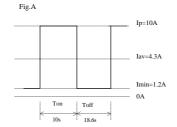
### **VS100P**

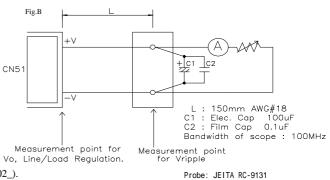
#### **SPECIFICATIONS**

### A221-01-01-B

| TEMS   | MODEL |                             |                                       |   |  |  |
|--|-------|-----------------------------|---------------------------------------|---|--|--|
| Nominal Output Voltage   |       |                             |                                       |   | VS100P-24  |  |
| Minimum Output Current   -   -   -   |       |                             |                                       | - | 24V  |  |
| 3   Average Output Current   -   | 2     |                             |                                       | - | 0A   |  |
| Peak Output Current   (*1)   -   10A   | 3     | 1                           |                                       | - | 4.3A   |  |
| 5  | 4     |                             | (*1)                                  | - |  |  |
| 7         Efficiency (Typ)         (*2)         -         85.0%           8         Input Voltage Range         (*3)         -         85-132VAC (47-440Hz) or 110-175VDC           9         Input Current (Typ)         (*4)         -         2.5A           10         Inrush Current (Typ)         (*4)         -         20A at 100VAC           11         Output Voltage Range         -         21.6 - 26.4           12         Maximum Ripple & Noise         0.5Tac50°C         -         240mV           13         Maximum Line Regulation         (*5.6)         -         96mV           14         Maximum Load Regulation         (*5.6)         -         96mV           15         Maximum Temperature Drift         (*5.8)         -         150mV           15         Maximum Temperature Drift         (*5.8)         -         124 MonV           16         Over Current Protection         (*9)         -         10.2A ~ at Ta:25 °C           17         Over Voltage Protection         (*10)         -         115% ~ 135%           18         Hold-Up Time (Typ)         (*2.13)         -         17ms           18         Hold-Up Time (Typ)         (*2.13)         -         17ms <td>5</td> <td>-</td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td>-</td> <td colspan="2"></td>  | 5     | -                           | · · · · · · · · · · · · · · · · · · · | - |  |  |
| 7         Efficiency (Typ)         (*2)         -         85.0%           8         Input Voltage Range         (*3)         -         85-132VAC (47-440Hz) or 110-175VDC           9         Input Current (Typ)         (*4)         -         2.5A           10         Inrush Current (Typ)         (*4)         -         20A at 100VAC           11         Output Voltage Range         -         21.6 - 26.4           12         Maximum Ripple & Noise         0.5Tac50°C         -         240mV           13         Maximum Line Regulation         (*5.6)         -         96mV           14         Maximum Load Regulation         (*5.6)         -         96mV           15         Maximum Temperature Drift         (*5.8)         -         150mV           15         Maximum Temperature Drift         (*5.8)         -         124 MonV           16         Over Current Protection         (*9)         -         10.2A ~ at Ta:25 °C           17         Over Voltage Protection         (*10)         -         115% ~ 135%           18         Hold-Up Time (Typ)         (*2.13)         -         17ms           18         Hold-Up Time (Typ)         (*2.13)         -         17ms <td>6</td> <td>• 1</td> <td colspan="2"></td> <td colspan="2"></td>  | 6     | • 1                         |                                       |   |  |  |
| Record   Control   Contr | 7     | *                           | *                                     |   | 85.0%  |  |
| 10   | 8     |                             |                                       |   | 85-132VAC (47-440Hz) or 110-175VDC               |  |
| 11   Output Voltage Range  | 9     | 1 0                         | 1 0                                   |   |  |  |
| 11   Output Voltage Range  | 10    |                             |                                       | - | 20A at 100VAC                                    |  |
| 13   Maximum Line Regulation   (*5,6)   -  | 11    |                             |                                       | - | 21.6 ~ 26.4                                      |  |
| Second Parallel Operation   Convertion     | 10    | Maximum Ripple & Noise      | 0≤Ta≤60°C                             | - |  |  |
| 14 Maximum Load Regulation       (*5,7)       -       150mV         15 Maximum Temperature Drift       (*5,8)       -       240mV         16 Over Current Protection       (*9)       -       10.2A ~ at Ta:25 ° C         17 Over Voltage Protection       (*10)       -       115% ~ 135%         18 Hold-Up Time (Typ)       (*2,13)       -       17ms         19 Leakage Current       (*11)       -       Less than 0.75mA         20 Parallel Operation       -       -         21 Series Operation       Possible         22 Operating Temperature       (*12)       -       Convection: -10~50°C:100%, 60°C:70%         23 Operating Humidity       -       30 ~ 90%RH (No dewdrop)         24 Storage Temperature       -       -       -30 ~ +85°C         25 Storage Humidity       -       10 ~ 95%RH (No dewdrop)         26 Cooling       -       Convection Cooling         27 Withstand Voltage       -       Input-Output: 2kVAC(20mA), Input-FG: 2kVAC(20mA)         28 Isolation Resistance       -       More than 100MΩ at Ta:25°C and 70%RH Output-FG 500VDC         29 Vibration       -       At no operating, 10-55Hz (sweep for Imin)         30 Shock       -       -       Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN   | 12    | (*5)                        | -10≤Ta<0°C                            | - | 240mV  |  |
| 15 Maximum Temperature Drift   | 13    | Maximum Line Regulation     | · · · · · ·                           |   | 96mV   |  |
| 16   Over Current Protection   (*9)   -     10.2A ~ at Ta:25 ° C     17   Over Voltage Protection   (*10)   -     115% ~ 135%     18   Hold-Up Time (Typ)   (*2,13)   -     17ms     19   Leakage Current   (*11)   -     Less than 0.75mA     20   Parallel Operation   -     -       21   Series Operation   Possible     22   Operating Temperature   (*12)   -     Convection: -10~50°C:100%, 60°C:70%     23   Operating Humidity   -     Convection: -10~50°C:100%, 60°C:70%     24   Storage Temperature   -     -   -   -   -   -     25   Storage Humidity   -     -   -   -   -     26   Cooling   -     -   -   -     27   Withstand Voltage   -     Input-Output: 2kVAC(20mA), Input-FG: 2kVAC(20mA)     28   Isolation Resistance   -     More than 100MΩ at Ta:25°C and 70%RH Output-FG 500VDC     29   Vibration   -     At no operating, 10-55Hz (sweep for 1min)     20   Shock   -     Less than 196.1m/s²     31   Safety   -     Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN     32   EMII   (*13)   -     Built to meet VCCI-B & FCC class B     33   Weight (Typ)   -     350g  | 14    | Maximum Load Regulation     | •                                     |   | 150mV  |  |
| 17   Over Voltage Protection   | 15    | Maximum Temperature Drift   | aximum Temperature Drift (*5,8)       |   | 240mV  |  |
| 18   Hold-Up Time (Typ)  | 16    | Over Current Protection     | ver Current Protection (*9)           |   | 10.2A ~ at Ta:25 ° C                             |  |
| Leakage Current  | 17    | Over Voltage Protection     | ver Voltage Protection (*10)          |   | 115% ~ 135%                                      |  |
| Parallel Operation   | 18    | _                           |                                       | - | 17ms   |  |
| Series Operation   | 19    |                             |                                       | 1 | Less than 0.75mA                                 |  |
| Convection: -10~50°C:100%, 60°C:70%  | 20    | -                           |                                       |   | -  |  |
| 23   Operating Humidity   -   30 ~ 90%RH (No dewdrop)  | 21    | Series Operation            | Series Operation                      |   |  |  |
| 24   Storage Temperature  30 ~ +85°C     25   Storage Humidity   - 10 ~ 95%RH (No dewdrop)     26   Cooling   - Convection Cooling     27   Withstand Voltage   Input-Output : 2kVAC(20mA), Input-FG : 2kVAC(20mA)     28   Isolation Resistance   - More than 100MΩ at Ta:25°C and 70%RH Output-FG 500VDC     29   Vibration   - At no operating, 10-55Hz (sweep for 1min)     19.6m/s² Constant, X,Y,Z Ihour each     30   Shock   - Less than 196.1m/s²     31   Safety   - Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN     32   EMI   (*13)   - Built to meet VCCI-B & FCC class B     33   Weight (Typ)   - 350g   | 22    | Operating Temperature (*12) |                                       | - | Convection: -10~50°C:100%, 60°C:70%              |  |
| Storage Humidity   -   10 ~ 95%RH (No dewdrop)   | 23    | Operating Humidity          |                                       | - | 30 ~ 90%RH (No dewdrop)                          |  |
| Convection Cooling   Convection Cooling  | 24    | Storage Temperature         |                                       | - | -30 ~ +85°C                                      |  |
| 27   Withstand Voltage   Input-Output : 2kVAC(20mA), Input-FG : 2kVAC(20mA)  | 25    | Storage Humidity            |                                       | 1 | 10 ~ 95%RH (No dewdrop)                          |  |
| 27         Output-FG : 500VAC(100mA) 1min.           28         Isolation Resistance         - More than 100MΩ at Ta:25°C and 70%RH Output-FG 500VDC           29         Vibration         - At no operating, 10-55Hz (sweep for 1min)           30         Shock         - Less than 196.1m/s²           31         Safety         - Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN           32         EMI         (*13)         - Built to meet VCCI-B & FCC class B           33         Weight (Typ)         - 350g   | 26    | Cooling                     | Cooling                               |   | Convection Cooling                               |  |
| Output-FG : 500VAC(100mA) 1min.  | 27    | Withstand Voltage           |                                       | - | Input-Output: 2kVAC(20mA), Input-FG: 2kVAC(20mA) |  |
| 29         Vibration         -         At no operating, 10-55Hz (sweep for 1min)           30         Shock         -         19.6m/s² Constant, X,Y,Z lhour each           31         Safety         -         Less than 196.1m/s²           32         EMI         (*13)         -         Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN           32         EMI         (*13)         -         Built to meet VCCI-B & FCC class B           33         Weight (Typ)         -         350g   | 21    |                             |                                       |   | Output-FG: 500VAC(100mA) 1min.                   |  |
| 19.6m/s² Constant, X,Y,Z Ihour each   19.6m/s² Constant, X,Y,Z Ihour each   Less than 196.1m/s²     31 Safety   - Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN   32 EMI  | 28    | Isolation Resistance        |                                       | - |  |  |
| 19.6m/s <sup>2</sup> Constant, X,Y,Z Ihour each  | 20    | Vibration                   |                                       | - |  |  |
| 31         Safety         -         Approved by UL60950, CSA60950, EN60950 & Built to meet DENAN           32         EMI         (*13)         -         Built to meet VCCI-B & FCC class B           33         Weight (Typ)         -         350g  | 2)    |                             |                                       |   |  |  |
| 32 EMI       (*13)       -       Built to meet VCCI-B & FCC class B         33 Weight (Typ)       -       350g   | 30    | Shock                       |                                       |   |  |  |
| 33 Weight (Typ) - 350g   | 31    | Safety                      | afety                                 |   |  |  |
|  | 32    | EMI                         | ` '                                   |   | Built to meet VCCI-B & FCC class B               |  |
| 34   Size (WxHxD)   mm   62 x 29 x 222   | 33    |                             |                                       | - | 350g   |  |
| 1 1  | 34    | 34 Size (WxHxD) mm          |                                       |   | 62 x 29 x 222                                    |  |

- \* Read instruction manual carefully , before using the power supply unit. ==NOTES==
- \*1. Operating time at peak output current is less than 10sec. with average output power and current (Duty=0.35). Please refer to Fig.A.& A221-01-03\_.
- \*2. At 100VAC and average output power, Ta=25°C.
- \*3. For cases where conformance to various safety specs are required to be described as 100-120VAC, 50/60Hz on name plate.
- \*4. Not applicable for the inrush current to Noise Filter for less than 0.2ms.
- \*5. Please refer to Fig B for measurement determination of line & load regulation and output ripple voltage.
- \*6. 85-132VAC, constant load.
- \*7. Min load full load (Average output power), constant input voltage.
- \*8.  $-10 \sim +50$ °C constant input voltage and load.
- \*9. Current limiting with automatic recovery. Avoid to operate at over load or dead short for more than 30 seconds.
- \*10. OVP circuit will shutdown output, manual reset (Re power on).
- \*11. Measured by each measuring method of UL, CSA, EN and DENAN (at 60Hz).
- \*12. At standard mounting method Fig C, Refer to derating curve (A221-01-02\_).- Load(%) is percent of average output load.
  - Do not exceed derating in both average output power and current.
- \*13. At 4.3A continouos output current condition.





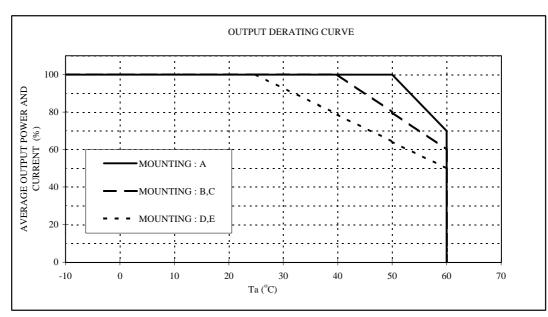
COMPONENT SIDE — PCB

# **VS100P**

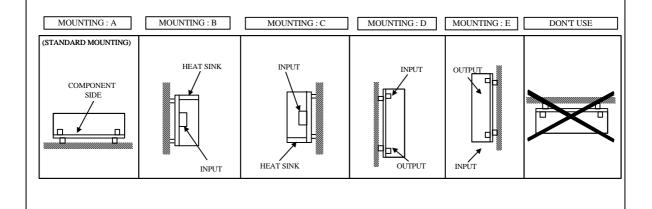
## **OUTPUT DERATING**

A221-01-02-A

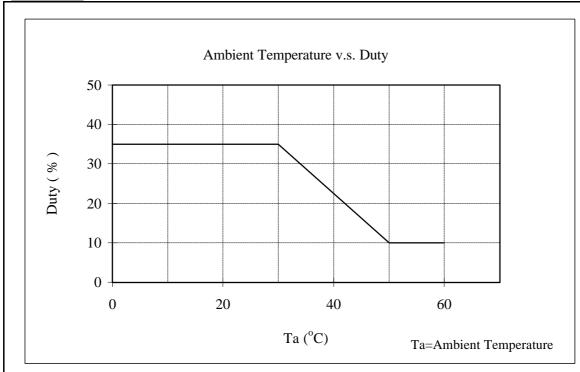
|         | AVERAGE OUTPUT POWER AND CURRENT (%) |                |                |  |  |  |
|---------|--------------------------------------|----------------|----------------|--|--|--|
| Ta (°C) | MOUNTING : A                         | MOUNTING : B,C | MOUNTING : D,E |  |  |  |
| -10     | 100                                  | 100            | 100            |  |  |  |
| 0       | 100                                  | 100            | 100            |  |  |  |
| 25      | 100                                  | 100            | 100            |  |  |  |
| 40      | 100                                  | 100            | 78.6           |  |  |  |
| 50      | 100                                  | 80             | 64.3           |  |  |  |
| 60      | 70                                   | 60             | 50             |  |  |  |



\*PEAK OUTPUT CURRENT DOES NOT NEED

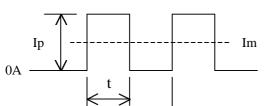


## A221-01-03



## **Peak Output Current**

Relation between average output current and peak output current must satisfy formulas below. Also operating time at peak output current should be less than 10 sec.



Ip : Peak output current (A)

Iav: Average output current of Specification (A)

Im : Average output current (A)

t : Pulse width of peak output current (sec) (Operating time at peak output)

T : Period (sec)

$$Iav \ge Im = \frac{Ip \times t}{T}$$

