

ASM1232LP/LPS



General Description

The ASM1232LP/LPS is a fully integrated microprocessor supervisor. It can halt and restart a "hung-up" microprocessor, restart a microprocessor after a power failure. It has a watchdog timer and external reset override.

A precision temperature-compensated reference and comparator circuits monitor the 5V, V_{CC} input voltage status. During power-up or when the V_{CC} power supply falls outside selectable tolerance limits, both RESET and RESET become active. When V_{CC} rises above the threshold voltage, the reset signals remain active for an additional 250ms minimum, allowing the power supply and system microprocessor to stabilize. The trip point tolerance signal, TOL, selects the trip level tolerance to be either 5% or 10%.

Each device has both a push-pull, active HIGH reset output and an open drain active LOW reset output. A debounced manual reset input, PBRST, activates the reset outputs for a minimum period of 250ms.

There is a watchdog timer to stop and restart a microprocessor that is "hung-up". The watchdog timeouts periods are selectable: 150ms, 610ms and 1200ms. If the \overline{ST} input is not strobed LOW before the time-out period expires, a reset is generated.

Devices are available in 8-pin DIP, 16-pin SO and compact 8-pin MicroSO packages.

Key Features

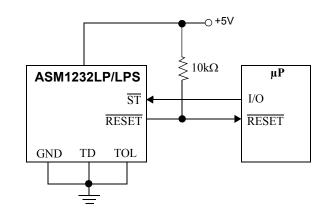
- 5V supply monitor
- Selectable watchdog period
- Debounce manual push-button reset input
- Precision temperature-compensated voltage reference and comparator.
- Power-up, power-down and brown out detection
- 250ms minimum reset time
- Active LOW open drain reset output and active HIGH push-pull output
- Selectable trip point tolerance: 5% or 10%

- Low-cost surface mount packages: 8-pin/16-pin SO, 8-pin
 DIP and 8-pin Micro SO packages
- Wide operating temperature -40°C to +85°C (N suffixed devices)

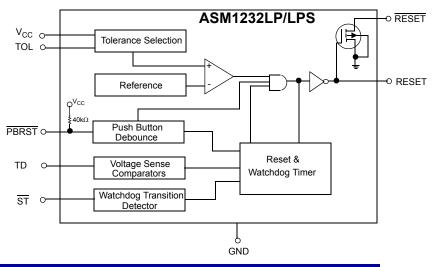
Applications

- Microprocessor Systems
- Computers
- Controllers
- Portable Equipment
- Intelligent Instuments
- Automotive Systems

Typical Operating Circuit



Block Diagram

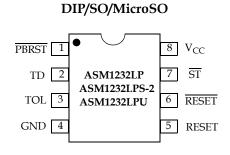


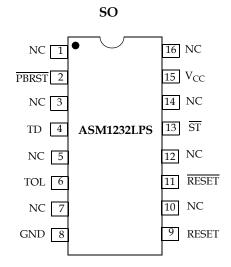
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Pin Description

Pin # 8-Pin Package	Pin # 16-Pin Package	Pin Name	Function
1	2	PBRST	Debounced manual pushbutton RESET input.
2	4	TD	Watchdog time delay selection. (t_{TD} = 150ms for TD = GND, t_{TD} = 610ms for TD=Open, and t_{TD} = 1200ms for TD = V _{CC}).
3	6	TOL	Selects 5% (TOL connected to GND) or 10% (TOL connected to $V_{CC})$ trip point tolerance.
4	8	GND	Ground.
5	9	RESET	 Active HIGH reset output. RESET is active: 1. If V_{CC} falls below the reset voltage trip point. 2. If PBRST is LOW. 3. If ST is not strobed LOW before the timeout period set by TD expires. 4. During power-up.
6	11	RESET	Active LOW reset output. (See RESET).
7	13	ST	Strobe input.
8	15	V _{CC}	5V power.
-	1,3,5,7, 10,12,14,16	NC	No internal connection.

5V µP Power Supply Monitor and Reset Circuit

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Detailed Description

The ASM1232LP/LPS monitors the microprocessor or microcontroller power supply and generates reset signal, both active HIGH and Active LOW, that halt processor operation whenever the power supply voltage levels are outside a predetermined tolerance.

RESET and RESET outputs

RESET is an active HIGH signal developed by a CMOS push-pull output stage and is the logical opposite to RESET.

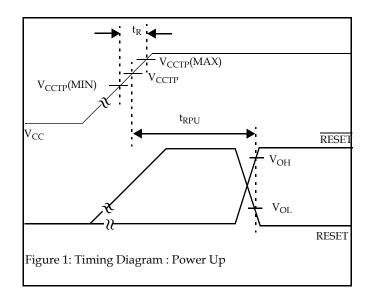
RESET is an active LOW signal. It is developed with an open drain driver. A pull up resistor of typical value $10k\Omega$ to $50k\Omega$ is required to connect with the output.

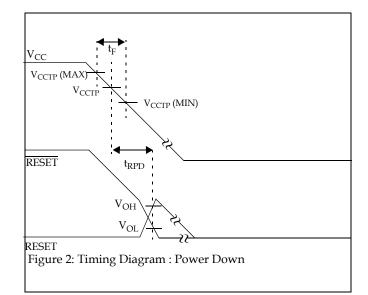
Trip Point Tolerance Selection

The TOL input is used to determine the level V_{CC} can vary below 5V without asserting a reset. With TOL conected to V_{CC}, RESET and RESET become active whenever V_{CC} falls below 4.5V. RESET and RESET become active when the V_{CC} falls below 4.75V if TOL is connected to ground.

After V_{CC} has risen above the trip point set by TOL, RESET and RESET remain active for a minimum time period of 250ms. On power-down, once V_{CC} falls below the reset threshold RESET stays LOW and is guaranteed to be 0.4V or less until V_{CC} drops below 1.2V. The active HIGH reset signal is valid down to a V_{CC} level of 1.2V also.

Tolerance Select	Tolerance	TRIP Point Voltage (V)		
UEIECI		Min	Nom	Мах
TOL = V_{CC}	10%	4.25	4.37	4.49
TOL = GND	5%	4.5	4.62	4.74





Application Information

Manual Reset Operation

Push-button switch input, $\overline{\text{PBRST}}$, allows the user to override the internal trip point detection circuits and issue reset signals. The pushbutton input is debounced and is pulled HIGH through an internal 40k Ω resistor.



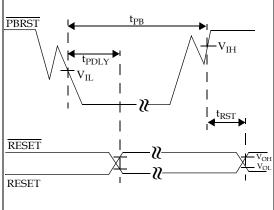
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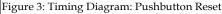
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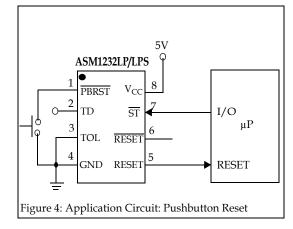
When $\overline{\text{PBRST}}$ is held LOW for the minimum time t_{PB} , both resets become active and remain active for a minimum time period of 250ms after $\overline{\text{PBRST}}$ returns HIGH.

The debounced input is guaranteed to recognize pulses greater than 20ms. No external pull-up resistor is required, since $\overrightarrow{\text{PBRST}}$ is pulled HIGH by an internal 40k Ω resistor.

The PBRST can be driven from a TTL or CMOS logic line or shorted to ground with a mechanical switch.







Watchdog Timer and ST Input

A watchdog timer stops and restarts a microprocessor that is "hung-up". The μ P must toggle the \overline{ST} input within a set period (as selectable through TD input) to verify proper software execution. If the \overline{ST} is not toggled low within the minimum timeout period, reset signals become active. In power-up after the supply voltage returns to an in-tolerance condition, the reset signal remains active for 250ms minimum, allowing the power supply and system microprocessor to stabilize. $\overline{\text{ST}}$ pulses as short as 20ns can be detected.

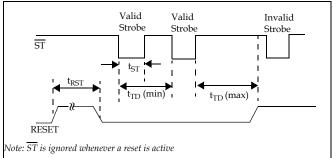
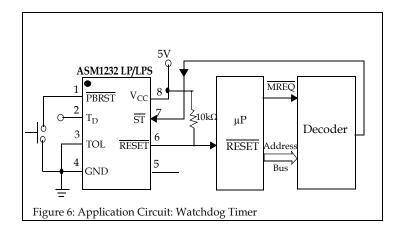


Figure 5: Timing Diagram: Strobe Input

Timeouts periods of approximately 150ms, 610ms or 1,200ms are selected through the TD pin.

TD Voltage level	Watchdog Time-out Period (ms)				
	Min	Nom	Мах		
GND	62.5	150	250		
Floating	250	610	1000		
V _{CC}	500	1200	2000		

The watchdog timer can not be disabled. It must be strobed with a high-to-low transition to avoid watchdog timeout and reset.





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Absolute Maximum Ratings

Parameter	Min	Мах	Unit
Voltage on V _{CC}	-0.5	7	V
Voltage on ST, TD	-0.5	V _{CC} + 0.5	V
Voltage on PBRST, RESET, RESET	-0.5	V _{CC} + 0.5	V
Operating Temperature Range (N suffixed devices)	-40	+85	°C
Operating Temperature Range (others)	0	70	°C
Soldering Temperature (for 10 sec)		+260	°C
Storage Temperature	-55	+125	°C
ESD rating HBM MM		2 200	KV V
Note: 1. Voltages are measured with respect to ground 2. These are stress ratings only and functional implication is not implied. If periods may affect device reliability.	Exposure to absolute	maximum ratings t	for extende

DC Electrical Characteristics

Unless otherwise stated, 4.5V <= V_{CC} <= 5.5V and over the operating temperature range of 0°C to 70°C (-40°C to +85°C. for N devices). All voltages are referenced to ground.

Parameter	Symbol	Conditions	Min	Тур	Мах	Unit
Supply Voltage	V _{CC}		4.5		5.5	V
ST and PBRST Input High Level	V _{IH}		2		V _{CC} + 0.3	V
ST and PBRST Input Low Level	V _{IL}		-0.3		0.8	V
V _{CC} Trip Point (T _{OL} = GND)	V _{CCTP}		4.50	4.62	4.74	V
V_{CC} Trip Point (T _{OL} = V _{CC})	V _{CCTP}		4.25	4.37	4.49	V
Watchdog Timeout Period	t _{TD}	T _D = GND	62.5	150	250	ms
Watchdog Timeout Period	t _{TD}	T _D = VCC	500	1200	2000	ms
Watchdog Timeout Period	t _{TD}	T _D Floating	250	610	1000	ms
Output Voltage	V _{OH}	I=-500µA, Note 3	V _{CC} - 0.5	V _{CC} - 0.1		V
Output Current	I _{OH}	Output = 2.4V, Note 2	-8	-10		mA
Output Current	I _{OL}	Output = 0.4V	10			mA



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Parameter	Symbol	Conditions	Min	Тур	Мах	Unit
Input Leakage	۱ _{IL}	Note 1	-1.0		1.0	μA
RESET Low Level	V _{OL}	Note 3			0.4	V
Internal Pull-up Resistor		Note 1		40		kΩ
Operating Current (CMOS)	I _{CC1}				30	μA
Input Capacitance	C _{IN}				5	pF
Output Capacitance	C _{OUT}				10	pF
PBRST Manual Reset Minimum Low Time	t _{PB}	PBRST = V _{IL}	20			ms
Reset Active Time	t _{RST}		250	610	1000	ms
ST Pulse Width	t _{ST}	Note 4	20			ns
V _{CC} Fail Detect to RESET or RESET	t _{RPD}			5	8	μs
V _{CC} Slew Rate	t _F	4.75V to 4.25V	300			μs
PBRST Stable LOW to RESET and RESET Active	t _{PDLY}				20	ms
V _{CC} Detect to RESET or RESET inactive	t _{RPU}	t _{RISE} = 5µs	250	610	1000	ms
V _{CC} Slew Rate	t _R	4.25V to 4.75V	0			ns

Notes

1. $\overline{\text{PBRST}}$ is internally pulled HIGH to V_{CC} through a nominal 40k Ω resistor.

2. RESET is an open drain output.

3. RESET remains within 0.5V of V_{CC} on power-down until V_{CC} falls below 2V. RESET remains within 0.5V of ground on power-down until V_{CC} falls below 2.0V.

4. Must not exceed the minimum watchdog time-out period (t_{TD}). The watchdogcircuit cannot be disabled. To avoid a reset, \overline{ST} must be strobed.

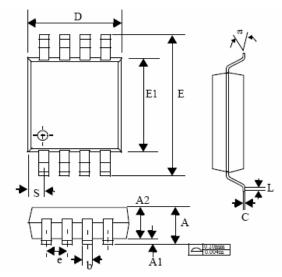


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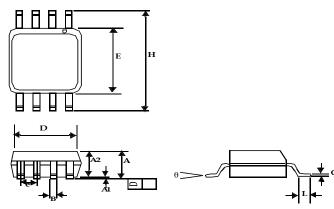
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Package Information

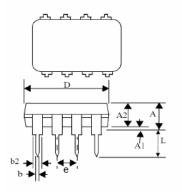
MicroSO (8-Pin)

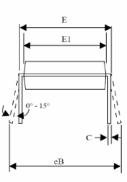


SO (8-Pin)



Plastic DIP (8-Pin)





Min Max Min Max MicroSO (8-Pin) MicroSO (8-Pin) 1.10 A1 0.002 0.006 0.05 0.15 A2 0.030 0.038 0.76 0.97 b 0.012 BSC 0.30 BSC 0.20 0.01 0.20 C 0.004 0.008 0.10 0.20 D 0.114 0.122 2.90 3.10 e 0.0256 BSC 0.65 BSC 0.65 E 0.184 0.200 4.67 5.08 E1 0.114 0.122 2.90 3.10 L 0.016 0.026 0.41 0.66 S 0.0206 BSC 0.52 BSC 0.52 BSC a 0° 6° 0° 6° J 0.010 0.10 0.25 A 0.053 0.069 1.35 1.75 A1 0.004 0.010 0.10 0.25 A2 0.012 0.		Incl	nes	Millim	eteres
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A1 0.002 0.006 0.05 0.15 A2 0.030 0.038 0.76 0.97 b 0.012 BSC 0.30 BSC C 0.004 0.008 0.10 0.20 D 0.114 0.122 2.90 3.10 e 0.0256 BSC 0.65 BSC 0.65 E 0.184 0.200 4.67 5.08 E1 0.114 0.122 2.90 3.10 L 0.016 0.026 0.41 0.66 S 0.0206 BSC 0.52 BSC 0.53 a 0° 6° 0° 6° A 0.053 0.069 1.35 1.75 A1 0.004 0.010 0.10 0.25 A2 0.049 0.059 1.25 1.50 B 0.012 0.020 0.31 0.51 C 0.007 0.010 0.18 0.25 D 0.193 BSC <			MicroSO (8-	Pin)	
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a0°6°0°6°SO (8-Pin)A0.0530.0691.351.75A10.0040.0100.100.25A20.0490.0591.251.50B0.0120.0200.310.51C0.0070.0100.180.25D0.193 BSC4.90 BSCE0.154 BSC3.91 BSCe0.050 BSC1.27 BSCH0.236 BSC6.00 BSCL0.0160.0500.411.2700°8°O°8°0°8°Plastic DIP (8-Pin)A-0.210-A-0.210-A10.015-0.38A20.1150.1952.924.95b0.0140.0220.360.56b20.0450.0701.141.78C0.0080.0140.200.36D0.3550.4009.0210.16E0.3000.3257.628.26E10.2400.2806.107.11e0.10U BSC2.54 BSCeB-0.430-10.92	L	0.016	0.026	0.41	0.66
A 0.053 0.069 1.35 1.75 A1 0.004 0.010 0.10 0.25 A2 0.049 0.059 1.25 1.50 B 0.012 0.020 0.31 0.51 C 0.007 0.010 0.18 0.25 D 0.193 BSC 4.90 BSC E 0.193 BSC 4.90 BSC E 0.154 BSC 3.91 BSC E 0.050 BSC 1.27 BSC H 0.236 BSC 6.00 BSC 1.27 BSC E 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° 8 1.27 BSC L 0.016 0.050 0.41 1.27 1.27 8 1.27	S	0.0206	BSC	0.52	BSC
A 0.053 0.069 1.35 1.75 A1 0.004 0.010 0.10 0.25 A2 0.049 0.059 1.25 1.50 B 0.012 0.020 0.31 0.51 C 0.007 0.010 0.18 0.25 D 0.193 BSC 4.90 BSC E E 0.154 BSC 3.91 BSC 4.90 BSC E 0.050 BSC 1.27 BSC H H 0.236 BSC 6.00 BSC L L 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° L 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° L 0.016 0.050 0.41 1.27 A - 0.210 - 5.33 A1 0.015 - 0.38 - A2 0.115 0.195 2.92	а	0°	6°	0°	6°
A1 0.004 0.010 0.10 0.25 A2 0.049 0.059 1.25 1.50 B 0.012 0.020 0.31 0.51 C 0.007 0.010 0.18 0.25 D 0.193 BSC 4.90 BSCE 0.154 BSC 3.91 BSCe 0.050 BSC 1.27 BSCH 0.236 BSC 6.00 BSCL 0.016 0.050 0.41 0° 8° 0° 8° \bullet 0.015 0.210 $ 5.33$ $A1$ 0.015 $ A2$ 0.115 0.195 2.92 $A1$ 0.015 $ 0.38$ $A2$ 0.014 0.022 0.36 0.014 0.022 0.36 0.56 $b2$ 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 $E1$ 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB $ 0.430$			SO (8-Pir	ı)	
A2 0.049 0.059 1.25 1.50 B 0.012 0.020 0.31 0.51 C 0.007 0.010 0.18 0.25 D 0.193 BSC 4.90 BSCE 0.154 BSC 3.91 BSCe 0.050 BSC 1.27 BSCH 0.236 BSC 6.00 BSCL 0.016 0.050 0.41 0° 8° 0° 8° ϕ 0° 8° 0° 8° A $ 0.210$ $ 5.33$ A1 0.015 $ 0.38$ $-$ A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSCeB $ 0.430$ $ 10.92$	А	0.053	0.069	1.35	1.75
B 0.012 0.020 0.31 0.51 C 0.007 0.010 0.18 0.25 D 0.193 BSC 4.90 BSC E 0.154 BSC 3.91 BSC e 0.050 BSC 1.27 BSC H 0.236 BSC 6.00 BSC L 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° Plastic DIP (8-Pin) A - 0.210 - 5.33 A1 0.015 - 0.38 - A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 <td>A1</td> <td>0.004</td> <td>0.010</td> <td>0.10</td> <td>0.25</td>	A1	0.004	0.010	0.10	0.25
C 0.007 0.010 0.18 0.25 D 0.193 BSC 4.90 BSC E 0.154 BSC 3.91 BSC e 0.050 BSC 1.27 BSC H 0.236 BSC 6.00 BSC L 0.016 0.050 0.41 θ 0° 8° 0° 8° Plastic DIP (8-Pin) Plastic DIP (8-Pin) A Λ 0.015 - 5.33 A1 0.015 - 0.38 - A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC <t< td=""><td>A2</td><td>0.049</td><td>0.059</td><td>1.25</td><td>1.50</td></t<>	A2	0.049	0.059	1.25	1.50
D 0.193 BSC 4.90 BSC E 0.154 BSC 3.91 BSC e 0.050 BSC 1.27 BSC H 0.236 BSC 6.00 BSC L 0.016 0.050 0.41 θ 0° 8° 0° 8° V Plastic DIP (8-Pin) A - 0.210 - 5.33 A1 0.015 - 0.38 - 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB - 0.430	В	0.012	0.020	0.31	0.51
E 0.154 BSC 3.91 BSC e 0.050 BSC 1.27 BSC H 0.236 BSC 6.00 BSC L 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° Plastic DIP (8-Pin)A- 0.210 - 5.33 A1 0.015 - 0.38 -A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB- 0.430 - 10.92	С	0.007	0.010	0.18	0.25
e 0.050 BSC 1.27 BSC H 0.236 BSC 6.00 BSC L 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° Plastic DIP (8-Pin)A- 0.210 - 5.33 A1 0.015 - 0.38 -A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB	D	0.193	BSC	4.90	BSC
H 0.236 BSC 6.00 BSCL 0.016 0.050 0.41 1.27 θ 0° 8° 0° 8° Plastic DIP (8-Pin)A- 0.210 - 5.33 A1 0.015 - 0.38 -A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSCeB- 0.430 - 10.92	E	0.154	BSC	3.91	BSC
L0.0160.0500.411.27θ0°8°0°8°Plastic DIP (8-Pin)A-0.210-5.33A10.015-0.38-A20.1150.1952.924.95b0.0140.0220.360.56b20.0450.0701.141.78C0.0080.0140.200.36D0.3550.4009.0210.16E0.3000.3257.628.26E10.2400.2806.107.11e0.100 BSC2.54 BSCeB-0.430-10.92	е	0.050	BSC	1.27 BSC	
θ 0° 8° 0° 8° Plastic DIP (8-Pin) A - 0.210 - 5.33 A1 0.015 - 0.38 - A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 9.02 10.92	Н	0.236	BSC	6.00 BSC	
Plastic DIP (8-Pin) A - 0.210 - 5.33 A1 0.015 - 0.38 - A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 9.2 eB - 0.430 - 10.92	L	0.016	0.050	0.41	
A - 0.210 - 5.33 A1 0.015 - 0.38 - A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 8.92 eB - 0.430 - 10.92	θ	0°	-	_	8°
A1 0.015 - 0.38 - A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 9.02 10.92			Plastic DIP (8	3-Pin)	
A2 0.115 0.195 2.92 4.95 b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 9.02 10.92	А		0.210	-	5.33
b 0.014 0.022 0.36 0.56 b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 8.26 eB - 0.430 - 10.92			-		-
b2 0.045 0.070 1.14 1.78 C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 9.02 10.92	A2	0.115	0.195	2.92	4.95
C 0.008 0.014 0.20 0.36 D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC 882 eB - 0.430 - 10.92	b				
D 0.355 0.400 9.02 10.16 E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB - 0.430 - 10.92				1.14	
E 0.300 0.325 7.62 8.26 E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB - 0.430 - 10.92	С	0.008			
E1 0.240 0.280 6.10 7.11 e 0.100 BSC 2.54 BSC eB - 0.430 - 10.92					
e 0.100 BSC 2.54 BSC eB - 0.430 - 10.92		0.300			
eB - 0.430 - 10.92	E1			6.10	7.11
	е	0.100		2.54	
L 0.115 0.150 2.92 3.81	eВ	-		-	
	L	0.115	0.150	2.92	3.81

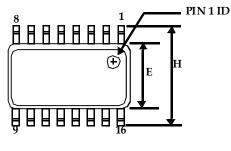
5V µP Power Supply Monitor and Reset Circuit

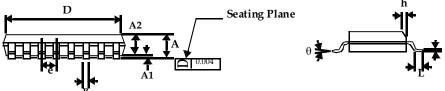
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SO (16-Pin)





	SO (16-Pin)*					
	Inc	hes	Millimeter			
	Min	Мах	Min	Мах		
А	0.053	0.069	1.35	1.75		
A1	0.004	0.010	0.10	0.25		
A2	0.049	0.059	1.25	1.50		
В	0.013	0.022	0.33	0.53		
С	0.008	0.012	0.19	0.27		
D	0.386	0.394	9.80	10.01		
E	0.150	0.157	3.80	4.00		
е	0.050	BSC	1.27 BS	С		
Н	0.228	0.244	5.80	6.20		
h	0.010	0.016	0.25	0.41		
L	0.016	0.035	0.40	0.89		
θ	0°	8°	0°	8°		

* JEDEC Drawing MS-013AA



ASM1232LP/LPS

rev 1.5

Ordering Information

Part Number	Package	Operating Temperature Range	Maximum Supply Current (μΑ)	Voltage Monitoring Application	Package Marking		
TIN-LEAD DEVICES							
ASM1232LP	8L PDIP	0°C to +70°C	30	5V	ASM1232LP		
ASM1232LPN	8L PDIP	-40° C to +85°C	30	5V	ASM1232LPN		
ASM1232LPS	16L SOIC	0°C to +70°C	30	5V	ASM1232LPS		
ASM1232LPS-2	8L SOIC	0°C to +70° C	30	5V	ASM1232LPS-2		
ASM1232LPSN	16L SOIC	-40°C to +85°C	30	5V	ASM1232LPSN		
ASM1232LPSN-2	8L SOIC	-40°C to +85°C	30	5V	ASM1232LPSN-2		
ASM1232LPU	8L MSOP	0°C to +70°C	30	5V	ASM1232LP		
ASM1232LPUN	8L MSOP	-40°C to +85°C	30	5V	ASM1232LPN		
LEAD FREE DEVICES	5						
ASM1232LPF	8L PDIP	0°C to +70°C	30	5V	ASM1232LPF		
ASM1232LPNF	8L PDIP	-40°C to +85°C	30	5V	ASM1232LPNF		
ASM1232LPS-2F	8L SOIC	0°C to +70°C	30	5V	ASM1232LPS-2F		
ASM1232LPSF	16L SOIC	0°C to +70°C	30	5V	ASM1232LPSF		
ASM1232LPSN-2F	8L SOIC	-40°C to +85°C	30	5V	ASM1232LPSN-2F		
ASM1232LPSNF	16L SOIC	-40°C to +85°C	30	5V	ASM1232LPSNF		
ASM1232LPUF	8L MSOP	0°C to +70°C	30	5V	ASM1232LPF		
ASM1232LPUNF	8L MSOP	-40°C to +85°C	30	5V	ASM1232LPNF		

5V µP Power Supply Monitor and Reset Circuit

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ASM1232LP/LPS



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