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Low Power, 3.3V/3.0V µP Reset, Active HIGH, Push-Pull Output

General Description

The ASM1817 voltage supervisory device with low-power, 3.3V/ 3.0V μ P Reset, active HIGH, Push-Pull output. Maximum supply current over temperature is a low 15 μ A (at 3.6V).

The ASM1817 generates an active HIGH reset signal whenever the monitored supply is out of tolerance. A precision reference and comparator circuit monitor power supply (V_{CC}) level. Tolerance level options are 5%, 10% and 20% percent. When an out-of-tolerance condition is detected, an internal power-fail signal is generated which forces an active HIGH reset signal. After V_{CC} returns to an in-tolerance condition, the reset signal remains active for 150ms to allow the power supply and system microprocessor to stabilize.

The ASM1817 is designed with a push-pull output stage and operates over the extended industrial temperature range. Devices are available in TO-92 and compact surface mount SOT-23 packages.

Other low power products in this family include the ASM1810/ 11/12/15/16, ASM1233D and ASM1233M.

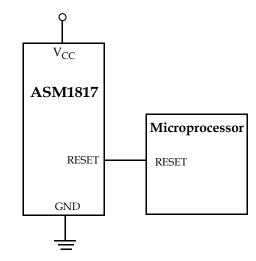
Key Features

- Low Supply Current
 •20 µA maximum (5.5 V)
 - •15 µA maximum (3.6 V)
- Automatically restarts a microprocessor after power failure
- 150ms reset delay after V_{CC} returns to an in-tolerance condition
- Active HIGH power-up reset
- Precision temperature-compensated voltage reference and comparator
- Eliminates external components
- TO-92 and compact surface mount SOT-23 package
- Push-Pull output for minimum current drain
- Operating temperature -40°C to +85°C

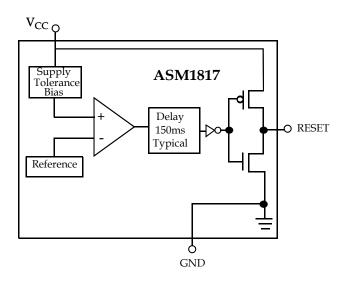
Applications

- Set-top boxes
- Cellular phones
- PDAs
- Energy management systems
- Embedded control systems
 - Printers
- Single board computers

Typical Operating Circuit

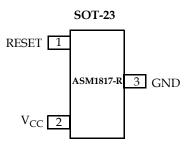


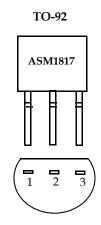
Block Diagram





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Pin Description

TO-92	SOT-23	Pin Name	Description	
Pin #	Pin #		Description	
1	1	RESET	Active HIGH reset output	
2	2	V _{CC}	Power supply input	
3	3	GND	Ground	

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Application Information

Operation - Power Monitor

The ASM1817 detects out-of-tolerance power supply conditions. It resets a processor during power-up, power-down and issues a reset to the system processor when the monitored power supply voltage is below the reset threshold. When an out-of-tolerance V_{CC} voltage is detected, the RESET signal is asserted. On power-up, RESET is kept active (HIGH) for approximatley 150ms after the power supply voltage has reached the selected tolerance. This allows the power supply and microprocessor to stablize before RESET is released.

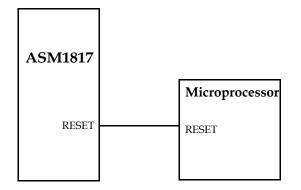
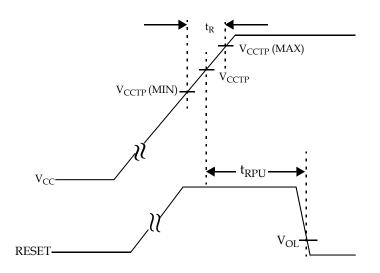
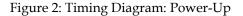
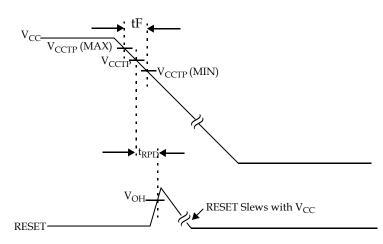
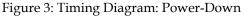


Figure 1: Typical Application











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Absolute Maximum Ratings

Parameter	Min	Max	Unit		
Voltage on V _{CC}	-0.5	7	V		
Voltage on RESET	-0.5	V _{CC} + 0.5	V		
Operating Temperature Range	-40	85	٦°		
Soldering Temperature (for 10 sec)		260	°C		
Storage Temperature	-55	125	°C		
ESD rating HBM MM		2 200	KV V		
NOTE: These are stress ratings only and functional use is not implied. Exposure to absolute maximum rat- ings for prolonged periods of time may affect device reliability.					

Electrical Characteristics

Unless otherwise noted, $V_{CC} = 1.2V$ to 5.5V and specifications are over the operating temperature range of -40°C to +85°C. All voltages are referenced to ground

Parameter	Symbol	Conditions	Min	Тур	Max	Unit
Supply voltage	V _{CC}		1.2		5.5	V
Output Voltage	V _{OH}	Ι _{ΟUT} < 500 μΑ	V _{CC} - 0.5V	V _{CC} - 0.1V		V
Output Current	I _{ОН}	Output = 2.4V, $V_{CC} \ge 2.7V$		350		μA
Output Current	I _{OL}	Output = 0.4V, $V_{CC} \ge 2.7V$	+10			mA
Operating Current	I _{CC}	V _{CC} < 5.5V, RESET output open		8	20	μA
Operating Current	I _{CC}	$V_{CC} \leq 3.6V$, RESET output open		6	15	μA
V _{CC} Trip Point (ASM1817R-5)	V _{CCTP}		2.98	3.06	3.15	V
V _{CC} Trip Point (ASM1817R-10)	V _{CCTP}		2.80	2.88	2.97	V
V _{CC} Trip Point (ASM1817R-20)	V _{CCTP}		2.47	2.55	2.64	V
Output Capacitance	C _{OUT}				10	pF
V _{CC} Detect to RESET Low	t _{RPD}			2	5	μs
V_{CC} Slew Rate (V_{CCTP} (MAX) to V_{CCTP} (MIN)	t _F		300			μs
V _{CC} Slew Rate (V _{CCTP} (MIN) to V _{CCTP} (MAX)	t _R		0			ns
V _{CC} Detect to RESET High	t _{RPU}	t _r = 5µs	100	150	250	ms
Note: The t _F value is for reference in defining values for t _{RPD} and should not be considered for proper operation or use.						



rev 1.5 Family Selection Guide

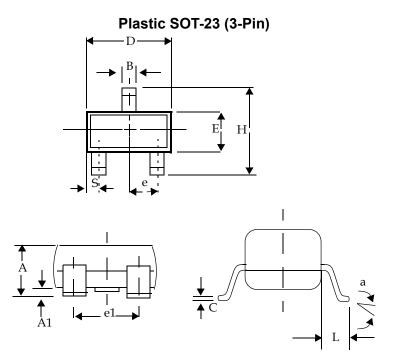
Part #	RESET Voltage (V)	RESET Time (ms)	Output Stage	RESET Polarity
ASM1810	4.620, 4.370, 4.120	150	Push-Pull	LOW
ASM1811	4.620, 4.350, 4.130	150	Open-Drain	LOW
ASM1812	4.620, 4.350, 4.130	150	Push-Pull	HIGH
ASM1815	3.060, 2.880, 2.550	150	Push-Pull	LOW
ASM1816	3.060, 2.880, 2.550	150	Open-Drain	LOW
ASM1817	3.060, 2.880, 2.550	150	Push-Pull	HIGH
ASM1233D	4.625, 4.375, 4.125	350	Open-Drain	LOW
ASM1233M	4.625, 4.375, 2.720	350	Open-Drain	LOW

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Package Dimension

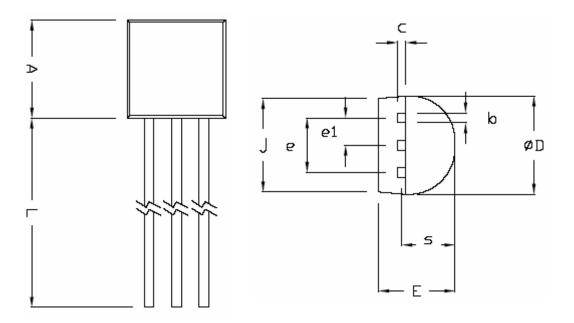


	Incl	nes	Millimeters				
	Min Max		Min	Max			
	Plastic SOT-23 (3-Pin)						
А	0.030	0.046	0.75	1.17			
A1	0.002	0.006	0.05	0.15			
В	0.012	0.020	0.30	0.50			
С	0.003 0.008 0.		0.08	0.20			
D	0.110	0.120	2.80	3.04			
E	0.047	0.055	1.20	1.40			
е	0.037	BSC	0.95 BSC				
e1	0.075	BSC	1.9 BSC				
н	0.083	0.104	2.10	2.64			
L	0.016	0.024	0.40	0.60			
а	0 ⁰	0 8	0 ⁰	80			
S	NA		NA				



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To-92 (3-Pin)



	Dimensions in Inches		Dimensions in Millimeters			
	Min	Max Min		Мах		
TO-92						
А	0.175	0.185	4.445	4.699		
b	0.016	0.020	0.406	0.508		
С	0.014	0.016	0.356	0.406		
φD	0.175	0.185	4.445	4.699		
E	0.138	0.144	3.505	3.658		
е	0.098	0.102	2.489	2.591		
e1	0.045	0.055	1.143	1.397		
j	0.168	0.174	4.269	4.420		
L	0.500	0.585	12.7	14.86		
S	0.095	0.099	2.413	2.515		



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Ordering Information

Device Summary								
Part Number**	RESET Output Voltage (V)	RESET Tolerance (%)	RESET Time (ms)	Push-Pull Output Stage	SOT-23 Package	RESET Polarity	Package Marking	
TIN - LEAD DEVIC	TIN - LEAD DEVICES							
ASM1817R-5	3.06	5	150	♦	•	HIGH	RPLL	
ASM1817R-10	2.88	10	150	•	•	HIGH	RQLL	
ASM1817R-20	2.55	20	150	♦	•	HIGH	RRLL	
LEAD FREE DEV	CES							
ASM1817R-5F	3.06	5	150	•	•	HIGH	KPLL	
ASM1817R-10F	2.88	10	150	•	•	HIGH	KQLL	
ASM1817R-20F	2.55	20	150	•	•	HIGH	KRLL	
Part Number**	RESET Output Voltage (V)	RESET Tolerance (%)	RESET Time (ms)	Push-Pull Output Stage	TO-92 Package	RESET Polarity	Package Marking	
TIN - LEAD DEVIC	CES							
ASM1817-5	3.06	5	150	•	•	HIGH	ASM1817-5	
ASM1817-10	2.88	10	150	•	•	HIGH	ASM1817-10	
ASM1817-20	2.55	20	150	♦	•	HIGH	ASM1817-20	
LEAD FREE DEV	LEAD FREE DEVICES							
ASM1817-5F	3.06	5	150	♦	•	HIGH	ASM1817-5F	
ASM1817-10F	2.88	10	150	•	•	HIGH	ASM1817-10F	
ASM1817-20F	2.55	20	150	•	•	HIGH	ASM1817-20F	
** Add /T to Part Number for Tape and Reel (i.e ASM18xx-x/T) LL- Lot Code								





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