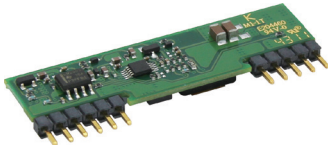


# NAP SIP Series



## Features

- Input under voltage protection \*
- Over current protection \*
- Short circuit protection \*
- Output overvoltage protection \*
- Over temperature protection \*
- Remote on/off control \*
- Support wave soldering

\*NAP03S04-A without this function

## Introduction

NAP series is high performance SIP POL module, whose feature include wide range of input voltage, high power density and perfect protection functions. This series include BUCK and BOOST modules, the output current covering 4A, 6A, 10A and 16A four levels. The output voltage can be set arbitrarily in the rating range. All modules can be used in DPA or IBA. This series which conform to the RoHS6 requirement are suitable for telecom devices, server, network and industry devices power supply.

## Specification

	Model	Parameter	Notes & Conditions
<b>Output characteristics</b>			
Output line regulation	ALL	1%Vo	The whole range of Vin, 100% load
Output load regulation	ALL	2%Vo	Rating input voltage, Iout=0 - Imax
Regulated voltage	ALL	3%Vo	The whole range of Vin, Iout and TA
Output ripple and noise (PK-PK)	NAP03S06-C, NAP03S06-E, NAP03S06-B, NAP03S06-A, NAP03S06-F, NAP05S06-B, NAP03S06-D, NAP05S06-A, NAP05S06-C, NAP03S16-A	50mV	Oscilloscope bandwidth: 20 MHz
	NAP05S10-A	70mV	
	NAP03S04-A	100mV	
	NAP03S15-A	60mV	
	NAP12S16-A	50mV	Vout < 3.3V, Oscilloscope bandwidth: 20 MHz
		75mV	Vout ≥ 3.3V, Oscilloscope bandwidth: 20 MHz
<b>Input characteristics</b>			
Operating input voltage	NAP03S06-C, NAP03S06-B, NAP03S06-A, NAP03S06-F, NAP03S15-A, NAP03S16-A	3.0 - 5.5V	-
	NAP03S06-E	3.0 - 3.6V	
	NAP03S06-D	3.15 - 3.6V	
	NAP05S06-A, NAP05S06-B, NAP05S06-C, NAP05S10-A	4.5 - 5.5V	
	NAP03S04-A	3.0 - 4.0V	
	NAP12S16-A	10 - 14V	
<b>Protection characteristics</b>			
Input UVP	NAP03S06-C, NAP03S06-E, NAP03S06-B, NAP03S06-A, NAP03S06-F, NAP05S06-B, NAP03S06-D, NAP05S06-A, NAP05S06-C, NAP03S15-A, NAP03S16-A	Turn on: 1.95 - 2.15V Turn off: 1.8 - 2.0V	Hysteresis: 0.15V
	NAP05S10-A	Turn on: 3.6 - 4.0V Turn off: 1.87 - 3.8V	Hysteresis: 0.1V
	NAP12S16-A	Turn on: 8.25 - 9.2V Turn off: 7.25 - 8.1V	Hysteresis: 1.0V
	NAP03S04-A	NA	Without this function
Output OVP	NAP05S10-A, NAP12S16-A	105% - 125%	Self-recovery
	others	NA	Without this function
Over current Protection	NAP03S06-C, NAP03S06-E, NAP03S06-B, NAP03S06-A, NAP03S06-F, NAP05S06-B, NAP03S06-D, NAP05S06-A, NAP05S06-C	7 - 18A	Hiccup
	NAP05S10-A	12 - 30A	
	NAP03S15-A, NAP12S16-A	17 - 40A	
	NAP03S16-A	26 - 47A	
	NAP03S04-A	NA	Without this function
Over temperature Protection	ALL	115 - 135°C	Converter will reset when over temperature condition is removed Hysteresis: 5°C
	NAP03S04A	NA	Without this function
<b>Absolute maximum rang</b>			
Input voltage (Continuous)	NAP03S06-C, NAP03S06-B, NAP03S06-A, NAP03S06-F, NAP05S06-B, NAP05S06-A, NAP05S06-C, NAP03S15-A, NAP03S16-A	5.5V	-
	NAP03S06-E, NAP03S04-A, NAP03S06-D	4V	
	NAP05S10-A	6V	
	NAP12S16-A	16V	
	Operating ambient temperature	ALL	
Storage temperature	ALL	-55 - 125°C	
<b>Other characteristics</b>			
Mean time between failures (MTBF)	ALL	1.5 million hours	Telcordia SR332, 80% load, 300LFM, TA=40°C

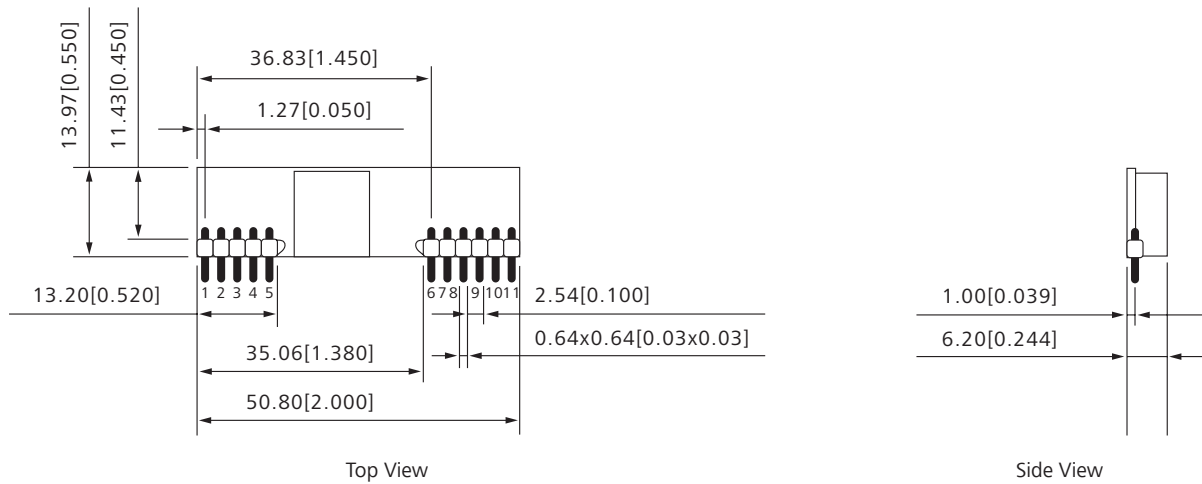
## Model Selector

Model	Input Voltage	Output Voltage	Output Current	Output Power	Efficiency	Mechanical Diagram
NAP03S06-E	3.0 - 3.6V	1.8V	6A	10W	90.0%	Diagram 2
NAP03S06-A	3.0 - 5.5V	2.1V	6A	12W	93.0%	Diagram 1
NAP03S06-D	3.15 - 3.6V	2.5V	6A	15W	95.0%	Diagram 1
NAP05S06-A	4.5 - 5.5V	3.3V	6A	20W	92.5%	Diagram 1
NAP05S06-C	4.5 - 5.5V	3.3V	6A	20W	92.5%	Diagram 2
NAP05S10-A	4.5 - 5.5V	3.3V	10A	33W	95.5%	Diagram 1
NAP03S04-A	3.0 - 4.0V	5.0V	4A	20W	90.5%	Diagram 3
NAP03S16-A	3.0 - 5.5V	0.75 - 3.3V	16A	50W	92.0%	Diagram 1
NAP12S16-A	10 - 14V	0.85 - 5.0V	16A	80W	92.0%	Diagram 1

## Mechanical Diagram

Unit: mm [in.]

Diagram 1

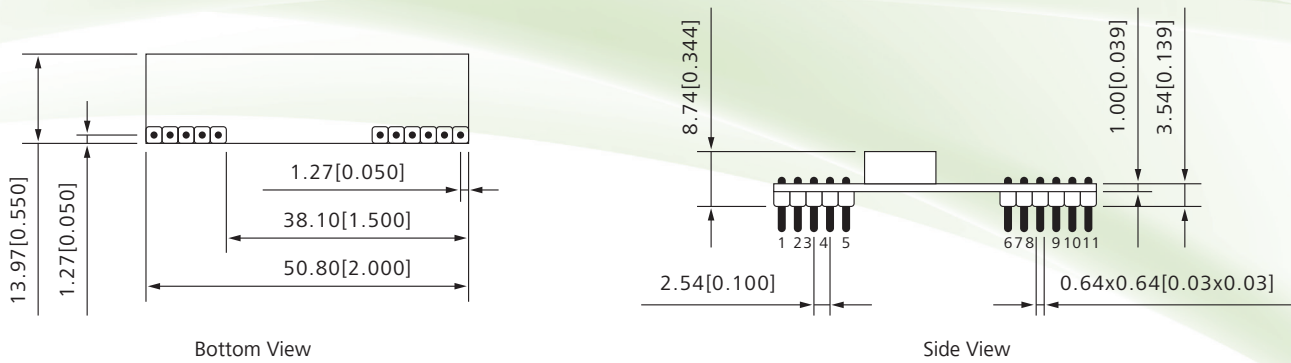


### Pin Description

Pin No.	Function	Pin No.	Function
1	Vout	7	Vin
2	Vout	8	Vin
3	Sense	9	Power good
4	Vout	10	Trim
5	GND	11	ON/OFF
6	GND		

\* NAP03S16-A, NAP05S10-A and NAP12S16-A without Pin9

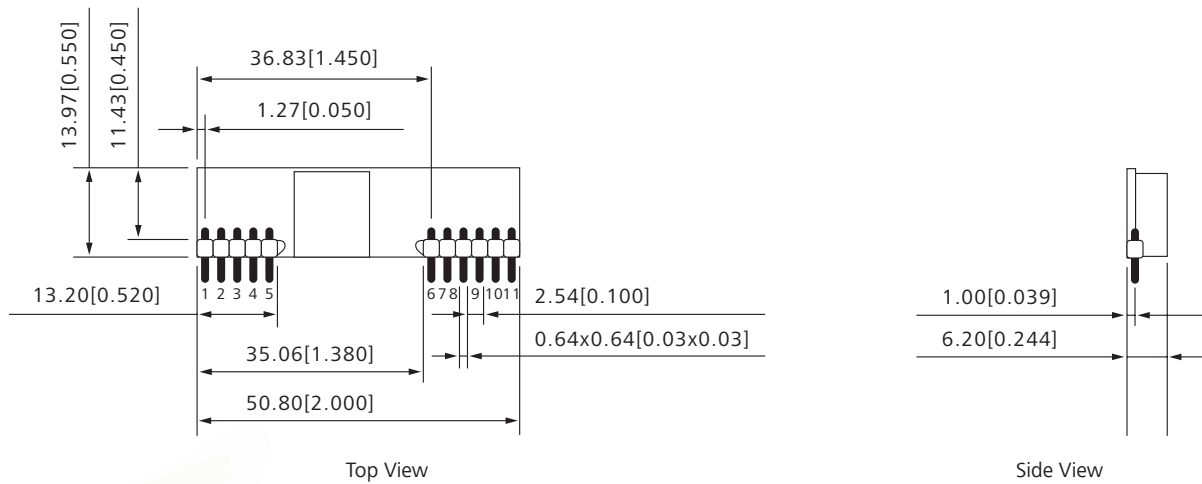
Diagram 2



## Pin Description

Pin No.	Function	Pin No.	Function
1	Vout	7	Vin
2	Vout	8	Vin
3	Sense	9	NA
4	Vout	10	Trim
5	GND	11	ON/OFF
6	GND		

Diagram 3



## Pin Description

Pin No.	Function	Pin No.	Function
1	Vout(+)	7	Vin(-)
2	Vout(+)	8	Vin(+)
3	Vout(+)	9	Vin(+)
4	Vout(-)	10	Vin(+)
5	Vout(-)	11	Vin(+)
6	Vin(-)		

## Tolerances

Dimensions: X.X±0.5mm[X.XX±0.02 in.]

X.XX±0.25mm[X.XXX±0.010 in.]