

1A SYNCHRONOUS BUCK SWITCHER WITH FET ON BOARD

Production Datasheet

Pb Free Product
DESCRIPTION

The NX4108-18 is a current mode PWM buck switcher with internal compensation and fixed 1.8V output voltage, can provide up to 1A output current with FET on board. It operates from 2.8V to 5.5V which is ideal for the application with single cell Li-Ion battery as well as other 3.3V input bus supply applications. Switching frequency is fixed 1MHz, small surface mount inductors and capacitors are allowed to use, make it good for portable applications.

NX4108-18 is available in 5-pin SOT23 package.

- 2.8 to 5.5V Input Voltage
- Fixed 1.8V Output Voltage
- 5-pin SOT23 Package
- 1MHz Fixed Frequency PWM Operation
- Internally-compensated Current Mode Controller
- Peak Current Limit with HICCUP Feature and Over Temperature Protection
- Prebias Start-up Operation
- Pb-free and RoHS Compliant

FEATURES
APPLICATIONS

- Li-Ion Battery Operated Portable System
- Cellular Phones
- Portable Applications
- USB Devices

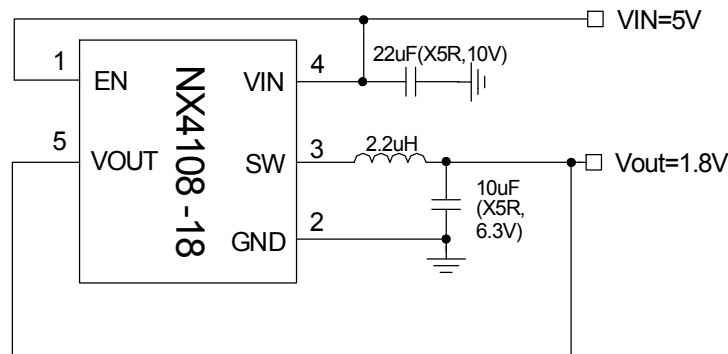
TYPICAL APPLICATION


Figure1 - Typical application of NX4108-18

ORDERING INFORMATION

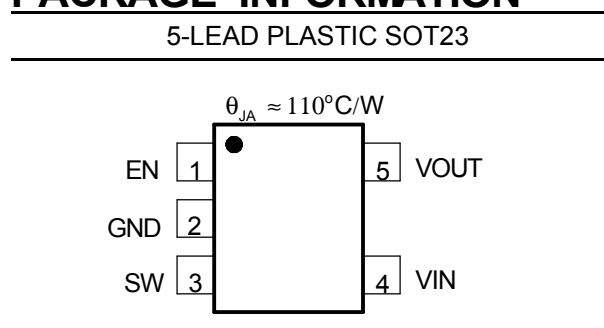
| Device | Temperature | Package | Pb-Free |
|----------------|---------------|----------|---------|
| NX4108-18CZ1TR | -40°C to 85°C | SOT23-5L | Yes |

ABSOLUTE MAXIMUM RATINGS

| | |
|--|---------------------|
| VIN to GND | -0.3V to 6V |
| SW,VOUT,EN to GND | -0.3V to VIN + 0.3V |
| ESD Susceptibility | 500V |
| Lead Temperature(Soldering,10sec.) | 300°C |
| Storage Temperature Range | -55°C to 150°C |
| Operating Junction Temperature Range | -40°C to 150°C |

CAUTION: Stresses above those listed in "ABSOLUTE MAXIMUM RATINGS", may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

PACKAGE INFORMATION



ELECTRICAL SPECIFICATIONS

$V_{IN}=3.5\text{V}, T_A=25^{\circ}\text{C}$, unless otherwise specified.

| PARAMETER | SYM | Test Condition | Min | TYP | MAX | Units |
|--------------------------------|-----------------------|--|------|------|-------|-------|
| V_{OUT} Voltage | | | | | | |
| V _{OUT} Voltage | V _{OUT} | | 1.77 | 1.8 | 1.822 | V |
| Line Regulation | | | | | | |
| Line Regulation | | VIN=2.8V to 5.5V, I _{OUT} =10mA | | 3 | | mV |
| VIN UVLO | | | | | | |
| VIN Rising Threshold | | | 2.3 | 2.5 | 2.8 | V |
| VIN Falling Threshold | | | | 2.3 | | V |
| Supply Voltage(VIN) | | | | | | |
| VIN Input Voltage Range | V _{IN} | | 2.8 | | 5.5 | V |
| Shutdown Current | I _{shutdown} | EN=GND | | 1 | 2.5 | uA |
| Quiescent Current | I _q | No Load, switching | | 8.5 | | mA |
| Oscillator (Rt) | | | | | | |
| Frequency | F _s | | 849 | 1000 | 1185 | kHz |
| Max Duty Cycle | | | | 85 | | % |
| Min ON Time | | | | 100 | | nS |
| SS | | | | | | |
| Soft Start Time | T _{ss} | | | 500 | | uS |
| Current Limit | | | | | | |
| Current Limit Threshold | | | | 1.8 | | A |

| PARAMETER | SYM | Test Condition | Min | TYP | MAX | Units |
|-----------------------------|-----|----------------|-----|-----|-----|-------|
| Current Limit | | | | | | |
| Current Limit Threshold | | | | 1.8 | | A |
| Thermal Shutdown | | | | | | |
| Thermal shutdown trip point | | | | 155 | | °C |
| Hysteresis | | | | 15 | | °C |
| Internal Switch | | | | | | |
| Rdson of Control FET | | VIN=5V | 400 | | | mohm |
| | | VIN=3.3V | | 480 | | |
| Rdson of Synchronous FET | | VIN=5V | 300 | | | mohm |
| | | VIN=3.3V | | 360 | | |
| Enable | | | | | | |
| En low Threshold voltage | | | | | 0.4 | V |
| En high Threshold voltage | | | 1.4 | | | V |

PIN DESCRIPTIONS

| PIN SYMBOL | PIN DESCRIPTION |
|------------|--|
| SW | SW output. Junction of the internal high-side and low-side power MOSFETs, and output inductor. |
| GND | Ground Connection for Chip. Connect GND with large copper areas to the input and output supply returns, and negative terminals of the input and output capacitors. |
| VOUT | Sense output voltage . |
| VIN | Supply voltage input for switcher |
| EN | Enable input. Set this pin to GND or less than 0.4V will shut down the regulator Enable signal can not be high when VIN is low |

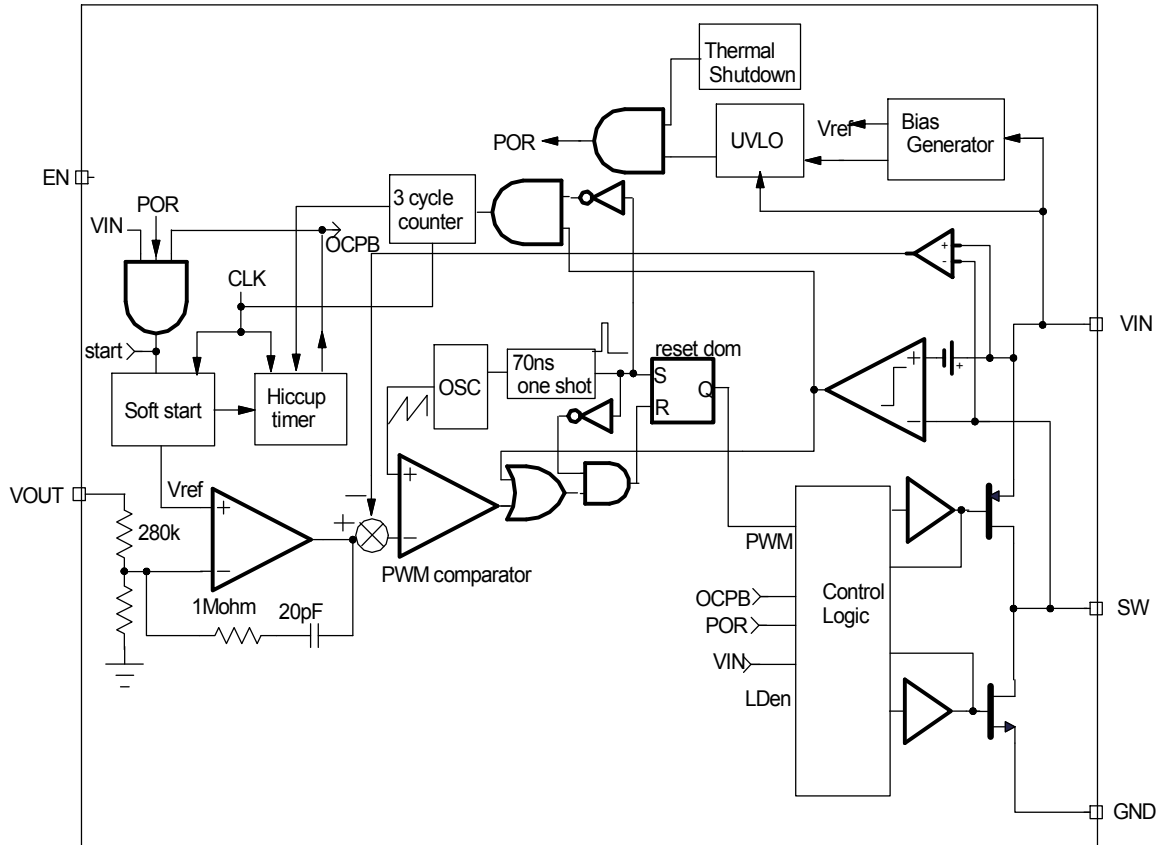
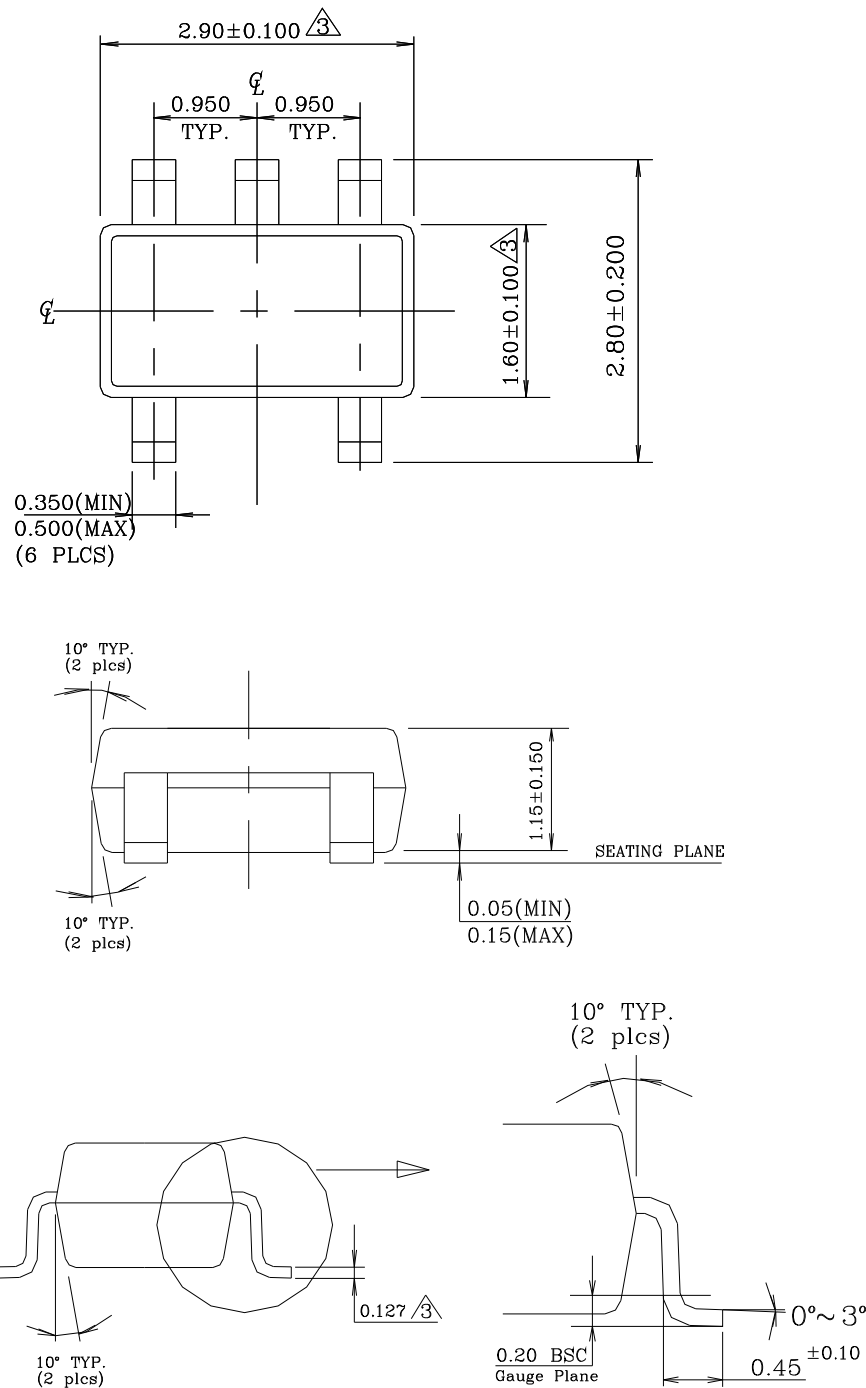
BLOCK DIAGRAM


Figure 2 - Simplified block diagram of the NX4108-18

SOT23-5 Outline Dimensions


NOTE:

1. Dimensions and tolerances are as per ANSI Y14.5M, 1982.
2. Package surface to be matte finish VDI 11~13.

$\Delta 3$ Dimensions are exclusive of mold flash and gate burr