

DS1812 5V EconoReset with Active High Push-Pull Output

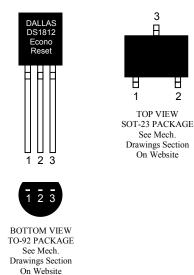
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FEATURES

- 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 surface mount SOT-23 packages available
- Push-pull active high output
- Operating temperature -40°C to +85°C

PIN ASSIGNMENT



PIN DESCRIPTION

TO-92

1

3

- RST Active High Reset Output
- 2 Power Supply Vcc
 - GND Ground

SOT-23

Active High Reset Output 1 RST 2 Power Supply Vcc Ground GND 3

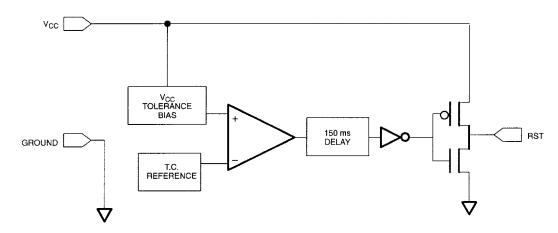
DESCRIPTION

The DS1812 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.

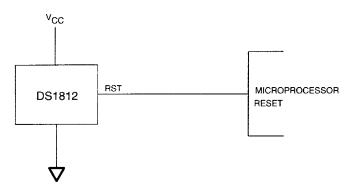
OPERATION - POWER MONITOR

The DS1812 provides the function 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 RST signal is asserted. On power-up, 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 RST is released.

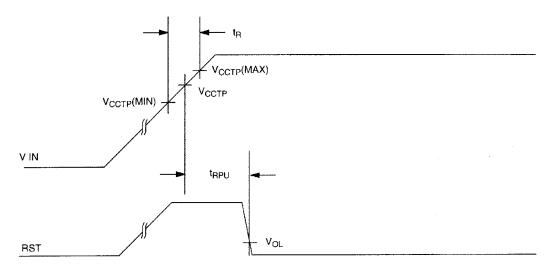
BLOCK DIAGRAM (CMOS OUTPUT) Figure 1



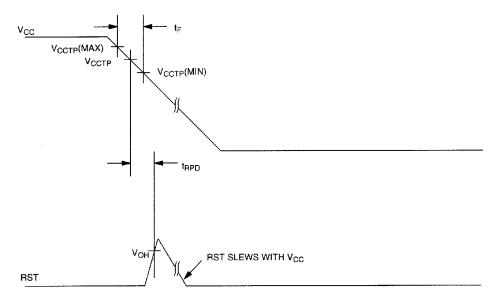
APPLICATION EXAMPLE Figure 2



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 -0.5V to +7.0V -0.5V to V_{CC} +0.5V -40°C to +85°C -55°C to +125°C 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 | 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)

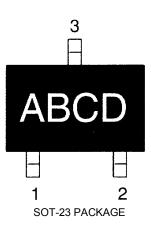
| | | | (+0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, | | | | |
|--|-------------------|-----------------|---|------|-------|-------|--|
| PARAMETER | SYMBOL | MIN | ТҮР | MAX | UNITS | NOTES | |
| Output Voltage @ 0-500 µA | V _{OH} | V _{CC} | V _{CC} | | V | 1 | |
| | | -0.5V | -0.1V | | | | |
| Output Current @ 2.4 volts | I _{OH} | | 350 | | μΑ | 2 | |
| Output Current @ 0.4 volts | I _{OL} | +10 | | | mA | 2 | |
| Operating Current $V_{CC} < 5.5$ | I _{CC} | | 30 | 40 | μΑ | 3 | |
| V _{CC} Trip Point (DS1812-5) | V _{CCTP} | 4.50 | 4.62 | 4.75 | V | 1 | |
| V _{CC} Trip Point (DS1812-10) | V _{CCTP} | 4.25 | 4.35 | 4.49 | V | 1 | |
| V _{CC} Trip Point (DS1812-15) | V _{CCTP} | 4.00 | 4.13 | 4.24 | V | 1 | |
| Output Capacitance | C _{OUT} | | | 10 | pF | | |

(-40°C to +85°C; V_{CC}=1.2V to 5.5V) AC ELECTRICAL CHARACTERISTICS PARAMETER UNITS **SYMBOL** MIN TYP MAX **NOTES RESET** Active Time 150 300 t_{RST} 100 ms V_{CC} Detect to RST 2 5 t_{RPD} μs V_{CC} Slew Rate 300 t_F μs $(V_{CCTP} (MAX) \text{ to } V_{CCTP} (MIN))$ V_{CC} Slew Rate 0 t_R ns $(V_{CCTP} (MIN) \text{ to } V_{CCTP} (MAX))$ V_{CC} Detect to RST 100 150 300 4 t_{RPU} ms

NOTES:

- 1. All voltages are referenced to ground.
- 2. Measured with $V_{CC} \ge 2.7$ volts.
- 3. Measured with RST output open.
- 4. $t_R = 5 \ \mu s$.

PART MARKING CODES



| "A" | "B" | &"C" | represent the device type. |
|-----|-----|------|----------------------------|
| | ъ, | | represent the device type. |

| J , a | C ICp | resent the de |
|-------|-------|---------------|
| 810 | - | DS1810 |
| 811 | - | DS1811 |
| 812 | - | DS1812 |
| 813 | - | DS1813 |
| 815 | - | DS1815 |
| 816 | - | DS1816 |
| 817 | - | DS1817 |
| 818 | - | DS1818 |

"D" represents the device tolerance.

| 1 | | |
|---|---|-----|
| А | - | 5% |
| В | - | 10% |
| С | - | 15% |
| D | - | 20% |