SUPPLY VOLTAGE MONITOR

ISSUE 4 – JULY 2006

ZM33164-3

DEVICE DESCRIPTION

The ZM33164-3 is a three terminal under voltage monitor circuit for use in microprocessor systems. The threshold voltage of the device has been set to 2.68 volts making it ideal for 3 volt circuits.

Included in the device is a precise voltage reference and a comparator with built in hysteresis to prevent erratic operation. The ZM33164-3 features an open collector output capable of sinking at least l0mA 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.

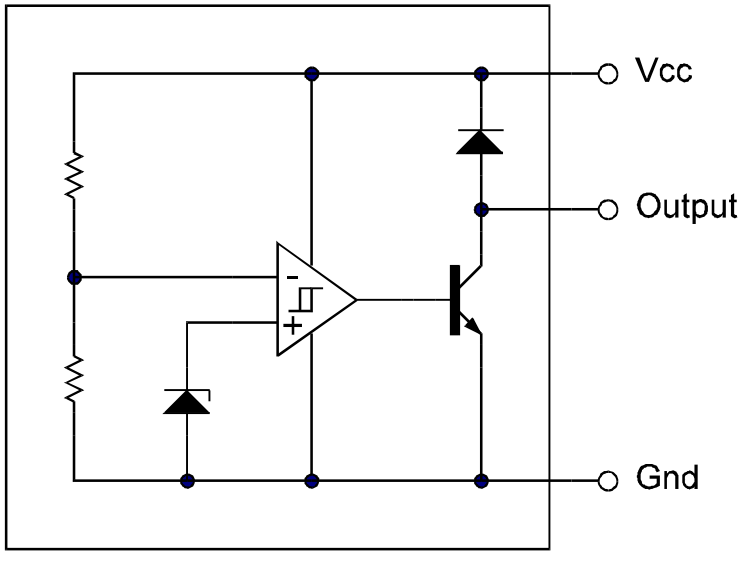
FEATURES

- 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
- 2.68 volt threshold for 3 volt logic
- 60mV hysteresis prevents erratic operation

APPLICATIONS

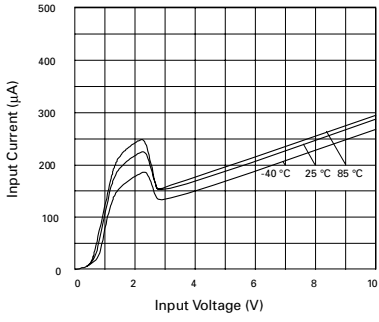
- Microprocessor systems
- Computers
- Computer peripherals
- Instrumentation
- Automotive
- Battery powered equipment

SCHEMATIC DIAGRAM

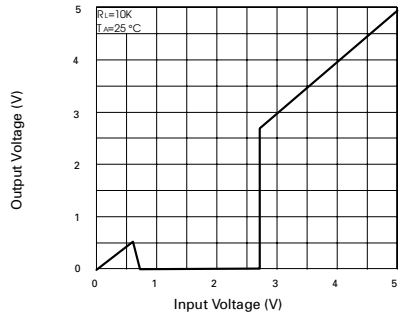


ZETEX SEMICONDUCTORS

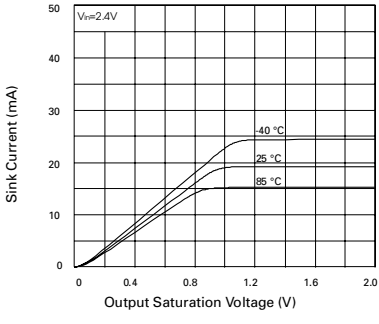
TYPICAL CHARACTERISTICS



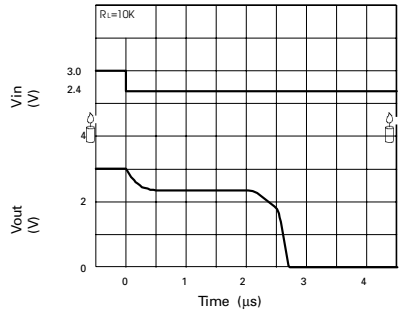
Input Current vs. Input Voltage



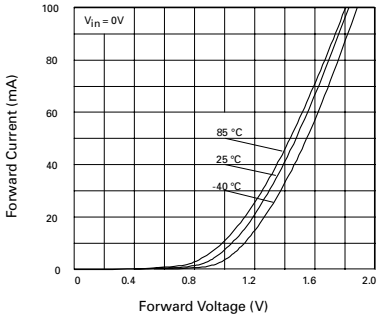
Output Voltage vs. Input Voltage



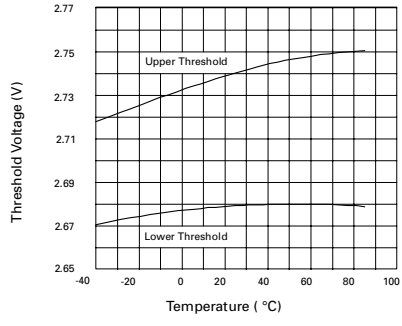
Output Saturation Voltage vs. Sink Current



Reset Delay Time



Clamp Diode Forward Current vs. Voltage



Threshold Voltage vs. Temperature

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ABSOLUTE MAXIMUM RATING

Input Supply Voltage	-1 to 12V	**Power Dissipation**	
Offstate Output Voltage	12V	TO92	780mW
Onstate Output Sink Current(Note 1)	Internally limited	SOT223	2W(Note 2)
Clamp diode Forward Current(Note 1)	100mA		
Operating junction temperature	150°C		
Operating Temperature	-40 to 85°C		
Storage Temperature	-65 to 150°C		

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)	V_{IH}	2.55	2.71	2.8	V
Threshold Voltage Low state output (Vcc decreasing)	V_{IL}	2.55	2.65	2.8	V
Hysteresis	V_H	0.03	0.06	0.15	V

OUTPUT

Output sink saturation:	V_{OL}				
(V_{cc}=2.4V, I_{sink}=8.0mA)			0.46	1.0	V
(V_{cc}=2.4V, I_{sink}=2.0mA)			0.15	0.4	V
(V_{cc}=1.0V, I_{sink}=0.1mA)				0.25	V
Onstate output sink current (V_{cc} , Output=2.4V)	I_{sink}	10	20	60	mA
Offstate output leakage current (V_{cc} , Output=3V)	I_{oh}		0.02	0.5	µA
Clamp diode forward voltage (I_f=10mA)	V_f	0.6	1.2	1.5	V
Propagation delay (V_{in} 3V to 2.4V, R_l=10k, T_{amb}=25°C)	T_d		2.5		µs

TOTAL DEVICE

Operating input voltage range	V_{cc}	1.0 to 10			V
Quiescent input current (V_{cc}=3V)	I_q		125	190	µA

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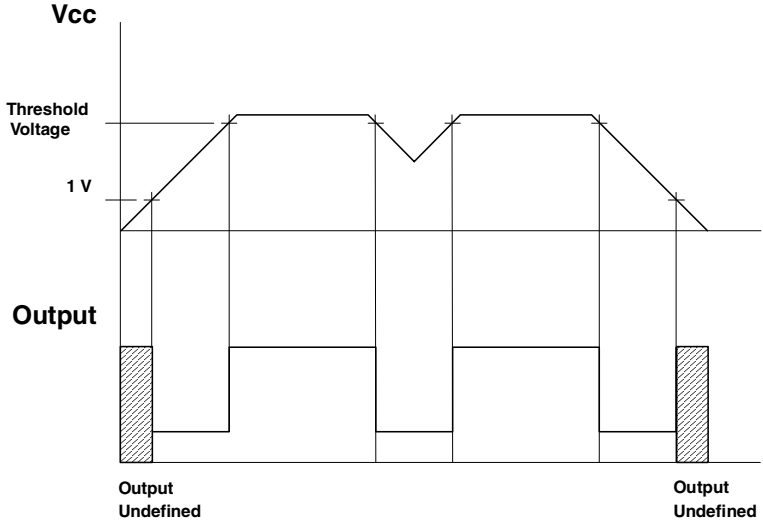
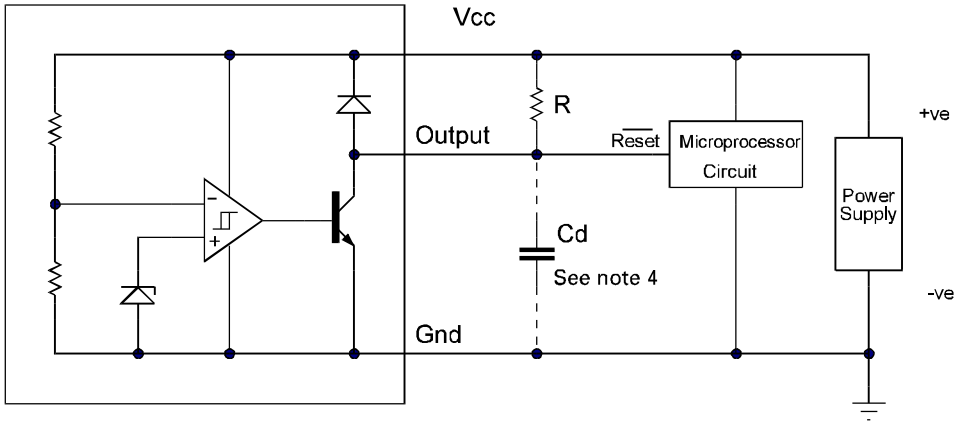
TIMING DIAGRAM



APPLICATION CIRCUIT



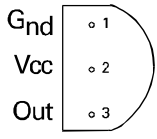
Note 4: A time delayed reset can be accomplished with the additional Cd.

$$T_{DY} = RCd \ln\left(\frac{1}{1 - \frac{V_{TH(mpu)}}{V_{in}}}\right)$$

T_{DY} =Time (Seconds)
V_{TH} =Microprocessor Reset Threshold
V_{in} =Power Supply Voltage

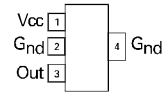
CONNECTION DIAGRAMS

TO92 Package Suffix – C



Bottom View

SOT223 Package Suffix – G



Top View –
Pin 4 floating or connected to pin 2

ORDERING INFORMATION

Part Number	Package	Part Mark
ZM331643G	SOT223	ZM331643
ZM331643C	TO92	ZM331643

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