

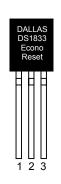
DS1833 5V EconoReset

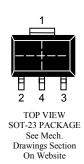
www.maxim-ic.com

FEATURES

- Automatically restarts microprocessor after power failure
- Maintains active-high reset for 350 ms after
 V_{CC} returns to an in-tolerance condition
- Accurate 5%, 10% or 15% microprocessor 5V power supply monitoring
- Reduces need for discrete components
- Precision temperature-compensated voltage reference and voltage sensor
- Low-cost TO-92 package or surface mount SOT-223 package
- Internal 5k pull-up resistor
- Operating temperature of -40°C to +85°C

PIN ASSIGNMENT







PIN DESCRIPTION

PIN 1 Ground PIN 2 Reset PIN 3 V_{CC}

PIN 4 Ground (SOT-223 only)

DESCRIPTION

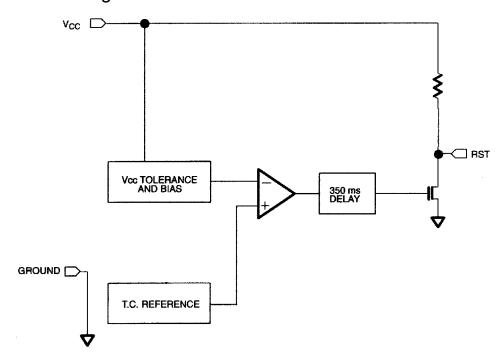
The DS1833 EconoReset uses a precision temperature compensated reference and comparator circuit to monitor the status of the power supply (V_{CC}). When an out-of-tolerance condition is detected, an internal power fail signal is generated which forces reset to the active (high) state. When V_{CC} returns to an intolerance condition, the reset signal is kept in the active state for approximately 350 ms to allow the power supply and processor to stabilize.

OPERATION - POWER MONITOR

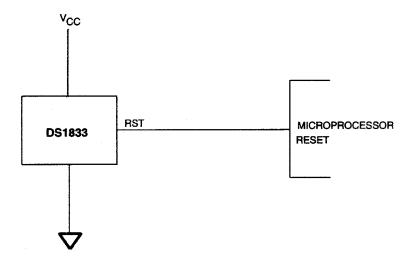
The DS1833 provides the functions of detecting out-of-tolerance power supply conditions and warning a processor-based system of impending power failure. When V_{CC} is detected as out-of-tolerance, as defined by the tolerance of the part selected, the RST signal is asserted. On power-up, RST is kept active for approximately 350 ms after the power supply has reached the selected tolerance. This allows the power supply and microprocessor to stabilize before RST is released.

1 of 5 041002

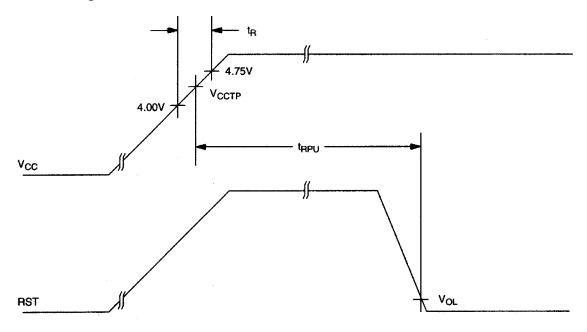
BLOCK DIAGRAM Figure 1



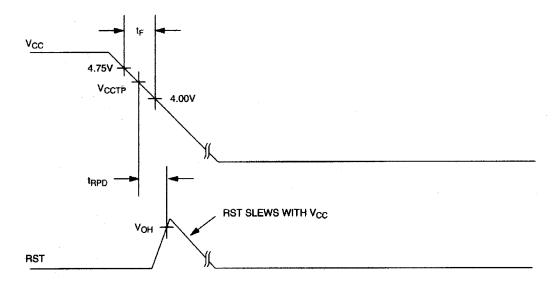
APPLICATION EXAMPLE Figure 2



POWER-UP Figure 3



POWER-DOWN Figure 4



ABSOLUTE MAXIMUM RATINGS*

 $\begin{array}{lll} \mbox{Voltage on V_{CC} Pin Relative to Ground} & -0.5 \mbox{V to } +7.0 \mbox{V} \\ \mbox{Voltage on I/O Relative to Ground} & -0.5 \mbox{V to V_{CC}} +0.5 \mbox{V} \\ \mbox{Operating Temperature} & -40 \mbox{°C to } +85 \mbox{°C} \\ \mbox{Storage Temperature} & -55 \mbox{°C to } +125 \mbox{°C} \\ \mbox{Soldering Temperature} & 260 \mbox{°C for } 10 \mbox{ seconds} \\ \end{array}$

RECOMMENDED DC OPERATING CONDITIONS

 $(-40^{\circ}C \text{ to } +85^{\circ}C)$

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	V_{CC}	1.2	5.0	5.5	V	1

DC ELECTRICAL CHARACTERISTICS

 $(-40^{\circ}\text{C to } +85^{\circ}\text{C}; V_{DD}=5\text{V} \pm 10\%)$

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES	
Low Level @ RST	V_{OL}			0.4	V	1	
Output Current @ 0.4V	I_{OL}	+8			mA		
Operating Current	I_{CC}		1.5	2	mA		
V _{CC} Trip Point 5%	V_{CCTP1}	4.5	4.625	4.74	V	1	
V _{CC} Trip Point 10%	V_{CCTP2}	4.25	4.375	4.49	V	1	
V _{CC} Trip Point 15%	V _{CCTP3}	4.0	4.125	4.24	V	1	
Output Capacitance	C _{OUT}			10	pF		
Internal Pull-Up Resistor	R_P	3.75	5	6.25	kΩ		

AC ELECTRICAL CHARACTERISTICS

 $(-40^{\circ}\text{C to } +85^{\circ}\text{C}; V_{\text{CC}}=5\text{V} \pm 10\%)$

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Reset Active Time	t_{RST}	250	350	450	ms	
V _{CC} Detect to RST	t_{RPD}			100	ns	
V _{CC} Slew Rate (4.75V - 4.00V)	$t_{ m F}$	300			μs	
V _{CC} Slew Rate (4.00V - 4.75V)	t_R	0			ns	
V _{CC} Detect to RST	$t_{ m RPU}$	250	350	450	ms	

NOTES:

1. All voltages are referenced to ground.

^{*} This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

ECONORESET SELECTION GUIDE

		VCC TRIP POINT			PUSHBUTTON DETECT			
		MIN	TYP	MAX	MIN	TYP	MAX	
	DS1233-15	4.0	4.125	4.24	2.4	-	3.3	
	DS1233-10	4.25	4.375	4.49	2.4	-	3.3	
	DS1233-5	4.5	4.625	4.75	2.4	-	3.3	
5V	DS1233D-15	4.0	4.125	4.24	N/A		N/A	
	DS1233D-10	4.25	4.375	4.49	N/A		N/A	
	DS1233D-5	4.5	4.625	4.75	N/A		N/A	
	DS1833-15	4.0	4.125	4.24	N/A		N/A	
	DS1833-10	4.25	4.375	4.49	N/A		N/A	
	DS1833-5	4.5	4.625	4.75	N/A		N/A	
3.3V	DS1233A-15	2.64	2.72	2.80	1.8	-	3.0	
	DS1233A-10	2.8	2.88	2.97	1.8	-	3.0	