

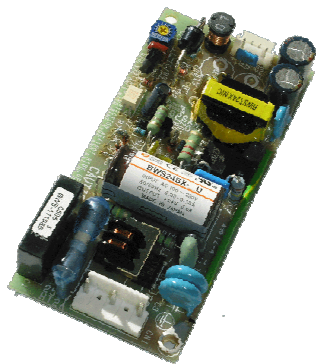


# ETA-USA

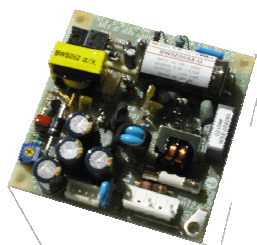
## HIGH QUALITY SWITCHING POWER SUPPLIES

**AC/DC SWITCHING POWER SUPPLY**  
**INPUT: 85~264VAC**  
**SINGLE OUTPUT**  
**10 WATTS**

# BWS/BWSE-SX-U SERIES



50Wx105Lx20H [mm]

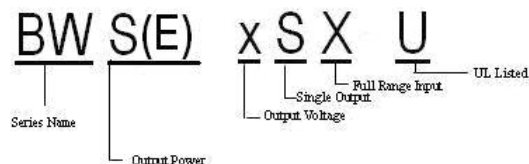


72.5Wx76Lx20.5H [mm]



### General Description

BW-Series are open-board, low profile, low price switcher without chassis and cover. It is designed for small size and low cost applications world-wide. The output power can be boosted 15% to 30% above nominal.



### Options

- \* Chassis +Cover (add suffix "-P")  
 Example: BWS05SX-PU  
 Dimension: 57x125x32 (mm)
- \*40cm long wire harness

### Features

1. Open Frame
2. Mountable on any axis
3. Input: 85~264Vac
4. Low cost
5. EMI: complies to EN55022B, FCC/B
6. Safety: UL 1950, (C-UL) EN60950
7. CE-marked acc. To LVD

| Input Characteristics   | Unit            | BWS3.3SX-U                                      | BWS05SX-U  | BWS12SX-U  | BWS15SX-U  | BWS24SX-U  |
|-------------------------|-----------------|-------------------------------------------------|------------|------------|------------|------------|
|                         |                 | BWSE3.3SX-U                                     | BWSE05SX-U | BWSE12SX-U | BWSE15SX-U | BWSE24SX-U |
| Input Voltage           | V <sub>ac</sub> | AC100~230V                                      |            |            |            |            |
| Input Voltage Range     | V <sub>dc</sub> | AC85~264V (DC110~370V)                          |            |            |            |            |
| Input Current           | A               | 0.3A at AC100V/0.15A at AC230V                  |            |            |            |            |
| Input Frequency         | Hz              | 50/60Hz                                         |            |            |            |            |
| Input Frequency Range   | Hz              | 47~440Hz                                        |            |            |            |            |
| Inrush Current *1       | A               | 15A (maximum) at AC100V/35A (maximum) at AC230V |            |            |            |            |
| Phase                   |                 | Single                                          |            |            |            |            |
| Efficiency (typical) *2 | %               | 66                                              | 74         | 80         | 80         | 81         |

| Output Characteristics         | Unit            | BWS3.3SX-U                                                        | BWS05SX-U  | BWS12SX-U  | BWS15SX-U  | BWS24SX-U  |
|--------------------------------|-----------------|-------------------------------------------------------------------|------------|------------|------------|------------|
|                                |                 | BWSE3.3SX-U                                                       | BWSE05SX-U | BWSE12SX-U | BWSE15SX-U | BWSE24SX-U |
| Output Voltage                 | V <sub>dc</sub> | 3.3                                                               | 5          | 12         | 15         | 24         |
| Output Current                 | A               | 2.0                                                               | 2.0        | 0.9        | 0.7        | 0.5        |
| Voltage Adjust Range           | V               | ± 10% of Rated Output Voltage (at no load within the input range) |            |            |            |            |
| Ripple and Noise (max.) *3     | mV              | 83                                                                | 100        | 170        | 200        | 290        |
| <b>Regulation</b>              |                 |                                                                   |            |            |            |            |
| a. Static Line Regulation max. | mV              | 26.4                                                              | 40         | 96         | 120        | 192        |
| b. Static Load Regulation max. | mV              | 29.7                                                              | 45         | 108        | 135        | 216        |
| c. Temperature Coefficient *4  | %/°C            | 0.03%/°C                                                          |            |            |            |            |
| d. Drift max. *5               | mV              | 31.5                                                              | 40         | 75         | 90         | 135        |
| e. Dynamic Load Reg. typ.      | mV              | Not Specified                                                     |            |            |            |            |
| f. Recovery Time               | mS              | Not Specified                                                     |            |            |            |            |
| g. Rise Time                   | mS              | 200mS (maximum) at 25°C and rated input/output                    |            |            |            |            |
| h. Hold Up Time                | mS              | 20mS (typical) at 25°C and rated input/output                     |            |            |            |            |



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## HIGH QUALITY SWITCHING POWER SUPPLIES

| Environmental Specification                                       |                                                                                                                                                                  |      |      |      |      |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| Operating Temperature                                             | open board type:-5 to +50°C/enclosed type:-5 to +40°C                                                                                                            |      |      |      |      |
| Operating Humidity                                                | 20 to 85%RH(non-condensing)                                                                                                                                      |      |      |      |      |
| Storage Temperature                                               | -20 to +85°C                                                                                                                                                     |      |      |      |      |
| Storage Humidity                                                  | 20 to 85%RH(non-condensing)                                                                                                                                      |      |      |      |      |
| Withstanding Voltage                                              | Primary-Secondary AC3,000V for 1minute<br>Primary-Frame Ground AC2,500V for 1minute<br>Primary-Secondary-Frame Ground 100MΩ(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                                                                                                                                                       |      |      |      |      |
| Isolation Resistance                                              | Primary-Secondary-Frame Ground 1000MΩ(minimum) by DC500V insulation tester                                                                                       |      |      |      |      |
| Function/Protection                                               |                                                                                                                                                                  |      |      |      |      |
| Over current Protection<br>≥110% of Rated Output<br>Current[A] *6 | Current Limiting with automatic recovery                                                                                                                         |      |      |      |      |
|                                                                   | 2.2                                                                                                                                                              | 2.2  | 0.99 | 0.77 | 0.55 |
| Over voltage Protection<br>≥115% of Rated Output<br>Voltage[V]    | Zener diode clamping                                                                                                                                             |      |      |      |      |
|                                                                   | 3.8                                                                                                                                                              | 5.75 | 13.8 | 17.3 | 27.6 |
| Remote Sense                                                      | not available                                                                                                                                                    |      |      |      |      |
| Remote On/Off                                                     | not available                                                                                                                                                    |      |      |      |      |
| Other Specifications                                              |                                                                                                                                                                  |      |      |      |      |
| Leakage Current(typ.)                                             | 0.75mA(maximum) at 25°C ,rated input/output and rated input frequency                                                                                            |      |      |      |      |
| Line Conducted Noise                                              | Built to meet FCC Part15-B Class B<br>Built to meet VCCI Class B<br>Built to meet EN55022 Class B                                                                |      |      |      |      |
| Safety                                                            | UL: UL1950<br>C-UL: CSA C22.2 No.950<br>VDE: EN60950, IEC950, VDE0805                                                                                            |      |      |      |      |
| MTBF [H] *9                                                       | 730,000                                                                                                                                                          |      |      |      |      |
| Switching<br>Frequency[kHz] (typ.) *7                             | 80                                                                                                                                                               |      |      |      |      |
| Mechanical Specification                                          |                                                                                                                                                                  |      |      |      |      |
| Dimension [mm]                                                    | BWS: 50Wx105Lx20H [mm] [1.969Wx4.134Lx0.7874H inch]<br>BWSE: 72.5Wx76Lx20.5H [mm] [2.854Wx2.992Lx0.8071H inch]                                                   |      |      |      |      |
| Weight (typical)                                                  | open board type:73g/enclosed type:160g                                                                                                                           |      |      |      |      |

### Conditions:

- \*1 at cold start
- \*2 at DC130V input/rated output
- \*3 measured by a bayonet probe at the end of a pair of 15cm long wires terminated with a 100uF electrolytic capacitor and 0.1uF film capacitor in parallel at a 0 to 20MHz bandwidth.
- \*4 open board type: at -5 to +50°C/enclosed type: at -5 to +40°C
- \*5 for 7hour period after 1hour warm-up at 25°C and rated input/output
- \*6 when output current changed from 25% of rated output current to 75% rapidly at AC100V input
- \*7 for less than 1minute of over current and short circuit
- \*8 variable change on input voltage and load conditions



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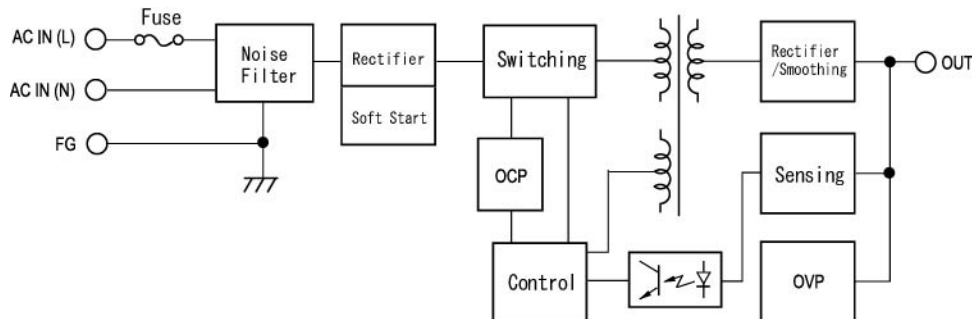
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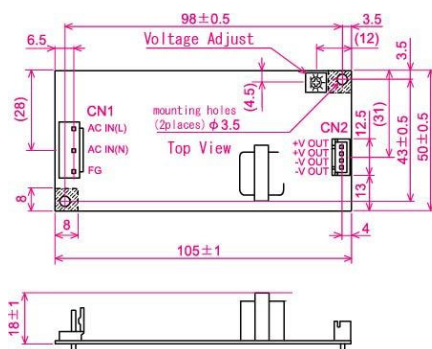
## HIGH QUALITY SWITCHING POWER SUPPLIES

### BLOCK DIAGRAM



### DIMENSION DIAGRAM

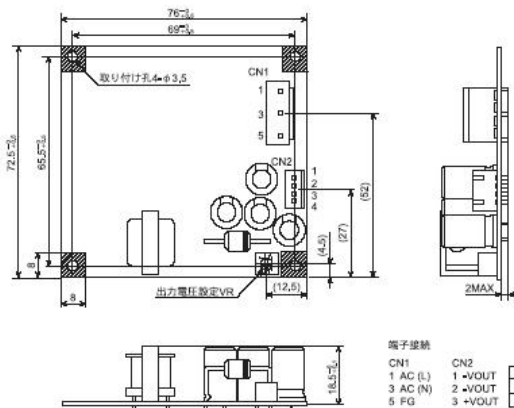
#### BWS-SX-U Series



| Mating Connector (housing) |        |
|----------------------------|--------|
| CN1                        | VHR-6N |
| CN2                        | XHP-4  |

Manufacturer: JST

#### BWSE-SX-U Series



端子接続

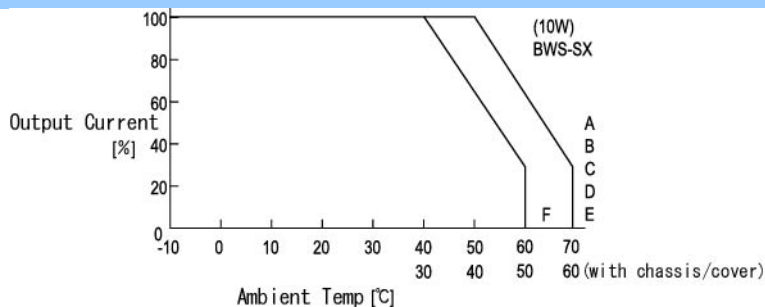
| 端子接続 |          |
|------|----------|
| CN1  | 1 AC (L) |
| CN1  | 2 AC (N) |
| CN1  | 3 AC (N) |
| CN1  | 4 +VOUT  |
| CN1  | 5 -VOUT  |
| CN2  | 1 +VOUT  |
| CN2  | 2 -VOUT  |
| CN2  | 3 +VOUT  |
| CN2  | 4 -VOUT  |

メーカー: 日本エタ電子部品株式会社

cover comes in touch when installed (dimensions in maximum)

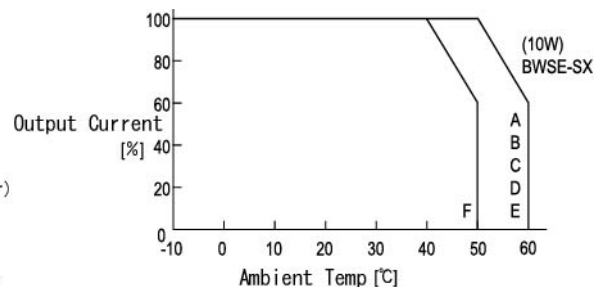
### DERATING CURVE

#### BWS-SX-U Series



※For safety specification, contact ETA Sales Representative

#### BWSE-SX-U Series



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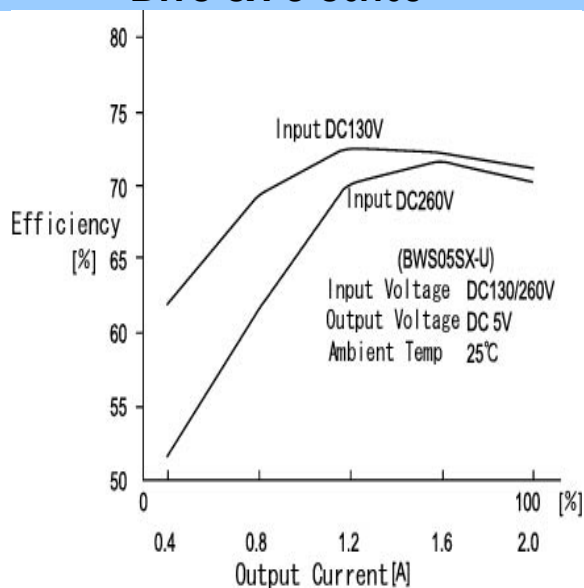


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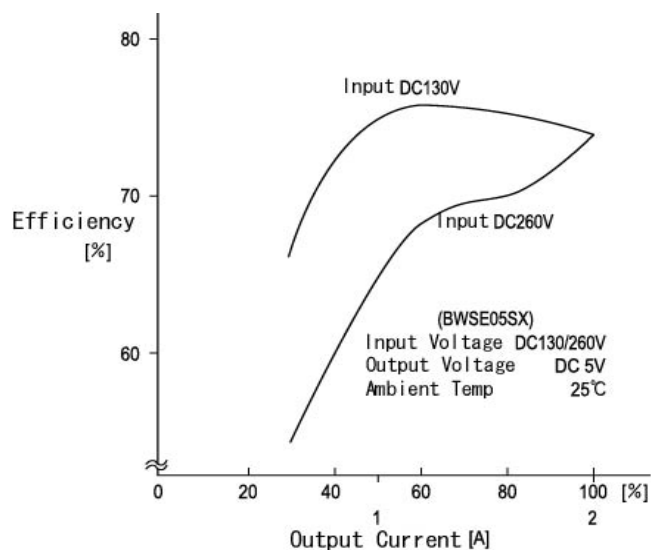
## HIGH QUALITY SWITCHING POWER SUPPLIES

### EFFICIENCY CURVES

#### BWS-SX-U Series



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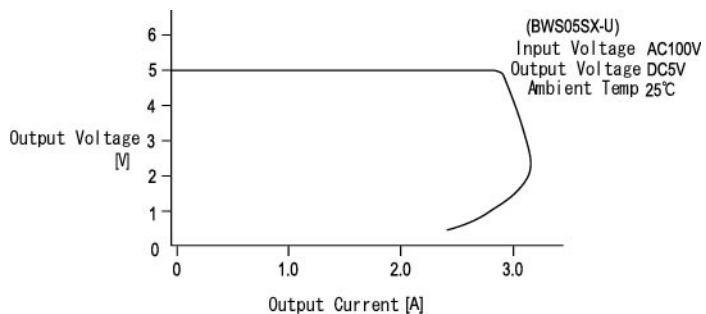


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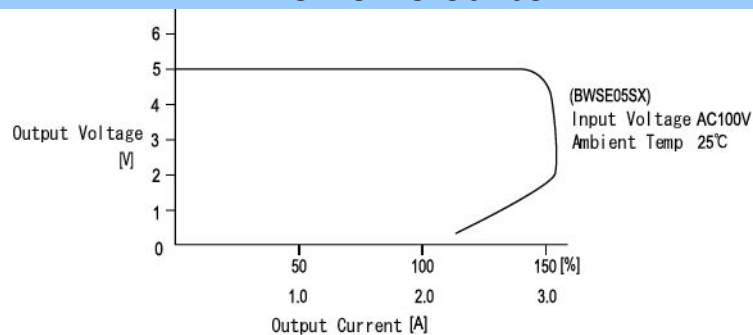
## HIGH QUALITY SWITCHING POWER SUPPLIES

### OCP CURVES

#### BWS-SX-U Series



#### BWSE-SX-U Series



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