PNJ16-12S Non-isolated SIP Series

Features

- Point of load(POL) applications
- High efficiency: 5V@93%
- -40 to +85 ambient operating temperature
- Open frame SIP
- Low output ripple and noise
- Positive enable function
- Adjustable output from 0.75V to 5.5V
- No minimum load requirement
- Fixed frequency switching(300KHZ)

Environmental

- Operating board temperature range:
  -40℃ to 100℃
- Storage temperature:
  -55℃ to 125℃
- Temp.coefficient:
  <±0.02%/℃
- MTBF:
  >2 million hrs

Electrical Specifications

Input

Input range: 10-14Vdc

Input under-voltage shundown: 9.0-9.3Vdc

Output

Voltage setpoint accuracy: ±2.0%Vo max.

Voltage adjust: 0.75V to 5.5V

Line regulation: 0.5%V_o max.

Load regulation: 1.0%V_o max.

Over-current protection: >200%I_o, auto-recovery

Short-circuit protection: continuous, auto-recovery

Ripple and noise: <75mVpp max.

Transient response: recovery <150uS max.
150mV max.
(25% step load change from 50% I_o)
di/dt: 1A/10uS

Control

Control voltage:

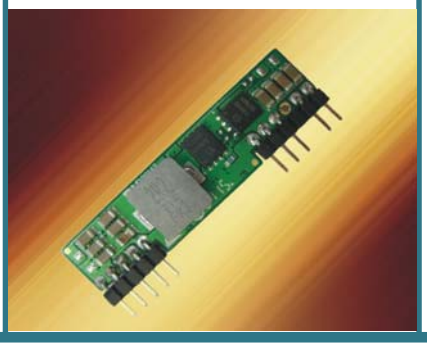
Positive logic

High =on	3 to 14Vdc
Low=off	-0.2 to 0.8Vdc

Negative logic

Low =on	-0.2 to 0.8Vdc
High=off	3 to 14Vdc

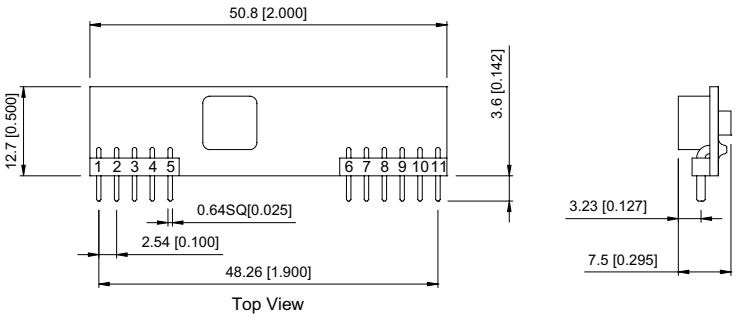
Control current: 2mA max

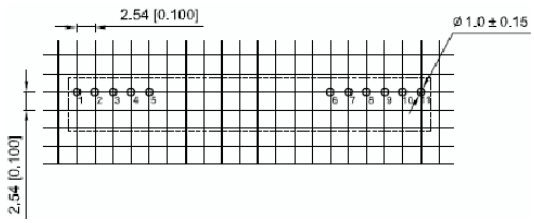


Ordering Information

Input Voltage	Output Voltage	Output Current	Efficiency	Model Number
10V to 14V	0.75V	16A	72%	PNJ16-12SV75
10V to 14V	1.2V	16A	81%	PNJ16-12S1V2
10V to 14V	1.5V	16A	85%	PNJ16-12S1V5
10V to 14V	1.8V	16A	87%	PNJ16-12S1V8
10V to 14V	2.5V	16A	88%	PNJ16-12S2V5
10V to 14V	3.3V	16A	91%	PNJ16-12S3V3
10V to 14V	5V	16A	93%	PNJ16-12S05

Dimensions





Pin Assignments

1、2、4	Vo
3	SENSE
5、6	GND
7、8	Vin
9	NC
10	TRIM
11	CNT

TOLERANCES：X.Xmm=+/-0.5mm
X.XXmm=+/-0.25mm

Unit:mm[inch]

Notes: The detail and recommended hole pattern layout is available in the Application Manual.

Output Voltage Programming

The output voltage of the PNJ16 can be programmed to any voltage between 0.75Vdc and 5Vdc by connecting one resistor (shown as Rtrim in Figure 1) between the TRIM and GND pins of the module. Without this external resistor, the output voltage of the module is 0.7525 Vdc. To calculate the value of the resistor Rtrim for a particular output voltage Vo, please use the following equation:

$$Rtrim = \left[\frac{10500}{Vo - 0.7525} - 1000\right]\Omega$$

For example, to program the output voltage of the PNJ16 module to 3.3Vdc, Rtrim is calculated as follows:

$$Rtrim = \left[\frac{10500}{3.3 - 0.7525} - 1000\right]\Omega$$

PNJ16 can also be programmed by apply a voltage between the TRIM and GND pins (Figure 2). The following equation can be used to determine the value of Vtrim needed for a desired output voltage Vo:

$$Vtrim := 0.7 - \left[(Vo - 0.7525)\cdot 0.0667\right]$$

For example, to program the output voltage of a PNJ16 module to 3.3 Vdc, Vtrim is calculated as follows

$$Vtrim := 0.7 - (2.5475\cdot 0.0667) = 0.53V$$

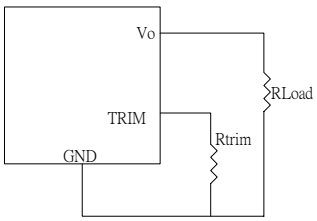


Figure 1: *Circuit configuration for programming output voltage using an external resistor*

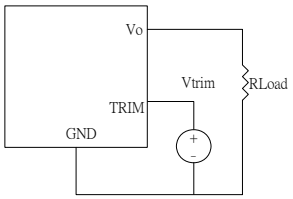


Figure 2: *Circuit Configuration for programming output voltage using external voltage source*

Table 1 provides Rtrim values required for some common output voltages, while Table 2 provides value of external voltage source, Vtrim, for the same common output voltages. By using a 1% tolerance trim resistor, set point tolerance of ±2% can be achieved as specified in the electrical specification.

Table 1

VO (V)	Rtrim (KΩ)
0.7525	Open
1.2	22.464
1.5	13.047
1.8	9.024
2.5	5.009
3.3	3.122
5.0	1.472

Table 2

VO (V)	Vtrim (V)
0.7525	Open
1.2	0.670
1.5	0.650
1.8	0.630
2.5	0.583
3.3	0.530
5.0	0.4167