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FEATURES

- Automatically restarts a microprocessor after power failure
- Maintains reset for 150 ms after V_{CC} returns . to an in-tolerance condition
- Reduces need for discrete components
- Precision temperature-compensated voltage reference and voltage sensor
- Low-cost TO-92 or space saving SOT-23 packages available
- Efficient open-drain output with internal 5.5 k Ω pull-up resistor
- Operating temperature -40°C to +85°C

PIN ASSIGNMENT



2 TOP VIEW SOT-23 PACKAGE See Mech. Drawings Section

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PIN DESCRIPTION

TO-92

1 RST Active Low Reset Output 2

Ground

- Power Supply V_{CC}
- 3 **GND**

SOT-23

1 RST Active Low Reset Output 2 V_{CC} Power Supply 3 **GND** Ground

DESCRIPTION

The DS1811 EconoReset uses a precision temperature 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 state. When V_{CC} returns to an in-tolerance condition, the reset signal is kept in the active state for approximately 150 ms to allow the power supply and processor to stabilize.

OPERATION - POWER MONITOR

The DS1811 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, the \overline{RST} signal is asserted. On power-up, \overline{RST} is kept active for approximately 150 ms after the power supply has reached the selected tolerance. This allows the power supply and microprocessor to stabilize before \overline{RST} is released.

BLOCK DIAGRAM (OPEN-DRAIN OUTPUT) Figure 1



APPLICATION EXAMPLE Figure 2



TIMING DIAGRAM: POWER-UP Figure 3



TIMING DIAGRAM: POWER-DOWN Figure 4



ABSOLUTE MAXIMUM RATINGS*

Voltage on V_{CC} Pin Relative to Ground Voltage on RST Relative to Ground Operating Temperature Storage Temperature Soldering Temperature $\begin{array}{l} -0.5V \ to \ +7.0V \\ -0.5V \ to \ V_{CC} \ +0.5V \\ -40^{\circ}C \ to \ +85^{\circ}C \\ -55^{\circ}C \ to \ +125^{\circ}C \\ 260^{\circ}C \ for \ 10 \ seconds \end{array}$

* 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	ТҮР	MAX	UNITS	NOTES
Supply Voltage	V _{CC}	0.0		5.5	V	1

DC ELECTRICAL CHARACTERISTICS		(-40°C to +85°C; V _{CC} =1.2V to 5.5V)				
PARAMETER	SYMBOL	MIN	ТҮР	MAX	UNITS	NOTES
Output Current @ 0.4 volts	I _{OL}	+10			mA	2, 3
Operating Current $V_{CC} < 5.5$ volts	I _{CC}		30	40	μΑ	4
V _{CC} Trip Point (DS1811-5)	V _{CCTP}	4.50	4.62	4.75	V	1
V _{CC} Trip Point (DS1811-10)	V _{CCTP}	4.25	4.35	4.49	V	1
V _{CC} Trip Point (DS1811-15)	V _{CCTP}	4.00	4.13	4.24	V	1
Internal Pull-Up Resistor	R _P	3.5	5.5	7.5	kΩ	
Output Capacitance	C _{OUT}			10	pF	

AC ELECTRICAL CHARACTERISTICS		(-40°C to +85°C; V _{CC} =1.2V to 5.5V)				
PARAMETER	SYMBOL	MIN	ТҮР	MAX	UNITS	NOTES
RESET Active Time	t _{RST}	100	150	300	ms	
V_{CC} Detect to \overline{RST}	t _{RPD}		2	5	μs	
V _{CC} Slew Rate	t _F	300			μs	
$(V_{CCTP} (MAX) \text{ to } V_{CCTP} (MIN))$						
V _{CC} Slew Rate	t _R	0			ns	
$(V_{CCTP} (MIN) \text{ to } V_{CCTP} (MAX))$						
V_{CC} Detect to \overline{RST}	t _{RPU}	100	150	300	ms	5

NOTES:

- 1. All voltages are referenced to ground.
- 2. Measured with $V_{CC} \ge 2.7$ volts.
- 3. A $1k\Omega$ external resistor may be required in some applications for proper operation of the microprocessor reset control circuit.
- 4. Measured with \overline{RST} output open.
- 5. $t_R = 5 \ \mu s$.

PART MARKING CODES



"A", "B", &"C" represent the device type.

1
DS1810
DS1811
DS1812
DS1813
DS1815
DS1816
DS1817
DS1818

"D" represents the device tolerance.

Α	5%
B	10%
С	15%
D	20%