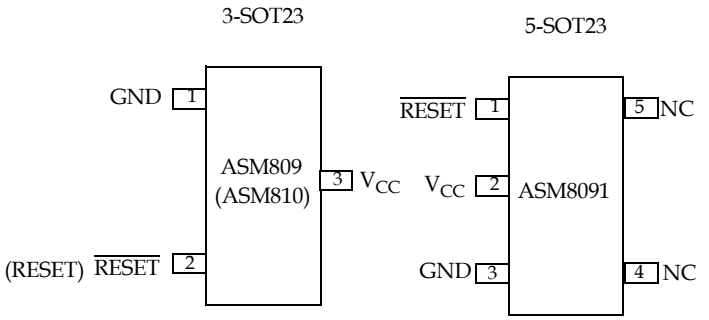
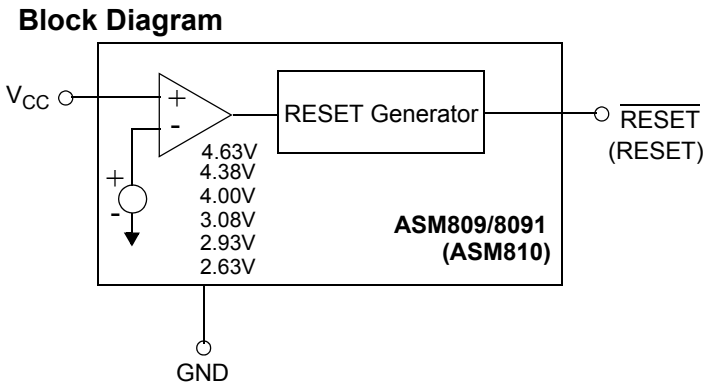
Pin Diagram



Block Diagram



Pin Description

Pin #			Pin Name	Function
ASM8091 5-SOT 23	ASM809 3-SOT 23	ASM810		
3	1	-	GND	Ground.
1	2	-	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$ is asserted LOW if V_{CC} falls below V_{TH} and remains LOW for atleast 140mS (T_{RST}) after V_{CC} exceeds the threshold.
-	-	2	RESET	RESET is asserted HIGH if V_{CC} falls below V_{TH} and remains HIGH for atleast 140mS (T_{RST}) after V_{CC} exceeds the threshold.
2	3	-	V_{CC}	Power supply input voltage (3.0V, 3.3V, 5.0V).

Detailed Description

A proper reset input enables a microprocessor / microcontroller to start in a known state. ASM809/ASM8091/ ASM810 assert reset to prevent code execution errors during power-up, power-down and brown-out conditions.

Reset Timing

The reset signal is asserted LOW for the ASM809,ASM8091 and HIGH for the ASM810 when the V_{CC} supply voltage falls below the threshold trip voltage and remains asserted for 140mS minimum after the V_{CC} has risen above the threshold.

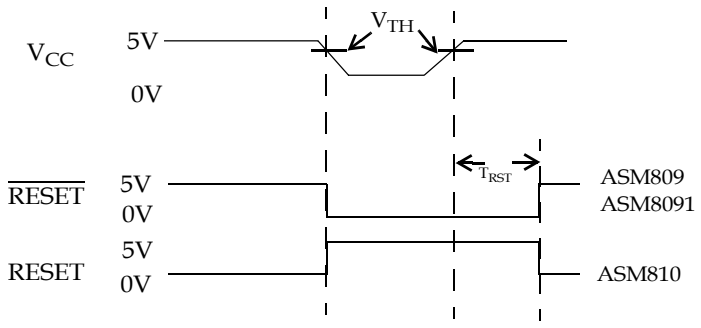


Figure 1: Reset TIming Diagram

Application Information

Negative V_{CC} Transients

The ASM809/ASM8091/ASM810 protect µpS from brownouts and low V_{CC}. Short duration transients of 100mV amplitude and 60µpS or less duration typically do not cause a false RESET.

Valid Reset with V_{CC} under 1.1V

When V_{CC} is under 1.1V, to ensure logic inputs connected to the ASM809,ASM8091 $\overline{\text{RESET}}$ pin are in a known state, a 100kΩ pull-down resistor is needed at $\overline{\text{RESET}}$. The value of the resistor is not critical. A 100kΩ pull-up resistor to V_{CC} at RESET is needed with the ASM810.

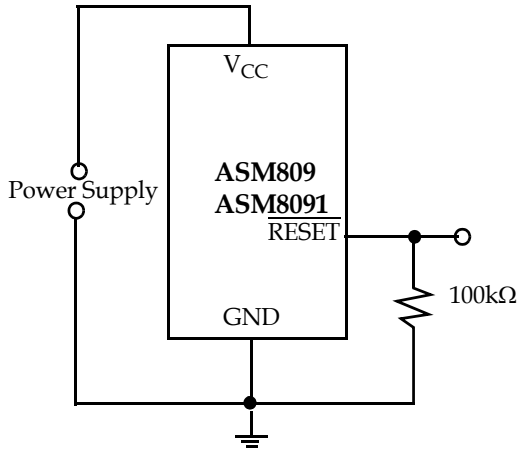


Figure 2: $\overline{\text{RESET}}$ valid with V_{CC} under 1.1V

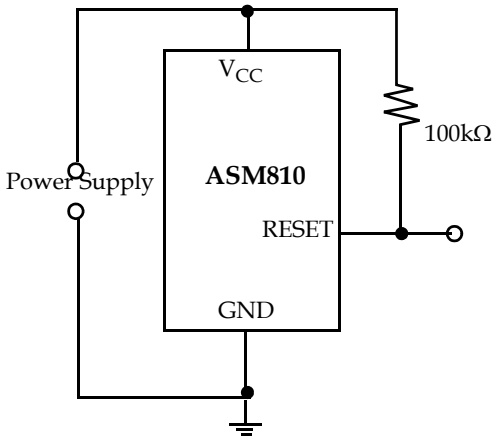


Figure 3: RESET valid with V_{CC} under 1.1V

Bidirectional Reset Pin Interfacing

The ASM809/ASM8091/ASM810 can interface with µP / µC bi-directional reset pins by connecting a 4.7kΩ resistor in series with the ASM809/ASM8091/ASM810 reset output and the µP/µC bi-directional reset pin.

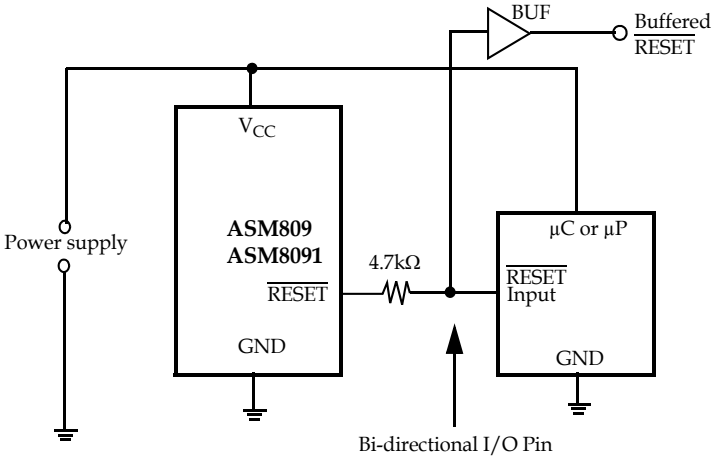


Figure 4: Bidirectional Reset Pin Interfacing

Absolute Maximum Ratings Table 1:

Parameter	Min	Max	Units
Pin Terminal Voltage With Respect To Ground			
V_{CC}	-0.3	6.0	V
RESET, $\overline{\text{RESET}}$	-0.3	V_{CC} + 0.3	V
Input current at V_{CC}		20	mA
Output current: RESET, $\overline{\text{RESET}}$		20	mA
Rate of Rise at V_{CC}		100	V/µs
ESD rating HBM MM		 2 200	 KV V
Note: These are stress ratings only and the functional operation is not implied. Exposure to absolute maximum ratings for prolonged time periods may affect device reliability.			

Absolute Maximum Ratings Table 2:

Parameter	Min	Max	Units
Power Dissipation (T_A = 70°C)		320	mW
Operating temperature range	-40	105	°C
Storage temperature range	-65	160	°C
Lead temperature (Soldering, 10 sec)		300	°C
Note: These are stress ratings only and the functional operation is not implied. Exposure to absolute maximum ratings for prolonged time periods may affect device reliability.			

Electrical Characteristics:

Unless otherwise noted, V_{CC} is over the full voltage range, T_A = -40°C to 105°C.
Typical values at T_A = 25°C, V_{CC} = 5V for L/M/J devices, V_{CC} = 3.3V for T/S devices and V_{CC} = 3V for R devices.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{CC}	Input Voltage Range	T_A = 0°C to 70°C T_A = -40°C to 105°C		1.1 1.2		5.5 5.5	V V
I_{CC}	Supply Current	T_A= -40°C to 85°C T_A = -40°C to 85°C T_A = 85°C to 105°C T_A = 85°C to 105°C	V_{CC} < 5.5V V_{CC} < 3.6V V_{CC} < 5.5V V_{CC} < 3.6V		9 6.0	15 10 25 20	µA
V_{TH}	Reset Threshold	L devices	T_A = 25°C T_A = -40°C to 85°C T_A = 85°C to 105°C	4.56 4.50 4.40	4.63	4.70 4.75 4.86	V
		M devices	T_A = 25°C T_A = -40°C to 85°C T_A = 85°C to 105°C	4.31 4.25 4.16	4.38	4.45 4.50 4.56	
		J devices	T_A = 25°C T_A = -40°C to 85°C T_A = 85°C to 105°C	3.93 3.89 3.80	4.00	4.06 4.10 4.20	
		T devices	T_A = 25°C T_A = -40°C to 85°C T_A = 85°C to 105°C	3.04 3.00 2.92	3.08	3.11 3.15 3.23	
		S devices	T_A = 25°C T_A = -40°C to 85°C T_A = 85°C to 105°C	2.89 2.85 2.78	2.93	2.96 3.00 3.08	
		R devices	T_A = 25°C T_A = -40°C to 85°C T_A = 85°C to 105°C	2.59 2.55 2.50	2.63	2.66 2.70 2.76	
	Reset Threshold Temp Coefficient				30		ppm/°C
	V_{CC} to Reset Delay	V_{CC} = V_{TH} to V_{TH}-100mV			20		µs

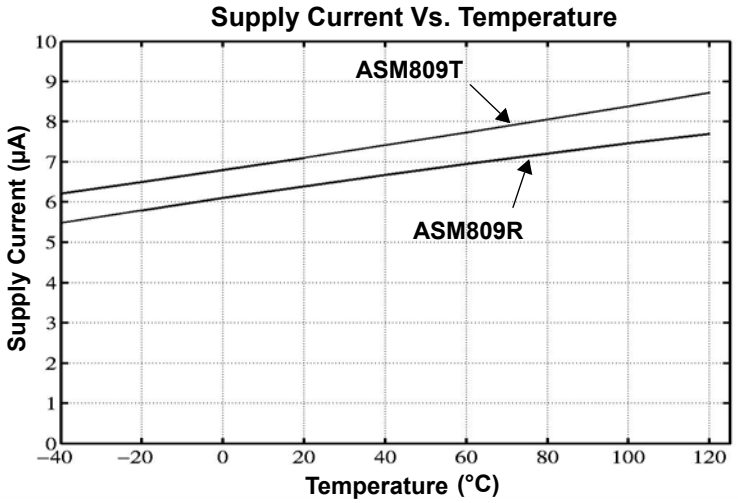
Notes:
1. Production testing done at T_A = 25°C. Over-temperature specifications guaranteed by design only, using six sigma design limits.
2. $\overline{\text{RESET}}$ output is active LOW for the ASM809/ASM8091 and RESET output is active HIGH for the ASM810.

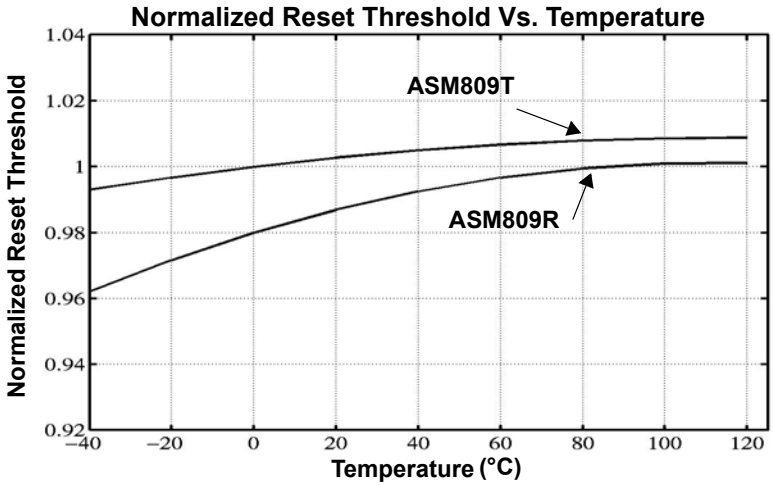
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_{RST}	Reset Active Timeout Period	T_A = -40°C to 85°C	140	240	560	ms
		T_A = 85°C to 105°C	100		840	
V_{OL}	Low $\overline{\text{RESET}}$ Output Voltage ASM809/ ASM8091	V_{CC}= V_{TH} min., I_{SINK} = 1.2mA, ASM809R/S/T and ASM8091S			0.3	V
		V_{CC}= V_{TH} min., I_{SINK} = 3.2mA, ASM809L/M/J			0.4	
		V_{CC} > 1.1V, I_{SINK} = 50µA			0.3	
V_{OH}	High $\overline{\text{RESET}}$ Output Voltage ASM809/ ASM8091	V_{CC} > V_{TH} max., I_{SOURCE} = 500µA, ASM809R/S/T and ASM8091S	0.8V_{CC}			V
		V_{CC} > V_{TH} max., I_{SOURCE} = 800µA, ASM809L/M/J	V_{CC} - 1.5			
V_{OL}	Low RESET Output Voltage ASM810	V_{CC}= V_{TH} max., I_{SINK} = 1.2mA, ASM810R/S/T			0.3	V
		V_{CC}= V_{TH} max., I_{SINK} = 3.2mA, ASM810L/M/J			0.4	V
V_{OH}	High RESET Output Voltage ASM810	1.8V < V_{CC} < V_{TH} min., I_{SOURCE} = 150µA	0.8V_{CC}			V

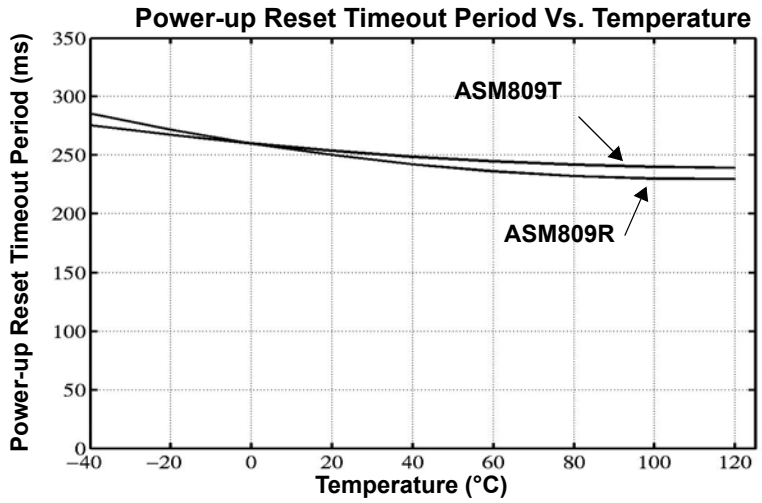
Notes:
1. Production testing done at T_A = 25°C. Over-temperature specifications guaranteed by design only, using six sigma design limits.
2. $\overline{\text{RESET}}$ output is active LOW for the ASM809/ASM8091 and RESET output is active HIGH for the ASM810.

Typical Operating Characteristics

Unless otherwise noted, V_{CC} is over the full voltage range, T_A = -40°C to 105°C. Typical values at T_A = 25°C, V_{CC} = 5V for L/M/J devices, V_{CC} = 3.3V for T/S devices and V_{CC} = 3V for R devices.



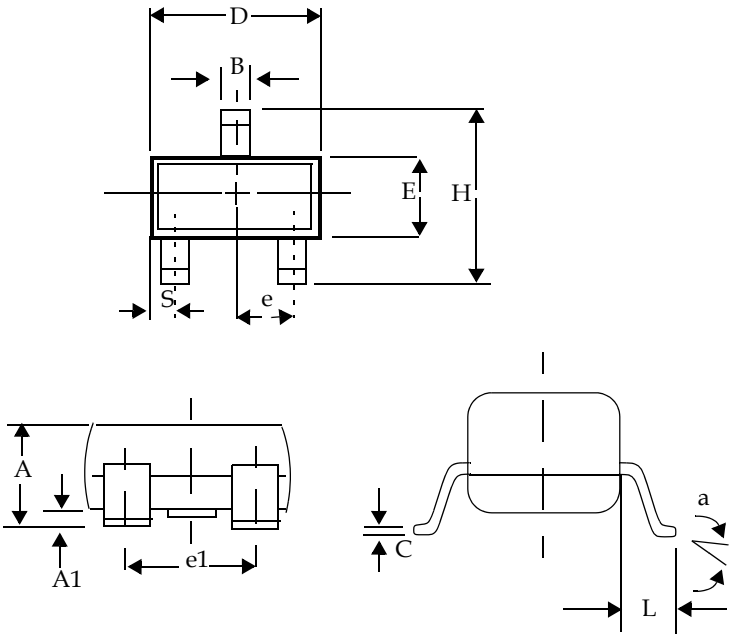




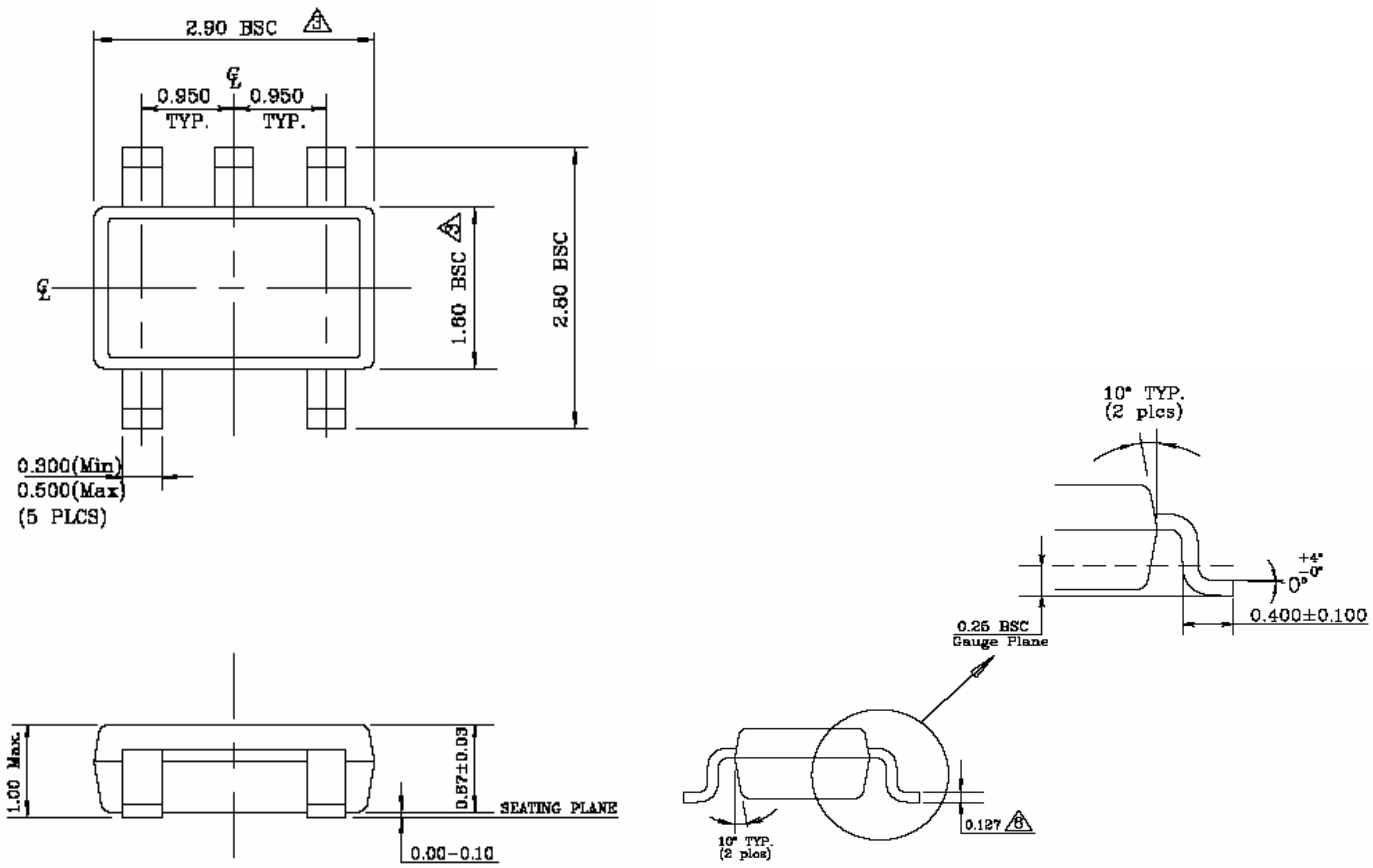
Package Dimensions

Plastic SOT-23 (3-Pin)

	Inches		Millimeters	
	Min	Max	Min	Max
Plastic SOT-23 (3-Pin)				
A	0.030	0.046	0.75	1.17
A1	0.002	0.006	0.05	0.15
B	0.012	0.020	0.30	0.50
C	0.003	0.008	0.08	0.20
D	0.110	0.120	2.80	3.04
E	0.047	0.055	1.20	1.40
e	0.037 BSC		0.95 BSC	
e1	0.075 BSC		1.9 BSC	
H	0.083	0.104	2.10	2.64
L	0.016	0.024	0.40	0.60
a	0^o	8^o	0^o	8^o
S	NA		NA	



5L SOT- 23 Package



NOTE:

1. DIMENSIONS ARE IN MM.
2. DRAWING NOT TO SCALE.
3. DIMENSIONS ARE INCLUSIVE OF PLATING.
4. DIMENSIONS ARE EXCLUSIVE OF MOLD FLASH AND METAL BURR.
5. MOLD FLASH SHALL NOT EXCEED 0.254MM.
6. JEDEC PACKAGE REFERENCE IS MO-193.

Ordering Information:

Part Number	Reset Threshold (V)	Temperature Range	Pin-Package	Package Marking (LL Lot Code)
ASM809 ACTIVE LOW RESET, TIN-LEAD PLATED DEVICES				
ASM809LEUR	4.63	-40°C to +105°C	3-SOT23	SALL
ASM809MEUR	4.38	-40°C to +105°C	3-SOT23	SBLL
ASM809JEUR	4.00	-40°C to +105°C	3-SOT23	SCLL
ASM809TEUR	3.08	-40°C to +105°C	3-SOT23	SDLL
ASM809SEUR	2.93	-40°C to +105°C	3-SOT23	SELL
ASM809REUR	2.63	-40°C to +105°C	3-SOT23	SFLL
ASM8091SEUK	2.93	-40°C to +105°C	5-SOT23	LO83
ASM809 ACTIVE LOW RESET, LEAD FREE DEVICES				
ASM809LEURF	4.63	-40°C to +105°C	3-SOT23	NALL
ASM809MEURF	4.38	-40°C to +105°C	3-SOT23	NBLL
ASM809JEURF	4.00	-40°C to +105°C	3-SOT23	NCLL
ASM809TEURF	3.08	-40°C to +105°C	3-SOT23	NDLL
ASM809SEURF	2.93	-40°C to +105°C	3-SOT23	NELL
ASM809REURF	2.63	-40°C to +105°C	3-SOT23	NFLL
ASM8091SEUKF	2.93	-40°C to +105°C	5-SOT23	LO83
ASM810 ACTIVE HIGH RESET, TIN-LEAD PLATED DEVICES				
ASM810LEUR	4.63	-40°C to +105°C	3-SOT23	SGLL
ASM810MEUR	4.38	-40°C to +105°C	3-SOT23	SHLL
ASM810JEUR	4.00	-40°C to +105°C	3-SOT23	SILL
ASM810TEUR	3.08	-40°C to +105°C	3-SOT23	SJLL
ASM810SEUR	2.93	-40°C to +105°C	3-SOT23	SKLL
ASM810REUR	2.63	-40°C to +105°C	3-SOT23	SLLL
ASM810 ACTIVE HIGH RESET, LEAD FREE DEVICES				
ASM810LEURF	4.63	-40°C to +105°C	3-SOT23	NGLL
ASM810MEURF	4.38	-40°C to +105°C	3-SOT23	NHLL
ASM810JEURF	4.00	-40°C to +105°C	3-SOT23	NILL
ASM810TEURF	3.08	-40°C to +105°C	3-SOT23	NJLL
ASM810SEURF	2.93	-40°C to +105°C	3-SOT23	NKLL
ASM810REURF	2.63	-40°C to +105°C	3-SOT23	NLLL

Notes:

- For parts to be packed in Tape and Reel, add “-T” at the end of the part number.
- Alliance Semiconductor's lead free parts are RoHS compliant. All parts are Lead Free by default. Contact factory for Non Lead Free devices

Related Products:

	ASM809	ASM810	ASM811	ASM812	ASM8091
Max Supply Current	15μA	15μA	15μA	15μA	15μA
Package Pins	3	3	4	4	5
Manual RESET input			■	■	
Package Type	SOT-23	SOT-23	SOT-143	SOT-143	SOT-23
Active-HIGH RESET Output		■		■	
Active-LOW $\overline{\text{RESET}}$ Output	■		■		■

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Part Number:
ASM809,ASM8091,ASM810
Document Version: V.1.8