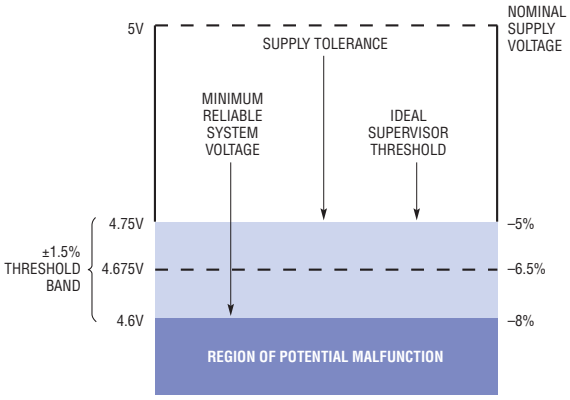
Voltage Monitors & Supervisors Quick Guide

Linear Technology's voltage monitors and supervisors monitor positive and negative power supplies ranging from 0.5V to 48V, with integration of up to eight supply monitors in a tiny package. Not all supervisors are created equal. Look for the following important features.



1.5% Guaranteed Threshold Accuracy

For a 5V system with ±5% tolerance, the supply may vary between 4.75V to 5.25V, requiring a perfectly accurate supervisor to generate a reset at exactly 4.75V. However, the actual reset threshold of a supervisor varies over a specified band. The actual reset threshold accuracy of most Linear Technology supervisors is ±1.5% around the nominal threshold voltage (i.e., 4.675V), minimizing the required system voltage margin and probability of system malfunction.

Voltage Threshold Settings

Nominal Voltage	SEL1	SEL2
12V	V_{CC}	V_{CC}
5V	V_{CC}	Open
3.3V	V_{CC}	GND
2.5V	Open	V_{CC}
1.8V	Open	Open
1.5V	Open	GND
1.2V	GND	V_{CC}
1V	GND	Open
ADJ (0.5V)	GND	GND

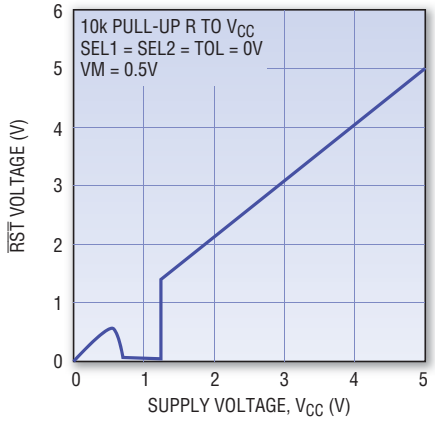
Adjustable/Pin-Selectable Thresholds and Tolerances

Adjustable and pin-selectable thresholds provide users with maximum flexibility, allowing a single part to be used across multiple designs. No need to hassle with factory-trimmed thresholds and tolerances or the procurement of multiple parts. Linear Technology supervisors with adjustable inputs (ADJ) allow selection of virtually any voltage using external resistors. And supervisors with pin-selectable thresholds and tolerances possess the most common supply voltage thresholds (or threshold combinations) and tolerances without the need for precision external resistors.

System Voltage Tolerance Settings

Tolerance	TOL
–5%	V_{CC}
–10%	Open
–15%	GND

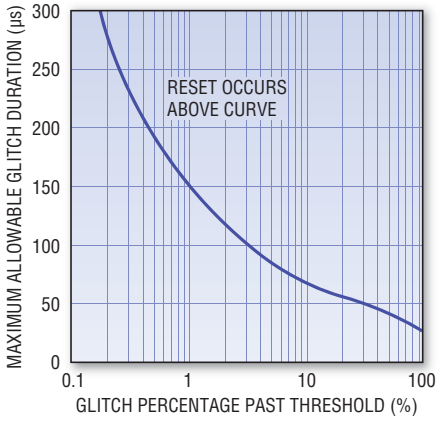
$\overline{RST}$ Output Voltage vs V_{CC}



Guaranteed RESET for Supply Voltages ≥ 0.5V

Some applications require a valid reset signal down to low supply voltages in order to prevent low voltage components from generating erroneous data or malfunction as a system powers up or down. Linear Technology supervisors guarantee a valid reset signal to an industry leading low of 0.5V to help preserve system integrity.

Allowable Glitch Duration vs Magnitude



Glitch Immunity

DC supplies can have high frequency variation from sources such as load transients, noise and pickup, all of which can cause spurious outputs at RST. Linear Technology supervisors combat glitches using voltage-dependent response time filtering, providing rejection of small, short duration glitches and faster response times as monitor overdrive increases.

LINEAR TECHNOLOGY

Part #	# of Voltage Monitors (# of Adj Inputs)	Monitor Voltages (V)	Reset Pulse Width	Supply Current (µA)	Watchdog Timer	Power Fail Warning	Manual Reset	OV Monitor	Negative Monitor	Comments	Temp Grades*	Package
LTC®2910	8 (8)	Adj	Adj	50				•	•	Resistor Programmable Thresholds, RST & RST Outputs, Shunt Regulator	C, I, H	SSOP-16, 5 x 3 DFN-16
LTC2939	6 (4)	5 to 1.2	Adj	80	Adj				•	16 Pin-Selectable Reset Threshold Combinations, Adj Reset and Watchdog Timers	C, I, H	MSOP-16
LTC2908	6 (5)	5, 3.3, 2.5, 1.8, 1.5	200ms	26						Guaranteed Reset for $V_{CC} \geq 0.5V$	C, I	TSOT-8, 3 x 2 DFN-8
LTC2930	6 (4)	5 to 1.5	Adj	52			•		•	16 Pin-Selectable Reset Thresholds Combinations	C, I, H	3 x 3 DFN-12
LTC2931	6 (4)	5 to 1.5	Adj	52	Adj				•	16 Pin-Selectable Reset Thresholds Combinations, Separate Voltage Monitor Outputs	C, I, H	TSSOP-20
LTC2932	6 (4)	5 to 1.5	Adj	52					•	16 Pin-Selectable Reset Thresholds Combinations, Separate Voltage Monitor Outputs	C, I, H	TSSOP-20
LTC2900	4 (2)	5 to 1.5	Adj	43			•		•	16 Pin-Selectable Reset Threshold Combinations, Open Drain or Push-Pull Reset Output	C, I	MSOP-10, 3 x 3 DFN-10
LTC2938	4 (2)	5 to 1.2	Adj	80	Adj				•	16 Pin-Selectable Reset Thresholds	C, I, H	MSOP-16
LTC2901	4 (2)	5 to 1.5	Adj	43	Adj				•	16 Pin-Selectable Reset Thresholds, Separate Voltage Monitor Outputs, Open Drain or Push-Pull Reset Output	C, I	SSOP-16
LTC2902	4 (2)	5 to 1.5	Adj	43					•	16 Pin-Selectable Reset Thresholds, Separate Voltage Monitor Outputs, Open Drain or Push-Pull Reset Output	C, I	SSOP-16
LTC2903	4 (3)	5, 3.3, 2.5, 1.8, –5.2	200ms	20						Guaranteed Reset for $V_{CC} \geq 0.5V$	C, I	TSOT-6
LTC2914	4 (4)	Adj		70				•	•	UV/OV Outputs, Optional Shunt Reg For High Voltage Operation	C, I, H	SSOP-16, 5 x 3 DFN-16
LTC2911	3 (2)	5, 3.3, 2.5, 1.8, 1.2	Adj	30		•				Margining Latch, Guaranteed Reset for $V_{CC} \geq 0.5V$	C, I, H	3 x 2 DFN-8, TSOT-8
LTC1326	3 (1)	5, 3.3, 2.5	200ms	40			•			Reset and Soft Reset Outputs	C, I	MSOP-8, SO-8
LTC1536	3 (1)	5, 3.3	200ms	200			•			Reset and Soft Reset Outputs, Added Tests for PCI Conformity	C, I	MSOP-8, SO-8
LTC1726	3 (1)	5, 3.3, 2.5	Adj	20	Adj						C, I, H	MSOP-8, SO-8
LTC1727	3 (1)	5, 3.3, 3, 2.5	200ms	15						Separate Voltage Monitor Outputs	C, E, I	MSOP-8, SO-8
LTC1728	3 (1)	5, 3.3, 3, 2.5, 1.8	200ms	15							C, E, H	TSOT-5
LTC2919	3 (2)	5, 3.3, 2.5	Adj	50				•	•	Pin-Selectable Polarity for Negative and UV/OV Monitoring, Shunt Regulator, V_{CC} Separate Voltage Monitor Outputs, Guaranteed Reset for $V_{CC} \geq 0.5V$	C, I, H	MSOP-10, 3 x 2 DFN-10
LTC2909	3 (2)	5, 3.3, 2.5	Adj	50				•	•	Pin-Selectable Polarity for Negative and UV/OV Monitoring, Shunt Regulator, V_{CC} Monitor, Guaranteed Reset for $V_{CC} \geq 0.5V$	C, I	TSOT-8, 3 x 2 DFN-8
LTC2960	2(2)	Adj	15ms/ 200ms	0.85			•	•		2.5V to 36V Operation, Resistor Programmable Thresholds	C, I, H	TSOT-8, 2 x 2 DFN-8
LTC2913	2 (2)	Adj		44				•		Resistor Programmable Reset Thresholds, UV/OV Outputs, Shunt Regulator, Guaranteed Reset for $V_{CC} \geq 0.5V$	C, I, H	MSOP-10, 3 x 3 DFN-10
LTC1696	2 (2)	Adj		1.1mA				•		Resistor Programmable Reset Thresholds, Gate Drive for Crowbar	C, E	TSOT-6
LTC2904	2 (0)	5 to 1	200ms	65						9 Pin-Selectable Reset Thresholds	C, I	TSOT-8, 3 x 2 DFN-8
LTC2905	2 (0)	5 to 1	Adj	65						9 Pin-Selectable Reset Thresholds	C, I, H	TSOT-8, 3 x 2 DFN-8
LTC2906	2 (1)	5, 3.3, 2.5	200ms	50						Pin-Selectable and Resistor Programmable Reset Thresholds	C, I	TSOT-8, 3 x 2 DFN-8
LTC2907	2 (1)	5, 3.3, 2.5	Adj	54						Pin-Selectable and Resistor Programmable Reset Thresholds	C, I	TSOT-8, 3 x 2 DFN-8
LTC2934	2 (2)	Adj	15ms/ 200ms	0.5		•	•			Resistor Programmable Reset Threshold	C, I	TSOT-8, 2 x 2 DFN-8
LTC2935	1 (1)	1.6 to 3.5	200ms	0.5		•	•			8 Pin-Selectable Reset Thresholds	C, I	TSOT-8, 2 x 2 DFN-8
LTC2915	1 (1)	12 to 0.5	Adj	30						9 Pin-Selectable Reset Thresholds, 3 Tolerances	C, I, H	TSOT-8, 3 x 2 DFN-8
LTC2916	1 (1)	12 to 0.5	Adj	30			•			9 Pin-Selectable Reset Thresholds	C, I, H	TSOT-8, 3 x 2 DFN-8
LTC2917	1 (1)	12 to 0.5	Adj	30	Adj					9 Pin-Selectable Reset Thresholds, 3 Tolerances	C, I, H	MSOP-10, 3 x 2 DFN-10
LTC2918	1 (1)	12 to 0.5	Adj	30	Adj		•			9 Pin-Selectable Reset Thresholds	C, I, H	MSOP-10, 3 x 2 DFN-10
LTC2912	1 (1)	Adj	Adj	40				•		Resistor Programmable Reset Threshold, UV/OV Outputs, Shunt Regulator	C, I, H	TSOT-8, 3 x 2 DFN-8
LTC1232	1 (0)	5	600ms	500	•		•				C, I	DIP-8, SO-8
LTC1235	1 (0)	5	200ms	600	•	•	•			Conditional Battery Backup, RAM Protect	C	DIP-16, SO-16
LTC690	1 (0)	5	50ms	600	•	•				Battery Backup, 4.65V Reset	C, I	DIP-8, SO-8
LTC691	1 (0)	5	50ms	600	•	•				Battery Backup, RAM Protect, 4.65V Reset	C, I	DIP-16, SO-16
LTC694	1 (0)	5, 3.3	200ms	600	•	•				Battery Backup, 4.65V Reset	C, I	DIP-8, SO-8
LTC695	1 (0)	5, 3.3	200ms	600	•	•				Battery Backup, RAM Protect, 4.65V Reset	C, I	DIP-16, SO-16