For portable device applications

NX30P0121UK High-Voltage Power Switch

Current-sensing output and integrated protection features make the NXP 3 A, 29 V back-to-back power switch an ideal choice for portable devices with demanding power needs and limited space.

OVERVIEW

The NX30P0121UK device is an advanced 3 A back-to-back reverse blocking and high-voltage (2.5 V to 20 V, 29 V max tolerance) power switch. It includes overtemperature protection, undervoltage lock-out (UVLO), V_{OUT} over-voltage lockout (OVLO) with a OVLO threshold level-adjustable pin. It is designed to automatically isolate the power terminals when a fault condition occurs. Both V_{IN} and V_{OUT} pins have 29 V max tolerance in shutdown mode.

The ISNS pin allows the system to measure the amount of current flowing through the power switch without adding a series-sensing resistor. This ISNS pin current mirror sensing output has a proportional ratio of 1:1053 to the current flowing through the power switch.

The entire device is enabled by an external EN pin. When the EN pin is driven LOW, the device is off. When EN pin is driven HIGH and VIN is valid, the power switch will turn on with soft starts slew rate control to limit inrush current.

NX30P0121UK POWER SWITCH SCHEMATIC
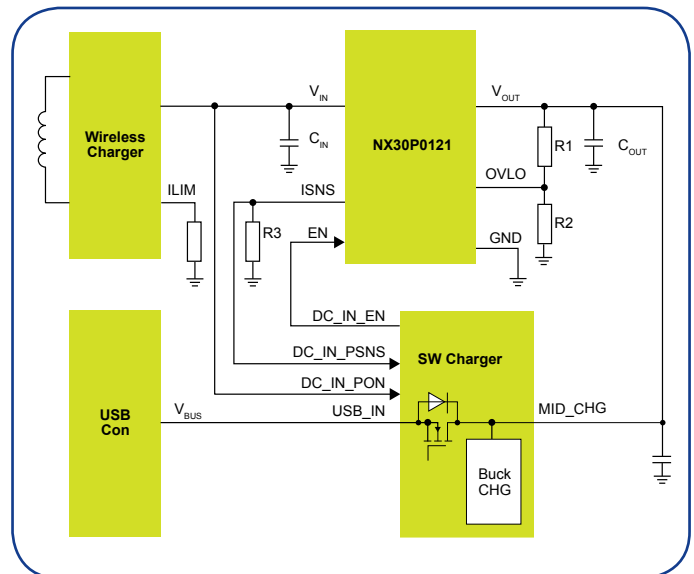
KEY FEATURES AND BENEFITS

▶ Wide supply voltage ranges from 2.5 V to 20 V

▶ Switch maximum 3 A continuous current

▶ 29 V tolerance on both V_{IN} and V_{OUT} pin

▶ 53 mΩ (typical) Low ON resistance

▶ Adjustable overvoltage protection threshold, power up default: 14.5 V

▶ Built-in slew rate control for inrush current limit

▶ ISNS to monitor input current from V_{IN} to V_{OUT}

▶ Protection circuitry
  – Overtemperature Protection
  – Overvoltage Protection
  – Undervoltage Lockout

▶ ESD protection
  – HBM ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 2 kV
  – CDM (JESD22-C101E)

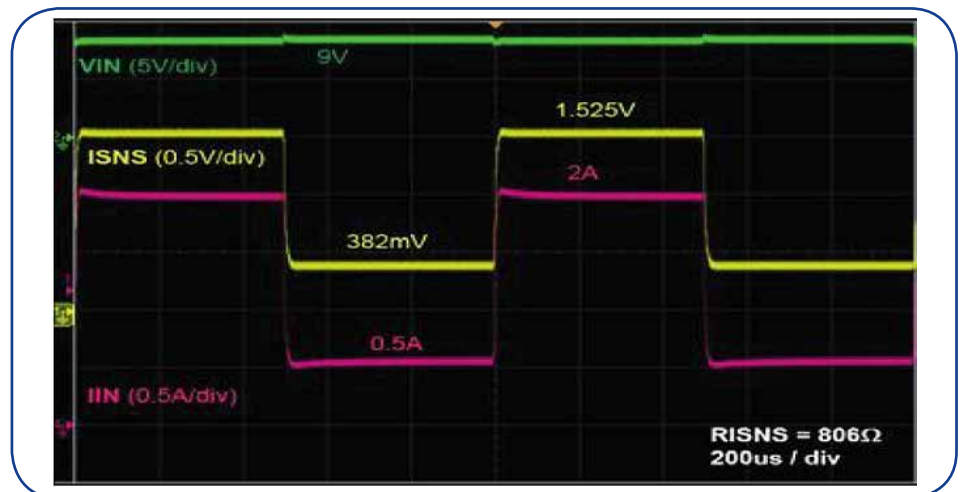▶ Specified from -40 °C to +85 °C

▶ WLCSP 12 bumps, 1.65 x 1.25 x 0.525 mm

TARGET APPLICATIONS

▶ Smartphones

▶ Tablets

▶ Portable Devices

ISNS OUTPUT STARTUP TIMING DIAGRAM
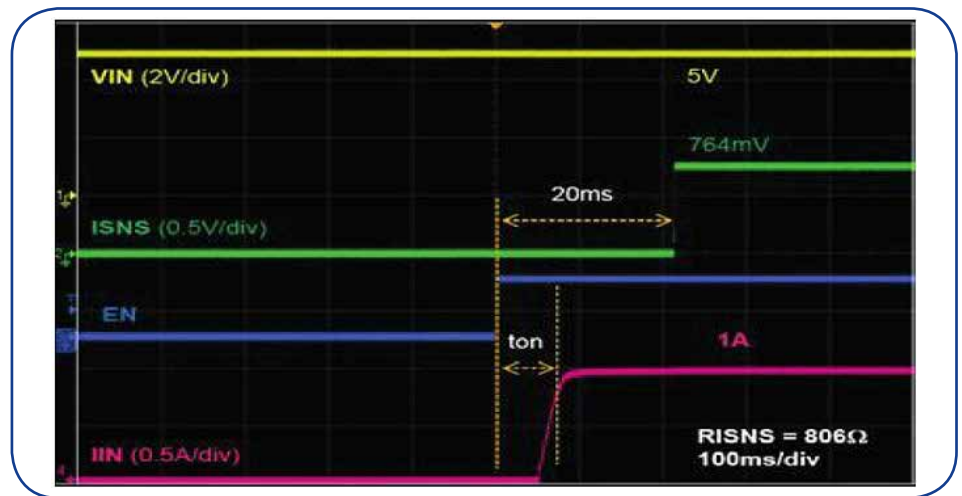
ISNS OUTPUT RESPONSE ON V_{IN} CHANGE

ISNS OUTPUT RESPONSE ON LOAD CHANGE