



# ETA-USA

## HIGH QUALITY SWITCHING POWER SUPPLIES

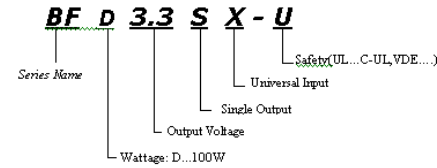
AC/DC SWITCHING POWER SUPPLY  
AC INPUT 85~264V  
SINGLE CHANNEL OUTPUT  
100 WATTS

# BFD-SX-U1

## SERIES



Dimension: 62Wx180Lx35H



### General Description

"BF"-Series AC/DC Switching power supplies are board type power supplies matched with new designs, which is in accordance with harmonic current regulation, of ultra-small sizes, high efficiency and low cost. By adopting the synchronization regular method (output less than 6 V) for the first time for this class of devices, BF-Series is 40mm smaller in depth compared with equivalent products by other makers. At the same time low cost is realized to meet market needs.

### Application

Industrial

### Input

<b>Input Voltage:</b>	AC100-240V
<b>Input Voltage Range:</b>	AC85-264V
<b>Input Current:</b>	2.0-0.9 A
<b>Frequency:</b>	50/60Hz
<b>Input Frequency Range:</b>	47-63Hz
<b>Phase:</b>	Single
<b>Inrush Current: *1</b>	18A (typ.) at AC100V 41A (typ.) at AC230V
<b>Leakage Current:</b>	1mA (maximum) at 25°C (rated input/output and rated input frequency)

### Features

1. Board Type
2. Ultra Small size
3. Universal input(AC 85V to 264V)
4. Harmonic current complies to IEC61000-3-2
5. Power factor BFD: 0.98/0.92 (AC 100/230V)
6. High efficiency
7. Low Cost
8. EMI: complies to FCC class B, or EN55022 class B, or VCCI class B
9. Safety: UL 60950-1 2<sup>nd</sup> edition, C-UL, EN 60950-1 2006

### Options

N/A



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Output Characteristic	Unit	Models								
		BFD3.3SX	BFD05SX	BFD06SX	BFD09SX	BFD12SX	BFD15SX	BFD24SX	BFD36SX	BFD48SX
Output Voltage	Vdc	3.3	5	6	9	12	15	24	36	48
Output Current	A	20	20	17	11.4	8.6	7.0	4.5	3.0	2.3
Voltage Adjust Range	V	±10% of Rated Output Voltage (at no load within the input range)								
Ripple&Noise(max)*2	mVpp	120/160		150 at 0 to 40°C /180 at -10 to 0°C						
Rise up time	mS	500mS(maximum) at 25°C and rated input/output								
Hold up time	mS	20mS(minimum) at 25°C and rated input/output								
<b>Regulation</b>										
a. Line Regulation	mV	9.9	15	18	27	36	45	72	108	144
b. Load Regulation *3	mV	40	40	40	40	40	100	150	150	150
c. Temperature Coefficient *4	°C	0.03 %/°C								
d. Drift(maximum) *5	mV	13.2	20	24	36	48	60	96	144	192
e. Dynamic Load Regulation (typ.) *6	mV	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.5
f. Recovery Time *6	mS	5 mS(typ.)								
<b>Efficiency</b>	<b>%</b>	<b>77/79</b>	<b>80/84</b>	<b>81/85</b>	<b>81/85</b>	<b>82/86</b>	<b>83/87</b>	<b>84/87</b>	<b>84/88</b>	<b>86/89</b>
<b>Power Factor</b>		<b>0.97/0.92</b>	<b>0.98(typical) at AC100V/0.92(typical) at AC230V</b>							



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## HIGH QUALITY SWITCHING POWER SUPPLIES

Environmental Specification			
Operating Temperature	-10 to +60 °C		
Operating Humidity	less than 85%/RH(non-condensing)		
Storage Temperature	-20 to +85 °C		
Storage Humidity	less than 85%/RH(non-condensing)		
Withstanding Voltage	Primary-Secondary	AC3,000V for 1minute	
	Primary-Frame Ground	AC2,500V for 1minute	
	Secondary-Frame Ground	AC500V for 1minute	
Isolation Resistance	Primary-Secondary-Frame Ground	50MΩ(minimum) by DC500V insulation tester	
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s <sup>2</sup> ,20minutes' period for 60minutes each along X,Y,Z axes(non-operating)		
Shock	294m/s <sup>2</sup>		
Cooling	Convection		
Environmental Agencies			
Line Conducted Noise	Built to meet FCC Part15-B Class B Built to meet VCCI Class B Built to meet CISPR Class B Built to meet EN55022 Class B		
Line Harmonic Distortion	Built to meet IEC61000-3-2		
Safety	UL: UL1950, IEC950 :UL 60950-1 2 <sup>nd</sup> edition C-UL: CSA C22.2 No.950 VDE EN60950-1 2006, IEC950, VDE0805		
MTBF [H]	347000	377000	398000
Switching Frequency[kHz]	100 (typ.)		
Function/Protection			
Over current Protection	Current Limiting with automatic recovery		
Over voltage Protection	output shutdown(to reset,leave 1minute after shut-off)		
Remote Sense	not available		
Remote On/Off	not available		
Power Fail Detection	not available		
Series Operation	available		
Parallel Operation	not available		
Mechanical			
Dimension [mm]	62W × 180L × 35H		
Weight [g] (typical)	320g		

### Conditions:

- \*1 cold start
- \*2 measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth
- \*3 when output current changed from 50% to 150% of rated output current rapidly at rated input
- \*4 at -10 to +50°C
- \*5 for 7hour period after 1hour warm-up at 25°C and rated input/output
- \*6 safety approved at 25°C



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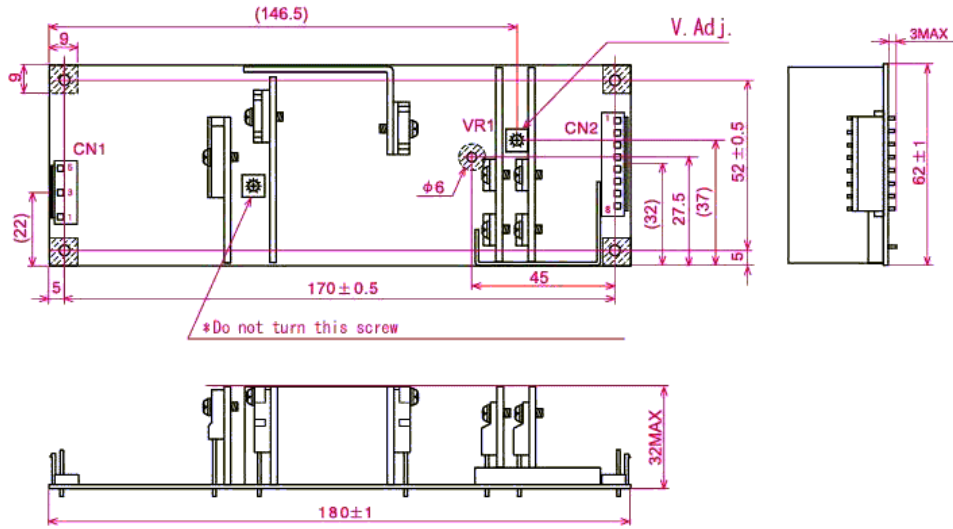
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## HIGH QUALITY SWITCHING POWER SUPPLIES

### DIMENSION DIAGRAM (mm)



The cover touches the shaded area

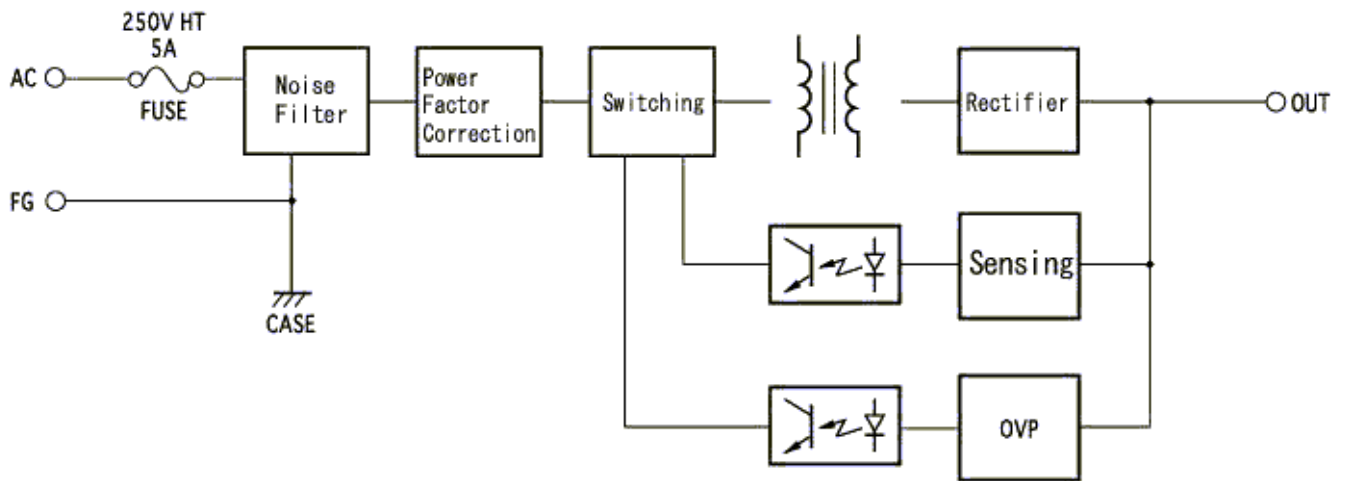
CN1	
Pin no.	Function
1	AC IN(L)
3	AC IN(N)
5	FG

CN2	
Pin no.	Function
1	0V OUT
2	0V OUT
3	0V OUT
4	0V OUT
5	+V OUT
6	+V OUT
7	+V OUT
8	+V OUT

Mating housing	Contact
CN1 VHR5N	SVH-21T-P1.1
CN2 VHR8N	SVH-21T-P1.1

Maker: J. S. T

### BLOCK DIAGRAM

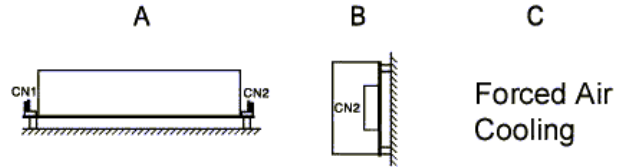
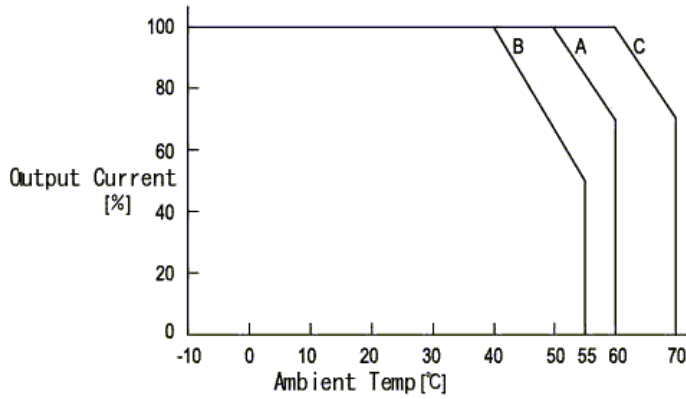




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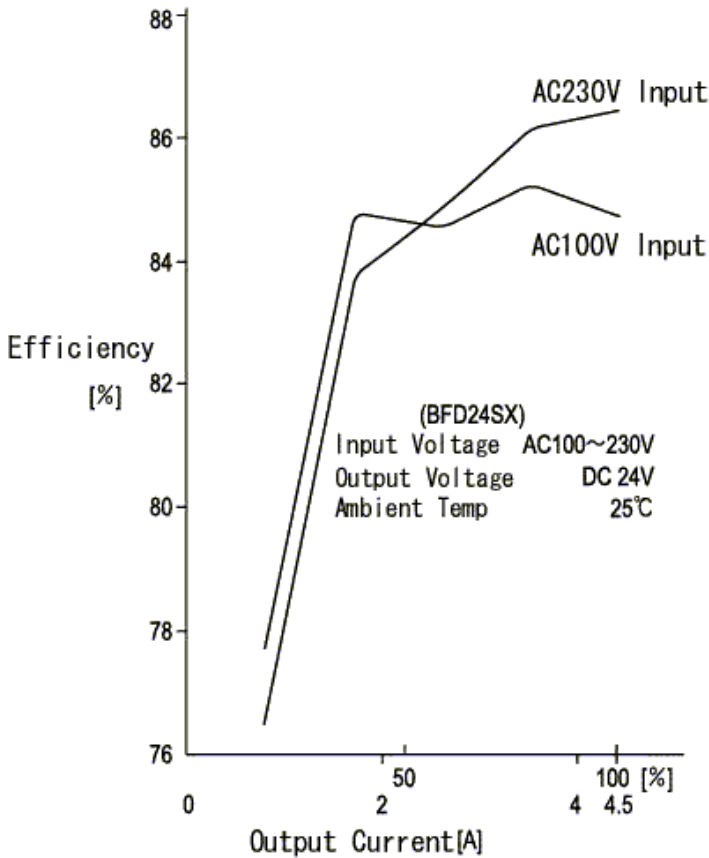
## HIGH QUALITY SWITCHING POWER SUPPLIES

### DERATING CURVE

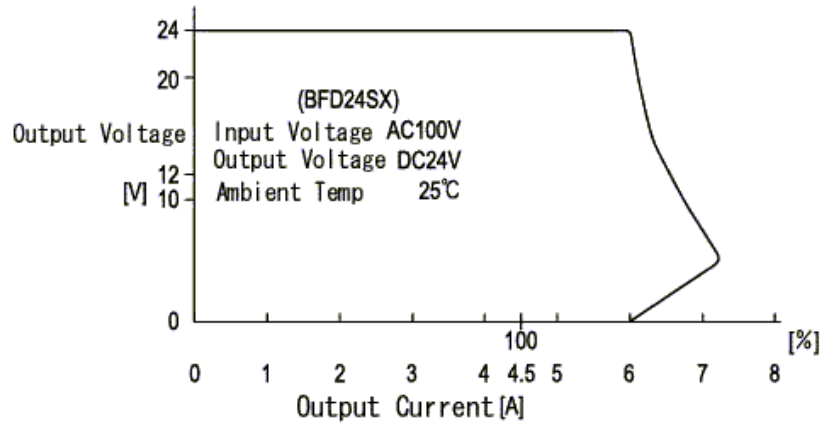


\*For safety specification, contact ETA Sales Representative

### EFFICIENCY CURVE



### OCP CURVE



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