

Introduction

The YB1921 is a cost-effective system supervisor Integrated Circuit (IC) designed to monitor $V_{\rm CC}$ in digital and mixed signal systems and provide a warning signal when the system power supply is out of working range, and a reset signal to the host processor when necessary. No external components are required.

The reset output is driven active within 20µsec of $V_{\rm CC}$ falling through the reset voltage threshold. Reset is maintained active for a minimum of 140msec after $V_{\rm CC}$ rises above the reset threshold. The YB1921 has an active-low RESET output. The output of the YB1921 is guaranteed valid down to $V_{\rm CC}$ =1V.

The YB1921 is optimized to reject fast transient glitches on the V_{CC} line. Low supply current of 18µA (V_{CC} =3.3V) makes these devices suitable for battery powered applications.

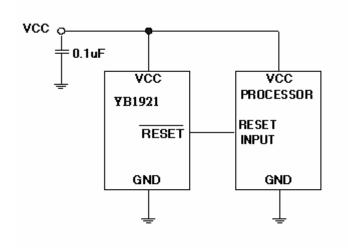
Features

- Precision V_{CC} Monitor for 2.8V, 3.0V, 3.3V, and 5.0V Supplies
- 140msec Guaranteed Minimum RESET Output Duration
- RESET Output Guaranteed to V_{CC}=1.0V
- Low 18µA Supply Current
- V_{CC} Transient Immunity
- Small SOT-23 Package
- No External Components
- Wide Operating Temperature: 0°C to 85°C

Applications

- Computers
- Embedded systems
- Battery powered equipment
- Critical μP power supply monitoring

Application Diagram





Absolute Maximum Ratings (1)

Parameter	Symbol	Value	Unit
		Value	
Input Voltage	V_{CC}	5.5	V
Output Voltage	RESET	-0.3 to (Vcc+0.3)	V
Input Current	_	20	mA
Output Current	I _{OUT}	20	mA
Power Dissipation	P_D	Internally Limited (3)	_
Output Short Circuit Duration	_	Infinite	_
Thermal Resistance, Junction-to-Ambient	Θ _{JA}	230	°C/W
Operating Temperature Range	T_A	0~85	°C
Lead Temperature (Soldering, 10 sec.)	_	260	°C
Junction Temperature	TJ	0 to+125	°C
Storage Temperature	Ts	-60 to+150	°C

Recommended Operating Conditions (2)

Parameter	Symbol	Value			Unit
		Min	Type.	Max	
Power Supply Voltage	V _{cc}	2.0	_	5.5	V
Junction Temperature	T_J	0		+125	°C



Electrical Characteristics

Vcc=5V for L/M/J; 3.3V for T/S; 3.0V for R, TA = 25°C, unless otherwise specified.

Parameter	Symbol	Condition	Min	Тур	Max	Unit	
Input Voltage	V _{CC}	_	2.0	_	5.5	V	
Supply Current	I _{cc}	_	_	18	25	μА	
Reset Threshold	V _{TH}	YB1921L-4.63V	4.54	4.63	4.72		
		YB1921M-4.38V	4.29	4.38	4.47	V	
		YB1921J-4.00V	3.92	4.00	4.08		
		YB1921T-3.08V	3.02	3.08	3.14		
		YB1921S-2.93V	2.87	2.93	2.99		
		YB1921R-2.63V	2.58	2.63	2.68		
Reset Threshold Temperature Coefficient (4)	_	_	_	30	_	ppm/°C	
V_{CC} to Reset Delay $V_{CC} = V_{TH}$ to $(V_{TH} - 100 \text{mV})$	_	_	_	20	_	μsec	
Reset Active Timeout Period	_	_	_	240	_	msec	
RESET Output Voltage Low	V _{OL}	I _{SINK} = 3mA	_	_	0.4	V	
RESET Output Voltage High	V _{OH}	I _{SOURCE} = 800μA	0.8V _{CC}	_	_	V	

Note 1: Exceeding the absolute maximum rating may damage the device.

Note 2: The device is not guaranteed to function outside its operating rating.

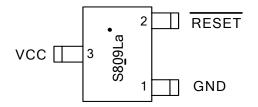
Note 3: The maximum allowable power dissipation at any T_A (ambient temperature) is calculated using: $P_{D (MAX)} =$

 $(T_{J (MAX)} - T_A)/\Theta_{JA}$. Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into thermal shutdown. See "Thermal Consideration" section for details

Note 4: RESET threshold temperature coefficient is the worst case voltage change divided by the total temperature range.



Pin Configuration



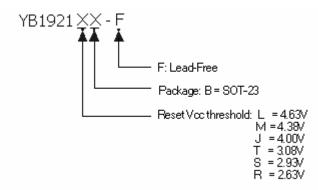
Pin Description

Pin No.	Symbol	Description
1	GND	Ground
2	RESET	RESET output remains low while Vcc is below the reset voltage threshold and for 240msec(typ) after Vcc rises above reset threshold
3	Vcc	Supply Voltage (typ.)

Ordering/Marking Information

Package	Reset Vcc threshold (V)	Part Number	Marking	Marking Information
	4.63	YB1921LB-F	S8 <u>0</u> 9La •	Starting with 0, a bar underlined 0 is for production year 2006, on top of 9 is for year 2007.
	4.38	YB1921MB-F	S8 <u>0</u> 9Ma •	And underlined 9 is for year 2008 The next character is marked on top of 8 for
007.00	4.00	YB1921JB-F	S8 <u>0</u> 9Ja •	2009, and underlined 8 for 2010. The naming pattern continues with consecutive characters for
SOT-23	3.08	YB1921TB-F	S8 <u>0</u> 9Ta •	later years. The last character is the week code. (A-Z: 1-26,
	2.93	YB1921SB-F	S8 <u>0</u> 9Sa •	a-z: 27-52)
	2.63	YB1921RB-F	S8 <u>0</u> 9Ra •	A dot on top right corner is for lead-free process.

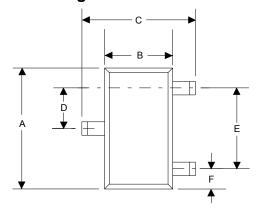
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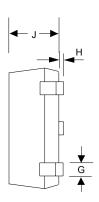


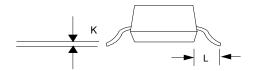


Dimension

Outline Drawing For SOT-23







SYMBOL	INC	HES	MILLIMETERS		
• · · · · · · · · · · · · · · · · · · ·	MIN	MAX	MIN	MAX	
А	0.110	0.120	2.80	3.04	
В	0.047	0.055	1.20	1.40	
С	0.083	0.104	2.10	2.64	
D	0.035	0.040	0.89	1.03	
Е	0.070	0.080	1.78	2.05	
F	0.018	0.024	0.45	0.60	
G	0.015	0.020	0.37	0.51	
Н	0.0005	0.004	0.013	0.10	
J	0.034	0.040	0.887	1.02	
K	0.003	0.007	0.085	0.18	
L	_	0.027	_	0.69	