



**THE DATASHEET OF
ZM331643GTA**



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 10mA 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.

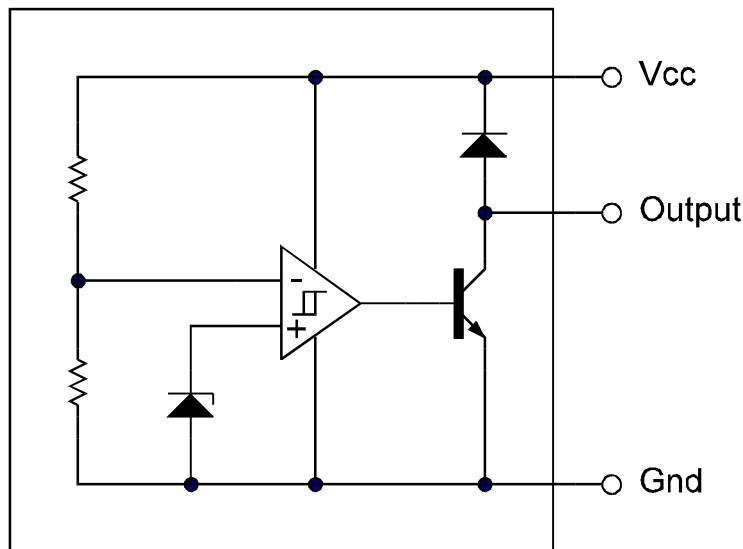
FEATURES

- 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

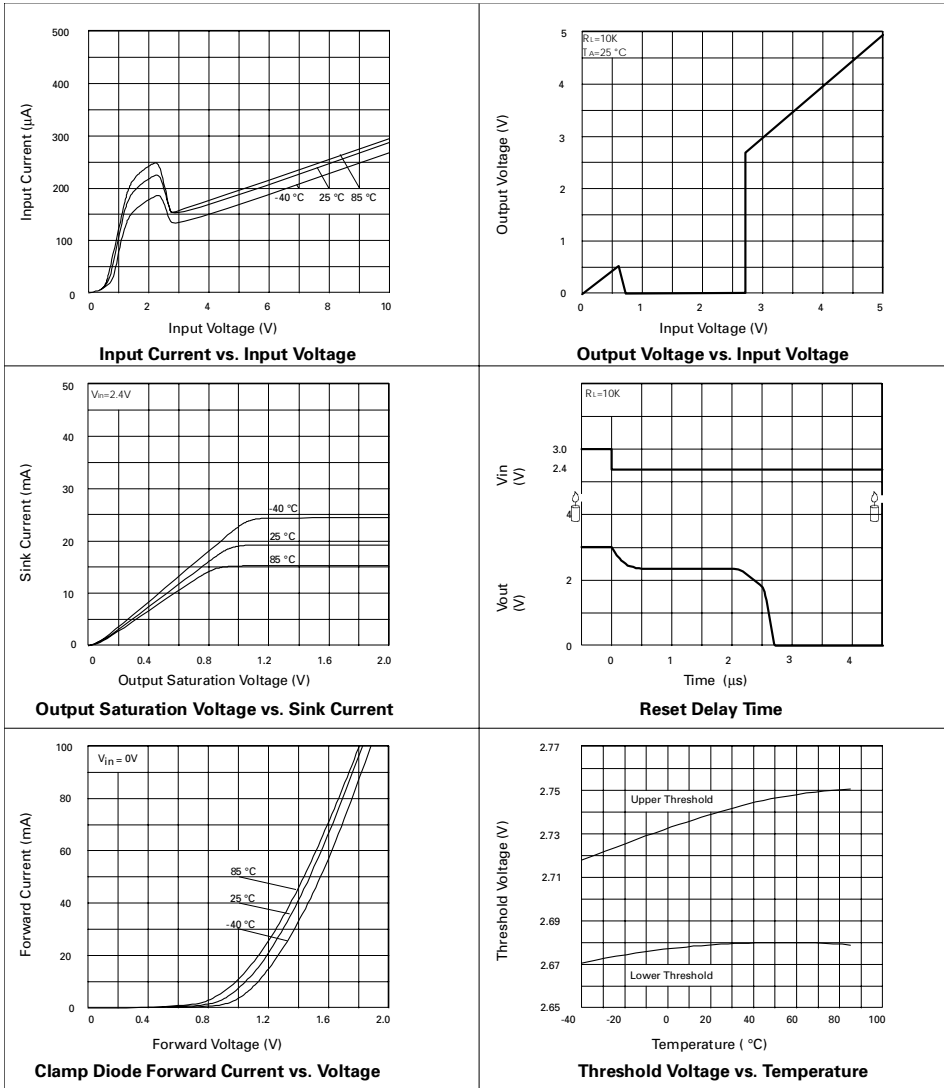
- Microprocessor systems
- Computers
- Computer peripherals
- Instrumentation
- Automotive
- Battery powered equipment

SCHEMATIC DIAGRAM



ZM33164-3

TYPICAL CHARACTERISTICS



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ABSOLUTE MAXIMUM RATING

Input Supply Voltage	-1 to 12V	Power Dissipation	
Offstate Output Voltage	12V	TO92	780mW
Onstate Output		SOT223	2W(Note 2)
Sink Current(Note 1)	Internally limited		
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

($T_{amb}=25^{\circ}\text{C}$ 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 (V_{cc} increasing)	V_{IH}	2.55	2.71	2.8	V
Threshold Voltage Low state output (V_{cc} decreasing)	V_{IL}	2.55	2.65	2.8	V
Hysteresis	V_H	0.03	0.06	0.15	V

OUTPUT

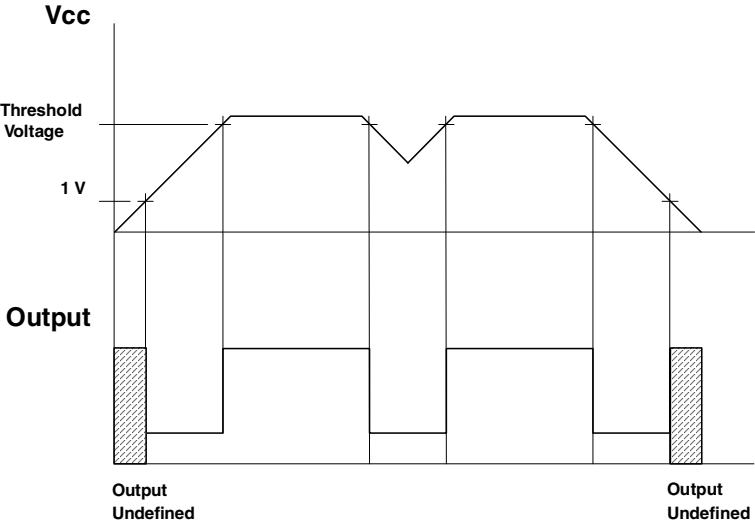
Output sink saturation: ($V_{cc}=2.4\text{V}$, $I_{sink}=8.0\text{mA}$)	V_{OL}		0.46	1.0	V
($V_{cc}=2.4\text{V}$, $I_{sink}=2.0\text{mA}$)			0.15	0.4	V
($V_{cc}=1.0\text{V}$, $I_{sink}=0.1\text{mA}$)				0.25	V
Onstate output sink current (V_{cc} , Output=2.4V)	I_{sink}	10	20	60	mA
Offstate output leakage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

TOTAL DEVICE

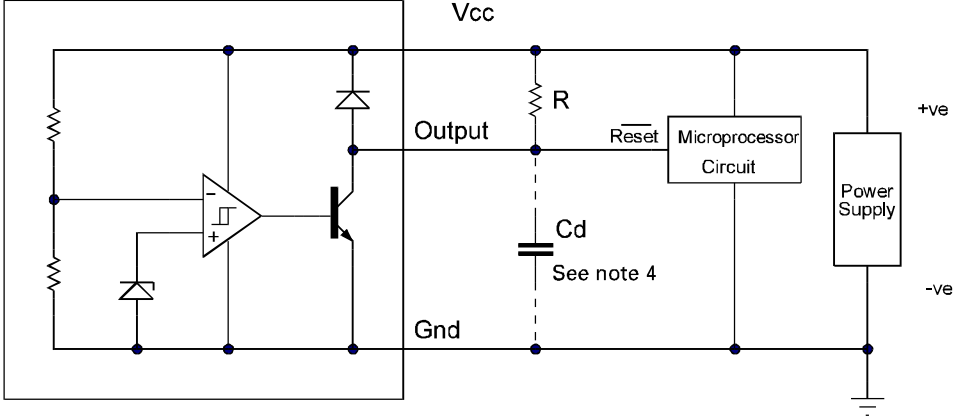
Operating input voltage range	V_{cc}	1.0 to 10			V
Quiescent input current ($V_{cc}=3\text{V}$)	I_q		125	190	μA

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TIMING DIAGRAM



APPLICATION CIRCUIT



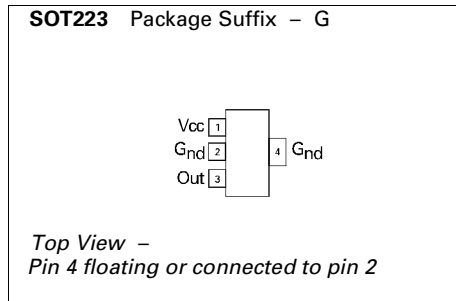
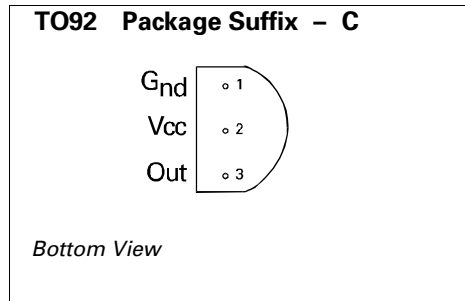
Note 4: A time delayed reset can be accomplished with the additional Cd.

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

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

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CONNECTION DIAGRAMS



ORDERING INFORMATION

Part Number	Package	Part Mark
ZM331643G	SOT223	ZM331643
ZM331643C	TO92	ZM331643

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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