



**Features**

Dimensions:

50.8×50.8×12.2 (mm)

- High efficiency :81% typical
- Low output noise and ripple
- Output Over-current Protection
- Baseplate operating temperature range - 25°C to +85°C
- RoHS (2002/95/EC) complaint

**Numbering Convention**

SF - 48 S 3V3 - 25W G  
 ①    ②   ③   ④                      ⑤   ⑥

No	Features	Descriptions
①	Product Series	SF Series
②	Typical Input Voltage	C – Input Voltage: 48V
③	Number of Outputs	S – Single Output
④	Typical Output Voltage	3V3 – Output Voltage: 3.3V
⑤	Typical Output Power	25 – Output Power: 25W
⑥	RoHS feature	G – lead-free, RoHS6

## 1 Description

The SF48S3V3-25WG series products feature 2:1 input voltage range, constant switching frequency, high efficiency, small size, input-output isolation, remote on/off, input under voltage protection, output short-circuit protection and output voltage trim, etc.

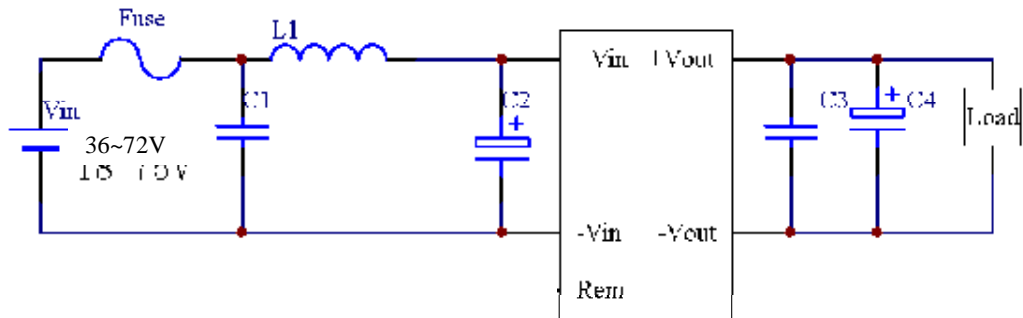
## 2 Technical Specifications ①

Parameter		Test Condition	Min	Typ	Max	Unit
<b>2.1 Absolute Maximum Ratings</b>						
Input Voltage (Vin)②		Continuous	—	—	80	Vdc
Max Output Power (Pomax)		Allowable operating conditions	—	—	20	W
<b>2.2 Input Specifications</b>						
Typical Input Voltage(Vinom)		—	—	48	—	Vdc
Input Voltage Range		—	36	—	72	Vdc
Max Input Current (Iinm)		Vimin, Ionom	—	—	750	mA
Input Under-voltage Protection		—	30	—	35	Vdc
Input Over-voltage Protection		—	73	—	80	Vdc
Onload Input Current(Iion)		Vinom, Io=0	—	—	50	mA
Remote (Rem)	on	—	5V-36V or Open Circuit(reference to -Vin)			
	off	—	≤2.0V or shorted to -Vin			
<b>2.3 Output Specifications</b>						
Output Voltage Set-point (Vo)		Vinom, Ionom	3.27	3.30	3.33	Vdc
Nominal Output Current (Ionom)		—	—	6	—	A
Line Regulation (Vov)		Vimin~Vimax, Ionom	—	—	±0.2	%Vo
Load Regulation (Vol)		Vinom, 0.1Ionom~ Ionom	—	—	±0.5	%
Output Voltage Adjustment Range (Voadj)		Vinom		±10		%
Output Over-current Protection	Protection Mode	—	Limited-Power Mode			—
	Threshold	Vinom	7	—	8.76	A
Output Short-Circuit Protection	Protection Mode	—	Continuous, Auto-recovery			Vo
Dynamic Load Response	Peak Deviation	25%-50%-25%Ionom 50%-75%-50%Ionom	—	—	±5%	Vo
	Settling Time		—	—	200	μs
Output Ripple and Noise (Peak-to-Peak)		20MHz	—	—	50	mV
External Output Capacitance(Co)		Vimin~Vimax, Io=0~Ionom Vinmin~Vinmax, Io=0~Ionom	0	—	4700	μF
Turn on/off Overshoot Amplitude		Vinom, Ionom	—	—	±10%	%Vo

Parameter	Test Condition	Min	Typ	Max	Unit	
<b>2.4 Safety Specifications</b>						
Safety Certificate	EN60950-1 Recognized					
Isolation Resistance (RISO)	—	50	—	—	MΩ	
Insulation Strength	Input to Output	Leak Current≤1mA, 1min	1000	—	—	Vdc
	Input to Case	Leak Current≤1mA, 1min	750	—	—	Vdc
	Output to Case	Leak Current≤1mA, 1min	500	—	—	Vdc
<b>2.5 Reliability</b>						
Vibration Test(sine)	Frequency: 10~55Hz Amplitude: 0.35mm Acceleration: 50m/s <sup>2</sup> Cycle: X,Y,Z 25 mins each axis	After being tested, no damage to the converter and its components, the appearance, output voltage and output ripple and noise (p-p) meet the data sheet requirements.				
Impact Test (half-sine)	Peak Acceleration: 300m/s <sup>2</sup> Duration: 6ms 6 times for three perpendicular directions	After being tested, no damage to the converter and its components, the appearance, output voltage and output ripple and noise (p-p) meet the data sheet requirements.				
MTBF	—	2×10 <sup>6</sup> h				
<b>2.6 Environmental Specifications</b>						
Relative Humidity	(40±2) °C, No Dew	—	—	90	%RH	
Cooling	—	Natural Convection				
Operating Case Temperature (Tc)	Allowable operating conditions	-25		+85	°C	
Storage Temperature (Tst)	Non-operating	-55		+105	°C	
Altitude	—	—	—	2000	m	
<b>2.7 General Specifications</b>						
Switching Frequency (f)	—	—	250	—	KHz	
Temperature Coefficient (Tcoeff)	—	—	—	±0.02	%/°C	
Efficiency (η)	Vinom, Ionom	79	81	—	%	
RoHS	RoHS (2002/95/EC) Directive					

### Important Notice

- ① Unless otherwise stated, all specifications are typical at nominal input voltage, full load and 25°C.
- ② The module has no input over-voltage protection, and input voltage up to 80V for long time may cause permanent damage to the module.

**3 Basic Application Circuit and Considerations****3.1 Basic Application Circuit**

Recommended:

Fuse: 2A

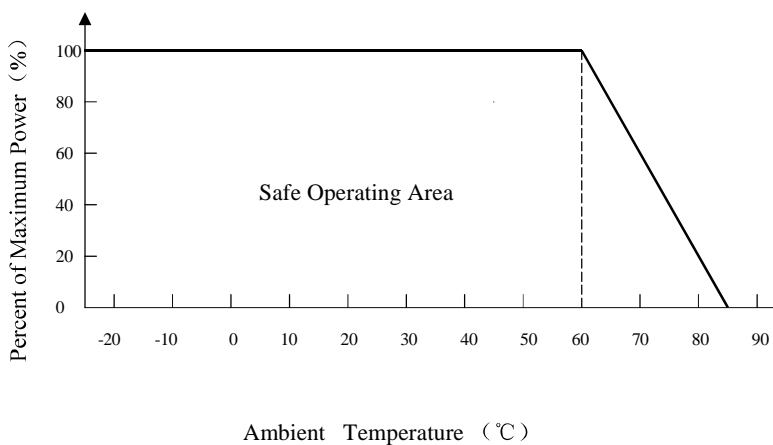
C1: 1µF/100V ceramic capacitor    C2: 47µF/100V electrolytic capacitor

L1: 3.3µH

C3: 1µF/10V ceramic capacitor    C4: 100µF/10V electrolytic capacitor

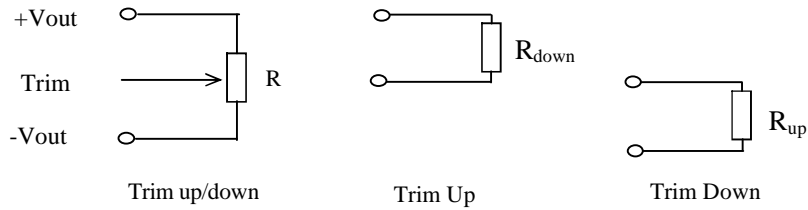
3.2 Input Voltage up to 80Vdc for long time or reverse input polarity (if no anti-reverse diode) would cause the module damaged.

3.3 Output short-circuit protection mode is continuous, automatic recovery. But it is not recommended to make the module operate under this condition for long time.

**4 Thermal Derating Curve**

### 5 Output Voltage Adjustment (Trim)

#### 5.1 Output Trim Circuit



#### 5.2 Output Trim Equations

(1) To increase the output voltage, the value of the external resistor should be

$$R_{\text{down}} = \frac{4.11}{V_a - V_o} - 10$$

(2) To decrease the output voltage, the value of the external resistor should be

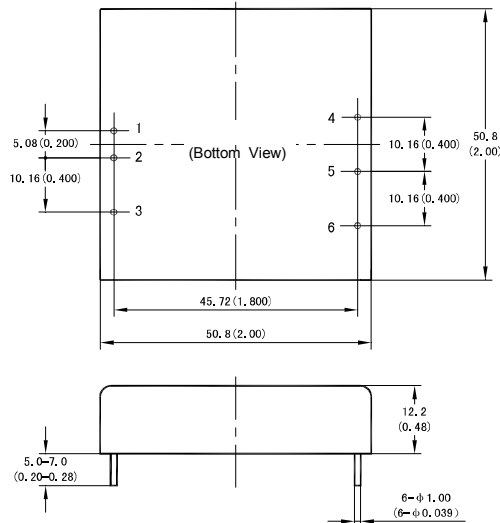
$$R_{\text{down}} = \frac{3.32(V_a - 1.24)}{V_o - V_a} - 10$$

Where  $V_a$  is adjusted output voltage; Unit: V

$R_{\text{Trim-up}}$ ,  $R_{\text{Trim-down}}$  are output adjusting resistors; Unit: kΩ

### 6 Dimensions and Pin definition

6.1 Dimensions Unit: mm (inch) Tolerances: .X±0.5; .XX±0.13(.X X±0.02; .X X X ±0.005)



#### 6.2 Pin Definition

No.	1	2	3	4	5	6
Symbol	+Vin	-Vin	Rem	+Vout	-Vout	Trim
Definition	Positive input	Negative input	Remote	Positive output	Negative output	Output Trim