onse 1 ---

PIN DESCRIPTION

Pin No.	Symbol	Description
1	GND	Ground
2	RESET (MAX809)	RESET output remains low while V _{CC} is below the reset voltage threshold, and for a reset timeout period after V _{CC} rises above reset threshold
2	RESET (MAX810)	RESET output remains high while V_{CC} is below the reset voltage threshold, and for a reset timeout period after V_{CC} rises above reset threshold
3	V _{CC}	Supply Voltage (Typ)

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power Supply Voltage (V _{CC} to GND)	V _{CC}	-0.3 to 6.0	V
RESET Output Voltage (CMOS)		–0.3 to (V _{CC} + 0.3)	V
Input Current, V _{CC}		20	mA

ELECTRICAL CHARACTERISTICS $T_A = -40$ C to +105 C unless otherwise noted. Typical values are at $T_A = +25$ C. (Note 3)

Characteristic	Symbol	Min	Тур	Max	Unit
V_{CC} Range $T_A = 0 \ C \ to +70 \ C$ $T_A = -40 \ C \ to +105 \ C \ (Note 4)$		1.0 1.2		5.5 5.5	V
Supply Current $V_{CC} = 3.3 V$ $T_A = -40 C \text{ to } +85 C$	Icc	_	0.5	1.2	μΑ
$T_{A} = 85 \text{ C to } +105 \text{ C (Note 5)}$ $V_{CC} = 5.5 \text{ V}$ $T_{A} = -40 \text{ C to } +85 \text{ C}$ $T_{A} = 85 \text{ C to } +105 \text{ C (Note 5)}$		- - -	- 0.8 -	2.0 1.8 2.5	
Reset Threshold (V _{in} Decreasing) (Note 6)	V _{TH}				V
$\begin{array}{c} \text{MAX809SN490} \\ \text{T}_{\text{A}} = +25 \text{ C} \\ \text{T}_{\text{A}} = -40 \text{ C to } +85 \text{ C} \\ \text{T}_{\text{A}} = +85 \text{ C to } +105 \text{ C (Note 5)} \end{array}$		4.83 4.78 4.66	4.9 - -	4.97 5.02 5.14	
MAX8xxLTR, MAX8xxSQ463 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		4.56 4.50 4.40	4.63 _ _	4.70 4.75 4.86	
MAX809HTR $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		4.48 4.43 4.32	4.55	4.62 4.67 4.78	
MAX8xxMTR, MAX8xxSQ438 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C (Note 5)$		4.31 4.27 4.16	4.38	4.45 4.49 4.60	
MAX809JTR, MAX8xxSQ400 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		3.94 3.90 3.80	4.00 _ _	4.06 4.10 4.20	
MAX8xxTTR, MAX809SQ308 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		3.04 3.00 2.92	3.08 _ _	3.11 3.16 3.24	
MAX8xxSTR, MAX8xxSQ293 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		2.89 2.85 2.78	2.93 _ _	2.96 3.00 3.08	
MAX8xxRTR, MAX8xxSQ263 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		2.59 2.56 2.49	2.63 _ _	2.66 2.70 2.77	
MAX809SN232, MAX809SQ232 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		2.28 2.25 2.21	2.32 _ _	2.35 2.38 2.45	
MAX809SN160 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		1.58 1.56 1.52	1.60 _ _	1.62 1.64 1.68	
MAX809SN120, MAX8xxSQ120 $T_A = +25 C$ $T_A = -40 C \text{ to } +85 C$ $T_A = +85 C \text{ to } +105 C \text{ (Note 5)}$		1.18 1.17 1.14	1.20 _ _	1.22 1.23 1.26	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Production testing done at $T_A = 25$ C, over temperature limits guaranteed by design. 4. For NCV automotive devices, this temperature range is $T_A = -40$ C to +125 C.

5. For NCV automotive devices, this temperature range is $T_A = +85$ C to +125 C. 6. Contact your **onsemi** sales representative for other threshold voltage options.

ELECTRICAL CHARACTERISTICS (continued) $T_A = -40$ C to +105 C unless otherwise noted. Typical values are at $T_A = +25$ C. (Note 7)

Characteristic	Symbol	Min	Тур	Max	Unit
Detector Voltage Threshold Temperature Coefficient		-	30	-	ppm/ C
V_{CC} to Reset Delay $V_{CC} = V_{TH}$ to ($V_{TH} - 100 \text{ mV}$)		-	10	-	μsec
Reset Active TimeOut Period (Note 8) MAX8xxSN(Q)293D1 MAX8xxSN(Q)293D2 MAX8xxSN(Q)293D3 MAX8xxSN(Q)293	t _{RP}	1.0 20 100 140	- - - -	3.3 66 330 460	msec
$ \begin{array}{l} \hline \textbf{RESET} \mbox{ Output Voltage Low (No Load) (MAX809)} \\ V_{CC} = V_{TH} - 0.2 \ V \\ 1.6 \ V \leq V_{TH} \leq 2.0 \ V, \ \textbf{I}_{SINK} = 0.5 \ \text{mA} \\ 2.1 \ V \leq V_{TH} \leq 4.0 \ V, \ \textbf{I}_{SINK} = 1.2 \ \text{mA} \\ 4.1 \ V \leq V_{TH} \leq 4.9 \ V, \ \textbf{I}_{SINK} = 3.2 \ \text{mA} \end{array} $	V _{OL}	-	_	0.3	V
$ \begin{array}{l} \hline \textbf{RESET} \mbox{ Output Voltage High (No Load) (MAX809)} \\ V_{CC} = V_{TH} + 0.2 \ V \\ 1.6 \ V \leq V_{TH} \leq 2.4 \ V, \ \textbf{I}_{SOURCE} = 200 \ \mu A \\ 2.5 \ V \leq V_{TH} \leq 4.9 \ V, \ \textbf{I}_{SOURCE} = 500 \ \mu A \end{array} $	V _{OH}	0.8 V _{CC}	_	-	V
$ \begin{array}{l} \mbox{RESET Output Voltage High (No Load) (MAX810)} \\ V_{CC} = V_{TH} - 0.2 \ V \\ 1.6 \ V \leq V_{TH} \leq 2.4 \ V, \ I_{SOURCE} = 200 \ \mu A \\ 2.5 \ V \leq V_{TH} \leq 4.9 \ V, \ I_{SOURCE} = 500 \ \mu A \end{array} $	V _{OH}	0.8 V _{CC}	_	-	V
$\begin{array}{l} \mbox{RESET Output Voltage Low (No Load) (MAX810)} \\ V_{CC} = V_{TH} + 0.2 \ V \\ 1.6 \ V \leq V_{TH} \leq 2.0 \ V, \ I_{SINK} = 0.5 \ mA \\ 2.1 \ V \leq V_{TH} \leq 4.0 \ V, \ I_{SINK} = 1.2 \ mA \\ 4.1 \ V \leq V_{TH} \leq 4.9 \ V, \ I_{SINK} = 3.2 \ mA \end{array}$	V _{OL}	-	_	0.3	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Production testing done at T_A = 25 C, over temperature limits guaranteed by design.
Contact your **onsemi** sales representative for timeout options availability for other threshold voltage options.

Detail Operation Description

The MAX809/810 series microprocessor reset supervisory circuits are designed to monitor the power supplies in digital systems and provide a reset signal to the processor without any external components. Figure 2 shows the timing diagram and a typical application below. Initially consider that input voltage V_{CC} is at a nominal level greater than the voltage detector upper threshold (v_{TH}). And the

RESET (RESET) output voltage (Pin 2) will be in the high state for MAX 809, or in the low state for MAX 810 devices.

If there is an input power interruption and V_{CC} becomes significantly deficient, it will fall below the lower detector threshold (V_{TH}). This event causes the RESET output to be in the low state for the MAX809, or in the high state for the NCP810 devices. After completion of the power interruption, V_{CC} will rise to its nominal level and become greater than the V_{TH}. This sequence activates the internal oscillator circuitry and digital counter to count. After the count of the timeout period, the reset output will revert back to the original state.

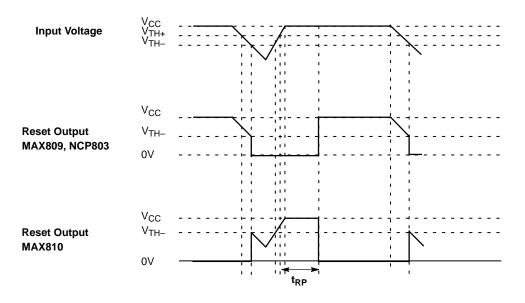
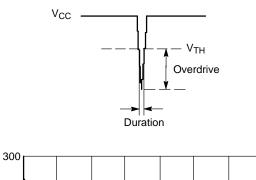


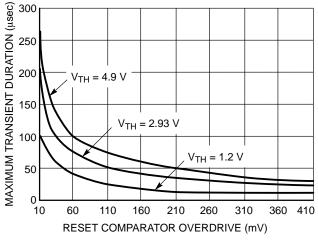
Figure 15. Timing Waveforms

APPLICATIONS INFORMATION

V_{CC} Transient Rejection

The MAX809 provides accurate V_{CC} monitoring and reset timing during power up, power down, and brownout/sag conditions, and rejects negative going transients (glitches) on the power supply line. Figure 16 shows the maximum transient duration vs. maximum negative excursion (overdrive) for glitch rejection. Any combination of duration and overdrive which lies **under** the curve will **not** generate a reset signal. Combinations above the curve are detected as a brownout or power down. Typically, transient that goes 100 mV below the reset threshold and lasts 5.0 μ s or less will not cause a reset pulse. Transient immunity can be improved by adding a capacitor in close proximity to the V_{CC} pin of the MAX809.







RESET Signal Integrity During Power–Down The MAX809 RESET output is valid to $V_{CC} = 1.0$ V. Below

ORDERING, MARKING AND THRESHOLD INFORMATION

Part Number VTH* (V) Timedeality ((neight=f6800)) Example Timedeality ((neight=f6800)) Example Timedeality ((neight=f6800)) Example Timedeality ((neight=f6800)) Example Timedeality ((neight=f6800)) SOT23-3 (Pb-Free) SOT23-3 (Pb-Free) SOT23-3 (Pb-Free) SOT00 / Tape & Reel				-			
3000 / Tape & Reel	Part Number	V _{TH} * (V)	Timë¢ûû®((716))ecî	4606 3105225566885509 7027	E(Maaking oo	T240 673718334 6883	≬n2e67 3HIPping †17.90
ACE (Pb-Free) 30007 hipe & Reel	MAX809STRG	2.93	140–460		SPT	SOT23-3	2000 / Tapa & Real
					ACE	(Pb-Free)	SUUU / Tape & Reel

ORDERING, MARKING AND THRESHOLD INFORMATION

Part Number	V _{TH} * (V)	Timeout* (ms)	Description	Marking	Package	Shipping [†]

DISCONTINUED (Note 9)

MAX809TTRG	3.08	140–460	Push-Pull RESET	SPU	SOT23–3 (Pb–Free)	3000 / Tape & Reel
NCV809SN293D1T1G*	2.93					



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DATE 11 OCT 2022

GENERIC MARKING DIAGRAM



ΧХ = Specific Device Code

М = Date Code •

= Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-

STYLE 1: CANCELLED	STYLE 2: PIN 1. ANODE 2. N.C. 3. CATHODE	STYLE 3: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 4: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 5: PIN 1. ANODE 2. ANODE 3. CATHODE	
STYLE 6:	STYLE 7:	STYLE 8:	STYLE 9:	STYLE 10:	STYLE 11:
PIN 1. EMITTER	PIN 1. BASE	PIN 1. GATE	PIN 1. ANODE	PIN 1. CATHODE	PIN 1. CATHODE
2. BASE	2. EMITTER	2. SOURCE	2. CATHODE	2. ANODE	2. CATHODE
3. COLLECTOR	3. COLLECTOR	3. DRAIN	3. CATHODE-ANODE	3. ANODE-CATHODE	3. CATHODE

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