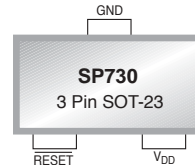


Microprocessor Supervisory Circuit with Pull Up Resistor

FEATURES

- Holds Microcontroller in Reset
- Reset Microcontroller during power loss
- 4.375 and 3.075 Voltage Trip Points
- Active Low $\overline{\text{RESET}}$ Pin
- Internal Pull-up Resistor
- Holds $\overline{\text{RESET}}$ for 350ms (typical)
- $\overline{\text{RESET}}$ valid down to $V_{\text{DD}} 1.0\text{V}$
- 45 μA Typical Operating Current
- Offered in a 3 Pin SOT-23 Package



Now Available in Lead Free Packaging

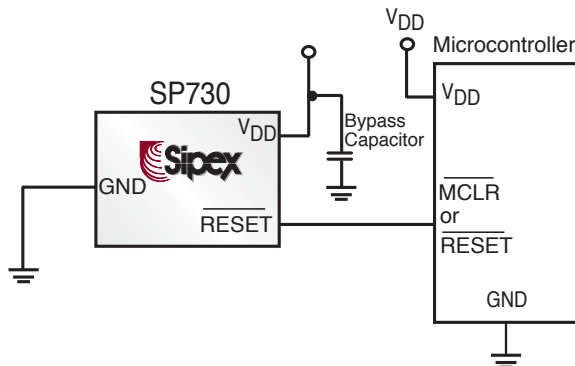
APPLICATIONS

- Portable Electronic Devices
- Electrical Power Meter
- Computer System Board
- Modem

DESCRIPTION

The SP730 is a voltage supervisory device designed to keep a microcontroller in reset until the system voltage has reached the proper level and stabilized. It also operates as protection from brown-out conditions when the supply voltage drops below a safe operating level. The SP730 has an internal 5k pull-up resistor. The device has an active low $\overline{\text{RESET}}$ pin and will assert the $\overline{\text{RESET}}$ signal whenever the voltage on the V_{DD} pin is below the trip-point voltage. The part is available in a small 3 pin SOT-23 package. Contact factory for other trip voltage options.

TYPICAL APPLICATION CIRCUIT



ABSOLUTE MAXIMUM RATINGS

| | |
|---|-------------------------|
| V_{DD} | 6.0V |
| All inputs and outputs w.r.t. GND | -0.6 to V_{DD} + 1.0V |
| Storage Temperature | -65°C to +150°C |
| Ambient Temperature with power applied..... | -65°C to +125°C |
| ESD Protection on all pins | ≥2kV |

These are stress ratings only and functional operation of the device at these ratings or any other above those indicated in the operation sections of the specifications below is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

ELECTRICAL CHARACTERISTICS

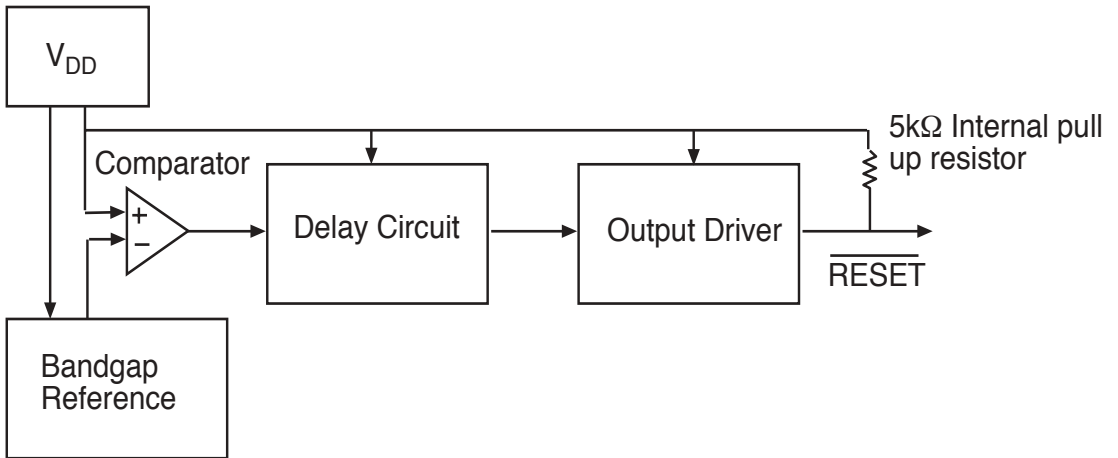
$V_{DD} = 1.0V - 5.5V$; -40°C to 85°C. The ♦ denotes the specifications which apply over the full operating temperature range, unless otherwise specified.

| Parameter | Symbol | Min. | Typ. | Max. | | Units | Conditions |
|---|-------------|---------------|-------|------|---|------------|--|
| Operating Voltage Range | V_{DD} | 1.0 | | 5.5 | ♦ | V | |
| V_{DD} Value to $\overline{\text{RESET}}$ | V_{DDMIN} | 1.0 | | | ♦ | V | |
| Operating Current | I_{DD} | | 45 | 60 | ♦ | μA | $V_{DD} = 5.5V$ (no load) |
| V_{DD} Trip Point | V_{TRIP} | 3.0 | 3.075 | 3.15 | ♦ | V | |
| | | 4.25 | 4.375 | 4.50 | ♦ | | |
| Threshold Hysteresis | V_{HYS} | | 50 | | ♦ | mV | |
| $\overline{\text{RESET}}$ Low Level Output Voltage | V_{OL} | | | 0.6 | ♦ | V | $I_{OL} = 8.5mA$, $V_{DD} = V_{TRIP MIN}$ |
| $\overline{\text{RESET}}$ High Level Output Voltage | V_{OH} | $V_{DD} - .7$ | | | ♦ | V | $I_{OH} = 50\mu A$, $V_{DD} > V_{TRIP MAX}$ |
| Pull up Resistor | | | 5 | | ♦ | K Ω | |
| V_{DD} Detect to $\overline{\text{RESET}}$ Inactive | t_{RPU} | 150 | 350 | 700 | ♦ | ms | |
| V_{DD} Detect to $\overline{\text{RESET}}$ | t_{RPD} | | 10 | | ♦ | μS | V_{DD} ramped from $V_{TRIP MAX}$ ($V_{TRIP MAX} + 250mV$) to ($V_{TRIP MIN} - 250mV$) |

PIN DESCRIPTION

| PIN NUMBER | PIN NAME | 3 PIN SOT-23 DESCRIPTION |
|------------|---------------------------|--|
| 1 | $\overline{\text{RESET}}$ | Active Low. This pin goes low whenever V_{DD} falls below the reset threshold. |
| 2 | V_{DD} | Supply input. |
| 3 | GND | Ground. |

FUNCTIONAL DIAGRAM



TIMING DIAGRAM

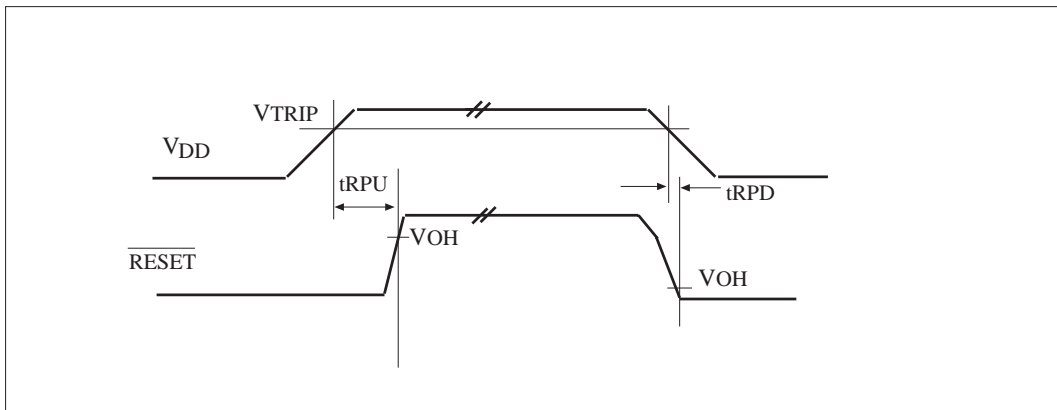
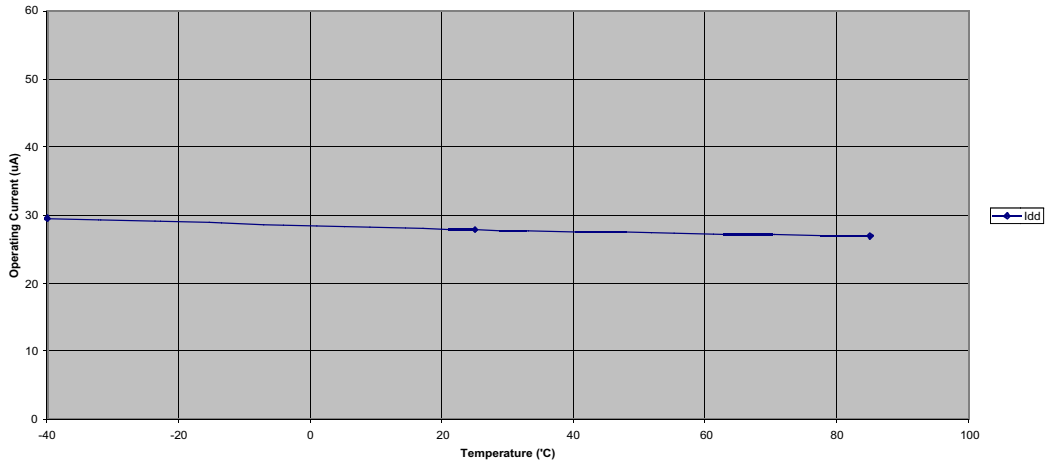


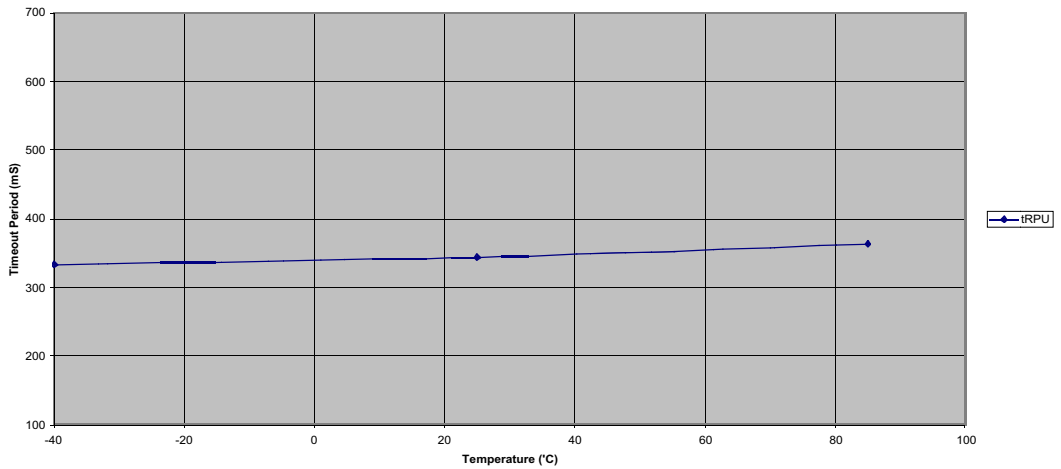
Figure 1: SP730 Timing Diagram

TYPICAL PERFORMANCE CHARACTERISTICS

I_{dd} vs Temperature

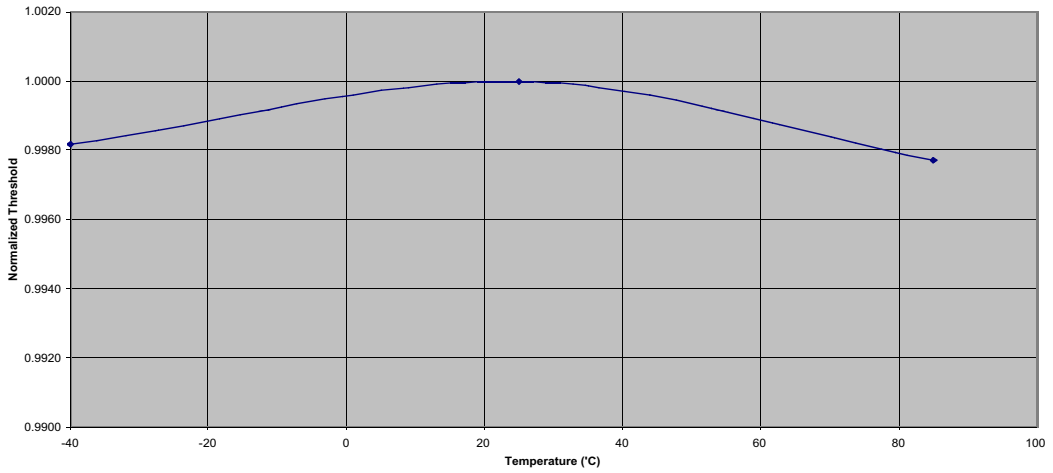


tRPU vs Temperature

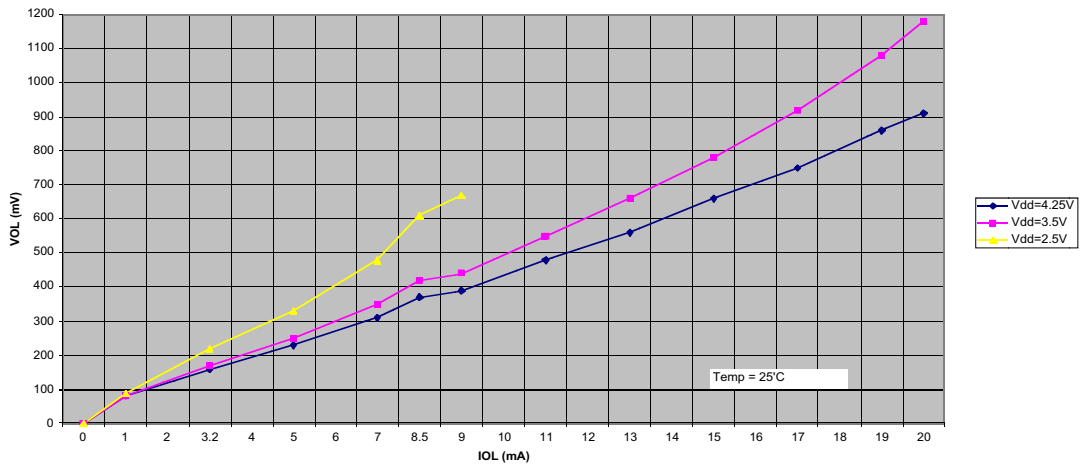


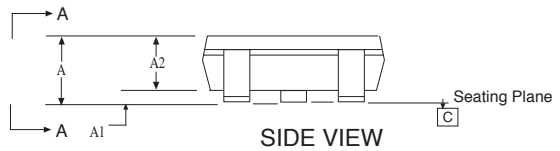
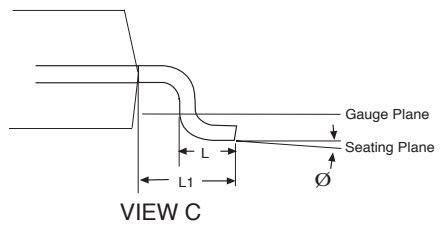
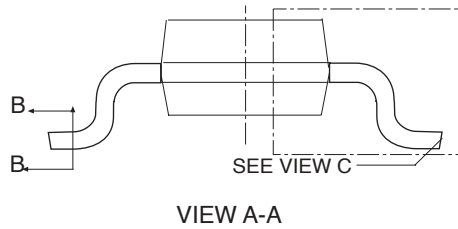
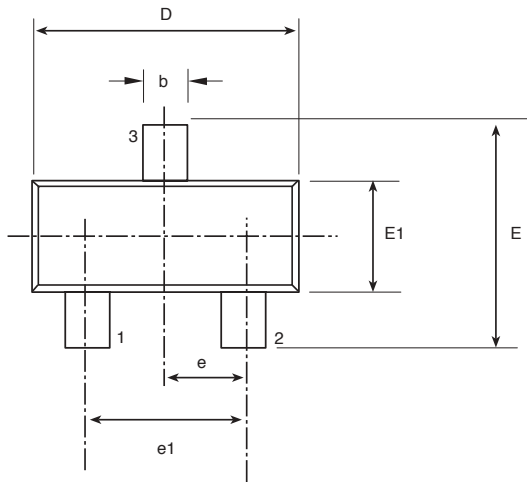
TYPICAL PERFORMANCE CHARACTERISTICS

Normalized VTRIP vs Temperature



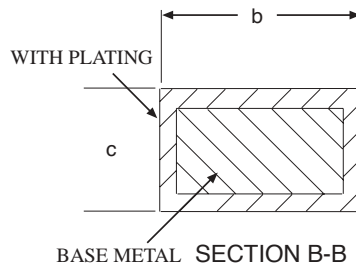
VOL vs IOL





| 3 Pin SOT-23 JEDEC TO-236 (AB) Variation | | | |
|--|----------|------|------|
| SYMBOL | MIN | NOM | MAX |
| A | 0.89 | - | 1.12 |
| A1 | 0.01 | - | 0.1 |
| A2 | 0.88 | 0.95 | 1.02 |
| b | 0.3 | - | 0.5 |
| c | 0.08 | - | 0.2 |
| D | 2.8 | 2.9 | 3.04 |
| e | 0.95 BSC | | |
| e1 | 1.90 BSC | | |
| E | 0.95 | - | 2.64 |
| E1 | 1.2 | 1.3 | 1.4 |
| L | 0.4 | 0.5 | 0.6 |
| L1 | 0.54 REF | | |
| Ø | 0° | - | 8° |

Note: Dimensions in (mm)



ORDERING INFORMATION

| Part number | Top Mark | Temperature | Package |
|-----------------------|-----------------|--------------------|----------------|
| SP730EK-4.375..... | V3WW..... | -40°-85°..... | 3 Pin SOT-23 |
| SP730EK-4.375/TR..... | V3WW..... | -40°-85°..... | 3 Pin SOT-23 |
| SP730EK-3.075..... | M4WW..... | -40°-85°..... | 3 Pin SOT-23 |
| SP730EK-3.075/TR..... | M4WW..... | -40°-85°..... | 3 Pin SOT-23 |

Contact factory for other trip voltage options.

Available in lead free packaging. To order add "-L" suffix to part number.

Example: SP730EK-4.375/TR = standard; SP730EK-L-4.375/TR = lead free

/TR = Tape and Reel

Pack quantity is 2500 for SOT-23.

 [CLICK HERE TO ORDER SAMPLES](#) 



ANALOG EXCELLENCE

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