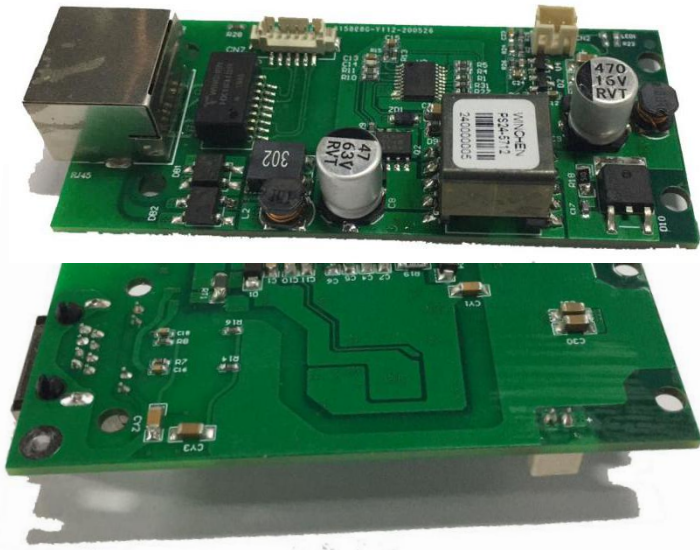


Power-Over-Ethernet Module



1. Product characteristics

- Compatible with IEEE802.3at standard devices.
- 42V~57V wide operating voltage range.
- Maximum output power up to 24W; Rated output: 12V/2A.
- The output ripple is less than 150 mV.
- Conversion efficiency can be as high as 88% (input 48V, output)12V@2A).
- Combined with several protection functions such as temperature control protection, current limit, high voltage internal switch, etc.
- Input/Output: isolate 1500Vdc.
- High reliability: design meets 5 million hours average failure interval

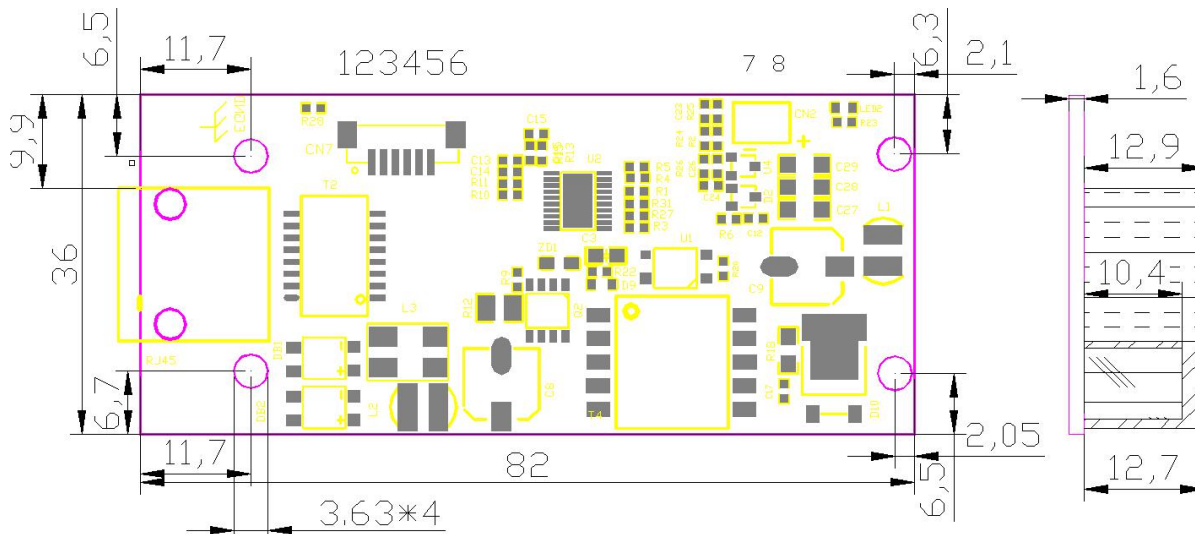
2. Scope of application

- IEEE 802.3at Compatible Devices
- Video and VoIP Phone
- PoS terminal, RFID terminal
- Fiber to Home (FTTH) Terminal

3. describe

- ▶ The POE PS24-5712T series module combines the PSE network power separation module. It can transmit data and power to non-PoE receiving devices without additional separators. The signal transmission is up to 100 meters in 10/100Mbps.
- ▶ It can be freely matched with more than 85% PC modules in the market, and can also be used to power and separate the network for other devices that need PoE function.
- ▶ The PS24-5712T control circuit provides the power device (PSE) required by PoE for compatibility signature and power classification, has complete protocol detection and then adds 25W power to the port.
- ▶ Auto Maintain Power Characteristics (MPS) - Auto-adjust MPS for Class 1-2 or Class 3-4 PSEs - Supports ultra-low power standby mode, main adapter priority input, etc. Also has a long soft start cycle for efficient DC/DC converters to ensure IEEE802.3at start-up requirements are met.

4. Pin foot definition



Dimensions are physical (mm)

Pin	Name	describe
1	GND	This pin provides a negative adjustment output connected to the eight legs to provide a negative electrode for the LED.
2	LED	This pin reserves LED-R indicators for the network ports and can be set up by itself.
3	TX+	This pin is the transmission of network TX signals.
4	TX-	This pin is the reception of network TX signals.
5	RX+	This pin is the transmission of network RX signals.
6	RX-	This pin is the transmission of network RX signals.
7	GND	Negative DC output.This pin provides negative adjustment output
8	Vout	The DC output of the positive pole.This pin provides positive adjustment output

5. Electrical characteristics

5.1 Absolute maximum rating parameter

No	parameter	Symbol	MIN	MAX	Units
1	Input DC Voltage	V_{CC}	42	57	V
2	DC Voltage Surge 1ms	V_{SURGE}	-0.6	65	V
3	ambient temperature	T_S	-40	80	°C

*Exceeding the above rating may cause permanent damage to the product. Functional operations under these conditions are not recommended.

The maximum rating assumes free air flow.

5.2 Recommended working conditions

No	parameter	Symbol	MIN	MAX	Units
1	input voltage	V_{IN}	42	57	V
2	Low Voltage Lock	V_{LOCK}	35	-	V
3	working temperature	T_{OP}	-40	80	°C

*Applicable only to the highest operating temperature of PS24-5712T.

5.3 output characteristic

No	parameter	Symbol	MIN	TYP	MAX	Units	Test Opinions
1	Standard Output Voltage	$+V_{DC}$	11.7	12.0	12.2	V	$V_{IN}=48V$
2	Output Current ($V_{IN}=48V$)	P_{WR}	-	2.5	3	A	Wide voltage input 42-57V
3	Power adjustment rate	V_{LINE}	-	0.1	-	%	@50% Load
4	Load Adjustment Rate	V_{LOAD}	-	1	-	%	@ $V_{IN}=48V$
5	Ripple Output Noise	V_{RN}	-	100	150	mVp-p	@Maximum Load
6	Minimum Load	R_{LOAD}	5	10	-	mA	
7	Short circuit duration	T_{SC}	-	-	∞	sec	
8	Efficiency (load 80%)	E_{FF}	-	88	-	%	
9	Isolation Voltage (I/O)	V_{ISO}	-	-	1500	VPK	
10	temperature coefficient	T_c	-	0.02		%	Per °C
11	dynamic response	T_S	-	60	100	ms	

1: Typical number is 25 C, nominal voltage is 48V, for auxiliary design only.

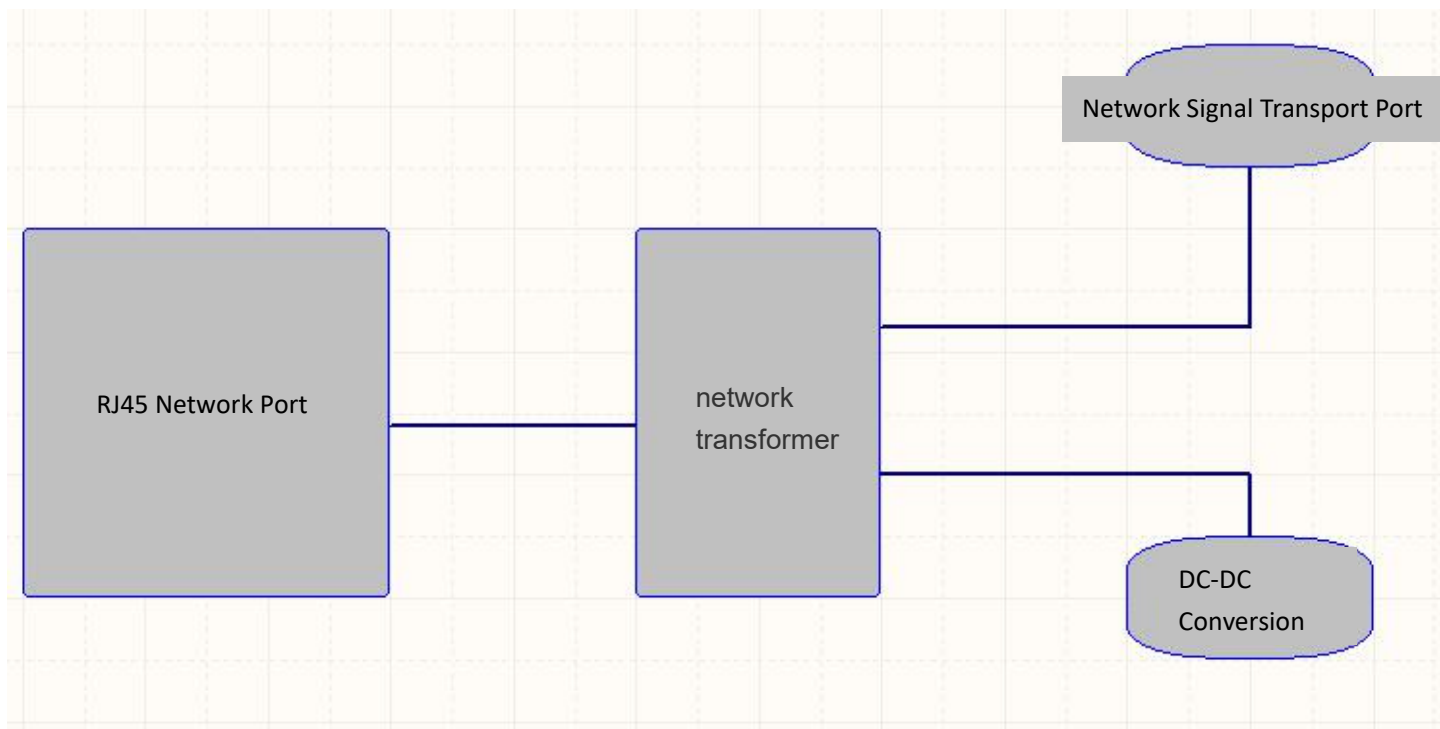
2: Output ripple and noise can be reduced by an external filter, see the application instructions.

3: If operated under the specified minimum load, the module emits audible noise and may cause PSE malfunction.

6. Functional Description

6.1 input

PS24-5712T is compatible with devices that use different power options, see Fig. 1: Typical system diagram. Specify that the PSE does not apply power to both outputs at the same time (see IEEE802.3at for more information).



Typical System Diagram

6.2. PD Signature

When the PS24-5712T is connected to a Class 5E cable, it will automatically go to the Power Supply Device (PSE) or the Midspan Device when required. Display the power device (PD) signal. The device then identifies a power supply device connected to the line and supplies power.

6.3. quarantine

Meets the security isolation requirements of section 33.4.1a of IEEE802.3at. Device (PD) must pass IEC 60950 Section 6.2 Electrical strength test. This requires a) 1500V AC Test or b) 1500V pulse test. The PS24-5712T specification meets the 1500Vdc pulse test. At least one track on either side of the isolation barrier. A gap of 3 mm is also important.

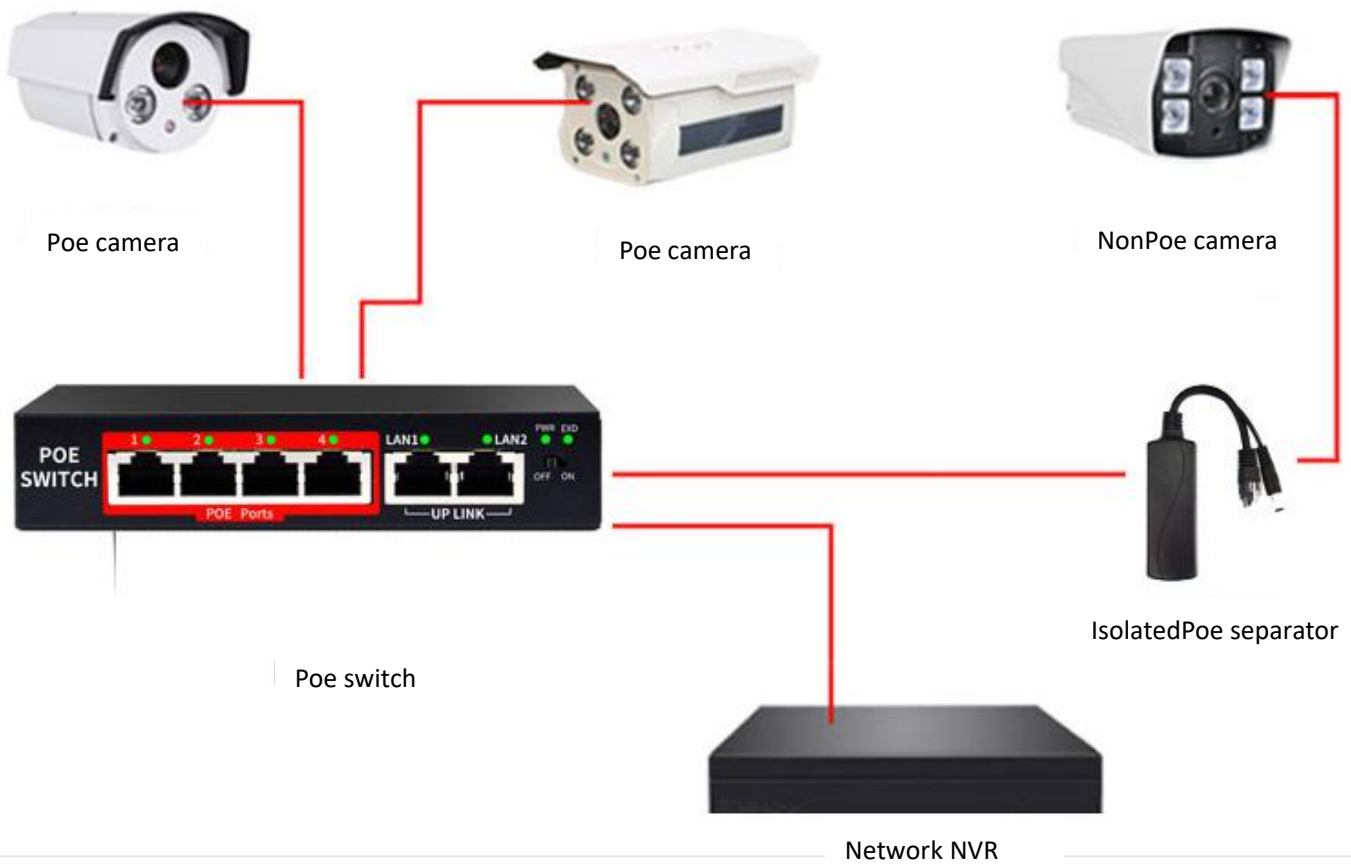
6.4. Power Classification

The PS24-5712T is suitable for grade 4 (25W) operation. Refer to other PoE products for alternative power programming.

6.5. DC/DC Converter

The PS24-5712T converter provides adjustable low ripple and low noise output with superior reliability and circuit protection built in.

6.6. Typical connections



Typical application diagram

7. Operating temperature range

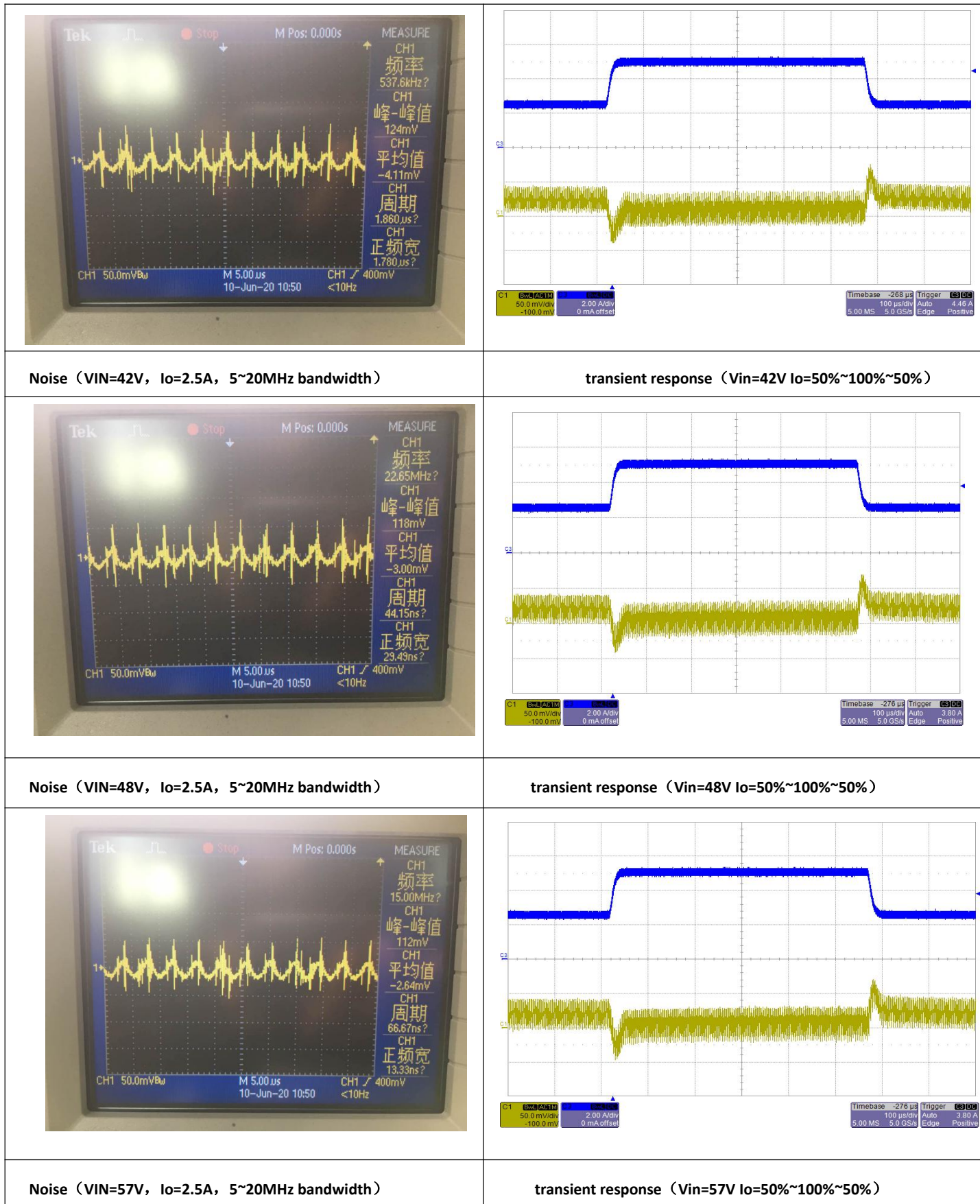
- As PS24-5712T is a power component, it will generate heat, so it is very important to consider heat dissipation in the design phase.
 - The core of PS24-5712T is a DC / DC converter, which will generate heat like other power supplies. The heat generated by the module will depend on the load required to drive and the input voltage provided by the PSE. The information shown in this section of the data sheet refers to the rated 48VDC input voltage supplied by se.
 - The maximum ambient working temperature of PS24-5712T is 60 °C . These results are generated in still air without any heat dissipation, and the performance of PS24-5712T can be improved by forcing air flow over the components or using a radiator.
 - PS24-5712T has built-in thermal protection function, which will reduce the output power when the working temperature is over a certain range. It is recommended that the module be powered by PSE or mid span equipment complying with IEEE 802.3at standard.
- ▶ Because each application environment is different, it is impossible to give fixed and absolute temperature recommendations. However, any enclosure must provide adequate ventilation for PS24-5712T.

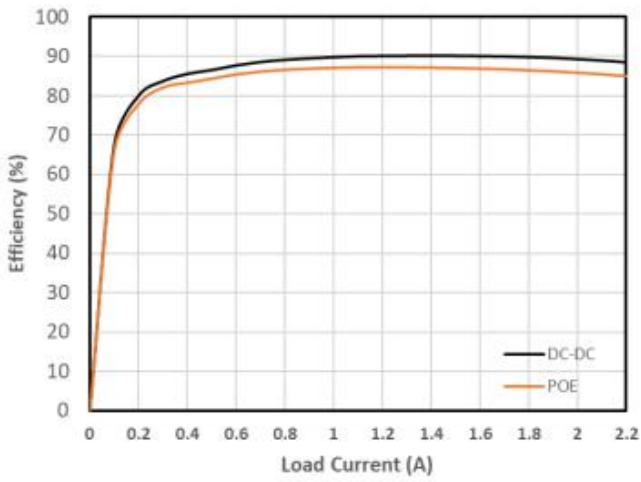
8. Thermal limit / protection

- ◆ PS24-5712T provides heating protection current through internal monitoring temperature or cuts off power supply to prevent exceeding its preset value Temperature limit of.
- ◆ The thermal current limitation is adopted in the two stages, which reduces the working current limitation of IC by 50%, and the temperature reaches 145 ° C and above 165 ° C Stop working
- ◆ The normal current limits for both return to service when the temperature returns below 125 ° C.

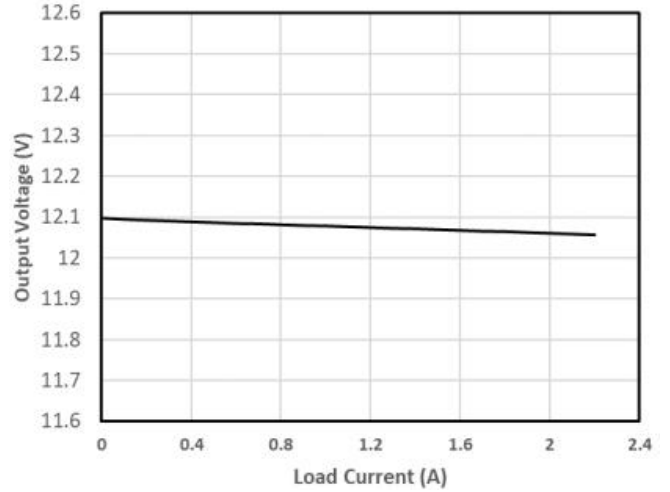
8. Schematic diagram of test waveform

Typical characteristics: $V_{out}=12$

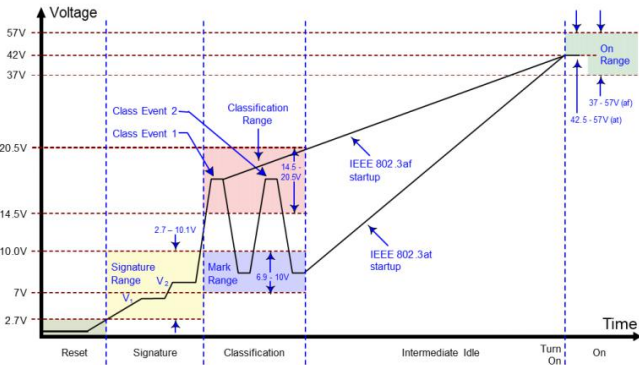




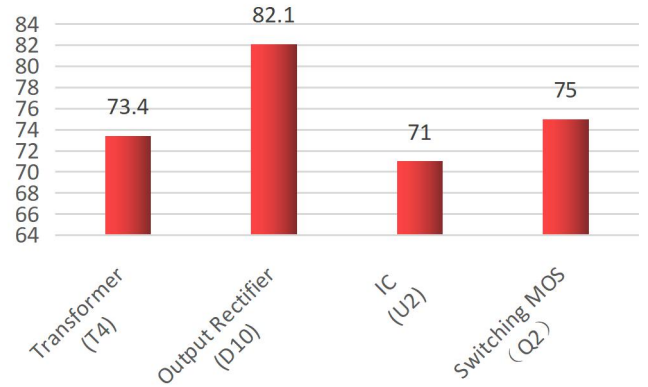
efficiency(VOUT = 12 V)



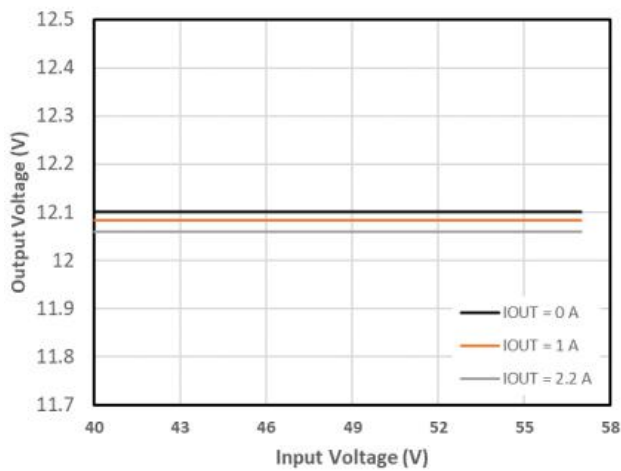
Output Voltage (Input 48V)



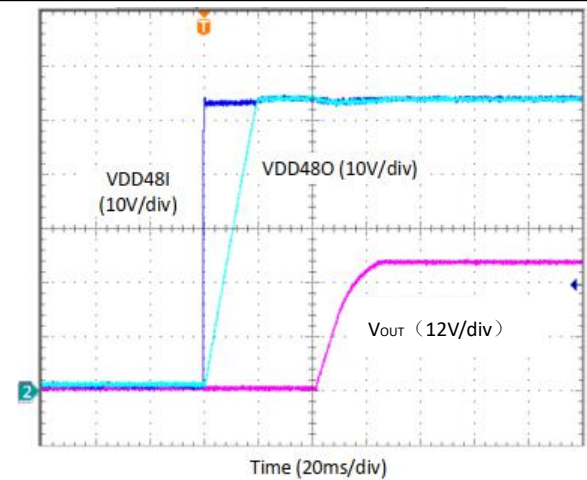
Power supply process



Component maximum temperature
Conditions: Ambient temperature: 29 C; Output power: 12V/2.5A;
Frequent: 3H



Input Voltage-Output Voltage



Input Output Response