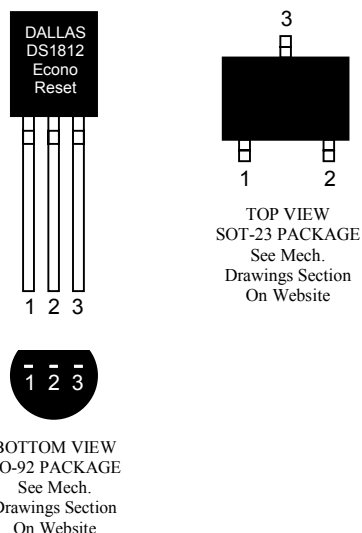


FEATURES

- 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 $+85^{\circ}\text{C}$

PIN ASSIGNMENT



PIN DESCRIPTION

TO-92

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

SOT-23

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

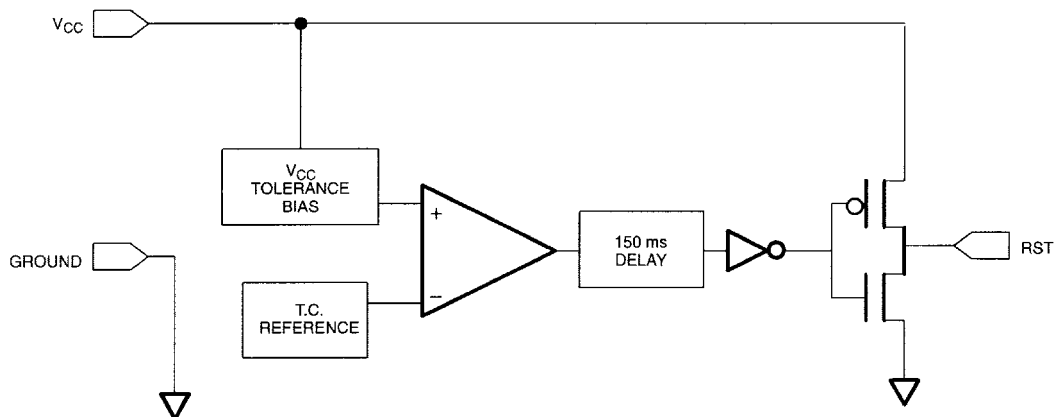
DESCRIPTION

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.

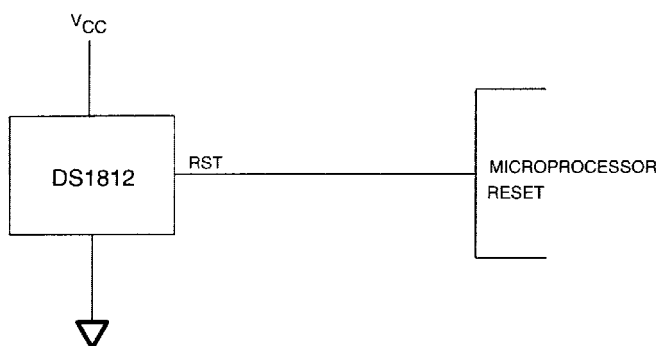
OPERATION - POWER MONITOR

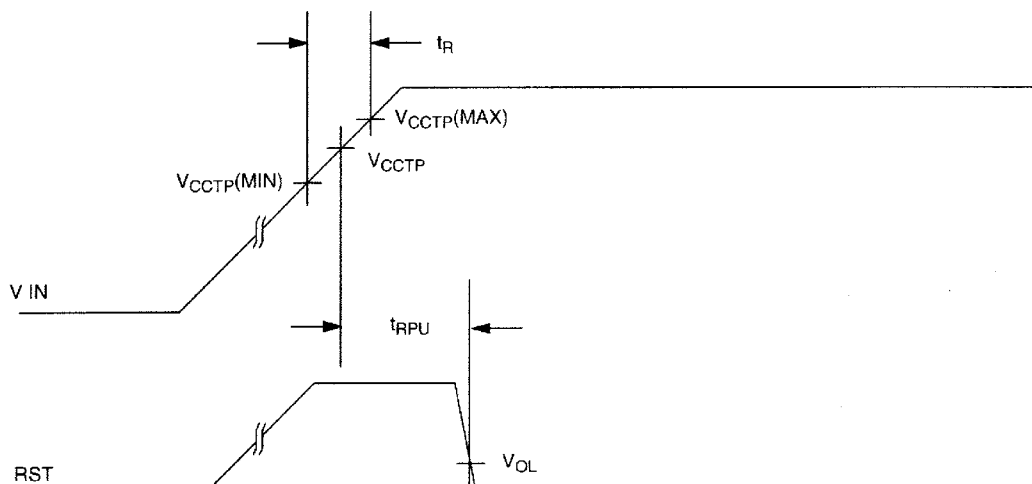
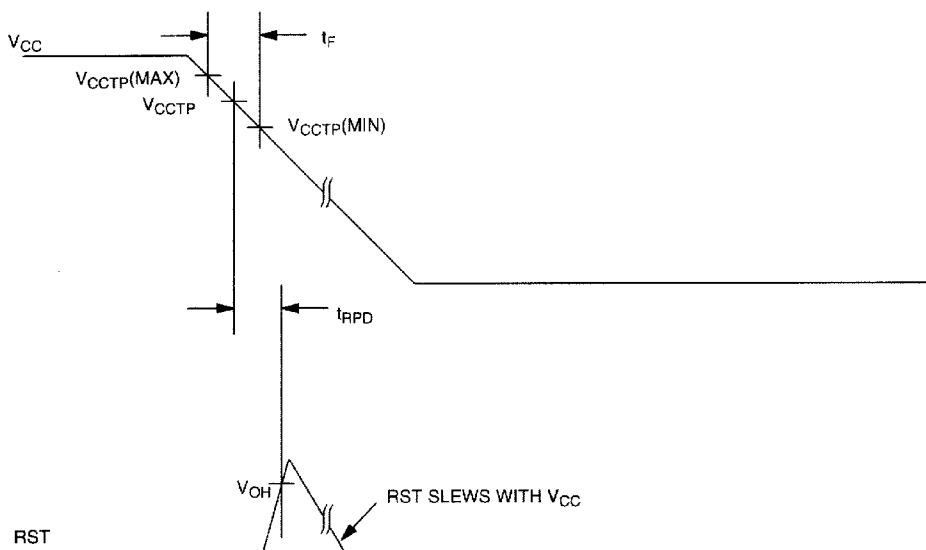
The DS1812 provides the function of detecting out-of-tolerance power supply conditions and warning a processor-based system of impending power failure. When V_{CC} is detected as out-of-tolerance, the RST signal is asserted. On power-up, RST is kept active for approximately 150 ms after the power supply 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	-0.5V to +7.0V
Voltage on RST 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}	0.0		5.5	V	1

DC ELECTRICAL CHARACTERISTICS (-40°C to +85°C; V_{CC}=1.2V to 5.5V)

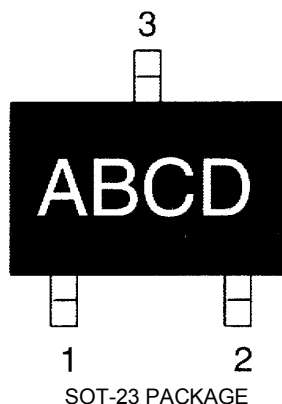
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Output Voltage @ 0-500 μ A	V _{OH}	V _{CC} -0.5V	V _{CC} -0.1V		V	1
Output Current @ 2.4 volts	I _{OH}		350		μ A	2
Output Current @ 0.4 volts	I _{OL}	+10			mA	2
Operating Current V _{CC} < 5.5	I _{CC}		30	40	μ A	3
V _{CC} Trip Point (DS1812-5)	V _{CCTP}	4.50	4.62	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	

AC ELECTRICAL CHARACTERISTICS (-40°C to +85°C; V_{CC}=1.2V to 5.5V)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
RESET Active Time	t _{RST}	100	150	300	ms	
V _{CC} Detect to RST	t _{RPD}		2	5	μ s	
V _{CC} Slew Rate (V _{CCTP} (MAX) to V _{CCTP} (MIN))	t _F	300			μ s	
V _{CC} Slew Rate (V _{CCTP} (MIN) to V _{CCTP} (MAX))	t _R	0			ns	
V _{CC} Detect to RST	t _{RPU}	100	150	300	ms	4

NOTES:

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

PART MARKING CODES

“A”, “B”, & “C” represent the device type.

810	-	DS1810
811	-	DS1811
812	-	DS1812
813	-	DS1813
815	-	DS1815
816	-	DS1816
817	-	DS1817
818	-	DS1818

“D” represents the device tolerance.

A	-	5%
B	-	10%
C	-	15%
D	-	20%

DS1812

Part Number Table

Notes:

1. See the [DS1812 QuickView Data Sheet](#) for further information on this product family or download the [DS1812 full data sheet](#) (PDF, 128kB).
2. Other options and links for purchasing parts are listed at: <http://www.maxim-ic.com/sales>.
3. [Didn't Find What You Need?](#) Ask our applications engineers. Expert assistance in finding parts, usually within one business day.
4. Part number suffixes: T or T&R = tape and reel; + = RoHS/lead-free; # = RoHS/lead-exempt. More: See [full data sheet](#) or [Part Naming Conventions](#).
5. * Some packages have variations, listed on the drawing. "PkgCode/Variation" tells which variation the product uses.

Part Number	Notes	Free Sample	Buy Direct	Package: TYPE PINS SIZE DRAWING CODE/VAR *	Temp	RoHS/Lead-Free? Materials Analysis
DS1812R-5/T&R/C01				SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C	RoHS/Lead-Free: No Materials Analysis
DS1812R-15+T&R	5V- 15%			SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3+4*	-40C to +85C	RoHS/Lead-Free: Yes Materials Analysis
DS1812R-10+T&R	5V- 10%			SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3+4*	-40C to +85C	RoHS/Lead-Free: Yes Materials Analysis
DS1812R-15-U	5V- 15%			SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C	RoHS/Lead-Free: No Materials Analysis

DS1812R-10-U	5V-10%	SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812R-5-U	5V-5%	SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812R-15/T&R	5V-15%	SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812R-10/T&R	5V-10%	SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812R-5-U+		SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812R-5+T&R	5V-5%	SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812R-15-U+		SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812R-10-U+		SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812R-5/T&R	5V-5%	SOT23;3 pin;50 Dwg: 21-0051G (PDF) Use pkgcode/variation: U3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-5+T&R	5V-5%	TO92;3 pin;185 Dwg: 56-G0006-003A (PDF) Use pkgcode/variation: Q3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812-10+T&R	5V-10%	TO92;3 pin;185 Dwg: 56-G0006-003A (PDF) Use pkgcode/variation: Q3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis

DS1812-15+		TO92;3 pin;185 Dwg: 56-G0006-001A (PDF) Use pkgcode/variation: Q3+1*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812-15+T&R	5V- 15%	TO92;3 pin;185 Dwg: 56-G0006-003A (PDF) Use pkgcode/variation: Q3+4*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812-15/T&R	5V- 15%	TO92;3 pin;185 Dwg: 56-G0006-003A (PDF) Use pkgcode/variation: Q3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-10/T&R	5V- 10%	TO92;3 pin;185 Dwg: 56-G0006-003A (PDF) Use pkgcode/variation: Q3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-5/T&R	5V-5%	TO92;3 pin;185 Dwg: 56-G0006-003A (PDF) Use pkgcode/variation: Q3-4*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-15	5V- 15% Monitor	TO92;3 pin;185 Dwg: 56-G0006-001A (PDF) Use pkgcode/variation: Q3-1*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-10	5V- 10% Monitor	TO92;3 pin;185 Dwg: 56-G0006-001A (PDF) Use pkgcode/variation: Q3-1*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-5	5V-5% Monitor	TO92;3 pin;185 Dwg: 56-G0006-001A (PDF) Use pkgcode/variation: Q3-1*	-40C to +85C RoHS/Lead-Free: No Materials Analysis
DS1812-10+		TO92;3 pin;185 Dwg: 56-G0006-001A (PDF) Use pkgcode/variation: Q3+1*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis
DS1812-5+		TO92;3 pin;185 Dwg: 56-G0006-001A (PDF) Use pkgcode/variation: Q3+1*	-40C to +85C RoHS/Lead-Free: Yes Materials Analysis

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