PNJ10-5S Non-isolated SIP Series

Features

- Point of load(POL) applications
- High efficiency: 3.3V@95%
- -40 to +85 ambient operating temperature
- Open frame SIP
- Low output ripple and noise
- Positive enable function
- Adjustable output from 0.75V to 3.63V
- 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:	3-5.5Vdc
Input under-voltage shundown:	1.9-2.1Vdc

Output

Voltage setpoint accuracy:	±2.0%Vo max.
Voltage adjust:	0.75V to 3.63V
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:	<70mVpp max.
Transient response:	recovery <100uS max.
	100mV max.
	(25% step load change from 50% I_o)
	di/dt: 1A/10uS

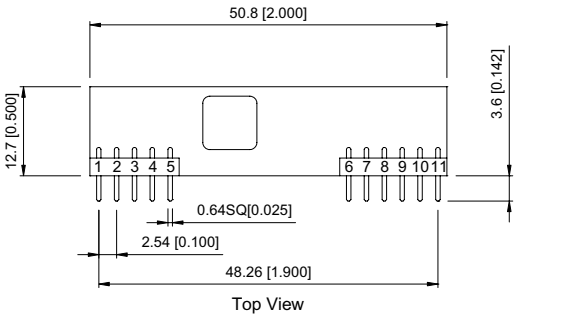
Control

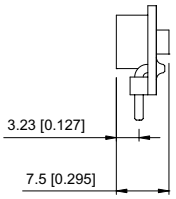
Control voltage:	
Positive logic	
High =on	3 to 5.5Vdc
Low=off	-0.2 to 0.8Vdc
Negative logic	
Low =on	-0.2 to 0.8Vdc
High=off	3 to 5.5Vdc
Control current:	2mA max

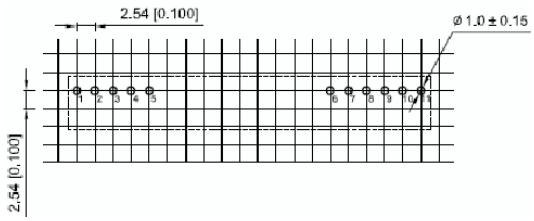
Ordering Information

Input Voltage	Output Voltage	Output Current	Efficiency	Model Number
3V to 5.5V	0.75V	10A	83%	PNJ10-5SV75
3V to 5.5V	1.2V	10A	89%	PNJ10-5S1V2
3V to 5.5V	1.5V	10A	90%	PNJ10-5S1V5
3V to 5.5V	1.8V	10A	91%	PNJ10-5S1V8
3V to 5.5V	2.5V	10A	93%	PNJ10-5S2V5
4.5V to 5.5V	3.3V	10A	95%	PNJ10-5S3V3

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 PNJ10 can be programmed to any voltage between 0.75Vdc and 3.3Vdc 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:

$$Rtrim = \left[\frac{21070}{Vo - 0.7525} - 5110\right]\Omega$$

For example, to program the output voltage of the PNJ10 module to 1.8Vdc, Rtrim is calculated as follows:

$$Rtrim = \left[\frac{21070}{1.8 - 0.7525} - 5110\right]\Omega = 15K\Omega$$

PNJ10 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:

$$Vtrim = 0.7 - 0.1698 \times (Vo - 0.7525)$$

For example, to program the output voltage of a PNJ10 module to 3.3 Vdc, Vtrim is calculated as follows

$$Vtrim = 0.7 - 0.1698 \times (3.3 - 0.7525) = 0.267V$$

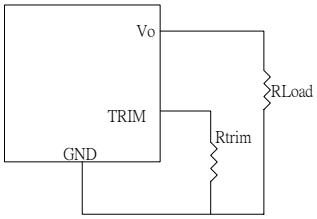


Figure 1: *Circuit configuration for programming output voltage using an external resistor*

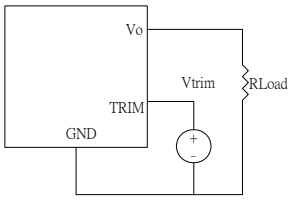


Figure 2: *Circuit Configuration for programming output voltage using external voltage source*

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	41.97
1.5	23.08
1.8	15.00
2.5	6.95
3.3	3.16

Table 2

Vo(V)	Vtrim(V)
0.7525	Open
1.2	0.624
1.5	0.573
1.8	0.522
2.5	0.403
3.3	0.267