	0.038	3.48
	27,000	ESMH100VSN273MQ35T	25.4 × 35	Q35	0.031	3.98
	33,000	ESMH100VSN333MQ40T	25.4 × 40	Q40	0.025	4.54
	39,000	ESMH100VSN393MQ45T	25.4 × 45	Q45	0.021	5.08
	47,000	ESMH100VSN473MQ50T	25.4 × 50	Q50	0.018	5.73
	22,000	ESMH100VSN223MR25T	30 × 25	R25	0.038	3.53
	27,000	ESMH100VSN273MR30T	30 × 30	R30	0.031	3.73
	33,000	ESMH100VSN333MR30T	30 × 30	R30	0.025	4.13
	39,000	ESMH100VSN393MR35T	30 × 35	R35	0.021	5.05
	47,000	ESMH100VSN473MR40T	30 × 40	R40	0.018	5.72
	56,000	ESMH100VSN563MR45T	30 × 45	R45	0.015	6.44
	27,000	ESMH100VSN273MA25T	35 × 25	A25	0.031	3.73
	33,000	ESMH100VSN333MA25T	35 × 25	A25	0.025	4.13
	39,000	ESMH100VSN393MA30T	35 × 30	A30	0.021	4.8
	47,000	ESMH100VSN473MA30T	35 × 30	A30	0.018	5.27
56,000	ESMH100VSN563MA35T	35 × 35	A35	0.015	6.38	

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

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

## 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>10 Volts</b> 13 Volts Surge	68,000	ESMH100VSN683MA40T	35 × 40	A40	0.012	7.27
	82,000	ESMH100VSN823MA50T	35 × 50	A50	0.01	8.49
	100,000	ESMH100VSN104MA63T	35 × 63	A63	0.01	8.91
	150,000	ESMH100VSN154MA80T	35 × 80	A80	0.009	11.67
	47,000	ESMH100VQT473MB25T	40 × 25	B25	0.026	5.02
	56,000	ESMH100VQT563MB30T	40 × 30	B30	0.021	5.74
	68,000	ESMH100VQT683MB35T	40 × 35	B35	0.018	6.56
	82,000	ESMH100VQT823MB40T	40 × 40	B40	0.015	7.42
	120,000	ESMH100VQT124MB50T	40 × 50	B50	0.012	9.54
	150,000	ESMH100VQT154MB63T	40 × 63	B63	0.01	11.39
220,000	ESMH100VQT224MB80T	40 × 80	B80	0.008	15.0	
<b>16 Volts</b> 20 Volts Surge	8,200	ESMH160VSN822MP25T	22 × 25	P25	0.081	2.51
	10,000	ESMH160VSN103MP25T	22 × 25	P25	0.066	2.77
	12,000	ESMH160VSN123MP30T	22 × 30	P30	0.055	2.86
	15,000	ESMH160VSN153MP35T	22 × 35	P35	0.044	3.29
	18,000	ESMH160VSN183MP40T	22 × 40	P40	0.037	3.72
	22,000	ESMH160VSN223MP50T	22 × 50	P50	0.03	4.37
	12,000	ESMH160VSN123MQ25T	25.4 × 25	Q25	0.055	2.95
	15,000	ESMH160VSN153MQ30T	25.4 × 30	Q30	0.044	3.46
	18,000	ESMH160VSN183MQ35T	25.4 × 35	Q35	0.037	3.98
	22,000	ESMH160VSN223MQ40T	25.4 × 40	Q40	0.03	4.26
	27,000	ESMH160VSN273MQ45T	25.4 × 45	Q45	0.025	4.72
	33,000	ESMH160VSN333MQ50T	25.4 × 50	Q50	0.02	5.33
	15,000	ESMH160VSN153MR25T	30 × 25	R25	0.044	3.66
	18,000	ESMH160VSN183MR25T	30 × 25	R25	0.037	4.0
	22,000	ESMH160VSN223MR30T	30 × 30	R30	0.03	4.21
	27,000	ESMH160VSN273MR35T	30 × 35	R35	0.025	4.82
	33,000	ESMH160VSN333MR40T	30 × 40	R40	0.02	5.36
	39,000	ESMH160VSN393MR45T	30 × 45	R45	0.017	6.01
	47,000	ESMH160VSN473MR50T	30 × 50	R50	0.014	6.79
	22,000	ESMH160VSN223MA25T	35 × 25	A25	0.03	4.15
	27,000	ESMH160VSN273MA30T	35 × 30	A30	0.025	4.65
	33,000	ESMH160VSN333MA30T	35 × 30	A30	0.02	5.15
	39,000	ESMH160VSN393MA35T	35 × 35	A35	0.017	5.95
	47,000	ESMH160VSN473MA40T	35 × 40	A40	0.014	6.76
	56,000	ESMH160VSN563MA45T	35 × 45	A45	0.012	7.62
	68,000	ESMH160VSN683MA50T	35 × 50	A50	0.01	8.63
	82,000	ESMH160VSN823MA63T	35 × 63	A63	0.011	9.88
	100,000	ESMH160VSN104MA80T	35 × 80	A80	0.009	11.67
	33,000	ESMH160VQT333MB25T	40 × 25	B25	0.027	5.15
	39,000	ESMH160VQT393MB30T	40 × 30	B30	0.022	5.86
	47,000	ESMH160VQT473MB35T	40 × 35	B35	0.019	6.68
	68,000	ESMH160VQT683MB40T	40 × 40	B40	0.015	8.27
	82,000	ESMH160VQT823MB50T	40 × 50	B50	0.012	9.66
100,000	ESMH160VQT104MB63T	40 × 63	B63	0.01	11.39	
150,000	ESMH160VQT154MB80T	40 × 80	B80	0.008	15.17	
<b>25 Volts</b> 32 Volts Surge	5,600	ESMH250VSN562MP25T	22 × 25	P25	0.089	2.21
	6,800	ESMH250VSN682MP30T	22 × 30	P30	0.073	2.4
	8,200	ESMH250VSN822MP35T	22 × 35	P35	0.061	2.72
	10,000	ESMH250VSN103MP40T	22 × 40	P40	0.05	3.09
	12,000	ESMH250VSN123MP45T	22 × 45	P45	0.041	3.48
	15,000	ESMH250VSN153MP50T	22 × 50	P50	0.033	4.0
	6,800	ESMH250VSN682MQ25T	25.4 × 25	Q25	0.073	2.56
	8,200	ESMH250VSN822MQ25T	25.4 × 25	Q25	0.061	2.8
	10,000	ESMH250VSN103MQ30T	25.4 × 30	Q30	0.05	3.12
	12,000	ESMH250VSN123MQ35T	25.4 × 35	Q35	0.041	3.43
	15,000	ESMH250VSN153MQ40T	25.4 × 40	Q40	0.033	3.95
	18,000	ESMH250VSN183MQ45T	25.4 × 45	Q45	0.028	4.45

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

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

## 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>25 Volts 32 Volts Surge</b>	10,000	ESMH250VSN103MR25T	30 × 25	R25	0.05	3.21
	12,000	ESMH250VSN123MR30T	30 × 30	R30	0.041	3.86
	15,000	ESMH250VSN153MR30T	30 × 30	R30	0.033	4.0
	18,000	ESMH250VSN183MR35T	30 × 35	R35	0.028	4.46
	22,000	ESMH250VSN223MR45T	30 × 45	R45	0.023	5.21
	27,000	ESMH250VSN273MR50T	30 × 50	R50	0.018	5.94
	12,000	ESMH250VSN123MA25T	35 × 25	A25	0.041	3.54
	15,000	ESMH250VSN153MA25T	35 × 25	A25	0.033	3.95
	18,000	ESMH250VSN183MA30T	35 × 30	A30	0.028	4.63
	22,000	ESMH250VSN223MA35T	35 × 35	A35	0.023	5.16
	27,000	ESMH250VSN273MA40T	35 × 40	A40	0.018	5.92
	33,000	ESMH250VSN333MA45T	35 × 45	A45	0.015	6.75
	39,000	ESMH250VSN393MA50T	35 × 50	A50	0.013	7.56
	47,000	ESMH250VSN473MA63T	35 × 63	A63	0.012	8.63
	68,000	ESMH250VSN683MA80T	35 × 80	A80	0.009	11.11
	22,000	ESMH250VQT223MB25T	40 × 25	B25	0.027	4.86
	27,000	ESMH250VQT273MB30T	40 × 30	B30	0.021	5.63
	33,000	ESMH250VQT333MB35T	40 × 35	B35	0.018	6.46
	39,000	ESMH250VQT393MB40T	40 × 40	B40	0.015	7.24
	56,000	ESMH250VQT563MB50T	40 × 50	B50	0.012	9.21
68,000	ESMH250VQT683MB63T	40 × 63	B63	0.01	10.84	
100,000	ESMH250VQT104MB80T	40 × 80	B80	0.008	14.31	

<b>35 Volts 44 Volts Surge</b>	3,900	ESMH350VSN392MP25T	22 × 25	P25	0.106	2.22
	4,700	ESMH350VSN472MP30T	22 × 30	P30	0.088	2.41
	5,600	ESMH350VSN562MP35T	22 × 35	P35	0.074	2.75
	6,800	ESMH350VSN682MP40T	22 × 40	P40	0.061	2.8
	8,200	ESMH350VSN822MP45T	22 × 45	P45	0.051	3.47
	10,000	ESMH350VSN103MP50T	22 × 50	P50	0.041	3.57
	4,700	ESMH350VSN472MQ25T	25.4 × 25	Q25	0.088	2.42
	5,600	ESMH350VSN562MQ25T	25.4 × 25	Q25	0.074	2.64
	6,800	ESMH350VSN682MQ30T	25.4 × 30	Q30	0.061	2.74
	8,200	ESMH350VSN822MQ35T	25.4 × 35	Q35	0.051	3.1
	10,000	ESMH350VSN103MQ40T	25.4 × 40	Q40	0.041	3.53
	12,000	ESMH350VSN123MQ45T	25.4 × 45	Q45	0.035	3.98
	15,000	ESMH350VSN153MQ50T	25.4 × 50	Q50	0.028	4.54
	6,800	ESMH350VSN682MR25T	30 × 25	R25	0.061	2.97
	8,200	ESMH350VSN822MR30T	30 × 30	R30	0.051	3.13
	10,000	ESMH350VSN103MR30T	30 × 30	R30	0.041	3.46
	12,000	ESMH350VSN123MR35T	30 × 35	R35	0.035	4.01
	15,000	ESMH350VSN153MR40T	30 × 40	R40	0.028	4.52
	18,000	ESMH350VSN183MR45T	30 × 45	R45	0.023	4.71
	22,000	ESMH350VSN223MR50T	30 × 50	R50	0.019	5.33
	8,200	ESMH350VSN822MA25T	35 × 25	A25	0.051	2.73
	10,000	ESMH350VSN103MA25T	35 × 25	A25	0.041	3.02
	12,000	ESMH350VSN123MA30T	35 × 30	A30	0.035	4.42
	15,000	ESMH350VSN153MA35T	35 × 35	A35	0.028	5.01
	18,000	ESMH350VSN183MA40T	35 × 40	A40	0.023	5.54
	22,000	ESMH350VSN223MA45T	35 × 45	A45	0.019	6.04
	27,000	ESMH350VSN273MA50T	35 × 50	A50	0.015	6.89
	33,000	ESMH350VSN333MA63T	35 × 63	A63	0.012	7.93
	47,000	ESMH350VSN473MA80T	35 × 80	A80	0.01	10.12
	15,000	ESMH350VQT153MB25T	40 × 25	B25	0.028	4.39
	18,000	ESMH350VQT183MB30T	40 × 30	B30	0.023	5.04
	22,000	ESMH350VQT223MB35T	40 × 35	B35	0.019	5.78
	27,000	ESMH350VQT273MB40T	40 × 40	B40	0.016	6.59
	39,000	ESMH350VQT393MB50T	40 × 50	B50	0.012	8.42
	47,000	ESMH350VQT473MB63T	40 × 63	B63	0.01	9.88
	68,000	ESMH350VQT683MB80T	40 × 80	B80	0.008	12.92

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

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

## 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>50 Volts 63 Volts Surge</b>	2,200	ESMH500VSN222MP25T	22 × 25	P25	0.151	1.91
	3,300	ESMH500VSN332MP30T	22 × 30	P30	0.10	2.37
	3,900	ESMH500VSN392MP35T	22 × 35	P35	0.085	2.65
	4,700	ESMH500VSN472MP40T	22 × 40	P40	0.071	2.99
	5,600	ESMH500VSN562MP45T	22 × 45	P45	0.059	3.36
	6,800	ESMH500VSN682MP50T	22 × 50	P50	0.049	3.81
	3,300	ESMH500VSN332MQ25T	25.4 × 25	Q25	0.10	2.38
	3,900	ESMH500VSN392MQ30T	25.4 × 30	Q30	0.085	2.68
	4,700	ESMH500VSN472MQ35T	25.4 × 35	Q35	0.071	3.03
	5,600	ESMH500VSN562MQ35T	25.4 × 35	Q35	0.059	3.31
	6,800	ESMH500VSN682MQ40T	25.4 × 40	Q40	0.049	3.81
	8,200	ESMH500VSN822MQ50T	25.4 × 50	Q50	0.04	4.37
	3,900	ESMH500VSN392MR25T	30 × 25	R25	0.085	2.55
	4,700	ESMH500VSN472MR25T	30 × 25	R25	0.071	2.81
	5,600	ESMH500VSN562MR30T	30 × 30	R30	0.059	3.37
	6,800	ESMH500VSN682MR35T	30 × 35	R35	0.049	3.85
	8,200	ESMH500VSN822MR40T	30 × 40	R40	0.04	4.36
	10,000	ESMH500VSN103MR45T	30 × 45	R45	0.033	4.97
	12,000	ESMH500VSN123MR50T	30 × 50	R50	0.028	5.6
	5,600	ESMH500VSN562MA25T	35 × 25	A25	0.059	3.42
	6,800	ESMH500VSN682MA30T	35 × 30	A30	0.049	3.85
	8,200	ESMH500VSN822MA30T	35 × 30	A30	0.04	4.41
	10,000	ESMH500VSN103MA35T	35 × 35	A35	0.033	4.92
	12,000	ESMH500VSN123MA40T	35 × 40	A40	0.028	5.58
	15,000	ESMH500VSN153MA45T	35 × 45	A45	0.022	6.44
	18,000	ESMH500VSN183MA50T	35 × 50	A50	0.018	6.71
	22,000	ESMH500VSN223MA63T	35 × 63	A63	0.013	7.23
	27,000	ESMH500VSN273MA80T	35 × 80	A80	0.011	8.57
	8,200	ESMH500VQT822MB25T	40 × 25	B25	0.033	3.63
	12,000	ESMH500VQT123MB30T	40 × 30	B30	0.024	4.6
15,000	ESMH500VQT153MB35T	40 × 35	B35	0.02	5.33	
18,000	ESMH500VQT183MB40T	40 × 40	B40	0.017	6.02	
22,000	ESMH500VQT223MB50T	40 × 50	B50	0.014	7.07	
33,000	ESMH500VQT333MB63T	40 × 63	B63	0.011	9.25	
39,000	ESMH500VQT393MB80T	40 × 80	B80	0.009	10.94	
<b>63 Volts 79 Volts Surge</b>	1,800	ESMH630VSN182MP25T	22 × 25	P25	0.138	1.82
	2,200	ESMH630VSN222MP30T	22 × 30	P30	0.113	2.31
	2,700	ESMH630VSN272MP35T	22 × 35	P35	0.092	2.4
	3,300	ESMH630VSN332MP35T	22 × 35	P35	0.075	2.62
	3,900	ESMH630VSN392MP40T	22 × 40	P40	0.064	2.93
	4,700	ESMH630VSN472MP50T	22 × 50	P50	0.053	3.39
	2,200	ESMH630VSN222MQ25T	25.4 × 25	Q25	0.113	2.3
	2,700	ESMH630VSN272MQ25T	25.4 × 25	Q25	0.092	2.4
	3,300	ESMH630VSN332MQ30T	25.4 × 30	Q30	0.075	2.64
	3,900	ESMH630VSN392MQ35T	25.4 × 35	Q35	0.064	2.97
	4,700	ESMH630VSN472MQ40T	25.4 × 40	Q40	0.053	3.36
	5,600	ESMH630VSN562MQ45T	25.4 × 45	Q45	0.044	3.77
	6,800	ESMH630VSN682MQ50T	25.4 × 50	Q50	0.037	4.27
	3,300	ESMH630VSN332MR25T	30 × 25	R25	0.075	2.78
	3,900	ESMH630VSN392MR30T	30 × 30	R30	0.064	3.0
	4,700	ESMH630VSN472MR30T	30 × 30	R30	0.053	3.32
	5,600	ESMH630VSN562MR35T	30 × 35	R35	0.044	3.75
	6,800	ESMH630VSN682MR40T	30 × 40	R40	0.037	4.27
	8,200	ESMH630VSN822MR45T	30 × 45	R45	0.03	4.83
	10,000	ESMH630VSN103MR50T	30 × 50	R50	0.025	5.49
	3,900	ESMH630VSN392MA25T	35 × 25	A25	0.064	3.0
	4,700	ESMH630VSN472MA25T	35 × 25	A25	0.053	3.36
	5,600	ESMH630VSN562MA30T	35 × 30	A30	0.044	3.76
	6,800	ESMH630VSN682MA30T	35 × 30	A30	0.037	4.15

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

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

## 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>63 Volts 79 Volts Surge</b>	8,200	ESMH630VSN822MA35T	35 × 35	A35	0.03	4.79
	10,000	ESMH630VSN103MA40T	35 × 40	A40	0.025	5.47
	12,000	ESMH630VSN123MA45T	35 × 45	A45	0.021	6.19
	15,000	ESMH630VSN153MA63T	35 × 63	A63	0.015	6.9
	22,000	ESMH630VSN223MA80T	35 × 80	A80	0.011	8.94
	6,800	ESMH630VQT682MB25T	40 × 25	B25	0.036	3.82
	8,200	ESMH630VQT822MB30T	40 × 30	B30	0.029	4.39
	10,000	ESMH630VQT103MB35T	40 × 35	B35	0.024	5.03
	12,000	ESMH630VQT123MB40T	40 × 40	B40	0.02	5.68
	18,000	ESMH630VQT183MB50T	40 × 50	B50	0.015	7.39
22,000	ESMH630VQT223MB63T	40 × 63	B63	0.013	8.72	
33,000	ESMH630VQT333MB80T	40 × 80	B80	0.01	11.62	
<b>80 Volts 100 Volts Surge</b>	1,200	ESMH800VSN122MP25T	22 × 25	P25	0.207	1.69
	1,500	ESMH800VSN182MP25T	22 × 25	P25	0.138	1.88
	1,800	ESMH800VSN182MP30T	22 × 30	P30	0.138	2.14
	2,200	ESMH800VSN222MP35T	22 × 35	P35	0.113	2.44
	2,700	ESMH800VSN272MP40T	22 × 40	P40	0.092	2.78
	3,300	ESMH800VSN332MP45T	22 × 45	P45	0.075	3.16
	3,900	ESMH800VSN392MP50T	22 × 50	P50	0.064	3.52
	1,800	ESMH800VSN182MQ25T	25.4 × 25	Q25	0.138	2.26
	2,200	ESMH800VSN222MQ30T	25.4 × 30	Q30	0.113	2.46
	2,700	ESMH800VSN272MQ35T	25.4 × 35	Q35	0.092	2.81
	3,300	ESMH800VSN332MQ40T	25.4 × 40	Q40	0.075	3.21
	3,900	ESMH800VSN392MQ45T	25.4 × 45	Q45	0.064	3.59
	4,700	ESMH800VSN472MQ50T	25.4 × 50	Q50	0.053	4.05
	2,200	ESMH800VSN222MR25T	30 × 25	R25	0.113	2.49
	2,700	ESMH800VSN272MR25T	30 × 25	R25	0.092	2.75
	3,300	ESMH800VSN332MR30T	30 × 30	R30	0.075	3.17
	3,900	ESMH800VSN392MR35T	30 × 35	R35	0.064	3.57
	4,700	ESMH800VSN472MR40T	30 × 40	R40	0.053	4.05
	5,600	ESMH800VSN562MR45T	30 × 45	R45	0.044	4.55
	6,800	ESMH800VSN682MR50T	30 × 50	R50	0.037	5.16
	3,300	ESMH800VSN332MA25T	35 × 25	A25	0.075	3.21
	3,900	ESMH800VSN392MA25T	35 × 25	A25	0.064	3.5
	4,700	ESMH800VSN472MA30T	35 × 30	A30	0.053	4.09
	5,600	ESMH800VSN562MA35T	35 × 35	A35	0.044	4.51
	6,800	ESMH800VSN682MA40T	35 × 40	A40	0.037	5.14
	8,200	ESMH800VSN822MA45T	35 × 45	A45	0.03	5.83
	10,000	ESMH800VSN103MA50T	35 × 50	A50	0.025	6.63
	12,000	ESMH800VSN123MA63T	35 × 63	A63	0.021	6.9
	15,000	ESMH800VSN153MA80T	35 × 80	A80	0.017	9.04
	4,700	ESMH800VQT472MB25T	40 × 25	B25	0.053	3.89
	5,600	ESMH800VQT562MB30T	40 × 30	B30	0.044	4.44
	6,800	ESMH800VQT682MB35T	40 × 35	B35	0.037	5.08
8,200	ESMH800VQT822MB40T	40 × 40	B40	0.03	5.75	
12,000	ESMH800VQT123MB50T	40 × 50	B50	0.021	7.39	
15,000	ESMH800VQT153MB63T	40 × 63	B63	0.017	8.82	
22,000	ESMH800VQT223MB80T	40 × 80	B80	0.011	11.62	
<b>100 Volts 125 Volts Surge</b>	820	ESMH101VSN821MP25T	22 × 25	P25	0.303	1.86
	1,200	ESMH101VSN122MP30T	22 × 30	P30	0.207	2.09
	1,500	ESMH101VSN152MP35T	22 × 35	P35	0.166	2.41
	1,800	ESMH101VSN182MP40T	22 × 40	P40	0.138	2.71
	2,200	ESMH101VSN222MP45T	22 × 45	P45	0.113	3.08
	2,700	ESMH101VSN272MP50T	22 × 50	P50	0.092	3.53
	1,200	ESMH101VSN122MQ25T	25.4 × 25	Q25	0.207	2.1
	1,500	ESMH101VSN152MQ30T	25.4 × 30	Q30	0.166	2.43
	1,800	ESMH101VSN182MQ35T	25.4 × 35	Q35	0.138	2.75
	2,200	ESMH101VSN222MQ40T	25.4 × 40	Q40	0.113	3.13

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

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

## 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>100 Volts 125 Volts Surge</b>	2,700	ESMH101VSN272MQ45T	25.4 × 45	Q45	0.092	3.57
	3,300	ESMH101VSN332MQ50T	25.4 × 50	Q50	0.075	4.06
	1,500	ESMH101VSN152MR25T	30 × 25	R25	0.166	2.46
	1,800	ESMH101VSN182MR25T	30 × 25	R25	0.138	2.72
	2,200	ESMH101VSN222MR30T	30 × 30	R30	0.113	3.09
	2,700	ESMH101VSN272MR35T	30 × 35	R35	0.092	3.55
	3,300	ESMH101VSN332MR40T	30 × 40	R40	0.075	4.05
	3,900	ESMH101VSN392MR45T	30 × 45	R45	0.064	4.54
	4,700	ESMH101VSN472MR50T	30 × 50	R50	0.053	5.13
	2,200	ESMH101VSN222MA25T	35 × 25	A25	0.113	3.14
	2,700	ESMH101VSN272MA30T	35 × 30	A30	0.092	3.71
	3,300	ESMH101VSN332MA30T	35 × 30	A30	0.075	4.05
	3,900	ESMH101VSN392MA35T	35 × 35	A35	0.064	4.49
	4,700	ESMH101VSN472MA40T	35 × 40	A40	0.053	5.11
	5,600	ESMH101VSN562MA45T	35 × 45	A45	0.044	5.75
	6,800	ESMH101VSN682MA50T	35 × 50	A50	0.037	6.50
	8,200	ESMH101VSN822MA80T	35 × 80	A80	0.03	7.47
	2,700	ESMH101VQT272MB25T	40 × 25	B25	0.092	3.29
	3,300	ESMH101VQT332MB30T	40 × 30	B30	0.075	3.81
	3,900	ESMH101VQT392MB35T	40 × 35	B35	0.064	4.3
4,700	ESMH101VQT472MB40T	40 × 40	B40	0.053	4.86	
6,800	ESMH101VQT682MB50T	40 × 50	B50	0.037	6.22	
8,200	ESMH101VQT822MB63T	40 × 63	B63	0.03	7.29	
12,000	ESMH101VQT123MB80T	40 × 80	B80	0.021	9.6	

<b>160 Volts 200 Volts Surge</b>	270	ESMH161VSN271MP20T	22 × 20	P20	0.614	1.18
	330	ESMH161VSN331MP25T	22 × 25	P25	0.502	1.4
	470	ESMH161VSN471MP30T	22 × 30	P30	0.353	1.73
	560	ESMH161VSN561MP35T	22 × 35	P35	0.296	1.95
	680	ESMH161VSN681MP40T	22 × 40	P40	0.244	2.21
	820	ESMH161VSN821MP45T	22 × 45	P45	0.202	2.49
	1,000	ESMH161VSN102MP50T	22 × 50	P50	0.166	2.82
	330	ESMH161VSN331MQ20T	25.4 × 20	Q20	0.502	1.35
	470	ESMH161VSN471MQ25T	25.4 × 25	Q25	0.353	1.74
	560	ESMH161VSN561MQ25T	25.4 × 25	Q25	0.296	1.95
	680	ESMH161VSN681MQ30T	25.4 × 30	Q30	0.244	2.16
	820	ESMH161VSN821MQ35T	25.4 × 35	Q35	0.202	2.45
	1,000	ESMH161VSN102MQ40T	25.4 × 40	Q40	0.166	2.79
	1,200	ESMH161VSN122MQ45T	25.4 × 45	Q45	0.138	3.15
	1,500	ESMH161VSN152MQ50T	25.4 × 50	Q50	0.111	3.72
	470	ESMH161VSN471MR20T	30 × 20	R20	0.353	1.7
	680	ESMH161VSN681MR25T	30 × 25	R25	0.244	2.19
	820	ESMH161VSN821MR30T	30 × 30	R30	0.202	2.5
	1,000	ESMH161VSN102MR30T	30 × 30	R30	0.166	2.8
	1,200	ESMH161VSN122MR35T	30 × 35	R35	0.138	3.13
	1,500	ESMH161VSN152MR45T	30 × 45	R45	0.111	3.73
	1,800	ESMH161VSN182MR50T	30 × 50	R50	0.092	4.2
	680	ESMH161VSN681MA20T	35 × 20	A20	0.366	2.14
	820	ESMH161VSN821MA25T	35 × 25	A25	0.303	2.5
	1,000	ESMH161VSN102MA25T	35 × 25	A25	0.249	2.8
	1,200	ESMH161VSN122MA30T	35 × 30	A30	0.207	3.27
	1,500	ESMH161VSN152MA35T	35 × 35	A35	0.166	3.69
	1,800	ESMH161VSN182MA40T	35 × 40	A40	0.138	4.18
	2,200	ESMH161VSN222MA45T	35 × 45	A45	0.113	4.78
	2,700	ESMH161VSN272MA50T	35 × 50	A50	0.092	5.45
	3,300	ESMH161VSN332MA63T	35 × 63	A63	0.075	5.6
	4,700	ESMH161VSN472MA80T	35 × 80	A80	0.053	7.15
	1,500	ESMH161VQT152MB25T	40 × 25	B25	0.166	3.11
1,800	ESMH161VQT182MB30T	40 × 30	B30	0.138	3.56	

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

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

## 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>160 Volts 200 Volts Surge</b>	2,200	ESMH161VQT222MB35T	40 × 35	B35	0.113	4.09
	2,700	ESMH161VQT272MB40T	40 × 40	B40	0.092	4.66
	3,900	ESMH161VQT392MB50T	40 × 50	B50	0.064	5.96
	4,700	ESMH161VQT472MB63T	40 × 63	B63	0.053	6.98
	6,800	ESMH161VQT682MB80T	40 × 80	B80	0.037	9.14
<b>180 Volts 225 Volts Surge</b>	220	ESMH181VSN221MP20T	22 × 20	P20	0.753	1.06
	270	ESMH181VSN221MP25T	22 × 25	P25	0.614	1.27
	390	ESMH181VSN221MP30T	22 × 30	P30	0.425	1.58
	470	ESMH181VSN221MP35T	22 × 35	P35	0.353	1.79
	560	ESMH181VSN221MP40T	22 × 40	P40	0.296	2.0
	680	ESMH181VSN221MP45T	22 × 45	P45	0.244	2.27
	820	ESMH181VSN221MP50T	22 × 50	P50	0.202	2.55
	270	ESMH181VSN271MQ20T	25.4 × 20	Q20	0.614	1.22
	390	ESMH181VSN391MQ25T	25.4 × 25	Q25	0.425	1.58
	560	ESMH181VSN561MQ30T	25.4 × 30	Q30	0.296	1.96
	680	ESMH181VSN681MQ35T	25.4 × 35	Q35	0.244	2.23
	820	ESMH181VSN821MQ40T	25.4 × 40	Q40	0.202	2.53
	1,000	ESMH181VSN102MQ45T	25.4 × 45	Q45	0.166	2.87
	390	ESMH181VSN391MR20T	30 × 20	R20	0.425	1.55
	560	ESMH181VSN561MR25T	30 × 25	R25	0.296	1.99
	820	ESMH181VSN821MR30T	30 × 30	R30	0.202	2.7
	1,000	ESMH181VSN102MR35T	30 × 35	R35	0.166	2.86
	1,200	ESMH181VSN122MR40T	30 × 40	R40	0.138	3.23
	1,500	ESMH181VSN152MR50T	30 × 50	R50	0.111	3.83
	560	ESMH181VSN561MA20T	35 × 20	A20	0.444	1.94
	820	ESMH181VSN821MA25T	35 × 25	A25	0.303	2.53
	1,000	ESMH181VSN102MA30T	35 × 30	A30	0.249	2.99
	1,200	ESMH181VSN122MA35T	35 × 35	A35	0.207	3.31
	1,500	ESMH181VSN152MA40T	35 × 40	A40	0.166	3.82
	1,800	ESMH181VSN182MA45T	35 × 45	A45	0.138	4.32
	2,200	ESMH181VSN222MA50T	35 × 50	A50	0.113	4.92
	2,700	ESMH181VSN272MA63T	35 × 63	A63	0.092	5.67
	3,900	ESMH181VSN392MA80T	35 × 80	A80	0.064	7.29
	1,200	ESMH181VQT122MB25T	40 × 25	B25	0.207	3.11
	1,500	ESMH181VQT152MB30T	40 × 30	B30	0.166	3.64
	1,800	ESMH181VQT182MB35T	40 × 35	B35	0.138	4.13
	2,200	ESMH181VQT222MB40T	40 × 40	B40	0.113	4.71
3,300	ESMH181VQT332MB50T	40 × 50	B50	0.075	6.13	
3,900	ESMH181VQT392MB63T	40 × 63	B63	0.064	7.11	
5,600	ESMH181VQT562MB80T	40 × 80	B80	0.044	9.27	
<b>200 Volts 250 Volts Surge</b>	180	ESMH201VSN181MP20T	22 × 20	P20	0.921	0.96
	270	ESMH201VSN271MP25T	22 × 25	P25	0.614	1.27
	330	ESMH201VSN331MP30T	22 × 30	P30	0.502	1.45
	390	ESMH201VSN391MP30T	22 × 30	P30	0.425	1.58
	470	ESMH201VSN471MP35T	22 × 35	P35	0.353	1.78
	560	ESMH201VSN561MP40T	22 × 40	P40	0.296	2.0
	680	ESMH201VSN681MP50T	22 × 50	P50	0.244	2.33
	270	ESMH201VSN271MQ20T	25.4 × 20	Q20	0.614	1.22
	330	ESMH201VSN331MQ25T	25.4 × 25	Q25	0.502	1.45
	390	ESMH201VSN391MQ25T	25.4 × 25	Q25	0.425	1.58
	470	ESMH201VSN471MQ30T	25.4 × 30	Q30	0.353	1.8
	560	ESMH201VSN561MQ35T	25.4 × 35	Q35	0.296	2.03
	680	ESMH201VSN681MQ40T	25.4 × 40	Q40	0.244	2.3
	820	ESMH201VSN821MQ45T	25.4 × 45	Q45	0.202	2.6
	1,000	ESMH201VSN102MQ50T	25.4 × 50	Q50	0.166	2.95
	390	ESMH201VSN391MR20T	30 × 20	R20	0.425	1.55
	470	ESMH201VSN471MR25T	30 × 25	R25	0.353	1.8
	560	ESMH201VSN561MR25T	30 × 25	R25	0.296	2.0

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

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

## 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>200 Volts 250 Volts Surge</b>	680	ESMH201VSN681MR30T	30 × 30	R30	0.244	2.28
	820	ESMH201VSN821MR35T	30 × 35	R35	0.202	2.59
	1,000	ESMH201VSN102MR40T	30 × 40	R40	0.166	2.95
	1,200	ESMH201VSN122MR45T	30 × 45	R45	0.138	3.31
	1,500	ESMH201VSN152MR50T	30 × 50	R50	0.111	3.82
	560	ESMH201VSN561MA20T	35 × 20	A20	0.444	1.94
	680	ESMH201VSN681MA25T	35 × 25	A25	0.366	2.31
	820	ESMH201VSN821MA25T	35 × 25	A25	0.303	2.6
	1,000	ESMH201VSN102MA30T	35 × 30	A30	0.249	2.95
	1,200	ESMH201VSN122MA35T	35 × 35	A35	0.207	3.31
	1,500	ESMH201VSN152MA40T	35 × 40	A40	0.166	3.82
	1,800	ESMH201VSN182MA45T	35 × 45	A45	0.138	4.32
	2,200	ESMH201VSN222MA50T	35 × 50	A50	0.113	4.92
	2,700	ESMH201VSN272MA63T	35 × 63	A63	0.092	5.67
	3,300	ESMH201VSN332MA80T	35 × 80	A80	0.075	6.7
	1,000	ESMH201VQT102MB25T	40 × 25	B25	0.249	2.84
	1,500	ESMH201VQT152MB30T	40 × 30	B30	0.166	3.64
	1,800	ESMH201VQT182MB35T	40 × 35	B35	0.138	4.13
	2,200	ESMH201VQT222MB40T	40 × 40	B40	0.113	4.71
	2,700	ESMH201VQT272MB50T	40 × 50	B50	0.092	5.54
3,900	ESMH201VQT392MB63T	40 × 63	B63	0.064	7.11	
4,700	ESMH201VQT472MB80T	40 × 80	B80	0.053	8.49	

<b>250 Volts 300 Volts Surge</b>	120	ESMH251VSN121MP20T	22 × 20	P20	1.381	0.78
	180	ESMH251VSN181MP25T	22 × 25	P25	0.921	1.04
	220	ESMH251VSN221MP25T	22 × 25	P25	0.753	1.15
	270	ESMH251VSN271MP30T	22 × 30	P30	0.614	1.31
	330	ESMH251VSN331MP35T	22 × 35	P35	0.502	1.49
	390	ESMH251VSN391MP40T	22 × 40	P40	0.425	1.67
	470	ESMH251VSN471MP45T	22 × 45	P45	0.353	1.88
	560	ESMH251VSN561MP50T	22 × 50	P50	0.296	2.1
	180	ESMH251VSN181MQ20T	25.4 × 20	Q20	0.921	1.0
	270	ESMH251VSN271MQ25T	25.4 × 25	Q25	0.614	1.32
	330	ESMH251VSN331MQ30T	25.4 × 30	Q30	0.502	1.51
	390	ESMH251VSN391MQ30T	25.4 × 30	Q30	0.425	1.66
	470	ESMH251VSN471MQ35T	25.4 × 35	Q35	0.353	1.86
	560	ESMH251VSN561MQ40T	25.4 × 40	Q40	0.296	2.09
	680	ESMH251VSN681MQ50T	25.4 × 50	Q50	0.244	2.44
	270	ESMH251VSN271MR20T	30 × 20	R20	0.614	1.29
	330	ESMH251VSN331MR25T	30 × 25	R25	0.502	1.52
	390	ESMH251VSN391MR25T	30 × 25	R25	0.425	1.66
	470	ESMH251VSN471MR30T	30 × 30	R30	0.353	1.89
	560	ESMH251VSN561MR35T	30 × 35	R35	0.296	2.14
	680	ESMH251VSN681MR40T	30 × 40	R40	0.244	2.43
	820	ESMH251VSN821MR45T	30 × 45	R45	0.202	2.75
	1,000	ESMH251VSN102MR50T	30 × 50	R50	0.166	3.31
	390	ESMH251VSN391MA20T	35 × 20	A20	0.638	1.62
	470	ESMH251VSN471MA25T	35 × 25	A25	0.529	1.88
	560	ESMH251VSN561MA25T	35 × 25	A25	0.444	2.06
	680	ESMH251VSN681MA30T	35 × 30	A30	0.366	2.46
	820	ESMH251VSN821MA35T	35 × 35	A35	0.303	2.77
	1,000	ESMH251VSN102MA40T	35 × 40	A40	0.249	3.32
	1,200	ESMH251VSN122MA45T	35 × 45	A45	0.207	3.53
	1,500	ESMH251VSN152MA50T	35 × 50	A50	0.166	4.04
	1,800	ESMH251VSN182MA63T	35 × 63	A63	0.138	4.63
	2,200	ESMH251VSN222MA80T	35 × 80	A80	0.113	5.47
	680	ESMH251VQT681MB25T	40 × 25	B25	0.366	2.34
	1,000	ESMH251VQT102MB30T	40 × 30	B30	0.249	2.97
	1,200	ESMH251VQT122MB35T	40 × 35	B35	0.207	3.37

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

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

## 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>250 Volts</b> <b>300 Volts Surge</b>	1,500	ESMH251VQT152MB40T	40 × 40	B40	0.166	3.89
	1,800	ESMH251VQT182MB50T	40 × 50	B50	0.138	4.52
	2,200	ESMH251VQT222MB63T	40 × 63	B63	0.113	5.34
	3,300	ESMH251VQT332MB80T	40 × 80	B80	0.075	7.12
<b>315 Volts</b> <b>365 Volts Surge</b>	82	ESMH3B1VSN820MP20T	22 × 20	P20	3.032	0.65
	120	ESMH3B1VSN121MP25T	22 × 25	P25	2.072	0.94
	150	ESMH3B1VSN151MP30T	22 × 30	P30	1.658	1.11
	180	ESMH3B1VSN181MP35T	22 × 35	P35	1.381	1.2
	220	ESMH3B1VSN221MP40T	22 × 40	P40	1.13	1.41
	270	ESMH3B1VSN271MP45T	22 × 45	P45	0.921	1.6
	330	ESMH3B1VSN331MP50T	22 × 50	P50	0.753	1.82
	100	ESMH3B1VSN101MQ20T	25.4 × 20	Q20	2.486	0.74
	150	ESMH3B1VSN151MQ25T	25.4 × 25	Q25	1.658	1.1
	180	ESMH3B1VSN181MQ25T	25.4 × 25	Q25	1.381	1.2
	220	ESMH3B1VSN221MQ30T	25.4 × 30	Q30	1.13	1.38
	270	ESMH3B1VSN271MQ35T	25.4 × 35	Q35	0.921	1.59
	330	ESMH3B1VSN331MQ40T	25.4 × 40	Q40	0.753	1.8
	390	ESMH3B1VSN391MQ45T	25.4 × 45	Q45	0.638	2.01
	470	ESMH3B1VSN471MQ45T	25.4 × 45	Q45	0.529	2.2
	150	ESMH3B1VSN151MR20T	30 × 20	R20	1.658	0.96
	220	ESMH3B1VSN221MR25T	30 × 25	R25	1.13	1.4
	270	ESMH3B1VSN271MR30T	30 × 30	R30	0.921	1.59
	330	ESMH3B1VSN331MR30T	30 × 30	R30	0.753	1.8
	390	ESMH3B1VSN391MR35T	30 × 35	R35	0.638	1.99
	470	ESMH3B1VSN471MR40T	30 × 40	R40	0.529	2.27
	560	ESMH3B1VSN561MR45T	30 × 45	R45	0.444	2.56
	680	ESMH3B1VSN681MR50T	30 × 50	R50	0.366	2.88
	220	ESMH3B1VSN221MA20T	35 × 20	A20	1.13	1.22
	270	ESMH3B1VSN271MA25T	35 × 25	A25	0.921	1.59
	330	ESMH3B1VSN331MA25T	35 × 25	A25	0.753	1.8
	390	ESMH3B1VSN391MA30T	35 × 30	A30	0.638	2.0
	470	ESMH3B1VSN471MA30T	35 × 30	A30	0.529	2.23
	560	ESMH3B1VSN561MA35T	35 × 35	A35	0.444	2.49
	680	ESMH3B1VSN681MA40T	35 × 40	A40	0.366	2.87
	820	ESMH3B1VSN821MA45T	35 × 45	A45	0.303	3.25
	1,000	ESMH3B1VSN102MA50T	35 × 50	A50	0.249	3.69
	1,200	ESMH3B1VSN122MA63T	35 × 63	A63	0.207	4.36
	1,500	ESMH3B1VSN152MA80T	35 × 80	A80	0.166	5.22
390	ESMH3B1VQT391MB25T	40 × 25	B25	0.638	2.04	
560	ESMH3B1VQT561MB30T	40 × 30	B30	0.444	2.57	
680	ESMH3B1VQT681MB35T	40 × 35	B35	0.366	2.93	
820	ESMH3B1VQT821MB40T	40 × 40	B40	0.303	3.32	
1,200	ESMH3B1VQT122MB50T	40 × 50	B50	0.207	4.27	
1,500	ESMH3B1VQT152MB63T	40 × 63	B63	0.166	5.09	
2,200	ESMH3B1VQT222MB80T	40 × 80	B80	0.113	6.71	
<b>350 Volts</b> <b>400 Volts Surge</b>	68	ESMH351VSN680MP20T	22 × 20	P20	3.656	0.59
	100	ESMH351VSN101MP25T	22 × 25	P25	2.486	0.86
	120	ESMH351VSN121MP30T	22 × 30	P30	2.072	0.99
	150	ESMH351VSN151MP35T	22 × 35	P35	1.658	1.14
	180	ESMH351VSN181MP40T	22 × 40	P40	1.381	1.28
	220	ESMH351VSN221MP45T	22 × 45	P45	1.13	1.44
	270	ESMH351VSN271MP50T	22 × 50	P50	0.921	1.64
	82	ESMH351VSN820MQ20T	25.4 × 20	Q20	3.032	0.67
	120	ESMH351VSN121MQ25T	25.4 × 25	Q25	2.072	0.99
	150	ESMH351VSN151MQ25T	25.4 × 25	Q25	1.658	1.1
	180	ESMH351VSN181MQ30T	25.4 × 30	Q30	1.381	1.24
	220	ESMH351VSN221MQ35T	25.4 × 35	Q35	1.13	1.44

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

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

## 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 400 Volts Surge</b>	270	ESMH351VSN271MQ40T	25.4 × 40	Q40	0.921	1.63
	330	ESMH351VSN331MQ50T	25.4 × 50	Q50	0.753	1.88
	120	ESMH351VSN121MR20T	30 × 20	R20	2.072	0.86
	180	ESMH351VSN181MR25T	30 × 25	R25	1.381	1.27
	220	ESMH351VSN221MR30T	30 × 30	R30	1.13	1.44
	270	ESMH351VSN271MR35T	30 × 35	R35	0.921	1.66
	330	ESMH351VSN331MR35T	30 × 35	R35	0.753	1.83
	390	ESMH351VSN391MR40T	30 × 40	R40	0.638	2.06
	470	ESMH351VSN471MR50T	30 × 50	R50	0.529	2.4
	180	ESMH351VSN181MA20T	35 × 20	A20	1.381	1.1
	220	ESMH351VSN221MA25T	35 × 25	A25	1.13	1.44
	270	ESMH351VSN271MA25T	35 × 25	A25	0.921	1.63
	330	ESMH351VSN331MA30T	35 × 30	A30	0.753	1.87
	390	ESMH351VSN391MA30T	35 × 30	A30	0.638	2.03
	470	ESMH351VSN471MA35T	35 × 35	A35	0.529	2.33
	560	ESMH351VSN561MA40T	35 × 40	A40	0.444	2.6
	680	ESMH351VSN681MA45T	35 × 45	A45	0.366	2.96
	820	ESMH351VSN821MA50T	35 × 50	A50	0.303	3.04
	1,000	ESMH351VSN102MA63T	35 × 63	A63	0.249	3.98
	1,200	ESMH351VSN122MA80T	35 × 80	A80	0.207	4.67
	330	ESMH351VQT331MB25T	40 × 25	B25	0.753	1.88
	470	ESMH351VQT471MB30T	40 × 30	B30	0.529	2.35
	560	ESMH351VQT561MB35T	40 × 35	B35	0.444	2.66
	680	ESMH351VQT681MB40T	40 × 40	B40	0.366	3.02
1,000	ESMH351VQT102MB50T	40 × 50	B50	0.249	3.89	
1,500	ESMH351VQT152MB63T	40 × 63	B63	0.166	5.09	
1,800	ESMH351VQT182MB80T	40 × 80	B80	0.138	6.07	
<b>400 Volts 450 Volts Surge</b>	56	ESMH401VSN560MP20T	22 × 20	P20	4.44	0.53
	82	ESMH401VSN820MP25T	22 × 25	P25	3.032	0.78
	100	ESMH401VSN101MP30T	22 × 30	P30	2.486	0.9
	120	ESMH401VSN121MP35T	22 × 35	P35	2.072	1.02
	150	ESMH401VSN151MP40T	22 × 40	P40	1.658	1.16
	180	ESMH401VSN181MP45T	22 × 45	P45	1.381	1.31
	220	ESMH401VSN221MP50T	22 × 50	P50	1.13	1.49
	270	ESMH401VSN271MP50T	22 × 50	P50	0.921	1.64
	68	ESMH401VSN680MQ20T	25.4 × 20	Q20	3.656	0.61
	100	ESMH401VSN101MQ25T	25.4 × 25	Q25	2.486	0.9
	120	ESMH401VSN121MQ25T	25.4 × 25	Q25	2.072	0.98
	150	ESMH401VSN151MQ30T	25.4 × 30	Q30	1.658	1.14
	180	ESMH401VSN181MQ35T	25.4 × 35	Q35	1.381	1.30
	220	ESMH401VSN221MQ40T	25.4 × 40	Q40	1.13	1.47
	270	ESMH401VSN271MQ45T	25.4 × 45	Q45	0.921	1.67
	330	ESMH401VSN331MQ50T	25.4 × 50	Q50	0.753	1.88
	100	ESMH401VSN101MR20T	30 × 20	R20	2.486	0.78
	150	ESMH401VSN151MR25T	30 × 25	R25	1.658	1.16
	180	ESMH401VSN181MR30T	30 × 30	R30	1.381	1.44
	220	ESMH401VSN221MR30T	30 × 30	R30	1.13	1.47
	270	ESMH401VSN271MR35T	30 × 35	R35	0.921	1.66
	330	ESMH401VSN331MR40T	30 × 40	R40	0.753	1.9
	390	ESMH401VSN391MR45T	30 × 45	R45	0.638	2.13
	470	ESMH401VSN471MR50T	30 × 50	R50	0.529	2.4
	150	ESMH401VSN151MA20T	35 × 20	A20	1.658	1.0
	180	ESMH401VSN181MA25T	35 × 25	A25	1.381	1.32
	220	ESMH401VSN221MA25T	35 × 25	A25	1.13	1.47
	270	ESMH401VSN271MA30T	35 × 30	A30	0.921	1.69
	330	ESMH401VSN331MA30T	35 × 30	A30	0.753	1.87
	390	ESMH401VSN391MA35T	35 × 35	A35	0.638	2.08
	470	ESMH401VSN471MA40T	35 × 40	A40	0.529	2.39
	560	ESMH401VSN561MA45T	35 × 45	A45	0.444	2.69

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

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

## 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	680	ESMH401VSN681MA50T	35 × 50	A50	0.366	3.04
	820	ESMH401VSN821MA63T	35 × 63	A63	0.303	3.61
	1,200	ESMH401VSN122MA80T	35 × 80	A80	0.207	4.67
	270	ESMH401VQT271MB25T	40 × 25	B25	0.921	1.7
	390	ESMH401VQT391MB30T	40 × 30	B30	0.638	2.14
	560	ESMH401VQT561MB35T	40 × 35	B35	0.444	2.66
	680	ESMH401VQT681MB40T	40 × 40	B40	0.366	3.02
	820	ESMH401VQT821MB50T	40 × 50	B50	0.303	3.53
	1,200	ESMH401VQT122MB63T	40 × 63	B63	0.207	4.56
1,500	ESMH401VQT152MB80T	40 × 80	B80	0.166	5.54	
<b>450 Volts</b> 500 Volts Surge	56	ESMH451VSN560MP25T	22 × 25	P25	4.44	0.65
	68	ESMH451VSN680MP25T	22 × 25	P25	3.656	0.71
	82	ESMH451VSN820MP30T	22 × 30	P30	3.032	0.82
	100	ESMH451VSN101MP35T	22 × 35	P35	2.486	0.93
	120	ESMH451VSN121MP40T	22 × 40	P40	2.072	1.04
	150	ESMH451VSN151MP45T	22 × 45	P45	1.658	1.19
	180	ESMH451VSN181MP50T	22 × 50	P50	1.381	1.34
	82	ESMH451VSN820MQ25T	25.4 × 25	Q25	3.032	0.82
	100	ESMH451VSN101MQ25T	25.4 × 25	Q25	2.486	0.9
	120	ESMH451VSN121MQ30T	25.4 × 30	Q30	2.072	1.02
	150	ESMH451VSN151MQ35T	25.4 × 35	Q35	1.658	1.19
	180	ESMH451VSN181MQ40T	25.4 × 40	Q40	1.381	1.33
	220	ESMH451VSN221MQ50T	25.4 × 50	Q50	1.13	1.54
	120	ESMH451VSN121MR25T	30 × 25	R25	2.072	1.03
	150	ESMH451VSN151MR30T	30 × 30	R30	1.658	1.19
	180	ESMH451VSN181MR35T	30 × 35	R35	1.381	1.35
	220	ESMH451VSN221MR40T	30 × 40	R40	1.13	1.55
	270	ESMH451VSN271MR45T	30 × 45	R45	0.921	1.78
	330	ESMH451VSN331MR50T	30 × 50	R50	0.753	2.01
	150	ESMH451VSN151MA25T	35 × 25	A25	1.658	1.19
	180	ESMH451VSN181MA25T	35 × 25	A25	1.381	1.33
	220	ESMH451VSN221MA30T	35 × 30	A30	1.13	1.53
	270	ESMH451VSN271MA35T	35 × 35	A35	0.921	1.73
	330	ESMH451VSN331MA40T	35 × 40	A40	0.753	2.0
	390	ESMH451VSN391MA45T	35 × 45	A45	0.638	2.24
	470	ESMH451VSN471MA50T	35 × 50	A50	0.529	2.53
	560	ESMH451VSN561MA63T	35 × 63	A63	0.444	2.98
	820	ESMH451VSN821MA80T	35 × 80	A80	0.303	3.86
	220	ESMH451VQT221MB25T	40 × 25	B25	1.13	1.54
	270	ESMH451VQT271MB30T	40 × 30	B30	0.921	1.78
	390	ESMH451VQT391MB35T	40 × 35	B35	0.638	2.22
	470	ESMH451VQT471MB40T	40 × 40	B40	0.529	2.51
	680	ESMH451VQT681MB50T	40 × 50	B50	0.366	3.21
820	ESMH451VQT821MB63T	40 × 63	B63	0.303	3.77	
1,200	ESMH451VQT122MB80T	40 × 80	B80	0.207	4.96	

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

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