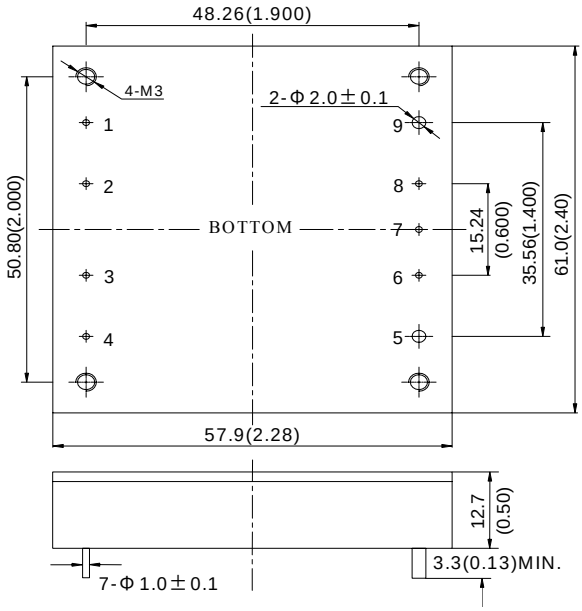
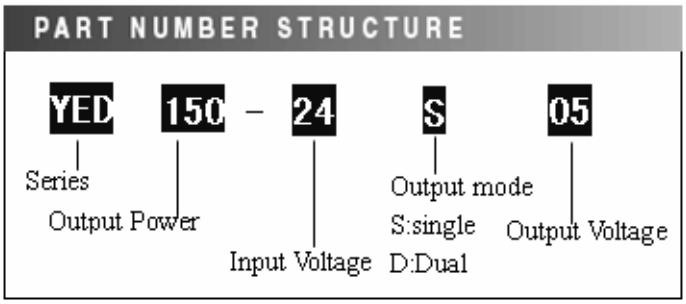
YED Series Converter

Outline Diagram



Features

- Half-Brick（61.0mm×57.9mm×12.7mm）
- Positive Logic, Remote on/off
- Input Under voltage Protection
- Output Current Limit Protection(OCP)
- Output Over Voltage Protection(OVP)
- Over Temperature Protection (OTP)
- Output Short-circuit Protection, hiccup, auto-recovery
- 1500V_{dc} Isolation Voltage
- Applications: Telecommunications, Electronic Data Processing, Distributed Power Architecture.



Pin	Symbol	Function
1	-Vin	Negative Input
2	CASE	Connect to the baseplate
3	CNT	Remote Control Pin
4	+Vin	Positive Input
5	+Vo	Positive output
6	+S	Positive Remote Sense
7	TRIM	Output voltage adjust
8	-S	Negative Remote Sense
9	-Vo	Negative Output

Case material: Aluminum, black;
Pin: copper with gold plating
Notes: all dimensions in mm(inches)
Tolerance:X.X±0.5(X.XX±0.02)
X.XX±0.25(X.XXX±0.010)

Performance Specifications And Ordering Guide

Unless otherwise specified, all values are given at: 25℃, one standard atmosphere pressure, pure resistive load and basic connection.

Model	Output				Input	Efficiency
	Voltage(V)	Current(A)	Ripple and Noise （mV）	Capacitive load(uF)	Range-DC (Volts)	
YED50						
YED50-24S03	3.3	10	50	10000	18-36	87%
YED50-24S05	5.05	10	100	10000	18-36	87%
YED50-48S03	3.3	10	50	10000	36-72	88%
YED50-48S05	5.05	10	50	10000	36-72	88%
YED50-110S05	5.05	15	50	4700	66-160	87%

Continue

Model	Output				Input	Efficiency
	Voltage(V)	Current(A)	Ripple and Noise （mV）	Capacitive load(uF)	Range-DC (Volts)	
YED75						
YED75-24S03	3.3	15	50	10000	18-36	88%
YED75-24S05	5.05	15	50	10000	18-36	88%
YED75-48S05	5.05	15	50	10000	36-72	89%
YED75-110S05	5.05	20	50	4700	66-160	88%
YED100						
YED100-24S05	5.05	20	50	10000	18-36	88%
YED100-48S03	3.3	20	50	10000	36-72	89%
YED100-48S05	5.05	20	100	10000	36-72	89%
YED100-110S05	5.05	30	50	4700	66-160	87%
YED150						
YED150-24S03	3.3	30	100	10000	18-36	87%
YED150-24S05	5.05	30	50	10000	18-36	88%
YED150-48S05	5.05	30	100	10000	36-72	88%

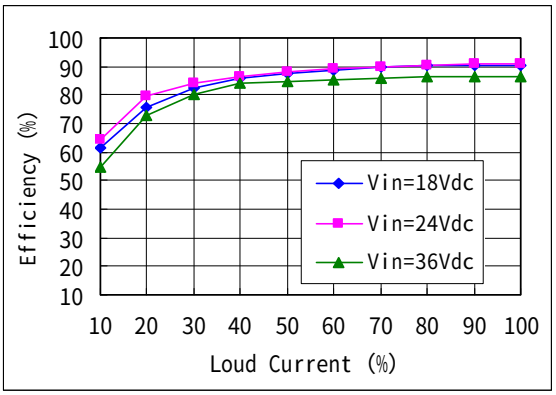
Performance/Functional Specifications

Input		
Input Voltage:	See Ordering Guide	
Romote Control: (Refer to –Vin)	On	Logic High
	Off	Logic Low
Input Under Voltage Protection:	See Respective Data Sheet	
Output		
Voltage Accuracy:	±1% max	
Trim Range:	±10% max	
LineRegulation:	±0.2%max	
Load Regulation:	±0.5% max	
Ripple and Noise:	See Ordering Guide	
Efficiency:	See Ordering Guide	
Dynamic Response:	5%Vo PK deviation (50~75% load) 200uS setting time (50~25% load)	
Start-up Delay Time:	See Respective Data Sheet	
Rise Time:	See Respective Data Sheet	

General	
Isolation Voltage:	1500Vdc /1min/1mA (Input-Output) 1050Vdc /1min/1mA (Input-Case) 500Vdc /1min/1mA (Output- Case)
Switching Frequency:	300kHz(typ)
MTBF：	1.5×10^6h(Bellcore RT332, 25℃)
Temperature Coeffcient:	±0.02% per℃
Baseplate Temperature:	-40℃～+100℃(Industry)
Storage Temperature:	-55℃～+105℃
Relative Humidity:	10%~90%
Over Temperature Protection:	100-120℃
Short-circuit Protection:	Hiccup mode, automatic recovery
Isolation Resistance:	50 MΩmin (500Vdc,90%RH)
Manual Soldering:	425℃max (5s Max)
Wave Soldering:	260℃max (10s Max)
Weight:	70~80g

Characteristic Curves

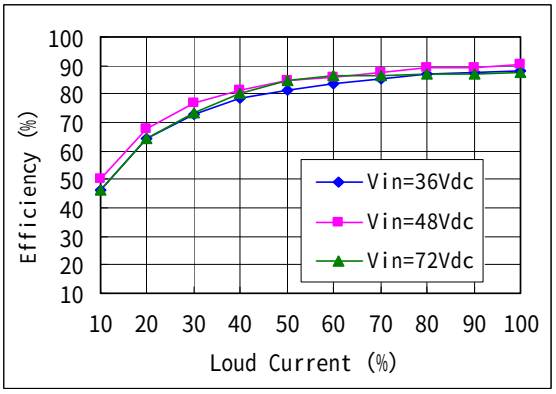
Efficiency



YED50-24S03

Efficiency

TBD
YED50-24S05



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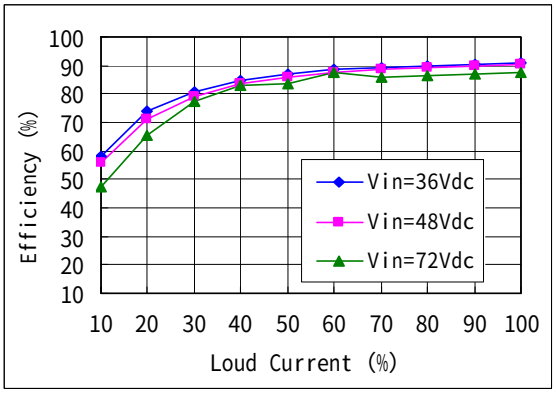
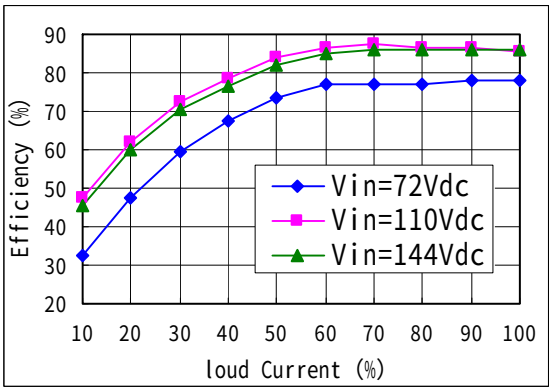
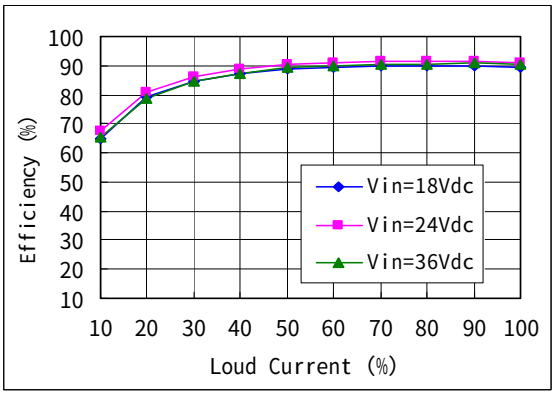


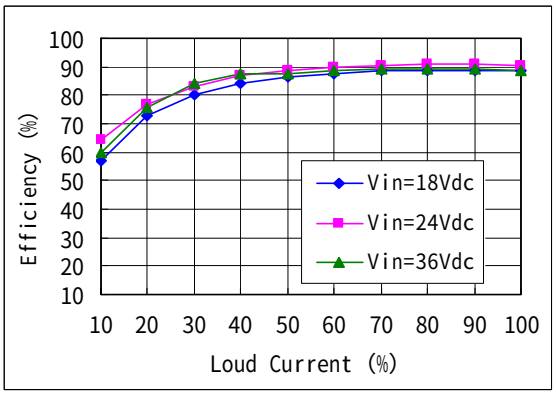
YED50-48S03



YED50-110S05

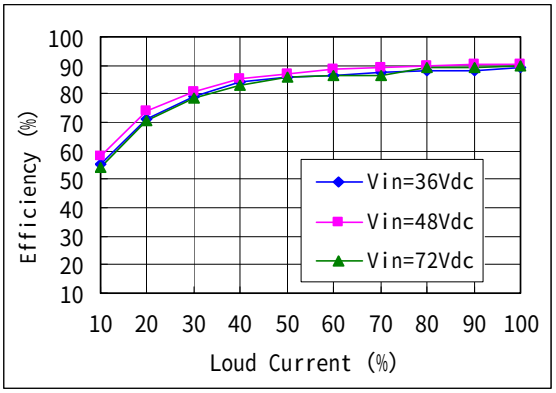


YED75-24S03



YED75-24S05

Efficiency



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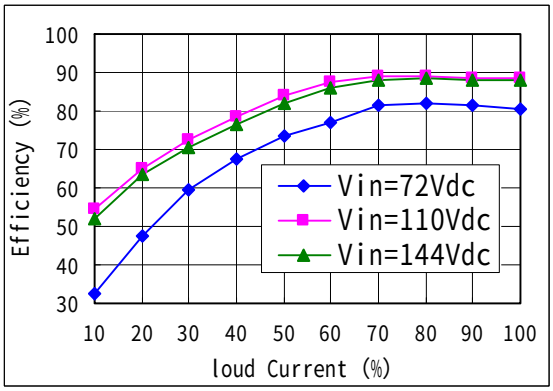
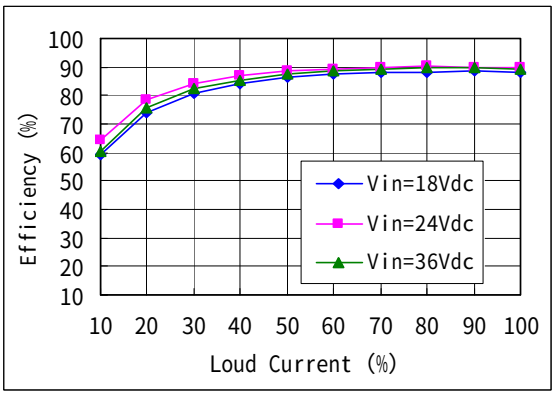
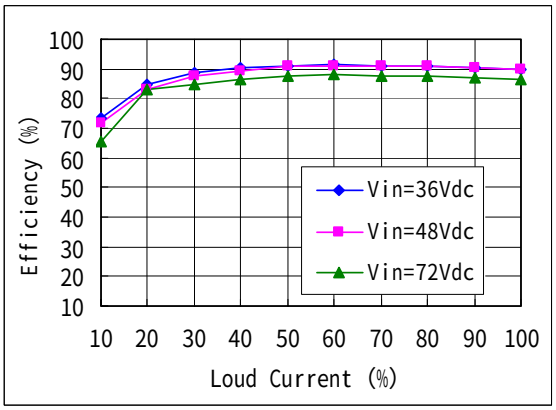


YED75-110S05



YED100-24S05



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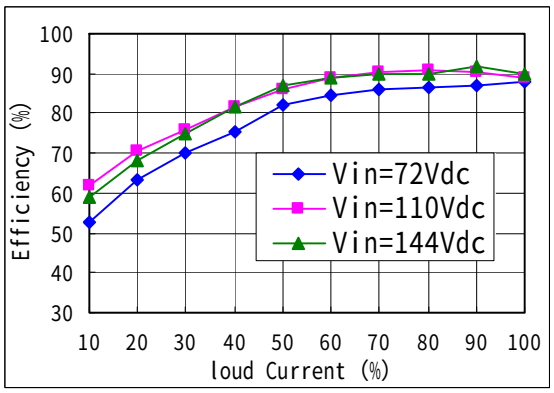

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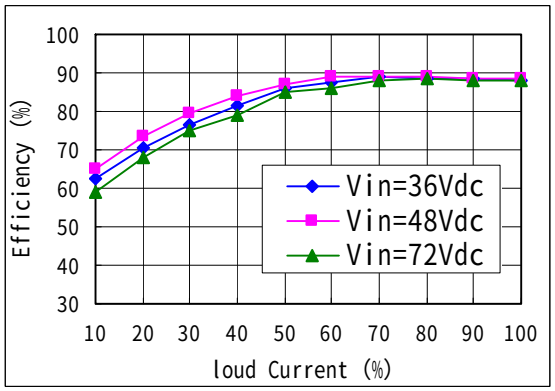

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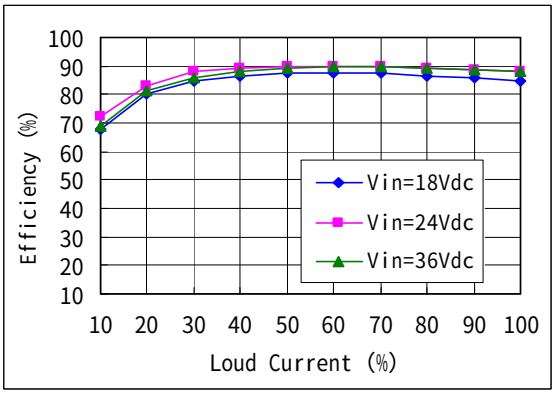
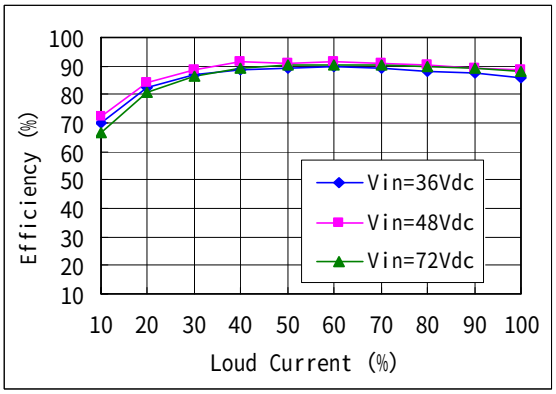
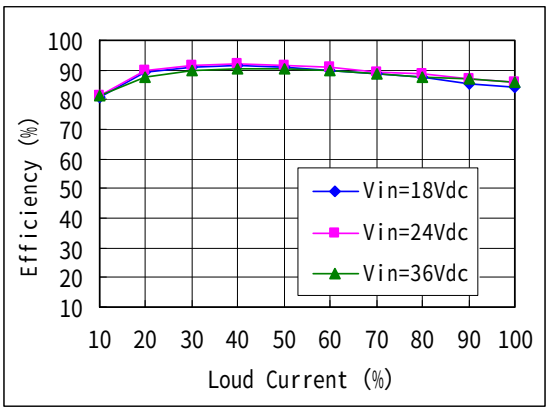


YED150-24S05



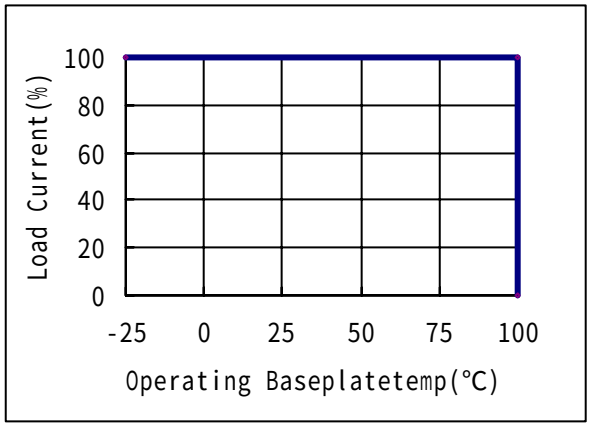
YED150-48S05

Efficiency



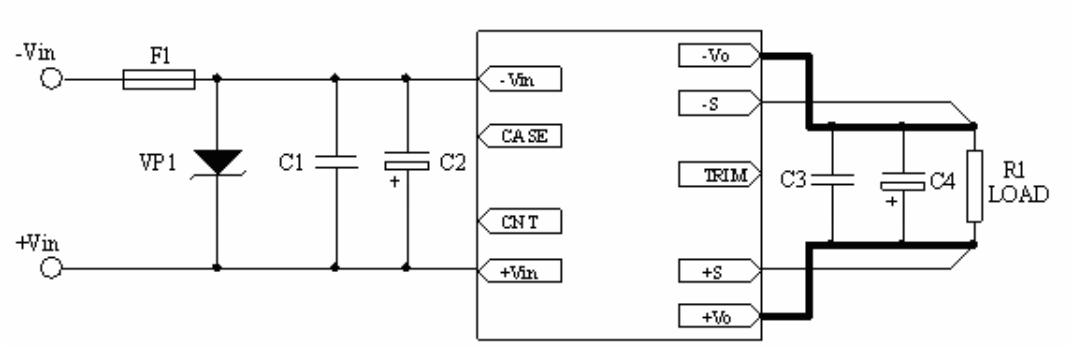
YED150-24S03

Derating



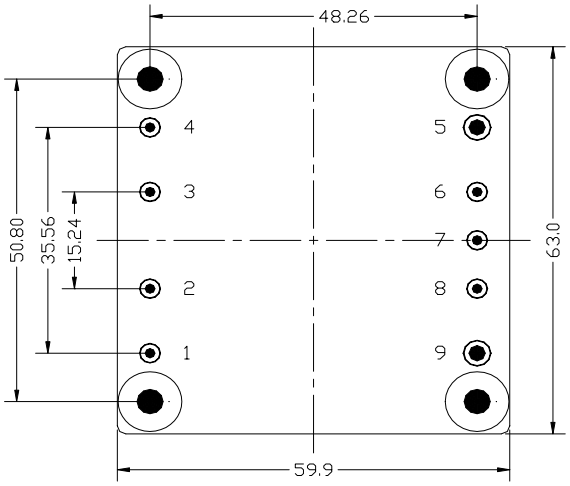
Design Considerations

Basic Connection



Notes: The basic connection indicates the basic requirements. Please refer to the instruction followed for further information.

Recommended Layout

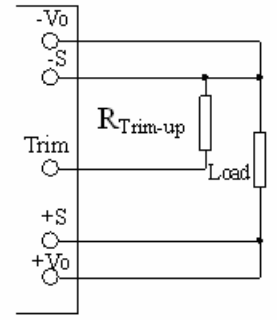


NO.	Recommendation & Notes
Pad Design	1-4、6-8 Pad holes: 1.5mm，pad diameter including hole:2.5mm; 5、9 Pad holes: 2.5mm,pad diameter including hole:4.50mm; the fixed holes at the four corners are metallized, with diameter of 3.3mm and pad diameter including hole: 5.3mm-6.3mm.
Airflow Direction	The air should flow along the direction of the heat sink
Safety	Isolated Converters, care to the spacing between input and output, input and protective ground、output and protective ground.
Electrical	The Vin(-) and Vo(-) planes should be placed under of the converter separately. Avoid routing sensitive signal or high disturbance AC signal under the converter.

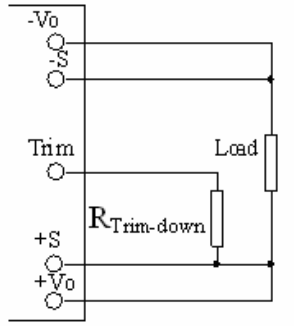
Output Voltage Adjust

The converters have an Output Voltage adjust pin (Trim). This pin can be used to adjust the output voltage above or below Output voltage initial setting. When increasing the output voltage, the voltage at the output pins (including any remote sense offset) must be kept below the maximum output adjust range, or the characteristics will not be assured in compliant with the specification, even the over voltage protection may be triggered. Also note that at increased output voltages the maximum power rating of the converter power, remains the same, and the output current capability will decrease correspondingly, at decrease output voltages the maximum current should not exceed the max output current. When the trim pins are not used, they should be floated.

External circuit is connected as the figure shown.



Connection for Trimming Up



Connection of Trimming Down

Remote Control

Remote control can be offered by setting right control voltage level (refer to -Vin pin)to CNT pin.

Positive Logic Control: When the level is higher than 3.5V or be left floating, the converter will be on. When the level is less than 1.5V, the converter will be off. when low level applied, the CNT source current is less than 1mA. Care should be taken to prevent CNT from surge, A TVS should be used in some cases.

Remote Sense

The remote sense can be used to compensate for the voltage drop between the output pins of the converter and the load input pins by +S、-S pins. The +S and –S pins should be connected to the input pins of the load respectively. The remote sense circuit will compensate for up to 0.5V drop between the sense voltage and the voltage at the output pins. If the remote sense is not needed, the –S should be connected to -Vo and +S should be connected to +Vo.

The anti-interference design should be considered when the +S、-S pins are connected to the pins to be compensated. The +S、-S traces should be located close to a ground trace or ground plane, and the area they surrounded should be minimized (just for electrical isolation); If cable connection presents, twisted pair wires should be used, EMI core are equipped with the twisted pair wires to reduce common mode noise when necessary, the sense leads should not be longer than 200mm,or the system characteristics may not be assured.

The sense leads only can carry very little current, and are not used for converter power output. Care should be taken in operation to avoid damaging the converter.

Over Temperature Protection(OTP)

The regulators are protected from thermal overload by an internal over temperature shutdown circuit. When the baseplate temperature exceeds the temperature trig point, the OTP circuit will cut down output power. The regulator will stop until safe operating temperature is restared. Hysteresis temperature between OTP trig point and restart is approx 10°C. Time between OTP and restart is dependent on cooling of the regulator.

Output Over Voltage Protection(OVP)

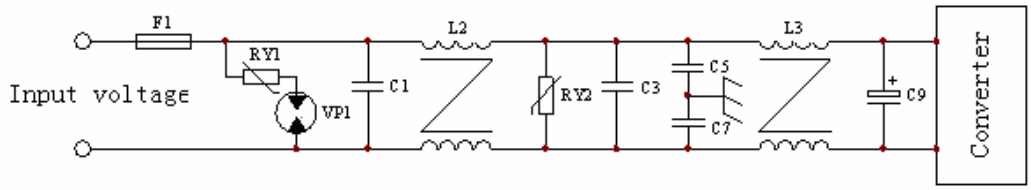
The switching-off type over voltage protection feature is used to protect the converter, when output voltage exceeds 115% to140% of the rated output voltage (the set point is between 115%-140%, there is the difference based on the specific parameters, but not beyond the range), the output voltage will shut down. When the converter internal detection circuit detect abnormal signals disappear the output will recovery.

External Capacitance

Unless special purpose (i.e. prolonging hold-up time, input impedance matching), the recommended input filter's capacitance ranges220μF～330μF, which not only offers a stable system, and reduces the cost, but also lessens the inrush current when the power supplies.

When larger capacitance is required, a circuit of suppressing the inrush current is recommended when the regulator start-up and a discharge circuit is recommended when the output dropped, ensuring the reliability and safety of other equipments in the system.

EMC Consideration



Conductive Interference will be emphasized in the following consideration, surge、EFT、conducted interference generated from the converter to power supply system, and so on. Some tests, like static, radiation, should be considered in the whole system design.

RY1、RY2、VP1 in the figure are VDR and discharge tube respectively, for the suppression of the differential mode interference conducted along with the wire. The maximum surge current of the VDR and Impulse Discharge Current of the discharge tube, Imax should not less than 3KA,Varistor voltage or DC Spark over Voltage must be 1.5 times of the converter input voltage. For lower level protection, RV2 can be remained only. It is advised to remain L2，if not, the differential mode inductor should be set, or others to make sure inductive resistance exists in the circuit, for a longer life to RY2.

The function of L2、L3、C5、C7、C3、C1 is for filtering differential mode and common mode interference. L2&L3 are for low frequency and high frequency separately. If only one common mode choke is required to remain for some reasons, the impedance characteristic of input voltage source should be considered comprehensively, L3 may be removed for low impedance and L2 may be removed for high impedance, the inductor for filtering within 10MHz should be focused on.

Safety Consideration

The converter, as one component for the end user, should be installed into the equipment, and all the safety considerations are achieved under certain condition. It is required to meet safety requirements in system design for the user. the primary to secondary is basic insulation to EN60950.The maximum operating temperature for PCB is 130 ℃.

To avoid fire and be protected when short circuit occurred, it is recommended that a slow blow fuse .For example choose Slow blow fuse which has fusing current as 20A. Inrush current suppression circuit is required for greater filter capacitance at input terminal, or it will result in the misoperation of the fuse.

Product Installation

The product can be installed in user board, suggest using M3 screw to fix the products in user board, in order to enhance the bearing ability when impactive and vibration coming. Note that, when you hammer the product using screws, this product shall be first fixed, again a needle pin welding, prevent strain soldered dot. Moreover the biggest torque of fastening screw cannot exceed 0.6 N.m, otherwise it will likely damage. the structural related to studs.

Metal surface of this product structured by aluminum PCB which has good thermal conductivity , mapping the overburden with heat conduction conlents or thermal gaskets, then install proper radiator.

Proper radiator and flows through radiator wind will greatly enhance products cooling capacity. when you install radiator ,you should be paid attention to the length of the bolt, ensure that has no relevant relatives with the screws fixed on PCB.

Delivery Package Information

Package material is multiple wall corrugated with less than 10^9 Ω surface resistance; internal material is anti-static foam with less than10^5 Ω surface resistance. Tray capacity: 12 PCS/box，Tray weight: 0.9kg~1.0kg; Carton capacity:15×12=180 PCS, Carton weight:13kg~14kg.

Quality Statement

The modules are manufactured in accordance with ISO 9001 system requirements, in compliant with YD/T1376-2005, and are monitored 100% by auto-testing system, 100% burn in.

The warranty for the modules is 5-year.

Contact Information

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