

### FEATURES

- Precision 1.8V to 5V Power Supply Monitoring
- 31 Reset Threshold Options:
  - 1.58V to 5.0V
- Four Reset Timeouts:
  - 1ms, 20ms, 140ms, 1120ms
- Manual Reset Input
- Reset Output Stage- Push-Pull Active-Low
- Guaranteed Reset Output valid to  $V_{CC}=1V$
- Power Supply Glitch Immunity
- Specified Over  $-40^{\circ}C$  to  $+125^{\circ}C$  Temperature Range
- 4-Lead SC70 Package

### APPLICATIONS

- Microprocessor Systems
- Computers
- Controllers
- Intelligent Instruments
- Portable Equipment

### GENERAL DESCRIPTION

The ADM6384 is a supervisory circuit which monitors power supply voltage levels in microprocessor-based systems. A power-on-reset signal is generated when the supply voltage rises to a preset threshold level. The ADM6384's debounced manual reset input can be used to initiate a reset by means of an external push-button or logic signal.

The part is available in a choice of the following 31 reset threshold options, from 1.58V to 5.0V. The minimum reset timeout periods are 1ms, 20ms, 140ms and 1120ms.

The ADM6384 is available in a 4-lead SC70 package and typically consumes only  $7\mu A$ , making it suitable for use in low power portable applications

### FUNCTIONAL BLOCK DIAGRAM

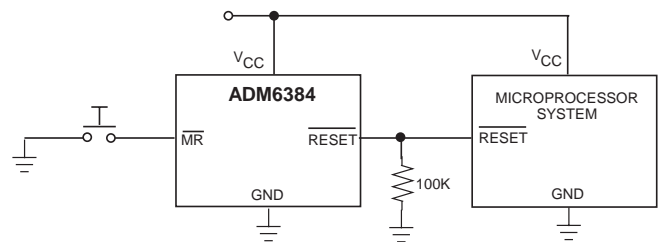
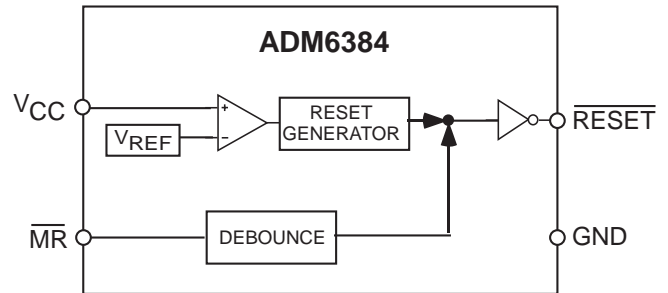


Figure 1. Typical ADM6384 Operating Circuit

### Rev. PrC

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## ADM6384—SPECIFICATIONS

Table 1.  $V_{CC}$ =Full Operating Range,  $T_A$ =-40°C to 125°C, unless otherwise noted

Parameter	Min	Typ	Max	Units	Test Conditions/Comments
<b>SUPPLY</b>					
$V_{CC}$ Operating Voltage Range	1		5.5	V	
Supply Current		7	13	$\mu$ A	$V_{CC}$ =5.5V, no load
		6	11	$\mu$ A	$V_{CC}$ =3.6V, no load
		4	7	$\mu$ A	$V_{CC}$ =2.5V, no load <sup>1</sup>
		3	6	$\mu$ A	$V_{CC}$ =1.8V, no load <sup>1</sup>
<b>RESET THRESHOLD VOLTAGE</b>					
ADM6384_50_	4.88	5.00	5.12	V	
ADM6384_49_	4.78	4.90	5.02	V	
ADM6384_48_	4.68	4.80	4.92	V	
ADM6384_47_	4.58	4.70	4.82	V	
ADM6384_46_	4.51	4.63	4.74	V	
ADM6384_45_	4.39	4.5	4.61	V	
ADM6384_44_	4.27	4.38	4.48	V	
ADM6384_43_	4.19	4.30	4.41	V	
ADM6384_42_	4.1	4.2	4.31	V	
ADM6384_41_	4.0	4.1	4.2	V	
ADM6384_40_	3.9	4.0	4.1	V	
ADM6384_39_	3.8	3.9	4.0	V	
ADM6384_38_	3.71	3.8	3.9	V	
ADM6384_37_	3.61	3.7	3.79	V	
ADM6384_36_	3.51	3.6	3.69	V	
ADM6384_35_	3.41	3.5	3.59	V	
ADM6384_34_	3.32	3.4	3.49	V	
ADM6384_33_	3.22	3.3	3.38	V	
ADM6384_32_	3.12	3.2	3.28	V	
ADM6384_31_	3.00	3.08	3.15	V	
ADM6384_30_	2.93	3.0	3.08	V	
ADM6384_29_	2.85	2.93	3.00	V	
ADM6384_28_	2.73	2.8	2.87	V	
ADM6384_27_	2.63	2.70	2.77	V	
ADM6384_26_	2.56	2.63	2.69	V	
ADM6384_25_	2.44	2.5	2.56	V	
ADM6384_24_	2.34	2.4	2.46	V	
ADM6384_23_	2.26	2.31	2.37	V	
ADM6384_22_	2.13	2.19	2.24	V	
ADM6384_17_	1.62	1.67	1.71	V	
ADM6384_16_	1.54	1.58	1.61	V	
RESET THRESHOLD TEMPERATURE COEFFICIENT		40		ppm/°C	
RESET THRESHOLD HYSTERESIS		3		mV	
<b>RESET TIMEOUT PERIOD</b>					
ADM6384__D1	1		2	ms	
ADM6384__D2	20		40	ms	
ADM6384__D3	140		280	ms	
ADM6384__D4	1120		2240	ms	
VCC to RESET DELAY		35		$\mu$ s	$V_{CC}$ falling at 10mV/ $\mu$ s
RESET Output Voltage					
VOL			0.3	V	$V_{CC}$ >=1.0V, $I_{SINK}$ =80 $\mu$ A
			0.3	V	$V_{CC}$ >=2.5V, $I_{SINK}$ =1.2mA

Parameter	Min	Typ	Max	Units	Test Conditions/Comments
VOH	0.8x V <sub>CC</sub>		0.4	V	V <sub>CC</sub> >=4.5V, I <sub>SINK</sub> =3.2mA
$\overline{\text{RESET}}$ Rise Time	0.8x V <sub>CC</sub>	5	25	ns	V <sub>CC</sub> >=2.5V, I <sub>SOURCE</sub> =500μA V <sub>CC</sub> >=4.5V, I <sub>SOURCE</sub> =800μA From 10% to 90% V <sub>CC</sub> , C <sub>L</sub> =5pF, V <sub>CC</sub> =3.3V
<b>MANUAL RESET INPUT</b>					
$\overline{\text{MR}}$ Input Threshold					
VIL			0.3xV <sub>CC</sub>	V	V <sub>CC</sub> <4V
VIH	0.7xV <sub>CC</sub>		0.8	V	V <sub>CC</sub> <4V
$\overline{\text{MR}}$ Input Pulse Width	2.4			V	V <sub>CC</sub> >4V
$\overline{\text{MR}}$ Glitch Rejection	1	100		μs	V <sub>CC</sub> >4V
$\overline{\text{MR}}$ Pull-up Resistance	32	63	100	kΩ	
$\overline{\text{MR}}$ to Reset Delay		200		ns	

<sup>1</sup> T<sub>A</sub> = 25°C Only

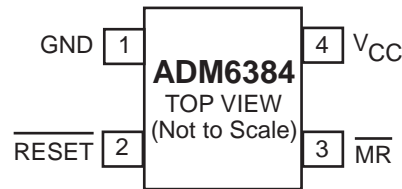
## ABSOLUTE MAXIMUM RATINGS

Table 2. T<sub>A</sub> = 25°C unless otherwise noted.

Parameter	Rating
V <sub>CC</sub>	-0.3V to +6V
$\overline{\text{RESET}}$	-0.3V to +6V
Output Current ( $\overline{\text{RESET}}$ )	20mA
Operating Temperature Range	-40°C to +125°C
Storage Temperature Range	-65°C to +150°C
θ <sub>JA</sub> Thermal Impedance, SC70	146°C/W
Lead Temperature	
Soldering (10 sec)	300°C
Vapour Phase (60 sec)	215°C
Infrared (15 sec)	220°C

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## PIN CONFIGURATIONS AND FUNCTIONAL DESCRIPTIONS



Pin Configuration

Table 3. Pin Functional Descriptions

Pin No.	Name	Description
1	GND	Ground
2	$\overline{\text{RESET}}$	Active-Low Reset Output, which is asserted whenever $V_{CC}$ is below the reset.threshold, $V_{TH}$ . Push-Pull Output Stage.
3	$\overline{\text{MR}}$	Manual Reset Input. This is an active-low input which, when forced low for at least $1\mu\text{s}$ , generates a reset. Features a $52\text{k}\Omega$ internal pull-up.
4	$V_{CC}$	Power Supply Voltage being Monitored.

### ESD CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although this product features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.



# OUTLINE DIMENSIONS

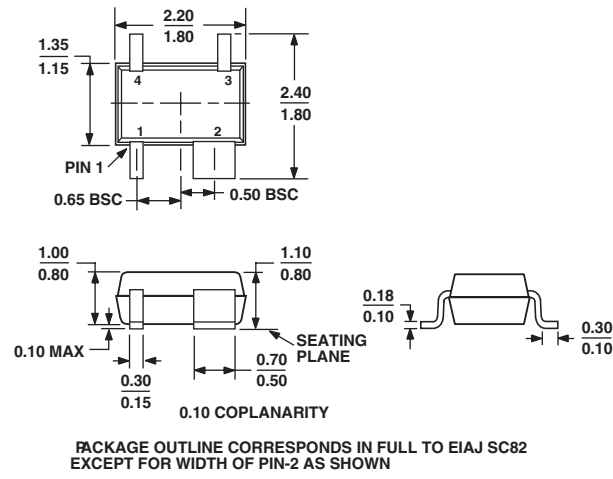


Figure 2. 4-Lead Plastic Surface Mount Package [SC70]

(KS-4)

Dimensions shown in millimeters



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Datasheets for electronics components.