

Features



- Dimensions: 50.8×40.6×12.7(mm)
- High efficiency :80% typical
- Low output noise and ripple
- Output Over-current Protection
- Baseplate operating temperature: -25°C to +85°C
- RoHS (2002/95/EC) complaint

Numbering Convention

SF - 48 S 3V3 - 20W 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	3.3 – Output Voltage: 3.3V
⑤	Typical Output Power	20 – Output Power: 20W
⑥	RoHS feature	G – lead-free, RoHS6

1 Description

The SF48S3V3-20WG series product provide industry-standard pins and 3.3V output voltage, feature wide input voltage range, high efficiency, excellent thermal performance, high isolation voltage (Input-output), and are suitable for telecommunications, industrial automation and test equipments that require low-voltage power supplies.

2 Technical Specifications (Unless otherwise indicated, all specifications are typical at nominal input voltage, full load and 25°C)

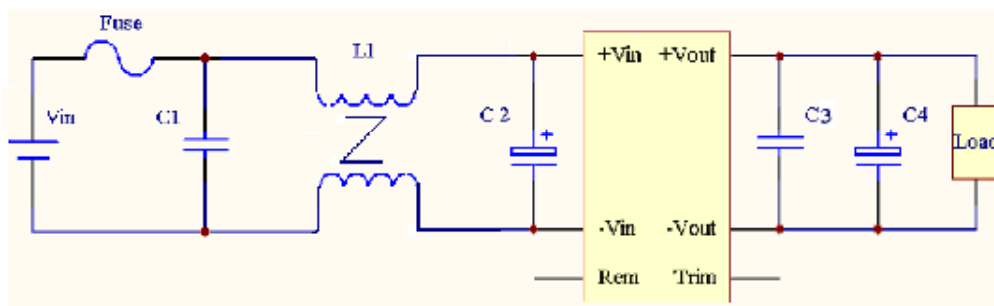
Parameter		Test Condition	Min	Typ	Max	Unit
2.1 Absolute Maximum Ratings						
Input Voltage (Vi)		Non-operating, continuous	36	—	72	Vdc
Input Transient Voltage (Vit)		100ms	—	—	100	Vdc
Max Output Power (Pomax)		allowable operating conditions	—	—	16.5	W
2.2 Input Specifications						
Typical Input Voltage(Vinom)		—	—	48	—	Vdc
Input Voltage Range		—	36	—	72	Vdc
Maximum Input current (Iimax)		Vimin, Ionom, ηmin	—	—	0.6	A
No-load Input Current (Iio)		Vinom, Io=0	—	—	30	mA
Quiescent Input Current (Iiof)		Vinom, remote output shutdown	—	—	10	mA
Remote	On	High (reference to -Vin, 3.6V ~ 48V or open circuits)				
	Off	Low (reference to -Vin, 0 ~ 0.4V or shorted to -Vin)				
2.3 Output Specifications						
Output voltage Set-point (Vonom)		Vinom,Ionom	3.27	3.30	3.33	Vdc
Typical Output Current (Ionom)		—	—	—	5	A
Output Current Range (Io)		—	0	—	5	A
Output Voltage Trim (Voadj)		Vinom	-10	—	+10	%
Line Regulation (Vov)		Vimin-Vimax,Ionom	—	—	±0.2	%Vo
Load Regulation (Vol)		10%-100%Ionom,Vinom	—	—	±0.5	%Vo
Output Over-current protection	Protection Mode	—	Threshold power		—	
	Protection Range	Vinom	5.8	6.8	7.8	A
Output Short-circuit protection	Protection Mode	—	Continuous recoverable		—	
	Protection Range	Vinom	—	—	100	mA

Parameter		Test Condition	Min	Typ	Max	Unit
Dynamic Load Response	Peak Deviation	25%-50%-25%I _{nom}	—	—	0.165	V
	Settling Time	50%-75%-50%I _{nom}	—	—	200	μs
Output Ripple and Noise		20MHz	—	—	50	mV(pk-pk)
External Output Capacitance (C _o)			0	—	8000	μF
Turn-on/off Peak Deviation			—	—	±10	%V _o
2.4 EMC Characteristics						
Isolation voltage	Input to output	Leak Current≤5mA, 1min	1500	—	—	Vdc
	Input to Case	Leak Current≤5mA, 1min	1050	—	—	Vdc
	Output to Case	Leak Current≤5mA, 1min	500	—	—	Vdc
Isolation Resistance (R _{iso})		—	50	—	—	MΩ
Safety Certificate		EN60950-1Certified				
2.5 Reliability						
Vibration Test(sine)		Frequency: 10~55Hz Amplitude: 0.35mm Acceleration: 50m/s ² Cycle: X,Y,Z 30min 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 ² 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		TR332,40℃,50% Stress conditions	2×10 ⁶ h			
2.6 Environmental Specifications						
Relative Humidity		(40±2) °C, No dew	—	—	90	%RH
Cooling		—	Conduction Cooling (forced-air cooling or heatsink)			
Operating Baseplate Temperature		See derating curve	-25	—	85	°C
Storage Temperature (T _{st})		Non-operating conditions	-40	—	105	°C
2.7 General Specifications						
Switching Frequency		—	—	330	—	k Hz
Weight		—	—	60	—	g

Parameter	Test Condition	Min	Typ	Max	Unit
Temperature Coefficient (Tcoeff)	—	—	—	±0.02	%/°C
Efficiency (η)	Vinom, Ionom	78	80	—	%
RoHS	RoHS(2002/95/EC) directive				

3. Basic Application Circuit and Considerations

3.1 Typical Application



Fuse: 3A L1: 1mH

C1: 1μF/100V (ceramic capacitor)

C2: 47μF /100V (electrolytic capacitor)

C3: 1μF /10V(ceramic capacitor)

C4: 220μF /10V (electrolytic capacitor)

3.2 Output will be on when the Rem is at high level or when the Rem keeps open circuit (referenced to -Vin); Output will be off when the Rem is at low level or connected to -Vin.

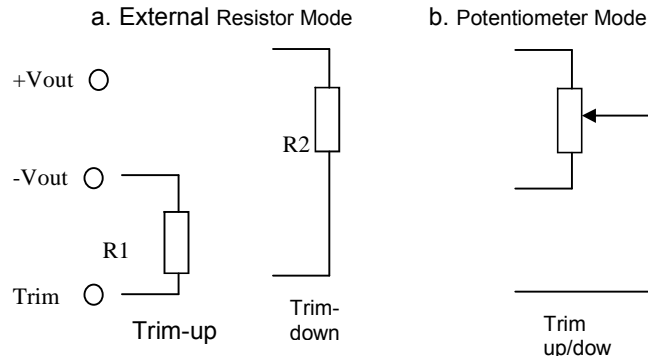
3.3 Input Voltage up to 80Vdc for long time or reverse input polarity would cause the module damaged.

3.4 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.

3.5 Output Trim: Exceed the maximum output power (trim up) or the maximum output current (trim down) may cause the converter operates abnormally. The output voltage shall not exceed 3.63V (trim up) or be lower than 2.97V (trim down), or the converter can't work well. See "4. Output Voltage Adjustment (Trim)" for details.

4 Output Voltage Adjustment (Trim)

4.1 Output Trim Circuit



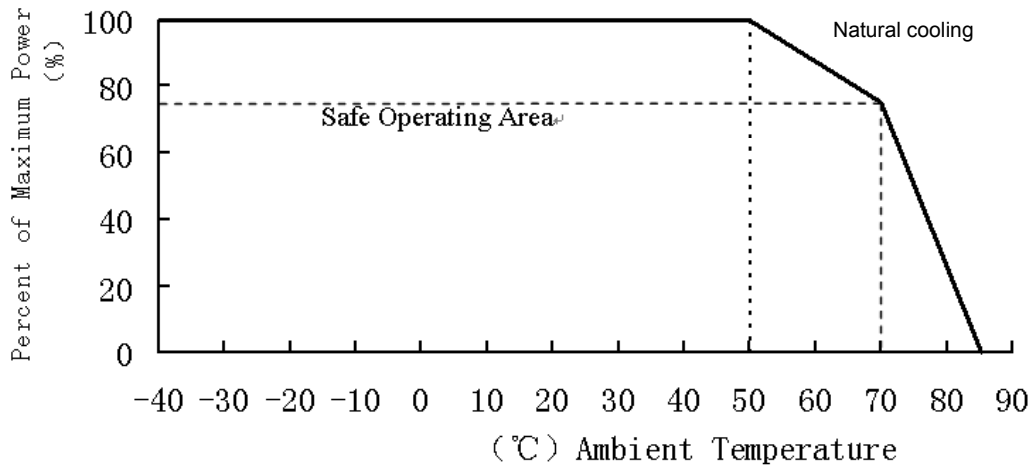
4.2 Output Trim Equations

$$\text{Trim-up: } R_{\text{Trim-up}} = \frac{4.1}{\Delta V} - 8.2$$

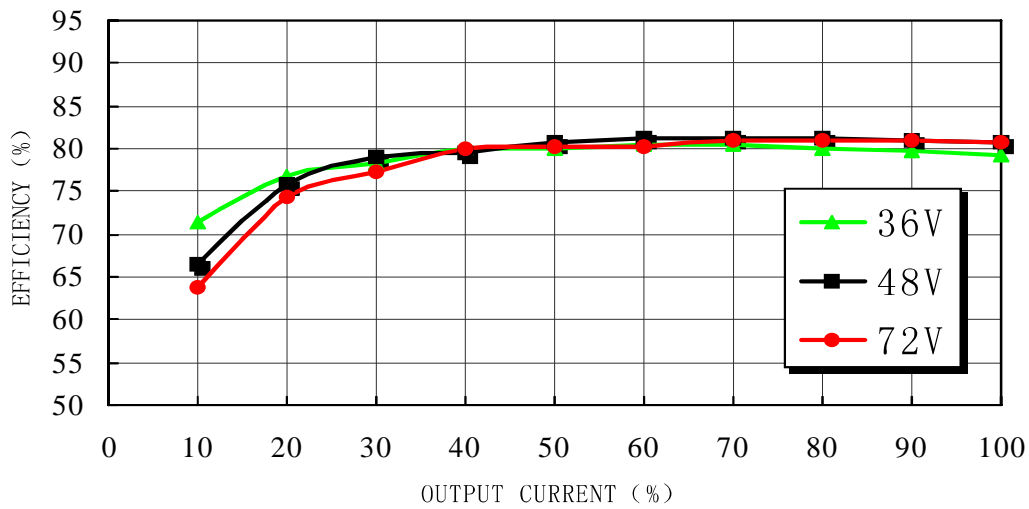
$$\text{Trim-down: } R_{\text{Trim-down}} = \frac{6.8}{\Delta V} - 11.5$$

Where ① ΔV : voltage changes, and $R_{\text{Trim-up}}$, $R_{\text{Trim-down}}$ Unit: k Ω ; ΔV Unit: Vdc

5 Thermal Derating Curve

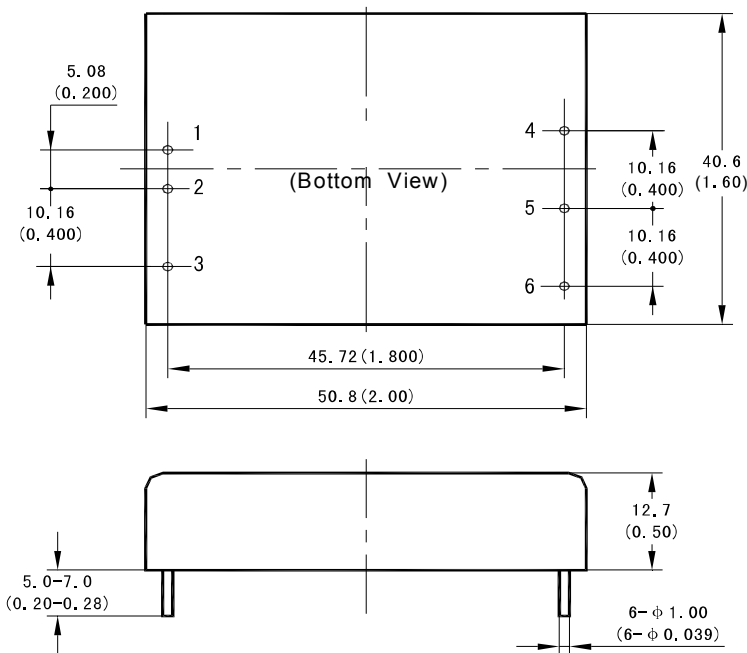


6 Efficiency Curve



7 Dimensions and Pin definition

7.1. **Dimensions** Unit: mm (inch) Tolerance: .X±0.5; .XX±0.13(.X X±0.02; .X X X ±0.005)



7.2 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	Trim