SUPPLY VOLTAGE

MONITOR

ISSUE 2 – JANUARY 2003

DEVICE DESCRIPTION

The ZSM530 is a three terminal under voltage monitor circuit for use in microprocessor systems. The threshold voltage of the device has been set to 4.3 volts making it ideal for 5 volt circuits.

Included in the device is a precise voltage reference and a comparator with built in hysteresis to prevent erratic operation. The ZSM530 features an open collector output capable of sinking at least I0mA which only requires a single external resistor to interface to following circuits.

Operation of the device is guaranteed from one volt upwards, from this level to the device threshold voltage the output is held low providing a power on reset function. Should the supply voltage, once established, at any time drop below the threshold level then the output again will pull low.

The device is available in a TO92 package for through hole applications as well as SOT223 for surface mount requirements.

ZSM530

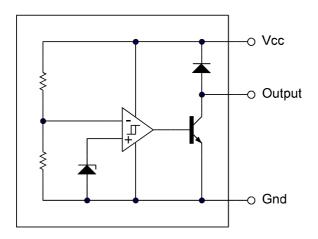
FEATURES

- SOT223 and TO92 packages
- Power on reset generator
- Automatic reset generation
- Low standby current
- Guaranteed operation from 1 volt
- Wide supply voltage range
- Internal clamp diode to discharge delay capacitor
- 4.3 volt threshold for 5 volt logic
- 20mV hysteresis prevents erratic operation

APPLICATIONS

- Microprocessor systems
- Computers
- Computer peripherals
- Instrumentation
- Automotive
- Battery powered equipment

SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATING

-1 to 10V Input Supply Voltage Offstate Output Voltage 10V **Onstate Output** Sink Current(Note 1) Clamp Diode Forward Current(Note 1) 100mA **Operating Junction** Temperature 150°C **Operating Temperature** -55 to 150°C Storage Temperature

Internally limited -40 to 85°C

Power Dissipation TO92 SOT223

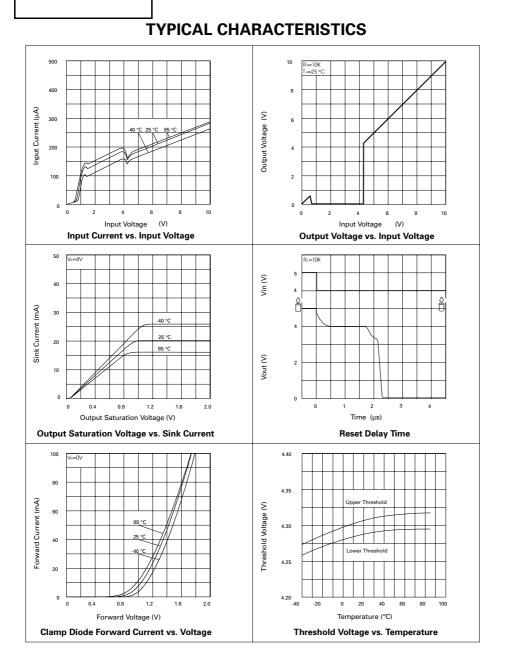
780mW 2W(Note 2)

TEST CONDITIONS (T_{amb}=25°C for typical values, T_{amb}=-40 to 85°C for min/max values (Note3))

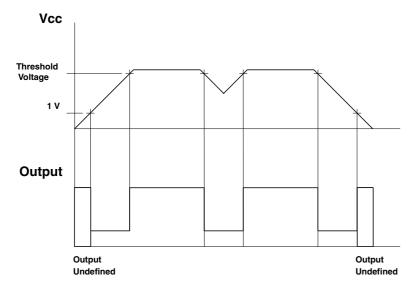
COMPARATOR PARAMETER SYMBOL MIN TYP. MAX. UNITS **Threshold Voltage** High state output (Vcc increasing) 4.2 4.31 4.4 V V_{IH} Threshold Voltage Low state output (V_{cc} decreasing) VIL 4.2 4.29 v 4.4 0.01 0.02 0.05 v Hysteresis V_{H} OUPUT Output sink saturation: VoL v (V_{cc}=3.8V, I_{sink}=8.0mA) 0.46 1.0 v (V_{cc}=3.8V, I_{sink}=2.0mA) 0.15 0.4 $(V_{cc}=1.0V, I_{sink}=0.1mA)$ 0.25 V 10 60 Onstate output sink current 27 mΑ l_{sink} (V_{cc} , Output=3.8V) Offstate output leakage current l_{oh} 0.02 0.5 μA $(V_{cc}, Output=5V)$ 0.6 V Clamp diode forward voltage Vf 1.2 1.5 (I_f=10mA) Propagation delay T_{d} 2 μs (V_{in} 5V to 3.8V, R_I=10k, T_{amb}=25°C) TOTAL DEVICE Operating input voltage range ... 10 to 65 v

Operating input voltage range	V _{cc}	1.0 10 0.5			L
Quiescent input current (V_{cc} =5V)	lq		175	260	μA
Nete					

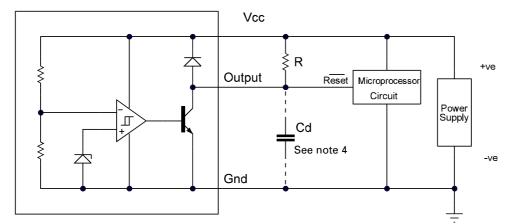
Note: 1. Maximum package power dissipation must be observed. 2. Maximum power dissipation for the SOT223 package is calculated assuming that the device is mounted on a PCB measuring 2 inches square. 3. Low duty cycle pulse techniques are used during test to maintain junction temperatures as close to ambient as possible.



TIMING DIAGRAM



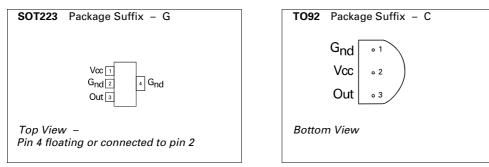
APPLICATION CIRCUIT



Note 4: A time delayed reset can be accomplished with the additional Cd.

$$T_{DY} = RCd \ln \left(\frac{1}{1 - \frac{V_{TH(mpu)}}{V_{in}}}\right) \qquad T_{DY} = Time (Seconds) \\ V_{TH} = Microprocessor Reset Threshold \\ V_{in} = Power Supply Voltage$$

CONNECTION DIAGRAMS



ORDERING INFORMATION

Part Number	Package	Part Mark	
ZSM530G	SOT223	ZSM530	
ZSM530C	TO92	ZSM530	