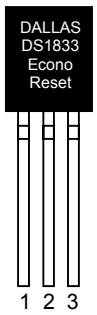
DS1833
5V EconoReset

www.maxim-ic.com

FEATURES

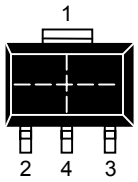
- Automatically restarts microprocessor after power failure
- Maintains active-high reset for 350 ms after V_{CC} returns to an in-tolerance condition
- Accurate 5%, 10% or 15% microprocessor 5V power supply monitoring
- Reduces need for discrete components
- Precision temperature-compensated voltage 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





BOTTOM VIEW
TO-92 PACKAGE
See Mech.
Drawings Section
On Website



TOP VIEW
SOT-23 PACKAGE
See Mech.
Drawings Section
On Website

PIN DESCRIPTION

PIN 1	Ground
PIN 2	Reset
PIN 3	V_{CC}
PIN 4	Ground (SOT-223 only)

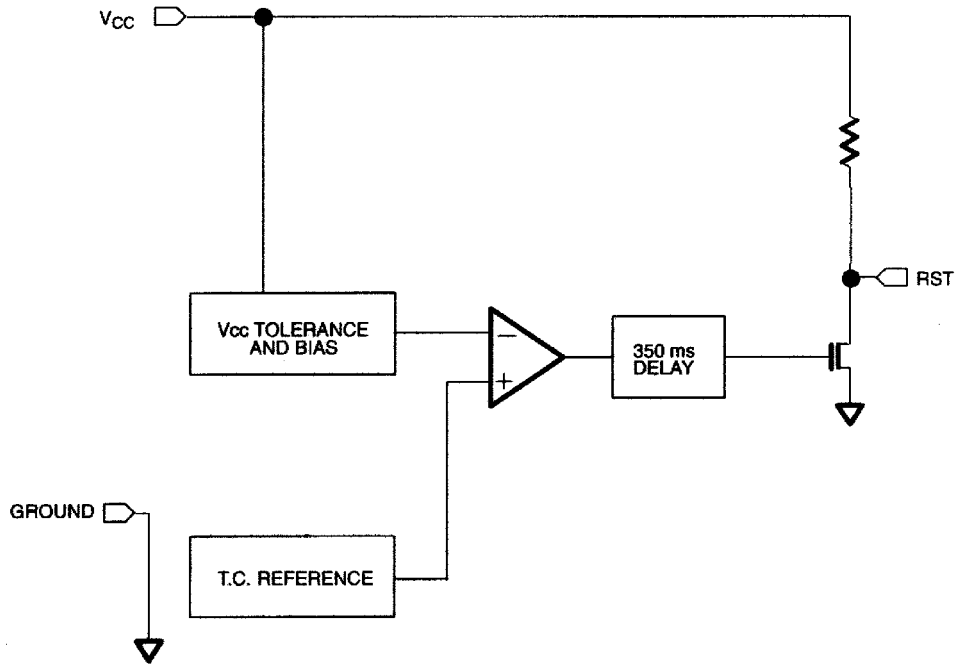
DESCRIPTION

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 in-tolerance condition, the reset signal is kept in the active state for approximately 350 ms to allow the power supply and processor to stabilize.

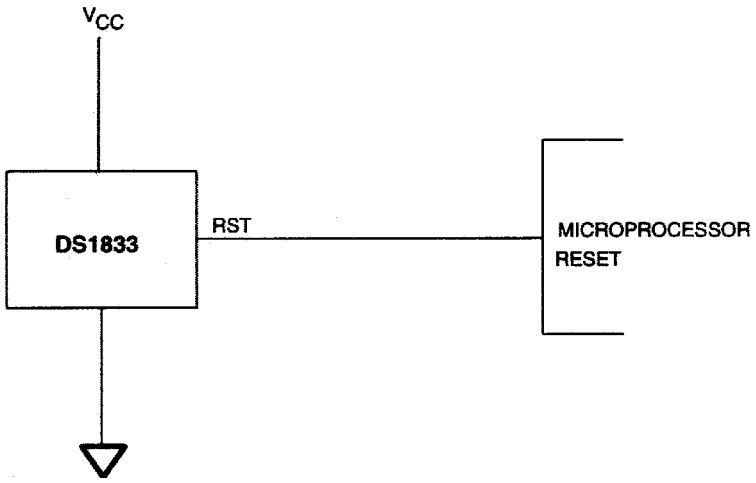
OPERATION - POWER MONITOR

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.

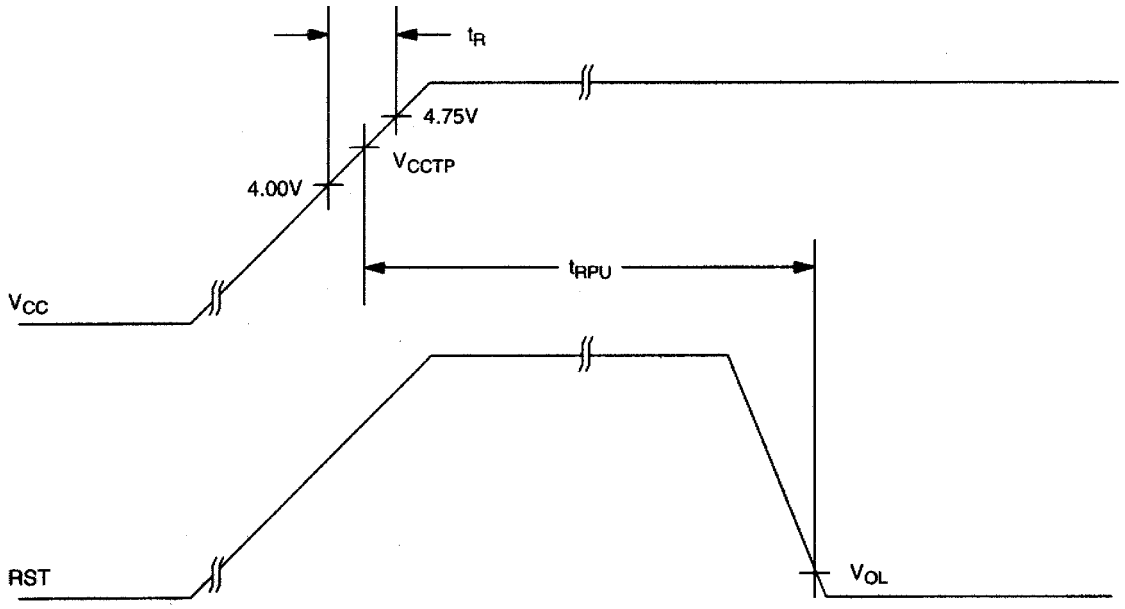
BLOCK DIAGRAM Figure 1



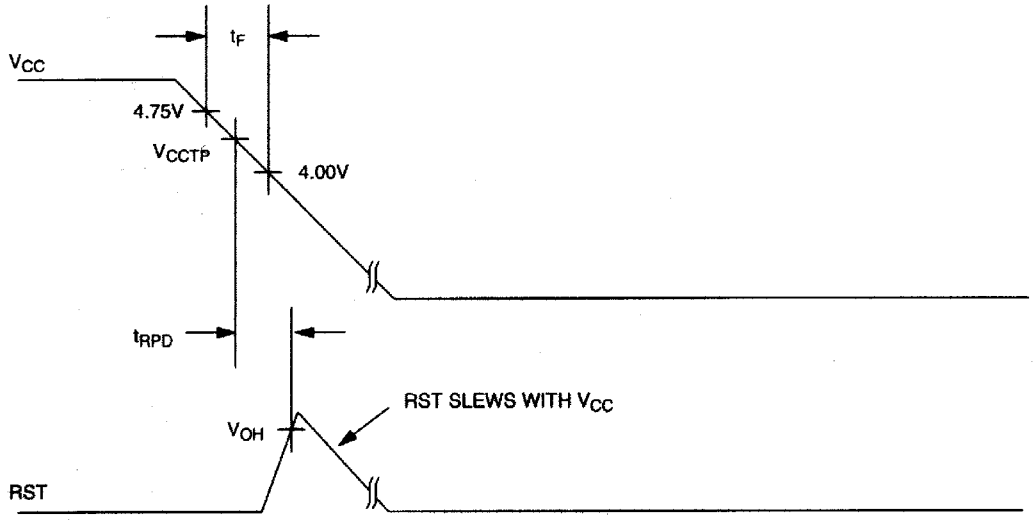
APPLICATION EXAMPLE Figure 2



POWER-UP Figure 3



POWER-DOWN Figure 4



ABSOLUTE MAXIMUM RATINGS*

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

* 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.

RECOMMENDED DC OPERATING CONDITIONS (-40°C to +85°C)

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

DC ELECTRICAL CHARACTERISTICS (-40°C to +85°C; V_{DD}=5V ± 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°C to +85°C; V_{CC}=5V ± 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_F	300			µs	
V_{CC} Slew Rate (4.00V - 4.75V)	t_R	0			ns	
V_{CC} Detect to RST	t_{RPU}	250	350	450	ms	

NOTES:

1. All voltages are referenced to ground.

ECONORESET SELECTION GUIDE

		VCC TRIP POINT			PUSHBUTTON DETECT		
		MIN	TYP	MAX	MIN	TYP	MAX
5V	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
	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