

High Performance K Series RFI Line Filters for SMPS Emission Control

# SK Series



UL Recognized  
CSA Certified  
VDE Approved



## SK Series

- Designed to reduce conducted noise to acceptable limits for equipment that must comply with FCC / EN specifications
- Utilizes significantly higher element values than the general purpose K Series which makes them better suited for equipment with Line to Ground and Line to Line conducted emissions including those with switching power supplies
- ESK6C and VSK6C incorporate separate ground circuit inductor to isolate the equipment chassis from power line ground at RF frequencies

## Ordering Information



\*IEC 60320-1 C14 inlet mates with C13 connector

## Specifications

### Maximum leakage current each Line to Ground:

	VSK Models	ESK Models
<b>3, 6 &amp; 10A</b>		
@120 VAC 60 Hz:	.4 mA	.21 mA
@250 VAC 50 Hz:	.7 mA	.36 mA
<b>20, 30 &amp; 40A</b>		
@120 VAC 60 Hz:	.75 mA	.3 mA
@250 VAC 50 Hz:	1.25 mA	.5 mA

### Hipot rating (one minute):

Line to Ground:	2250 VDC
Line to Line:	1450 VDC

### Rated Voltage (max):

250 VAC

### Operating Frequency:

50/60 Hz

### Rated Current:

3 to 40A

### Operating Ambient Temperature Range

(at rated current  $I_r$ ): -10°C to +40°C  
In an ambient temperature ( $T_a$ ) higher than +40°C the maximum operating current ( $I_o$ ) is calculated as follows:  $I_o = I_r \sqrt{(85-T_a)/45}$

## Available Part Numbers

3VSK1	3ESK1	20ESK6
3VSK3	3ESK3	20VSK6
3VSK7	3ESK7	30ESK6
3VSK7M	3ESK7M	30ESK6C
6VSK1	6ESK1	30VSK6
6VSK3	6ESK3	30VSK6C
6VSK7	6ESK7	40VSK6
6VSK7M	6ESK7M	
10VSK1	10ESK1	
10VSK3	10ESK3	
10VSK7	10ESK7	
10VSK7M	10ESK7M	



High Performance K Series Filters for SMPS Emission Control *(continued)*

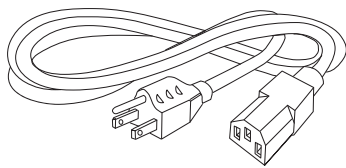
# SK Series

## Electrical Schematic



## Accessories

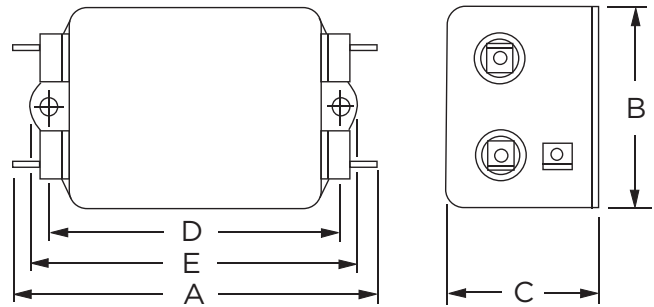
GA400: NEMA 5-15P to IEC 60320-1 C-13 line cord



ESK6 / VSK6

## Case Styles

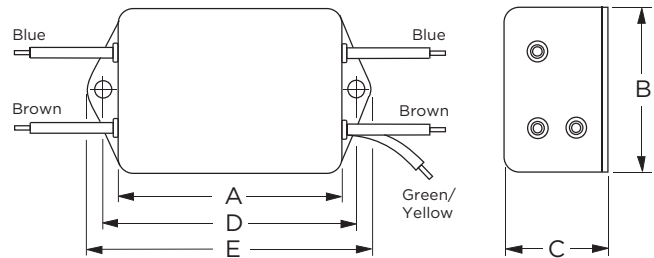
### SK1



Typical Dimensions:

- Line/Load Terminals (4): .250 [6.3] with .07 [1.8] Dia. hole
- Ground Terminal (1): .250 [6.3] with .07 x .16 [1.8 x 3.8] slot
- Mounting Holes (2): .188 [4.78] Dia.

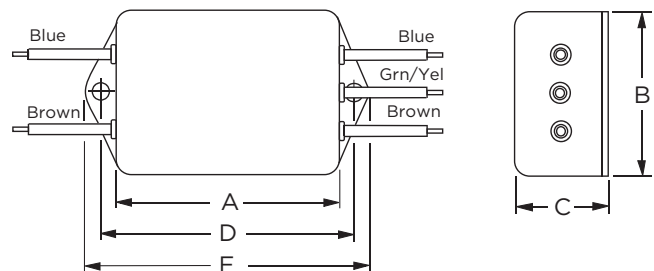
### SK3 (3A)



Typical Dimensions:

- Wire Leads (5): 4.0 [101.6] Min., AWG18
- Mounting Holes (2): .188 [4.78] Dia.

### SK3 (6 & 10A)



Typical Dimensions:

- Wire Leads (5): 4.0 [101.6] Min., AWG18 (AWG16 for 10A)
- Mounting Holes (2): .188 [4.78] Dia.

High Performance K Series Filters for SMPS Emission Control *(continued)*

# SK Series

## Case Styles *(continued)*

### SK6 (20A)



Typical Dimensions:  
 Terminals (5): 8-32, Torque 18 lbf-in. [2.03 N-m] max.  $\pm 2$  [.22]  
 Mounting Holes (2): .188 [4.78] Dia.

### SK6 (30A)



Typical Dimensions:  
 Terminals (5): 10-32, Torque 27 lbf-in. [3.05 N-m] max.  $\pm 2$  [.22]  
 Mounting Slots (4): .250 x .156 [6.35 x 3.96] Dia.

### SK6C (30A)



Typical Dimensions:  
 Terminals (5): 10-32, Torque 27 lbf-in. [3.05 N-m] max.  $\pm 2$  [.22]  
 Mounting Slots (4): .250 x .156 [6.35 x 3.96] Dia.

### SK6 (40A)



Typical Dimensions:  
 Terminals (5): 10-32, Torque 27 lbf-in. [3.05 N-m] max.  $\pm 2$  [.22]  
 Mounting Slots (4): .203 x .156 [5.15 x 3.96] Dia.

### SK7 & SK7M



Typical Dimensions:  
 Load Terminals (2): .250 [6.3] with .07 [1.8] Dia. hole  
 Ground Terminal (1): .250 [6.3] with .07 x .16 [1.8 x 3.8] slot  
 Line Inlet (1): IEC 60320-1 C14  
 K7 Tapped Inserts (2): 6-32 x 1/4  
 K7M Tapped Inserts (2): M3 x .5

### Recommended Panel Cutout



Tolerance  $\pm .005$  [0.13]  
 Back Mount Only



RFI Power Line Filters

High Performance K Series Filters for SMPS Emission Control *(continued)*

# SK Series

## Case Dimensions

Part No.	A (max)	B (max)	C (max)	D $\pm .015$ $\pm .38$	E (max)
3VSK1,	<b>3.85</b>	<b>2.07</b>	<b>1.16</b>	<b>2.938</b>	<b>3.35</b>
3ESK1	<i>97.8</i>	<i>52.6</i>	<i>29.5</i>	<i>74.63</i>	<i>85.1</i>
3VSK3,	<b>2.56</b>	<b>2.07</b>	<b>1.16</b>	<b>2.938</b>	<b>3.35</b>
3ESK3	<i>65.0</i>	<i>52.6</i>	<i>29.5</i>	<i>74.63</i>	<i>85.1</i>
3VSK7/7M,	<b>3.21</b>	<b>2.25</b>	<b>1.53</b>	<b>1.575</b>	<b>0.63*</b>
3ESK7/7M	<i>81.5</i>	<i>57.2</i>	<i>38.9</i>	<i>40.01</i>	<i>16.0*</i>
6VSK1,	<b>4.34</b>	<b>2.25</b>	<b>1.28</b>	<b>3.427</b>	<b>3.83</b>
6ESK1	<i>110.2</i>	<i>57.2</i>	<i>32.5</i>	<i>87.05</i>	<i>97.3</i>
6VSK3,	<b>3.05</b>	<b>2.25</b>	<b>1.28</b>	<b>3.427</b>	<b>3.83</b>
6ESK3	<i>77.5</i>	<i>57.2</i>	<i>32.5</i>	<i>87.05</i>	<i>97.3</i>
6VSK7/7M,	<b>3.21</b>	<b>2.25</b>	<b>1.78</b>	<b>1.575</b>	<b>0.63*</b>
6ESK7/7M	<i>81.5</i>	<i>57.2</i>	<i>45.2</i>	<i>40.01</i>	<i>16.0*</i>
10VSK1,	<b>4.97</b>	<b>2.25</b>	<b>1.78</b>	<b>4.063</b>	<b>4.46</b>
10ESK1	<i>126.2</i>	<i>57.2</i>	<i>45.2</i>	<i>103.2</i>	<i>113.3</i>
10VSK3,	<b>3.69</b>	<b>2.25</b>	<b>1.78</b>	<b>4.063</b>	<b>4.46</b>
10ESK3	<i>93.7</i>	<i>57.2</i>	<i>45.2</i>	<i>103.2</i>	<i>113.3</i>
10VSK7/7M,	<b>4.34</b>	<b>2.25</b>	<b>1.78</b>	<b>1.575</b>	<b>0.63*</b>
10ESK7/7M	<i>110.0</i>	<i>57.2</i>	<i>45.2</i>	<i>40.01</i>	<i>16.0*</i>
20VSK6,	<b>5.09</b>	<b>2.25</b>	<b>1.78</b>	<b>4.063</b>	<b>4.46</b>
20ESK6	<i>127.3</i>	<i>57.2</i>	<i>45.2</i>	<i>103.2</i>	<i>129.3</i>
Part No.	A (max)	B (max)	C (max)	D $\pm .020$ $\pm .51$	E (max)
30VSK6,	<b>4.92</b>	<b>3.12</b>	<b>2.75</b>	<b>3.437</b>	<b>4.00</b>
30ESK6	<i>125.0</i>	<i>79.25</i>	<i>69.85</i>	<i>87.3</i>	<i>101.6</i>
30VSK6C,	<b>4.92</b>	<b>3.12</b>	<b>2.75</b>	<b>3.437</b>	<b>4.00</b>
30ESK6C	<i>125.0</i>	<i>79.25</i>	<i>69.85</i>	<i>87.3</i>	<i>101.6</i>
40VSK6	<b>6.45</b>	<b>3.12</b>	<b>2.18</b>	<b>3.50</b>	<b>3.96</b>
	<i>163.83</i>	<i>79.25</i>	<i>55.4</i>	<i>88.9</i>	<i>100.6</i>

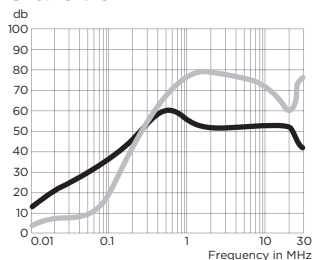
\*±0.02 [0.5]

## Performance Data

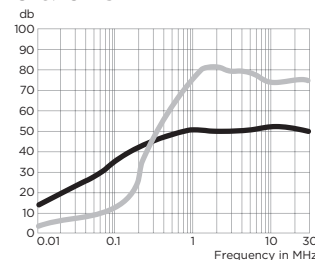
### Typical Insertion Loss

Measured in closed 50 Ohm system

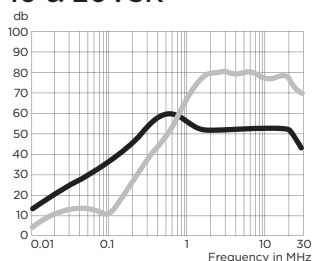
#### 3 & 6VSK



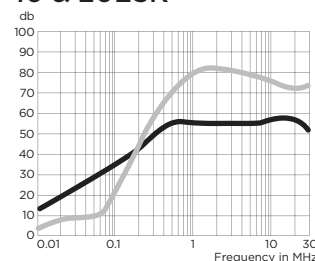
#### 3 & 6ESK



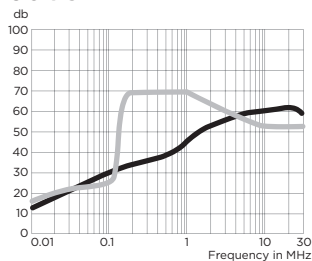
#### 10 & 20VSK



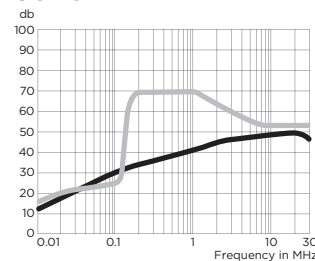
#### 10 & 20ESK



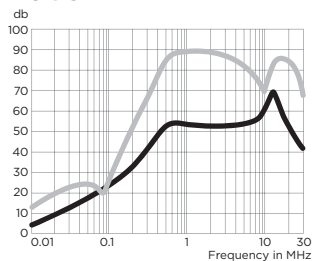
#### 30VSK



#### 30ESK



#### 40VSK



— Common Mode / Asymmetrical (L-G)  
- - - Differential Mode / Symmetrical (L-L)

**High Performance K Series Filters for SMPS Emission Control** *(continued)*

# SK Series

## Performance Data *(continued)*

### Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency – MHz								
	.01	.08	.1	.15	.5	1	5	10	30
<b>VSK Models</b>									
3A, 6A	4	23	25	29	43	44	42	42	30
10A	4	23	25	29	43	44	42	42	30
20A	7	23	25	29	43	44	48	48	48
30A	2	13	14	15	27	31	46	51	39
40A	2	15	18	22	40	43	45	50	30
<b>ESK Models</b>									
3A, 6A	4	22	24	28	42	40	36	36	27
10A	4	22	24	28	42	40	36	36	27
20A	7	22	24	28	35	38	45	45	45
30A	2	13	15	15	27	31	40	41	36

Differential Mode / Symmetrical (Line to Line)

Current Rating	Frequency – MHz								
	.01	.08	.1	.15	.5	1	5	10	30
<b>VSK Models</b>									
3A, 6A	1	3	10	25	59	65	62	40	40
10A	1	3	3	10	55	65	65	50	50
20A	1	10	8	8	45	60	65	60	60
30A	5	13	13	13	60	60	51	43	43
40A	7	14	16	30	65	65	65	57	50
<b>ESK Models</b>									
3A, 6A	1	3	10	25	59	65	62	40	40
10A	1	3	3	10	55	65	65	65	45
20A	1	10	8	8	45	60	65	60	60
30A	5	12	12	13	60	60	51	43	43

