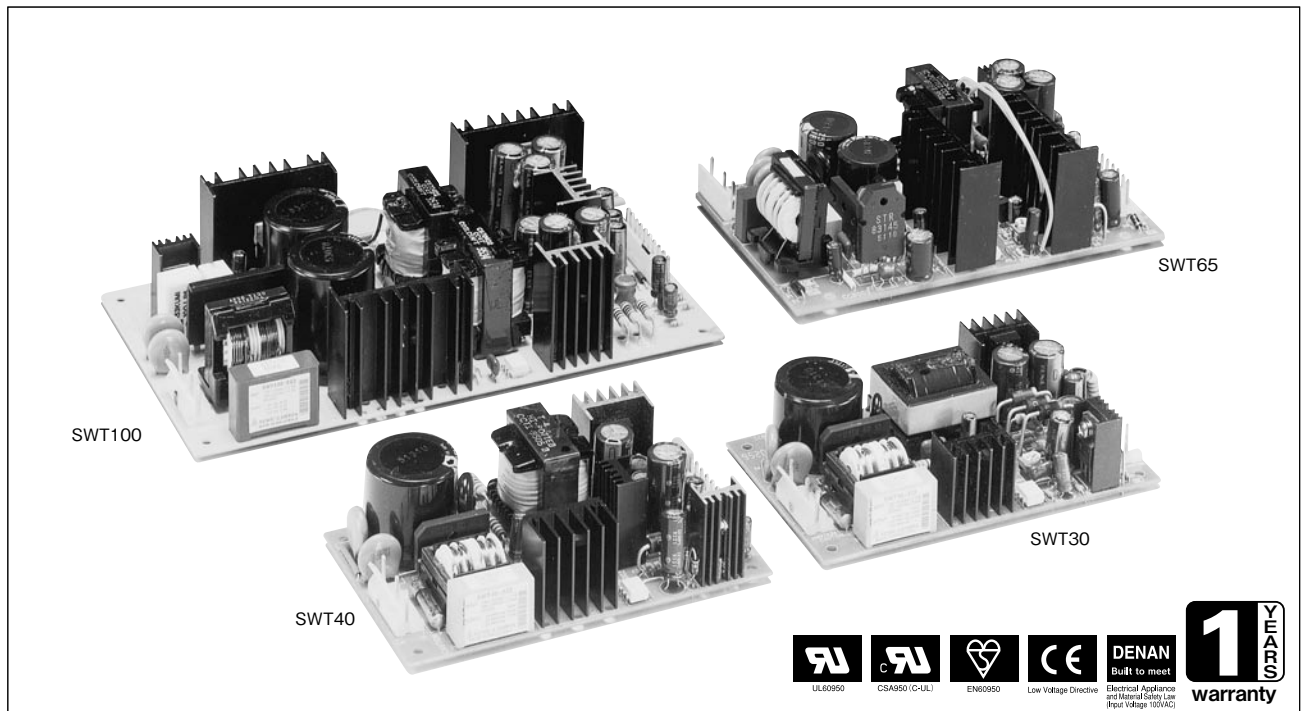


# SWT SERIES

Triple Output 30W - 100W



## ■ Features

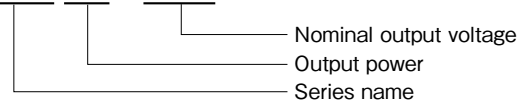


CE marking applicable

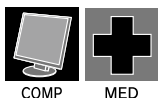
- 100V/200V worldwide-applicable input / Multiple outputs / Super low cost type
- Applicable to consumer products such as bill discriminator machines and games
- Peak load current available (SWT30/40)

## ■ Model naming method

**SWT 30-522**



## ■ Applications



## ■ Conformity to RoHS Directive

This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

SWT

## ■ Product Line up

| Output Voltage | 30W (50W)                  |                            |                            |                            |                            |                            | 40W (50W)                  |                            |                            |                            |                            |   |
|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---|
|                | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model |   |
| +5V            | 2A (3A)                    | 2A (3A)                    | 0.3A (-)                   | 2A (3A)                    | -                          | 3A (4.5A)                  | 2A (3A)                    | 2A (3A)                    | 0.3A (-)                   | 3A (4.5A)                  | 3A (4.5A)                  |   |
| -5V            | -                          |                            |                            |                            |                            |                            |                            |                            |                            |                            |                            | - |
| +12V           | 1.5A (3A)                  | 1.5A (3A)                  | -                          | -                          | -                          | 2A (3A)                    | 2A (3A)                    | -                          | -                          | -                          | -                          |   |
| -12V           | 0.3A (-)                   | -                          | -                          | -                          | -                          | 0.3A (-)                   | 0.3A (-)                   | -                          | -                          | -                          | -                          |   |
| +15V           | -                          | -                          | -                          | 1A (2.2A)                  | -                          | -                          | -                          | -                          | -                          | -                          | 1.5A (2.4A)                |   |
| -15V           | -                          | -                          | -                          | 0.3A (-)                   | -                          | -                          | -                          | -                          | -                          | -                          | 0.3A (-)                   |   |

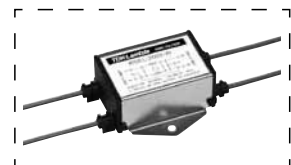
| Output Voltage | 65W (-)                    |                            |                            |                            |                            |                            | 100W (-)                   |                            |                            |                            |                            |  |
|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--|
|                | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model | Output Current(Peak)/Model |  |
| +5V            | 6A (-)                     | 6A (-)                     | 6A (-)                     | 6A (-)                     | 8A (-)                     | 8A (-)                     | 8A (-)                     | 8A (-)                     | 8A (-)                     | 8A (-)                     | 8A (-)                     |  |
| -5V            | -                          | 0.5A (-)                   | -                          | -                          | -                          | -                          | -                          | 0.8A (-)                   | -                          | -                          | -                          |  |
| +12V           | 2.5A (-)                   | 2.5A (-)                   | -                          | -                          | 4A (-)                     | 4A (-)                     | 4A (-)                     | 4A (-)                     | -                          | -                          | -                          |  |
| -12V           | 0.5A (-)                   | -                          | -                          | -                          | 0.8A (-)                   | 0.8A (-)                   | -                          | -                          | -                          | -                          | -                          |  |
| +15V           | -                          | -                          | -                          | 1.8A (-)                   | -                          | -                          | -                          | -                          | -                          | -                          | 3.2A (-)                   |  |
| -15V           | -                          | -                          | -                          | 0.5A (-)                   | -                          | -                          | -                          | -                          | -                          | -                          | 0.8A (-)                   |  |

# SWT30 Specifications

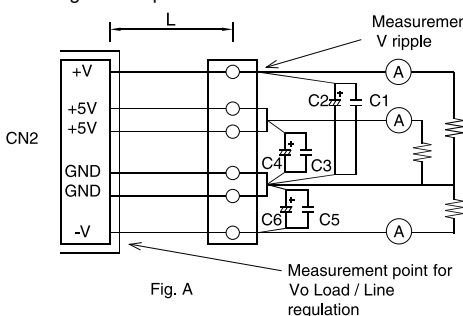
| ITEMS/UNITS |                                  | MODEL | SWT30-522   |     |     | SWT30-525   |     |     | SWT30-5FF |     |     |   |  |
|-------------|----------------------------------|-------|---|-----|-----|-------------|-----|-----|-----------|-----|-----|---|--|
|             |                                  | CH    | 1   | 2   | 3   | 1           | 2   | 3   | 1         | 2   | 3   |   |  |
| Input       | Voltage Range (*2)               | V     | AC85 - 265 (Continuously) / DC110 - 340   |     |     |             |     |     |           |     |     |   |  |
|             | Frequency (*2)                   | Hz    | 47 - 63   |     |     |             |     |     |           |     |     |   |  |
|             | Efficiency (typ) (*1)            | %     | 70  |     |     |             |     |     |           |     |     |   |  |
|             | Current (100/200VAC)(typ)(*1)    | A     | 0.90 / 0.45   |     |     |             |     |     |           |     |     |   |  |
|             | Inrush Current (100/200VAC)(typ) | A     | 15 / 30 (cold start, Ta=25°C)   |     |     |             |     |     |           |     |     |   |  |
| Output      | Nominal Voltage                  | VDC   | +5  | +12 | -12 | +5          | +12 | -5  | +5        | +15 | -15 |   |  |
|             | Minimum Current                  | A     | 0.2   | 0.4 | 0   | 0.2         | 0.4 | 0   | 0.2       | 0.4 | 0   |   |  |
|             | Maximum Current                  | A     | 2   | 1.5 | 0.3 | 2           | 1.5 | 0.3 | 2         | 1   | 0.3 |   |  |
|             | Maximum Peak Current (*10)       | A     | 3   |     |     | -           |     |     | 3         |     |     | - |  |
|             | Maximum Peak Power               | W     | 31.6 (49.6)   |     |     | 29.5 (47.5) |     |     |           |     |     |   |  |
|             | Maximum Line Regulation(*3)(*4)  |       | CH1:1% , CH2: 2% , CH3: 1%  |     |     |             |     |     |           |     |     |   |  |
|             | Maximum Load Regulation (*3)(*5) |       | CH1:2% , CH2: 4% , CH3: 2%  |     |     |             |     |     |           |     |     |   |  |
|             | Temperature Coefficient(*3)(*6)  |       | 0.04%/°C  |     |     |             |     |     |           |     |     |   |  |
|             | Maximum Ripple & Noise (*3)      | mVp-p | ±5V: 120; ±12V: 150; ±15V: 150  |     |     |             |     |     |           |     |     |   |  |
|             | Hold-up Time (100VAC)(typ)(*1)   | ms    | 17  |     |     |             |     |     |           |     |     |   |  |
| Function    | Voltage Adjustable Range         |       | CH1 +5V fixed, CH2.3 fixed<br>Shipment condition: CH1: ±1%, CH2(+12V): ±3%, CH2(+15V):±5%, CH3: ±5% |     |     |             |     |     |           |     |     |   |  |
|             | Over Current Protection (*7)     |       | Automatic recovery, O.C.P point : >170%   |     |     |             |     |     |           |     |     |   |  |
|             | Over Voltage Protection (*8)     | VDC   | >6V (CH1 only)  |     |     |             |     |     |           |     |     |   |  |
| Environment | Output Terminals                 |       | All channels common ground (2 terminals)  |     |     |             |     |     |           |     |     |   |  |
|             | Operating Temperature (*9)       | °C    | Convection cooling 0 to 50: 100% load; 60: 70% load   |     |     |             |     |     |           |     |     |   |  |
|             | Storage Temperature              | °C    | -20 to +85  |     |     |             |     |     |           |     |     |   |  |
|             | Operating Humidity               | %RH   | 30 - 90 (No dewdrop)  |     |     |             |     |     |           |     |     |   |  |
|             | Storage Humidity                 | %RH   | 10 - 95 (No dewdrop)  |     |     |             |     |     |           |     |     |   |  |
|             | Vibration                        |       | 10 - 55Hz amplitude (sweep 1min) Less than 19.6m/s <sup>2</sup> X , Y ,Z 1Hr each                   |     |     |             |     |     |           |     |     |   |  |
|             | Shock                            |       | Less than 196.1m/s <sup>2</sup>   |     |     |             |     |     |           |     |     |   |  |
|             | Cooling                          |       | Convection cooling  |     |     |             |     |     |           |     |     |   |  |
| Isolation   | Withstand Voltage                |       | I/P-O/P: 3kVAC(20mA), I/P-FG: 2.5kVAC(20mA), O/P-FG: 500VAC(100mA) for 1min                         |     |     |             |     |     |           |     |     |   |  |
|             | Isolation Resistance             |       | More than 100MΩ at Ta=25°C and 70%RH, Output - FG 500VDC  |     |     |             |     |     |           |     |     |   |  |
| Standards   | Safety Standards                 |       | Approved by UL60950-1, CSA C22.2 No.60950-1, EN60950-1. Built to meet DENAN.                        |     |     |             |     |     |           |     |     |   |  |
|             | EMI                              |       | Built to meet EN55011 / EN55022-B, VCCI-B, FCC-B.   |     |     |             |     |     |           |     |     |   |  |
| Mechanical  | Weight                           | g     | 230   |     |     |             |     |     |           |     |     |   |  |
|             | Size (W x H x D)                 | mm    | 76.2 x 127.0 x 30.5   |     |     |             |     |     |           |     |     |   |  |

- (\*1) At 100VAC, 200VAC and MAX. OUTPUT POWER (Convection cooling), Ta=25°C.
- (\*2) For cases where conformance to various safety specs (UL, CSA, EN) are required to be described as 100~120VAC, 200~240VAC, 50/60Hz on name plate.
- (\*3) Please refer to Fig A for measurement determination of line & load regulation and output ripple voltage. (Measure with JEITA RC-9131 probe)
- (\*4) From 85~132VAC / 170~265VAC, constant load.
- (\*5) From Min. load - Full load (Maximum power), constant input voltage.
- (\*6) From 0°C~+50°C, constant input voltage and load.
- (\*7) Current limiting with automatic recovery. Avoid to operate over load or dead short for more than 30 seconds.
- (\*8) Over voltage clamping by zener diode.
- (\*9) At standard mounting method, Fig B.
- (\*10) Peak current operation is less than 10 sec. with duty factor less than 30%. In addition, it does not have to satisfy the total regulation specification.

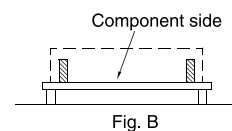
● Recommended EMC Filter



RSEL-2002W  
Please refer to "TDK-Lambda EMC Filters" catalog.

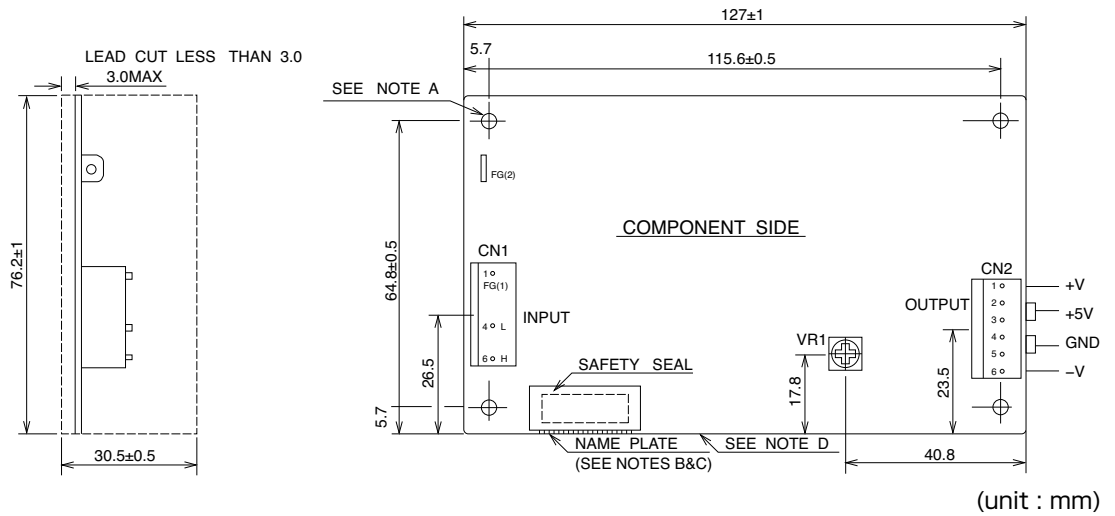


L: 150mm AWG#18  
C1,C3,C5: Film Cap 0.1μF  
C2,C4,C6: Elec. Cap 100μF  
Bandwidth of scope: 100MHz



# Outline Drawing

## [SWT30]



**PCB MATERIAL**  
GLASS COMPOSITE : CEM-3

- NOTES**
- A : THE 4-φ3.5 HOLES ARE CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
  - B : MODEL NAME, NORMAL OUTPUT VOLTAGE AND AVERAGE OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
  - C : COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
  - D : TO KEEP THE DISTANCE MORE THAN 4M/M BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.
  - E : FG(1) OR FG(2) IS FOR SAFETY GROUND CONNECTION.

**CONNECTORS USED:**

| PART DESCRIPTION             | CATALOG NO. | MANUFACTURER | QTY |
|------------------------------|-------------|--------------|-----|
| PIN HEADER (INPUT SIDE CN1)  | 5414-30B    | MOLEX        | 1   |
| PIN HEADER (OUTPUT SIDE CN2) | 5273-06A    | MOLEX        | 1   |

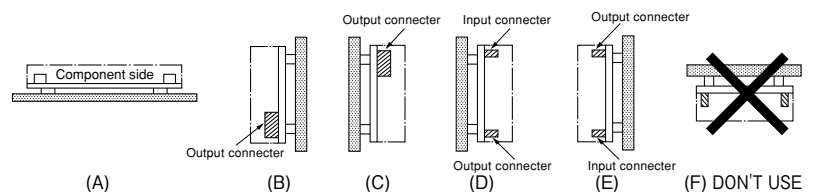
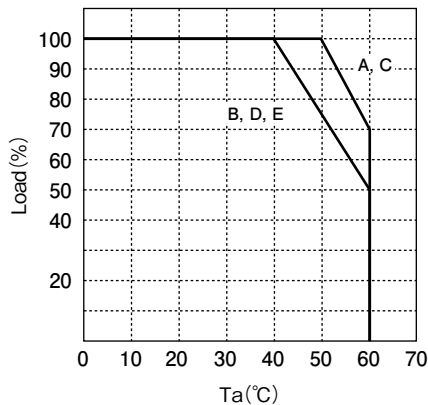
**RECOMMENDED HOUSING & TERMINAL PIN.**  
\* NOT INCLUDED WITH THE PRODUCT

| SOCKET HOUSING (CN1)   | 5195-06 | MOLEX | 1 |
|------------------------|---------|-------|---|
| SOCKET HOUSING (CN2)   | 5195-06 | MOLEX | 1 |
| TERMINAL PINS (CN1, 2) | 5194PBT | MOLEX | 9 |

HAND CRIMPING TOOL: 11-26-0058      MANUFACTURER: MOLEX

# Output Derating

**OUTPUT DERATING CURVE**



Recommended standard mounting method is (A). (B), (C), (D) and (E) are also possible. Please do not use (F), where the PCB will be on the top side and heat will be trapped inside the unit.

# SWT40 Specifications

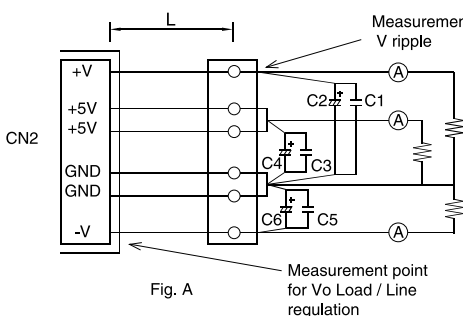
| ITEMS/UNITS | MODEL                            | SWT40-522            |  |  | SWT40-525 |             |     | SWT40-5FF |           |     |     |  |
|-------------|----------------------------------|----------------------|--|--|-----------|-------------|-----|-----------|-----------|-----|-----|--|
|             |                                  | CH                   | 1  | 2  | 3         | 1           | 2   | 3         | 1         | 2   | 3   |  |
| Input       | Voltage Range (*2)               | V                    | AC85 - 265 (continuously) / DC110 - 340  |  |           |             |     |           |           |     |     |  |
|             | Frequency (*2)                   | Hz                   | 47 - 63  |  |           |             |     |           |           |     |     |  |
|             | Efficiency (typ) (*1)            | %                    | 70   |  |           |             |     |           |           |     |     |  |
|             | Current (100/200VAC)(typ)(*1)    | A                    | 1.11 / 0.55  |  |           |             |     |           |           |     |     |  |
|             | Inrush Current (100/200VAC)(typ) | A                    | 15 / 30 (cold start, Ta=25°C)  |  |           |             |     |           |           |     |     |  |
| Output      | Nominal Voltage                  | VDC                  | +5   | +12  | -12       | +5          | +12 | -5        | +5        | +15 | -15 |  |
|             | Minimum Current                  | A                    | 0.2  | 0.3  | 0         | 0.2         | 0.3 | 0         | 0.2       | 0.3 | 0   |  |
|             | Maximum Current                  | A                    | 3  | 2  | 0.3       | 3           | 2   | 0.3       | 3         | 1.5 | 0.3 |  |
|             | Maximum Peak Current (*10)       | A                    | 4.5  | 3  | —         | 4.5         | 3   | —         | 4.5       | 2.4 | —   |  |
|             | Maximum Peak Power               | W                    | 42.6 (54.6)  |  |           | 40.5 (51.6) |     |           | 42 (51.6) |     |     |  |
|             | Maximum Line Regulation(*3)(*4)  |                      | CH1: 1% , CH2: 2% , CH3: 1%  |  |           |             |     |           |           |     |     |  |
|             | Maximum Load Regulation (*3)(*5) |                      | CH1: 2% , CH2: 4% , CH3: 2%  |  |           |             |     |           |           |     |     |  |
|             | Temperature Coefficient(*3)(*6)  |                      | 0.04%/°C   |  |           |             |     |           |           |     |     |  |
|             | Maximum Ripple & Noise (*3)      | mVp-p                | ±5V: 120; ±12V: 150; ±15V: 150   |  |           |             |     |           |           |     |     |  |
|             | Hold-up Time (100VAC)(typ)(*1)   | ms                   | 17   |  |           |             |     |           |           |     |     |  |
| Function    | Voltage Adjustable Range         |                      | CH1 +5V fixed, CH2,3 fixed<br>Shipment condition: CH1: ±1%, CH2(+12V): ±3%, CH2(+15V): ±5%, CH3: ±5% |  |           |             |     |           |           |     |     |  |
|             | Over Current Protection (*7)     |                      | Automatic recovery, O.C.P point: >140%   |  |           |             |     |           |           |     |     |  |
|             | Over Voltage Protection (*8)     | VDC                  | >6 (CH1 only)  |  |           |             |     |           |           |     |     |  |
| Environment | Output Terminals                 |                      | All channels common ground (2 terminals)   |  |           |             |     |           |           |     |     |  |
|             | Operating Temperature (*9)       | °C                   | Convection cooling 0 to 50: 100% load; 60: 70% load  |  |           |             |     |           |           |     |     |  |
|             | Storage Temperature              | °C                   | -20 to +85   |  |           |             |     |           |           |     |     |  |
|             | Operating Humidity               | %RH                  | 30 - 90 (No dewdrop)   |  |           |             |     |           |           |     |     |  |
|             | Storage Humidity                 | %RH                  | 10 - 95 (No dewdrop)   |  |           |             |     |           |           |     |     |  |
|             | Vibration                        |                      | 10 - 55Hz amplitude (sweep 1min) Less than 19.6m/s <sup>2</sup> X , Y , Z 1Hr each                   |  |           |             |     |           |           |     |     |  |
|             | Shock                            |                      | Less than 196.1m/s <sup>2</sup>  |  |           |             |     |           |           |     |     |  |
|             | Cooling                          |                      | Convection cooling   |  |           |             |     |           |           |     |     |  |
|             | Isolation                        | Withstand Voltage    |  | I/P-O/P: 3kVAC(20mA), I/P-FG: 2.5kVAC(20mA), O/P-FG: 500VAC (100mA) for 1min |           |             |     |           |           |     |     |  |
|             |                                  | Isolation Resistance |  | More than 100MΩ at Ta=25°C and 70%RH, Output - FG 500VDC                     |           |             |     |           |           |     |     |  |
| Standards   | Safety Standards                 |                      | Approved by UL60950-1, CSA C22.2 No 60950-1, EN60950-1. Built to meet DENAN.                         |  |           |             |     |           |           |     |     |  |
|             | EMI                              |                      | Built to meet EN55011 / EN55022-B, VCCI-B, FCC-B   |  |           |             |     |           |           |     |     |  |
| Mechanical  | Weight                           | g                    | 280  |  |           |             |     |           |           |     |     |  |
|             | Size (W x H x D)                 | mm                   | 76.2 x 127.0 x 35.6  |  |           |             |     |           |           |     |     |  |

- (\*1) At 100VAC, 200VAC and MAX. OUTPUT POWER (Convection cooling), Ta=25°C.
- (\*2) For cases where conformance to various safety specs (UL,CSA, EN) are required to be described as 100~120VAC, 200~240VAC, 50/60 Hz on name plate.
- (\*3) Please refer to Fig A for measurement determination of line & load regulation and output ripple voltage. (Measure with JEITA RC-9131 probe.)
- (\*4) From 85~132VAC / 170~265VAC, constant load.
- (\*5) From Min. load - Full load (Maximum power), constant input voltage.
- (\*6) From 0°C ~ +50°C, constant input voltage and load.
- (\*7) Current limiting with automatic recovery. Avoid to operate over load or dead short for more than 30 seconds.
- (\*8) Over voltage clamping by zener diode.
- (\*9) At standard mounting method, Fig B.
- (\*10) Peak current operation is less than 10 sec. with duty factor less than 30%. In addition, it does not has to satisfy the total regulation specification.

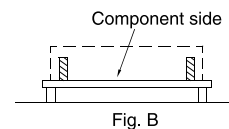
● Recommended EMC Filter



RSEL-2002W  
Please refer to "TDK-Lambda EMC Filters" catalog.

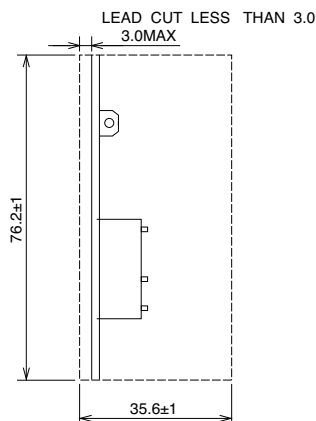


L: 150mm AWG#18  
C1,C3,C5: Film Cap 0.1μF  
C2,C4,C6: Elec. Cap 100μF  
Bandwidth of scope: 100MHz



# Outline Drawing

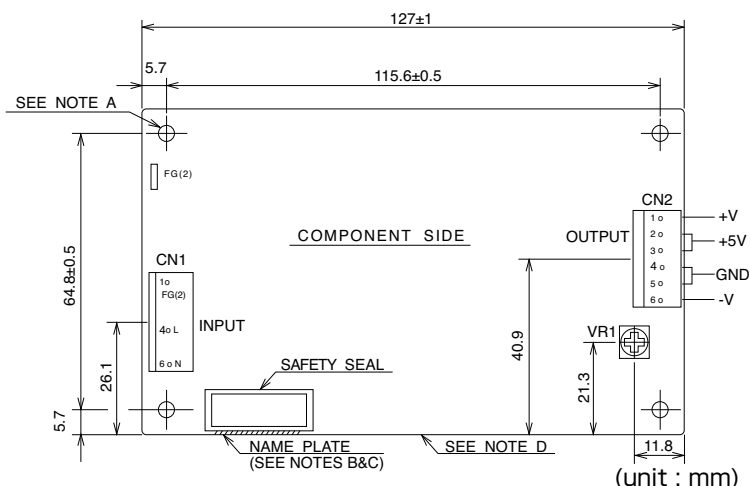
## [SWT40]



PCB MATERIAL  
GLASS COMPOSITE : CEM-3

**NOTES**

- A : THE 4- $\phi$  3.5 HOLES ARE CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
- B : MODEL NAME, NORMAL OUTPUT VOLTAGE AND AVERAGE OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C : COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- D : TO KEEP THE DISTANCE MORE THAN 4M/M BETWEEN PC-BBOARD EDGE AND CUSTOMER'S CHASSIS.
- E : FG(1) OR FG(2) IS FOR SAFETY GROUND CONNECTION.



**CONNECTORS USED:**

| PART DESCRIPTION             | CATALOG NO. | MANUFACTURER | QTY |
|------------------------------|-------------|--------------|-----|
| PIN HEADER (INPUT SIDE CN1)  | 5414-30B    | MOLEX        | 1   |
| PIN HEADER (OUTPUT SIDE CN2) | 5273-06A    | MOLEX        | 1   |

**RECOMMENDED HOUSING & TERMINAL PIN.**

\* NOT INCLUDED WITH THE PRODUCT

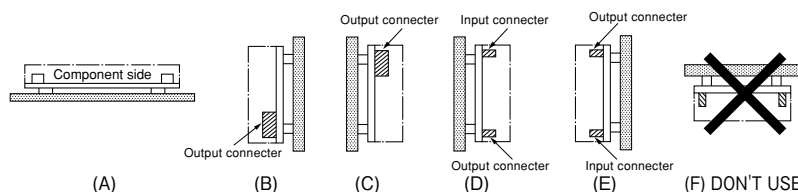
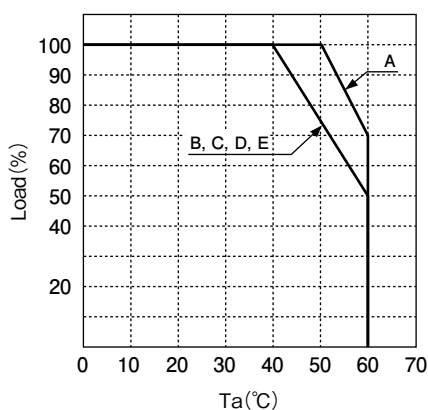
| SOCKET HOUSING (CN1)   | 5195-06 | MOLEX | 1 |
|------------------------|---------|-------|---|
| SOCKET HOUSING (CN2)   | 5195-06 | MOLEX | 1 |
| TERMINAL PINS (CN1, 2) | 5194PBT | MOLEX | 9 |

HAND CRIMPING TOOL: 11-26-0058

MANUFACTURER: MOLEX

# Output Derating

**OUTPUT DERATING CURVE**



Recommended standard mounting method is (A). (B), (C), (D) and (E) are also possible. Please do not use (F), where the PCB will be on the top side and heat will be trapped inside the unit.

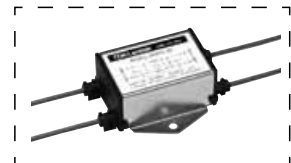
SWT

# SWT65 Specifications

| ITEMS/UNITS |                                  | MODEL | SWT65-522  |     |     | SWT65-525 |     |     | SWT65-5FF |     |     |   |  |
|-------------|----------------------------------|-------|--|-----|-----|-----------|-----|-----|-----------|-----|-----|---|--|
|             |                                  | CH    | 1  | 2   | 3   | 1         | 2   | 3   | 1         | 2   | 3   |   |  |
| Input       | Voltage Range (*2)               | V     | AC85 -132, 170-265 (auto selectable)   |     |     |           |     |     |           |     |     |   |  |
|             | Frequency (*2)                   | Hz    | 47-63  |     |     |           |     |     |           |     |     |   |  |
|             | Efficiency (typ) (*1)            | %     | 72   |     |     |           |     |     |           |     |     |   |  |
|             | Current (100/200VAC)(typ) (*1)   | A     | 1.71 / 0.86  |     |     |           |     |     |           |     |     |   |  |
|             | Inrush Current (100/200VAC)(typ) | A     | 30 / 30 (cold start , Ta=25°C)   |     |     |           |     |     |           |     |     |   |  |
| Output      | Nominal Voltage                  | VDC   | +5   | +12 | -12 | +5        | +12 | -5  | +5        | +15 | -15 |   |  |
|             | Minimum Current                  | A     | 0.3  | 0   |     |           | 0.3 | 0   |           |     | 0.3 | 0 |  |
|             | Maximum Current                  | A     | 6  | 2.5 | 0.5 | 6         | 2.5 | 0.5 | 6         | 1.8 | 0.5 |   |  |
|             | Maximum Peak Current             | A     | -  |     |     |           |     |     |           |     |     |   |  |
|             | Maximum Power                    | W     | 66   |     |     | 62.5      |     |     | 64.5      |     |     |   |  |
|             | Maximum Line Regulation(*3)(*4)  |       | CH1: 1%, CH2: 2%, CH3: 1%  |     |     |           |     |     |           |     |     |   |  |
|             | Maximum Load Regulation (*3)(*5) |       | CH1: 2%, CH2: 4%, CH3: 2%  |     |     |           |     |     |           |     |     |   |  |
|             | Temperature Coefficient (*3)(*6) |       | 0.04%/°C   |     |     |           |     |     |           |     |     |   |  |
|             | Maximum Ripple & Noise (*3)      | mVp-p | ±5V: 120; ±12V: 150; ±15V: 150   |     |     |           |     |     |           |     |     |   |  |
|             | Hold-up Time (100VAC)(Typ)(*1)   | ms    | 17   |     |     |           |     |     |           |     |     |   |  |
|             | Voltage Adjustable Range         |       | CH1 +5V fixed, CH2.3 fixed<br>Shipment condition: CH1: ±1% CH2(+12V): ±3%; CH2(+15V): ±5% CH3: ±5% |     |     |           |     |     |           |     |     |   |  |
| Function    | Over Current Protection (*7)     | A     | Automatic recovery, O.C.P point: >105%   |     |     |           |     |     |           |     |     |   |  |
|             | Over Voltage Protection (*8)     | VDC   | >6 (CH1 only)  |     |     |           |     |     |           |     |     |   |  |
|             | Output Terminals                 |       | All channels common ground (2 terminals)   |     |     |           |     |     |           |     |     |   |  |
| Environment | Operating Temperature (*9)       | °C    | Convection cooling 0 to 50: 100% load; 60: 70% load  |     |     |           |     |     |           |     |     |   |  |
|             | Storage Temperature              | °C    | -20 to +85   |     |     |           |     |     |           |     |     |   |  |
|             | Operating Humidity               | %RH   | 30 - 90 (No dewdrop)   |     |     |           |     |     |           |     |     |   |  |
|             | Storage Humidity                 | %RH   | 10 - 95 (No dewdrop)   |     |     |           |     |     |           |     |     |   |  |
|             | Vibration                        |       | 10 - 55Hz amplitude ( sweep 1min ) Less than 19.6m/s <sup>2</sup> X, Y, Z 1Hr each                 |     |     |           |     |     |           |     |     |   |  |
|             | Shock                            |       | Less than 196.1m/s <sup>2</sup>  |     |     |           |     |     |           |     |     |   |  |
|             | Cooling                          |       | Convection cooling   |     |     |           |     |     |           |     |     |   |  |
| Isolation   | Withstand Voltage                |       | I/P-O/P: 3kVAC(20mA), I/P-FG: 2.5kVAC(20mA), O/P-FG: 500VAC(100mA) for 1min                        |     |     |           |     |     |           |     |     |   |  |
|             | Isolation Resistance             |       | More than 100MΩ at Ta=25°C and 70%RH, Output - FG 500VDC   |     |     |           |     |     |           |     |     |   |  |
| Standards   | Safety Standards                 |       | Approved by UL60950-1, CSA C22.2 No.60950-1, EN60950-1, Built to meet DENAN.                       |     |     |           |     |     |           |     |     |   |  |
|             | EMI                              |       | Built to meet EN55011 / EN55022-B, VCCI-B, FCC-B   |     |     |           |     |     |           |     |     |   |  |
| Mechanical  | Weight                           | g     | 350  |     |     |           |     |     |           |     |     |   |  |
|             | Size (W x H x D)                 | mm    | 88.9 x 152.4 x 45.0  |     |     |           |     |     |           |     |     |   |  |

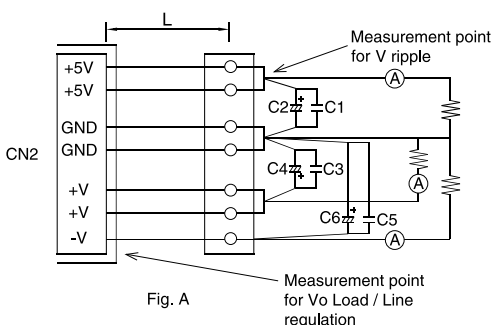
- (\*1) At 100VAC, 200VAC and max. output power (convection cooling), Ta=25°C.
- (\*2) For cases where conformance to various safety specs (UL, CSA, EN) are required to be described as 100-120VAC, 200-240VAC, 50/60Hz on name plate.
- (\*3) Please refer to Fig A for measurement determination of line & load regulation and output ripple voltage. (Measure with JEITA-RC9131 probe.)
- (\*4) From 85-132VAC / 170-265VAC, constant load.
- (\*5) From min. load - full load (maximum power), constant input voltage.
- (\*6) From 0°C to +50°C, constant input voltage and load.
- (\*7) Current limiting with automatic recovery. Avoid to operate over load or dead short for more than 30 seconds.
- (\*8) Over voltage clamping by zener diode.
- (\*9) At standard mounting method, Fig B.

**Recommended EMC Filter**



RSEL-2003W

Please refer to "TDK-Lambda EMC Filters" catalog.



L: 150mm AWG#18  
 C1,C3,C5: Film Cap 0.1μF  
 C2,C4,C6: Elec. Cap 100μF  
 Bandwidth of scope: 100MHz

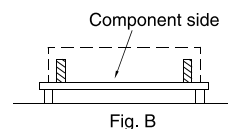
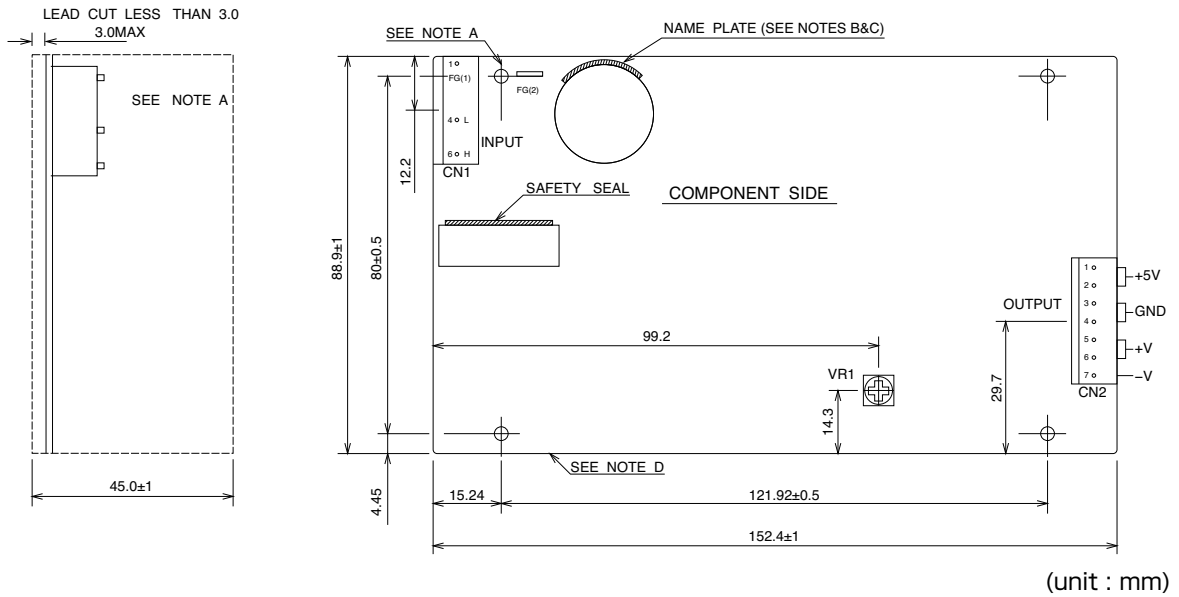


Fig. B

# Outline Drawing

## [SWT65]



(unit : mm)

PCB MATERIAL  
GLASS COMPOSITE : CEM-3

**NOTES**

- A : THE 4-  $\phi$  3.5 HOLES ARE CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
- B : MODEL NAME, NORMAL OUTPUT VOLTAGE AND AVERAGE OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C : COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- D : TO KEEP THE DISTANCE MORE THAN 4M/M BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.
- E : FG(1) OR FG(2) IS FOR SAFETY GROUND CONNECTION.

**CONNECTORS USED:**

| PART DESCRIPTION             | CATALOG NO. | MANUFACTURER | QTY |
|------------------------------|-------------|--------------|-----|
| PIN HEADER (INPUT SIDE CN1)  | 5414-30B    | MOLEX        | 1   |
| PIN HEADER (OUTPUT SIDE CN2) | 5273-07A    | MOLEX        | 1   |

**RECOMMENDED HOUSING & TERMINAL PIN.**  
\* NOT INCLUDED WITH THE PRODUCT

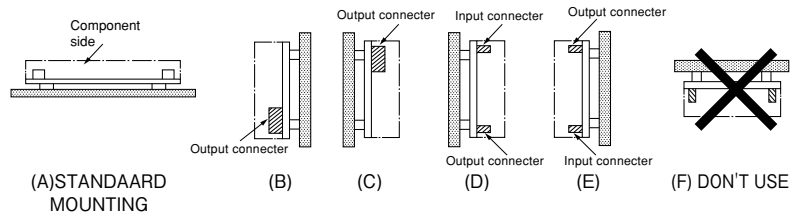
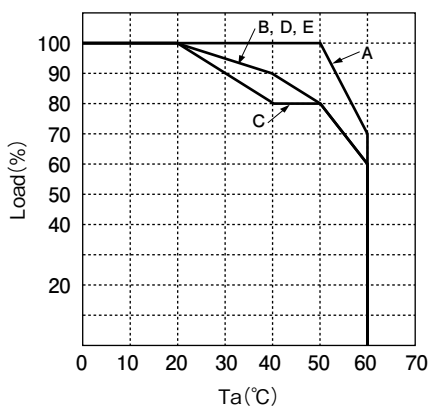
|                        |         |       |    |
|------------------------|---------|-------|----|
| SOCKET HOUSING (CN1)   | 5195-06 | MOLEX | 1  |
| SOCKET HOUSING (CN2)   | 5195-07 | MOLEX | 1  |
| TERMINAL PINS (CN1, 2) | 5194PBT | MOLEX | 10 |

HAND CRIMPING TOOL: 11-26-0058

MANUFACTURER: MOLEX

# Output Derating

**OUTPUT DERATING CURVE**



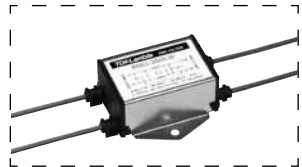
Recommended standard mounting method is (A). (B), (C), (D) and (E) are also possible. Please do not use (F), where the PCB will be on the top side and heat will be trapped inside the unit.

# SWT100 Specifications

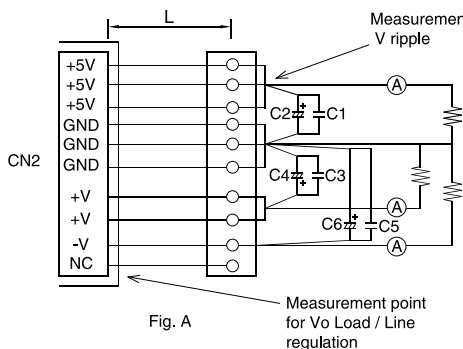
| ITEMS/UNITS |  | MODEL | SWT100-522   |     |     | SWT100-525 |     |     | SWT100-5FF |     |     |
|-------------|--|-------|--|-----|-----|------------|-----|-----|------------|-----|-----|
|             |  |       | CH 1   | 2   | 3   | 1          | 2   | 3   | 1          | 2   | 3   |
| Input       | Voltage Range (*2)                     | V     | AC85-265 (Continuously) /DC110-340   |     |     |            |     |     |            |     |     |
|             | Frequency (*2)                         | Hz    | 47-63  |     |     |            |     |     |            |     |     |
|             | Efficiency (typ) (*1)                  | %     | 74   |     |     |            |     |     |            |     |     |
|             | Current (100/200VAC)(typ) (*1)         | A     | 2.9 / 1.9  |     |     |            |     |     |            |     |     |
|             | Inrush Current (100/200VAC)(typ) (*10) | A     | 15 / 30 (Ta=25°C)  |     |     |            |     |     |            |     |     |
| Output      | Nominal Voltage                        | VDC   | +5   | +12 | -12 | +5         | +12 | -5  | +5         | +15 | -15 |
|             | Minimum Current                        | A     | 0.5  | 0   |     | 0.5        | 0   |     | 0.5        | 0   |     |
|             | Maximum Current                        | A     | 8  | 4   | 0.8 | 8          | 4   | 0.8 | 8          | 3.2 | 0.8 |
|             | Maximum Peak Current                   | A     | -  |     |     |            |     |     |            |     |     |
|             | Maximum Power                          | W     | 97.6   |     |     | 92         |     |     | 100        |     |     |
|             | Maximum Line Regulation(*3)(*4)        | mV    | CH1: 1%, CH2: 2%, CH3: 1%  |     |     |            |     |     |            |     |     |
|             | Maximum Load Regulation (*3)(*5)       | mV    | CH1: 2%, CH2: 4%, CH3: 2%  |     |     |            |     |     |            |     |     |
|             | Temperature Coefficient (*3)(*6)       |       | 0.04%/°C   |     |     |            |     |     |            |     |     |
|             | Maximum Ripple & Noise (*3)            | mVp-p | ±5V: 120; ±12V: 150; ±15V: 150   |     |     |            |     |     |            |     |     |
|             | Hold-up Time (100VAC)(typ) (*1)        | ms    | 17   |     |     |            |     |     |            |     |     |
| Function    | Voltage Adjustable Range               |       | CH1 +5V fixed, CH2,3 fixed<br>Shipment condition: CH1: ±1%, CH2: ±3%, CH3: ±5%   |     |     |            |     |     |            |     |     |
|             | Over Current Protection (*7)           |       | Automatic recovery, O.C.P point: >105%   |     |     |            |     |     |            |     |     |
|             | Over Voltage Protection (*8)           | VDC   | >6 (CH1 only)  |     |     |            |     |     |            |     |     |
| Environment | Output Terminals                       |       | All channels common ground (3 terminals)   |     |     |            |     |     |            |     |     |
|             | Operating Temperature (*9)             | °C    | Convection cooling 0 to 50: 100% load; 60: 70% load                              |     |     |            |     |     |            |     |     |
|             | Storage Temperature                    | °C    | -20 to +85   |     |     |            |     |     |            |     |     |
|             | Operating Humidity                     | %RH   | 30 - 90 (No dewdrop)   |     |     |            |     |     |            |     |     |
|             | Storage Humidity                       | %RH   | 10 - 95 (No dewdrop)   |     |     |            |     |     |            |     |     |
|             | Vibration                              |       | 10 - 55Hz amplitude (sweep 1min) Less than 19.6m/s <sup>2</sup> X, Y, Z 1Hr each |     |     |            |     |     |            |     |     |
|             | Shock                                  |       | Less than 196.1m/s <sup>2</sup>  |     |     |            |     |     |            |     |     |
|             | Cooling                                |       | Convection cooling   |     |     |            |     |     |            |     |     |
| Isolation   | Withstand Voltage                      |       | I/P-O/P: 3kVAC(20mA), I/P-FG: 2.5kVAC(20mA), O/P-FG: 500VAC(100mA) for 1min      |     |     |            |     |     |            |     |     |
|             | Isolation Resistance                   |       | More than 100MΩ at Ta=25°C and 70%RH, Output - FG 500VDC                         |     |     |            |     |     |            |     |     |
| Standards   | Safety Standards                       |       | Approved by UL60950-1, CSA C22.2 No.60950-1, EN60950-1. Built to meet DENAN.     |     |     |            |     |     |            |     |     |
|             | EMI                                    |       | Built to meet EN55011 / 55022-B, VCCI-B, FCC-B                                   |     |     |            |     |     |            |     |     |
| Mechanical  | Weight                                 | g     | 600  |     |     |            |     |     |            |     |     |
|             | Size (WxHxD)                           | mm    | 108.0 x 196.9 x 45.0   |     |     |            |     |     |            |     |     |

- (\*1) At 100VAC, 200VAC and max. output power (convection cooling), Ta=25°C.
- (\*2) For cases where conformance to various safety specs (UL, CSA, EN) are required to be described as 100-120VAC, 200-240VAC, 50/60Hz on name plate.
- (\*3) Please refer to Fig A for measurement determination of line & load regulation and output ripple voltage. (Measure with JEITA RC-9131 probe.)
- (\*4) From 85-132VAC / 170-265VAC, constant load.
- (\*5) From min. load - full load (maximum power), constant input voltage.
- (\*6) From 0°C to +50°C, constant input voltage and load.
- (\*7) Current limiting with automatic recovery. Avoid to operate over load or dead short for more than 30 seconds.
- (\*8) Over voltage clamping by zener diode.
- (\*9) At standard mounting method, Fig B.
- (\*10) When resuming operation in less than 5 sec. after power failure, soft start circuit will not limit the in-rush current at turn-on.

**Recommended EMC Filter**



RSEL-2006W  
Please refer to "TDK-Lambda EMC Filters" catalog.



L: 150mm AWG#18  
C1,C3,C5: Film Cap 0.1μF  
C2,C4,C6: Elec. Cap 100μF  
Bandwidth of scope: 100MHz

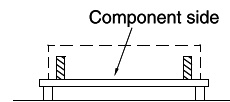
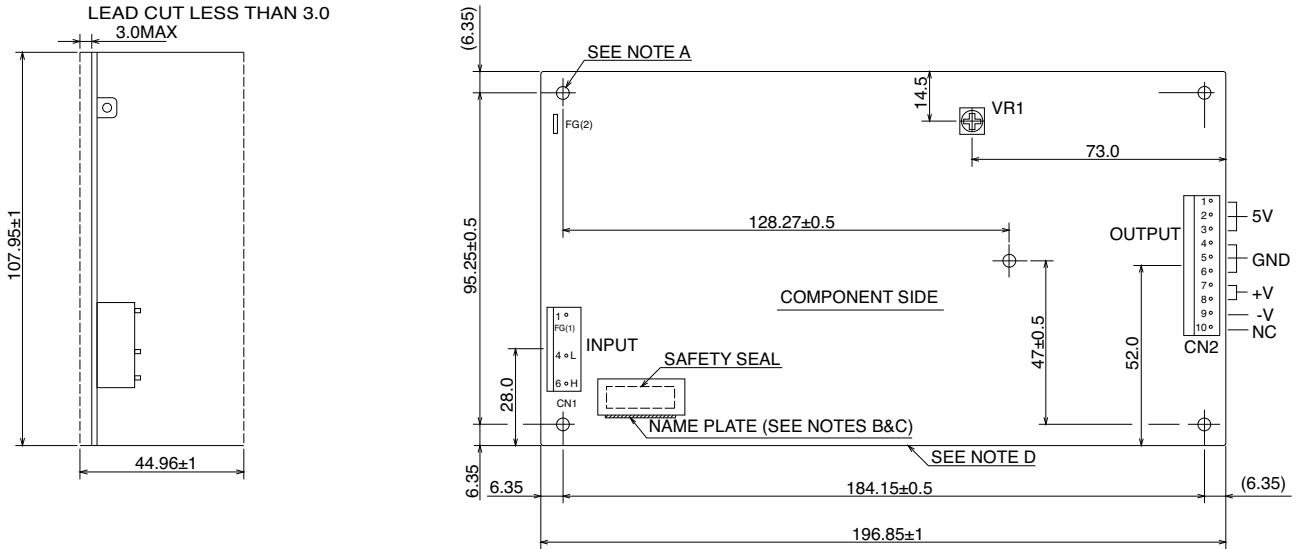


Fig. B



Outline Drawing

[SWT100]



(unit : mm)

PCB MATERIAL  
GLASS COMPOSITE : CEM-3

NOTES

- A : THE 5  $\phi$  3.5 HOLES ARE CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION SPEC.
- B : MODEL NAME, NORMAL OUTPUT VOLTAGE AND AVERAGE OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C : COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- D : TO KEEP THE DISTANCE MORE THAN 4M/M BETWEEN PC-BOARD EDGE AND CUSTOMER'S CHASSIS.
- E : FG(1) OR FG(2) IS FOR SAFETY GROUND CONNECTION.

CONNECTORS USED:

| PART DESCRIPTION             | CATALOG NO. | MANUFACTURER | QTY |
|------------------------------|-------------|--------------|-----|
| PIN HEADER (INPUT SIDE CN1)  | 5414-30B    | MOLEX        | 1   |
| PIN HEADER (OUTPUT SIDE CN2) | 5273-10A    | MOLEX        | 1   |

RECOMMENDED HOUSING & TERMINAL PIN.  
\* NOT INCLUDED WITH THE PRODUCT

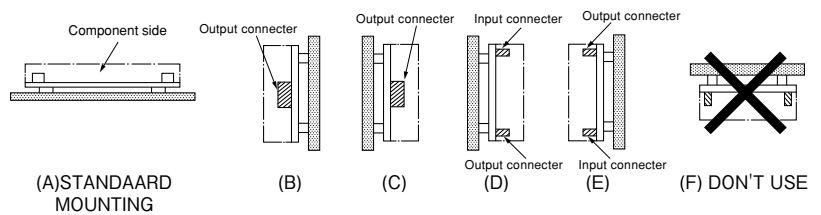
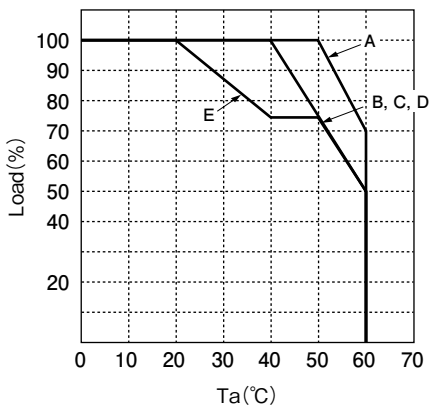
|                        |         |       |    |
|------------------------|---------|-------|----|
| SOCKET HOUSING (CN1)   | 5195-06 | MOLEX | 1  |
| SOCKET HOUSING (CN2)   | 5195-10 | MOLEX | 1  |
| TERMINAL PINS (CN1, 2) | 5194PBT | MOLEX | 13 |

HAND CRIMPING TOOL: 11-26-0058

MANUFACTURER: MOLEX

Output Derating

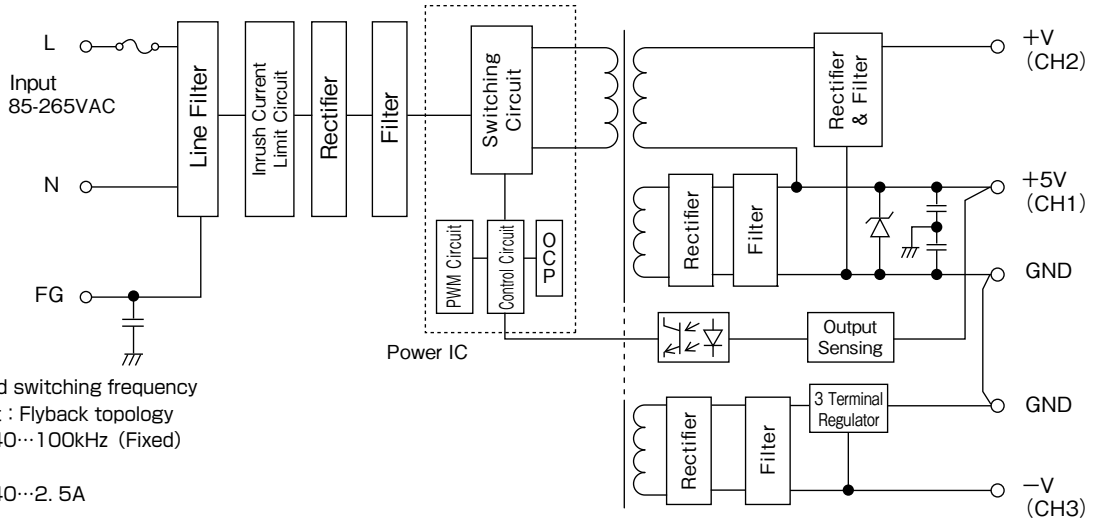
OUTPUT DERATING CURVE



Recommended standard mounting method is (A). (B), (C), (D) and (E) are also possible. Refer to the derating curve. Please do not use (F), where the PCB will be on the top side and heat will be trapped inside the unit.

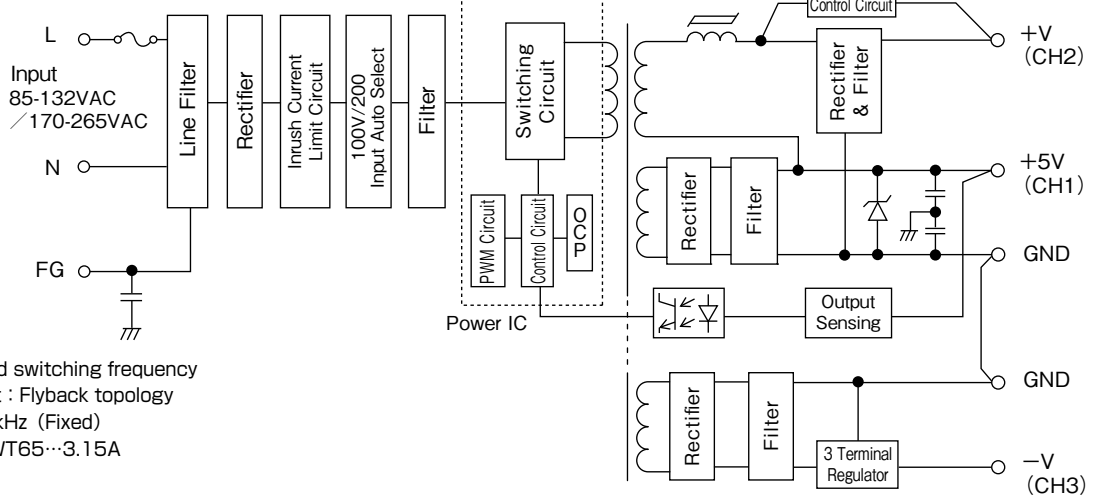
Block Diagram

[SWT30, SWT40]



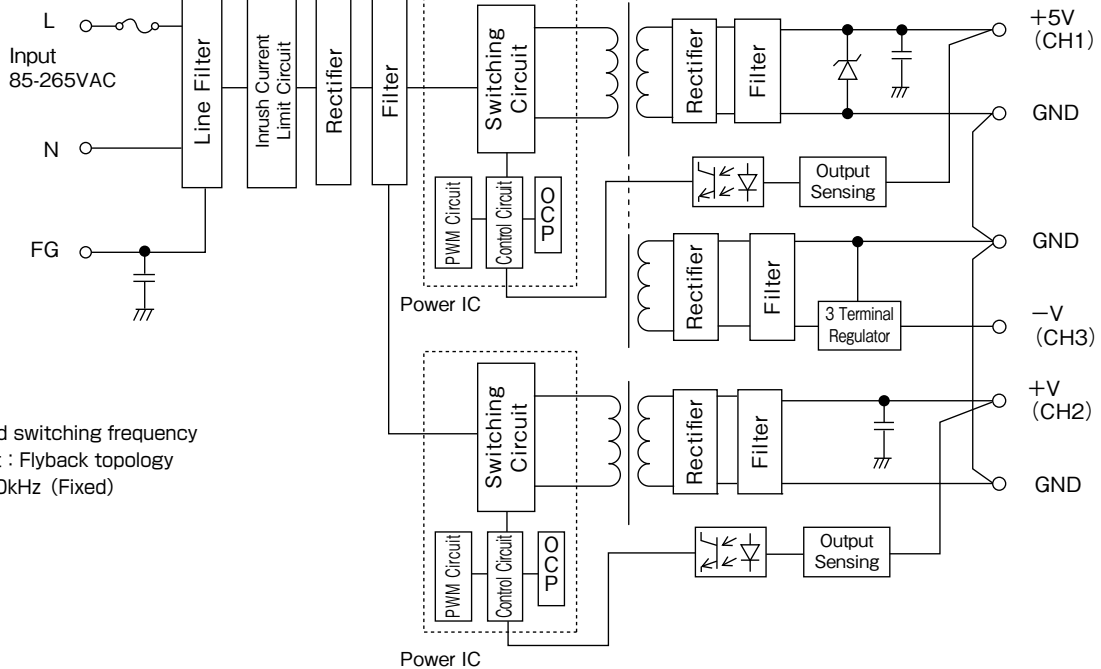
- Circuit mode and switching frequency  
Switching circuit : Flyback topology  
SWT30, SWT40...100kHz (Fixed)
- Fuse rating  
SWT30, SWT40...2.5A

[SWT65]



- Circuit mode and switching frequency  
Switching circuit : Flyback topology  
SWT65...100kHz (Fixed)
- Fuse rating SWT65...3.15A

[SWT100]

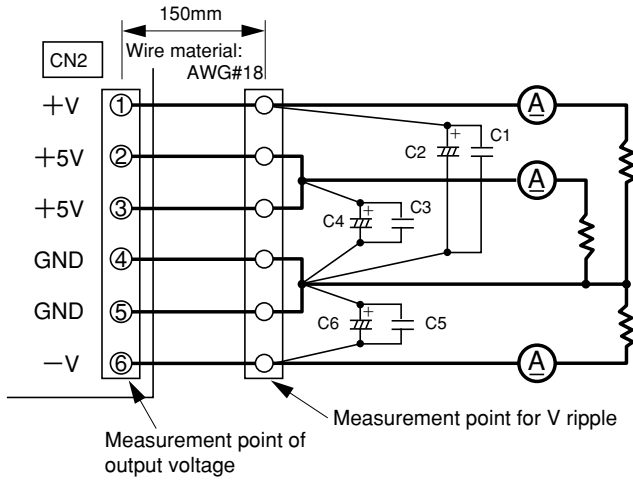


- Circuit mode and switching frequency  
Switching circuit : Flyback topology  
SWT100...100kHz (Fixed)
- Fuse rating  
SWT100...5A

SWT

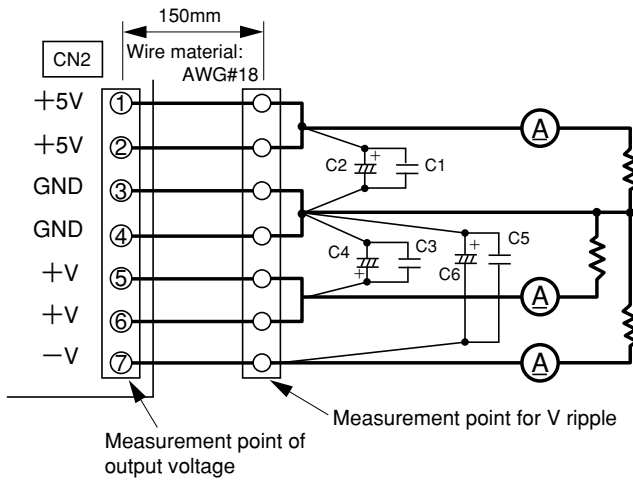
**Circuit for Measuring Performances**

**[SWT30, SWT40]**



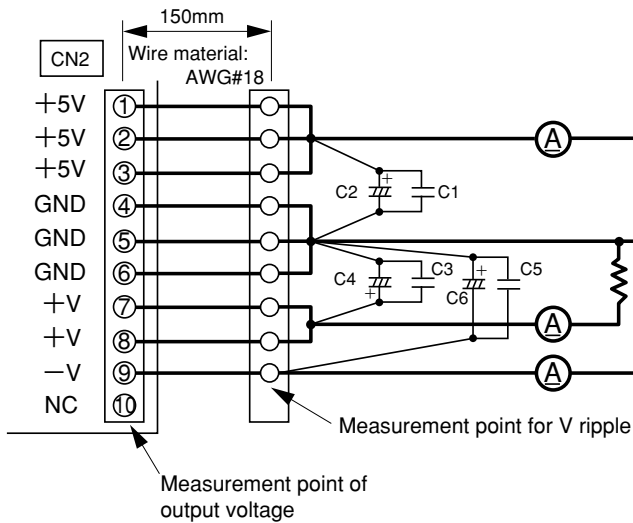
C1, C3, C5  
Film capacitor -- 0.1 $\mu$ F  
C2, C4, C6  
Electrolytic capacitor -- 100 $\mu$ F

**[SWT65]**



C1, C3, C5  
Film capacitor -- 0.1 $\mu$ F  
C2, C4, C6  
Electrolytic capacitor -- 100 $\mu$ F

**[SWT100]**



C1, C3, C5  
Film capacitor -- 0.1 $\mu$ F  
C2, C4, C6  
Electrolytic capacitor -- 100 $\mu$ F

SWT

# SWT Series Instruction Manual

## BEFORE USING THE POWER SUPPLY UNIT

Pay attention to all warnings and cautions before using the unit. Incorrect usage could lead to an electric shock, damage to the unit or a fire hazard.

### ⚠ WARNING

- Do not touch the internal components, they may have high voltage or high temperature. You may get electric shock or burned.
- When the unit is operating, keep your hands and face away from it; an accident may injure you.

### ⚠ CAUTION

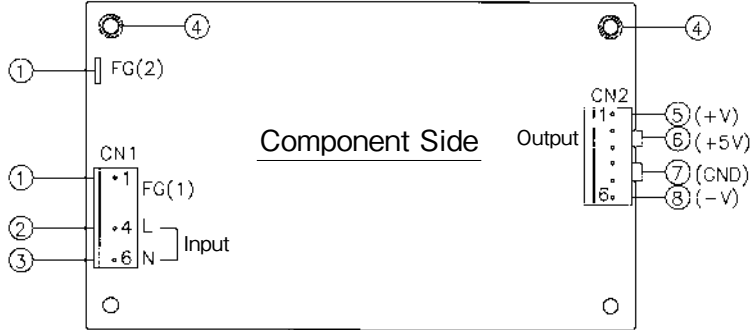
- This power supply is primarily designed and manufactured to use and enclosed in other equipment.
- Never operate the unit under over current or shorted conditions for 30 seconds or more, which could result in damage or insulation failure.
- This power supply is PC board type unit. Please hold the board edge while mounting, and do not touch the component side.

## 1. Terminal Explanation

- Input must be off when making connections.
- Output current of each connector must be less than 5A.
- Connect FG terminal of input connector and mountale FG to ground terminal of the equipment.
- Use the input/output connector housing, terminal pin as specified in outline drawing.
- Connector housing and terminal pin are not included with this product.
- Also, use recommended crimping tool.

### 1 SWT30, 40 Terminal Explanation

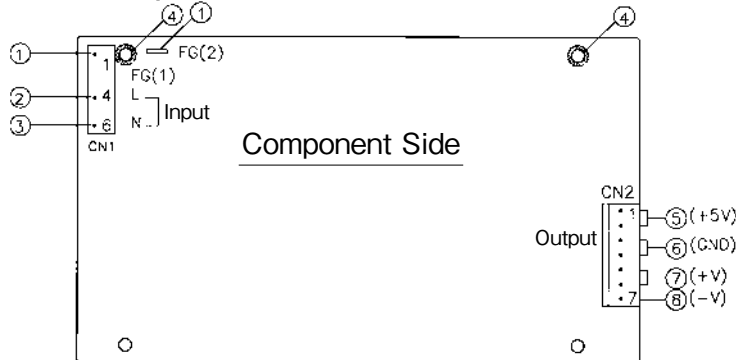
SWT30, 40 Component Side



- ① FG(1) terminal (pin 1 of CN1)  
FG(2) terminal (faston terminal)  
Connect FG(1) or FG(2) to safety ground of apparatus or equipment.
- ② AC input terminal (pin 4 of CN1)  
L: Live line (fuse in line)
- ③ AC input terminal (pin 6 of CN1)  
N: Neutral line
- ④ Protective earth: Must be connected to electrically safe ground of apparatus or equipment by electrically conductive spacers.
- ⑤ CH2 +V output terminal (pin 1 of CN2)
- ⑥ CH1 +5V output terminal (pin 2 and 3 of CN2)
- ⑦ GND CH1, CH2, CH3 common ground terminal (pin4-5 of CN2)
- ⑧ CH3 -V output terminal (pin 6 of CN2)

### 2 SWT65 Terminal Explanation

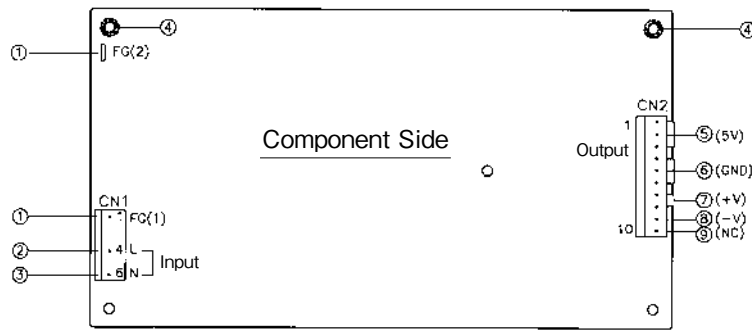
SWT65 Component Side



- ① FG(1) terminal (pin 1 of CN1)  
FG(2) terminal (faston terminal)  
Connect FG(1) or FG(2) to safety ground of apparatus or equipment.
- ② AC input terminal (pin 4 of CN1)  
L: Live line (fuse in line)
- ③ AC input terminal (pin 6 of CN1)  
N: Neutral line
- ④ Protective earth: Must be connected to electrically safe ground of apparatus or equipment by electrically conductive spacers.
- ⑤ CH1 +5V output terminal (pin 1 and 2 of CN2)
- ⑥ GND CH1, CH2, CH3 common ground terminal (pin3-4 of CN2)
- ⑦ CH2 +V output terminal (pin 5 and 6 of CN2)
- ⑧ CH3 -V output terminal (pin 7 of CN2)

### 3 SWT100 Terminal Explanation

#### SWT100 Component Side



- ① FG(1) terminal (pin 1 of CN1)  
FG(2) terminal (faston terminal)  
Connect FG(1) or FG(2) to safety ground of apparatus or equipment.
- ② AC input terminal (pin 4 of CN1)  
L: Live line (fuse in line)
- ③ AC input terminal (pin 6 of CN1)  
N: Neutral line
- ④ Protective earth: Must be connected to electrically safe ground of apparatus or equipment by electrically conductive spacers.
- ⑤ CH1 +5V output terminal (pin 1-3 of CN2)
- ⑥ GND CH1, CH2, CH3 common ground terminal (pin 4-6 of CN2)
- ⑦ CH2 +V output terminal (pin 7 and 8 of CN2)
- ⑧ CH3 -V output terminal (pin 9 of CN2)
- ⑨ N C : Non connection

## 2. Explanation of Functions and Precautions

### 1 Input Voltage Range

Input voltage range of SWT30, SWT40 and SWT100 is single phase 85-265VAC (47-63Hz) or DC110-340V. Input voltage range for SWT65 is 85-132VAC or 170-265VAC. Do not switch input voltage from 85-132VAC directly to 170-265VAC, as may cause power supply damaged.

### 2 Output Voltage Range Adjustment

All output voltage are fixed type (CH1, CH2, CH3). It cannot be adjusted.

### 3 Minimum Output Current

The output voltage of all channel is stabilized when more than minimum output current of CH1 (all model) and CH2 (only SWT30, 40).

### 4 Over Voltage Protection (OVP)

OCP circuit with zener diode clamp system is built into CH1 output (+5V). Over 6V of nominal voltage will clamp the output. If the output voltage is lowered to due to the over-voltage application, the output will not resume. Replacement of the power supply unit is necessary (for a fee).

### 5 Over Current Protection (OCP)

OCP type is current limiting with automatic recovery. OCP function operates when the output current exceeds OCP specifications. The output automatically recovers when the over current / shorted conditions is removed. The output will be automatically recovered when the overload or dead short condition is canceled. When OCP operates in any of the outputs, the other outputs will also get lowered. Do not operate in overload or dead short conditions for more than 30 seconds. It could result in damage.

### 6 Ripple

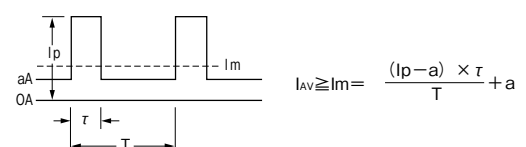
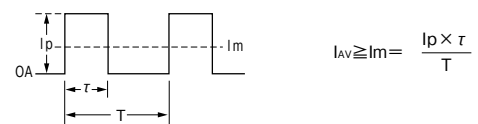
The standard specification for maximum ripple value is measured according to measurement circuit specified by JEITA-RC9131. When load lines are longer, ripple becomes larger. In this case, electrolytic capacitor, film capacitor, etc. might be necessary to use across the load terminal. The output ripple cannot be measured accurately if the probe ground lead of oscilloscope is too long.

### 7 Inrush Current

This series uses power thermistor to protect the circuit from inrush current. Please carefully select input switch and fuse in cases of the high temperature and the power re-input.

### 8 Peak Output Current

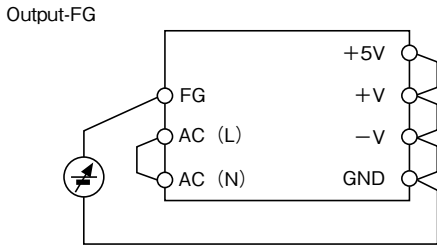
Output current of CH1(+5V) and CH2(+V) of SWT30, SWT 40 can cope with peak current loads. Specified maximum output current and peak output current must satisfy formulas below. Allowable peak output operating duration is less than 10 sec. Cycle should be more than 10ms and duty should be  $\leq 0.35$ . ( $\tau \leq 10$  seconds)



- $I_p$  : Peak Output Current (A)
- $I_{av}$  : Average output current (A)  
(Average output current of specification)
- $I_m$  : Average output current (A)
- $\tau$  : Pulse width of peak output current (Sec)
- $T$  : Period (Sec)

### 9 Isolation Test

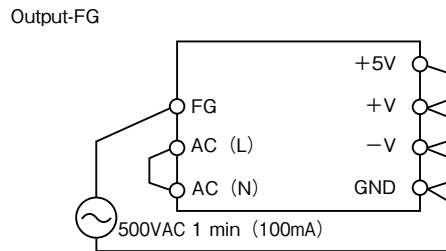
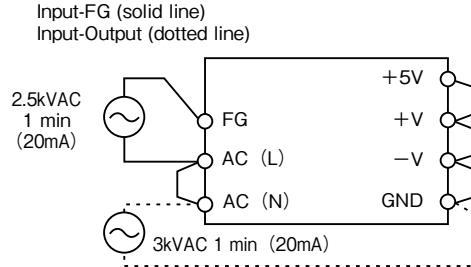
Isolation resistance between output and FG shall be more than 100MΩ at 500VDC. For safety operation, voltage setting of DC isolatin tester must be done before the test. Ensure that it is fully discharged after the test.



### 10 Withstand Voltage

This series is designed to withstand 3.0kVAC between input and output, 2.5kVAC between input and FG and 500VAC between output and FG for 1 minute. When testing withstand voltage, set current limit of the withstand

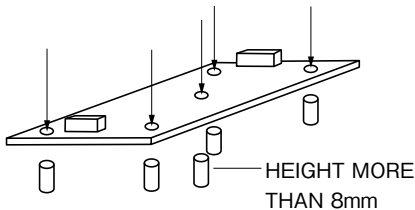
voltage test equipment to 20mA (Output-FG: 100mA). The applied voltage must be gradually increased from zero to the testing value and then gradually decreased for shut down. When timer is used, the power supply may be damaged by high impulse voltage at timer switch on and off. Connect input and output as follows. When output is left open during tests, output voltage might appear momentarily.



## 3. Mounting Method

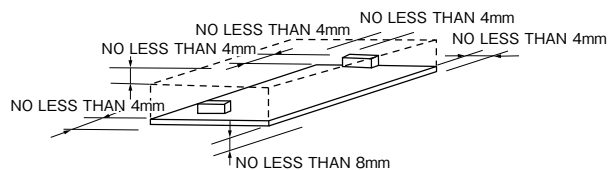
Please use the mounting hole and insert the spacer (MAX φ6.0mm) of height over 8mm to lift the unit. The vibration spec is the value taken when the unit is raised by 8mm specers.

- SWT30,SWT40,SWT65····4 pcs (φ3.5mm)
- SWT100····5 pcs (φ3.5mm)

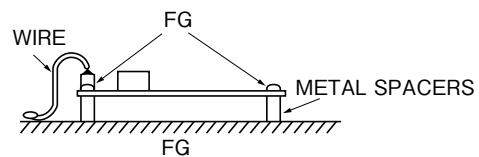


When mounting this unit (PCB), please allot space to satisfy isolation and withstand voltage specifications. Furthermore, for convection cooling, component side ventilation is necessary.

Please left 4mm space from the surfaces and the sides of PCB, especially from the solder surface, 8mm space is necessary.



FG should be connected to the earth terminal of the apparatus. If not, the EMI noise and output noise will increase.



SWT

## 4. Wiring Method

The input line and output load shall be separated and twisted to improve noise sensitivity. Noise can be eliminated by attaching a capacitor to the load terminals.

Select the wire materials to adapt the connector as follows.

INPUT: AWG#24-#18  
 OUTPUT: AWG#24-18

## 5. External Fuse Rating

Refer to the following fuse rating when selecting the external fuses that are to be used on input line. Do not use fast-blow fuse. Fuse rating is specified by inrush current value at line turn-on.

Do not select the fuse according to input current (RMS) values under the actual load condition.

| Model       | Fuse Rating |
|-------------|-------------|
| SWT30,SWT40 | 2.5A        |
| SWT65       | 3.15A       |
| SWT100      | 5A          |

## 6. Before concluding that the unit is at fault...

- Check if the rated input voltage is connected.
- Check if the wiring of input and output are correct.
- Ensure the input and output connectors are firmly inserted and the pressing of the connector pins are exactly fixed.
- Check if the wiring material is not too thin.
- Check if output current are more than minimum output current. CH1 (all model) and CH2 (only SWT30, 40)
- Check if FG terminal is connected to safety ground.
- Ensure that a large capacitor is not connected on the output side.

Please use within maximum capacitance shown below.

| Model  | Maximum capacitance |          |          |
|--------|---------------------|----------|----------|
|        | CH1 (+5V)           | CH2 (+V) | CH3 (-V) |
| SWT30  | 50,000uF            | 10,000uF | 5,000uF  |
| SWT40  | 50,000uF            | 10,000uF | 5,000uF  |
| SWT65  | 8,000uF             | 2,000uF  | 1,000uF  |
| SWT100 | 50,000uF            | 6,000uF  | 5,000uF  |

- Check whether output current are more than minimum output current.  
 The output voltage of all channel are stabilized when CH1 (all model) and CH2 (only SWT30, 40) are more than minimum output current.



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