

钍地半导体
Tudi Semiconductor

Product Specification

TUDI-STM705/706/707/708/813L

Power management chip

网址 www.sztdbdt.com

用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

Features

●Supervisory-Function Integration Significantly
Improves System Reliability While Reducing Board Space
● Guaranteed RESET Valid at VCC = 1V
- 200ms Reset Pulse Width
- Debounced TTL/CMOS-Compatible Manual
●Reset Input
- Active-High Reset Output (STM707/ STM708/ STM813L)
● Precision-Supply Voltage Monitor
- 4.65V (STM705/ STM707/ STM813L)
- 4.40V (STM706/ STM708)
● Voltage Monitor for Power-Fail or Low-Battery Warning

Explanation

The STM705－STM708/ STM813L microprocessor (µP) supervisory circuits reduce the complexity and number of components required to monitor power-supply and battery functions in µP systems. These devices significantly improve system reliability and accuracy compared to separate ICs or discrete components.
The STM705/ STM706/ STM813L provide four functions:
1) A reset output during power-up, power-down, and brownout conditions.
2) An independent watchdog output that goes low if the watchdog input has not been toggled within 1.6 seconds.
3) A 1.25V threshold detector for power-fail warning, lowbattery detection, or for monitoring a power supply other than +5V.
4) An active-low manual-reset input.
The STM707/ STM708 are the same as the STM705/ STM706, except an active-high reset is substituted for the watchdog timer. The STM813L is the same as the STM705, except RESET is provided instead of RESET.
Two supply-voltage monitor levels are available: The STM705/ STM707/ STM813L generate a reset pulse when
the supply voltage drops below 4.65V, while the STM706/ STM708 generate a reset pulse below 4.40V. All four parts are available in 8-pin DIP, SOP, and MSOP8 packages.

Applications

● Computers
● Intelligent Instruments
● Critical µP Power Monitoring

Block Diagram

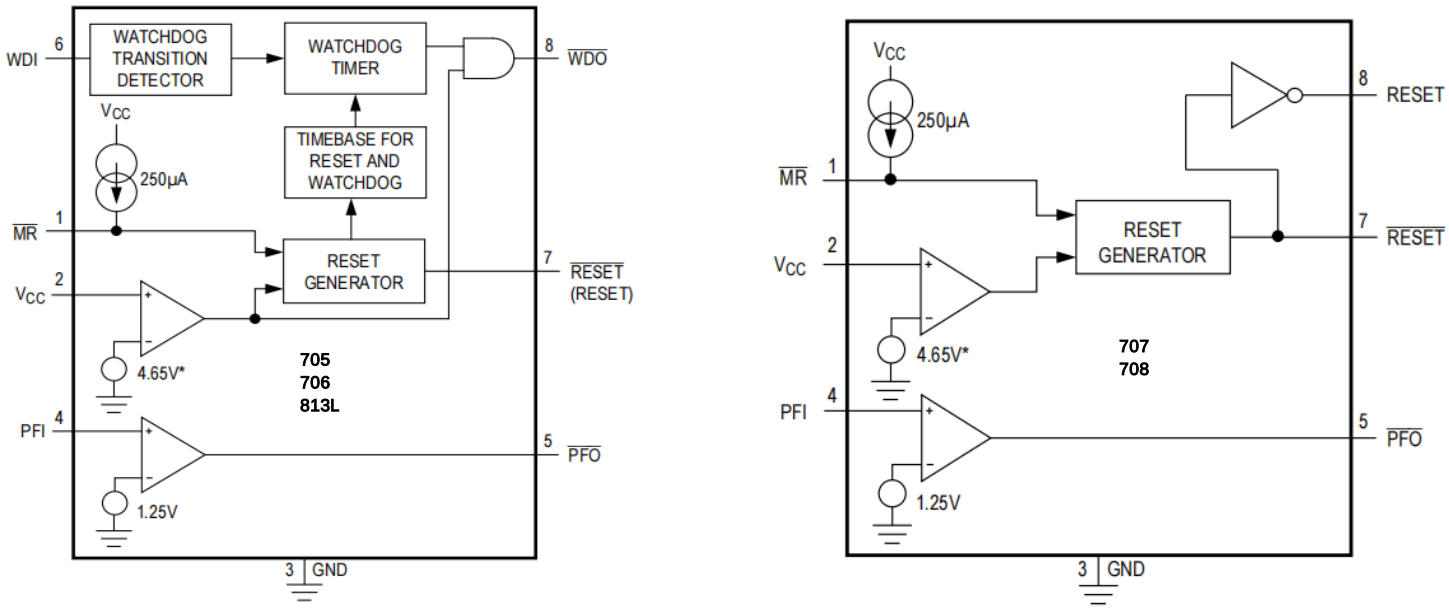


Figure 1: STM705/6/7/8, and 813L Block Diagram

Pin Function

Pin	symbol	description
1	VCC	Source
2	GND	The earth
3	!MR	Manual reset input
4	PFI	1.25V internal comparator reverse input
5	!PFO	1.25V output of built-in comparator
6	WDI	Set this pin to high to disable the watchdog function.
7	!WDO	Watchdog output
8	RESET	Output a high-level reset signal,with RESET and!RESET inverted.
9	!RESET	Low level reset signal output
10	NC	Not have

Table 1 Pin Function Descriptions for 705/6/7/8, and 813L

Pin Diagram

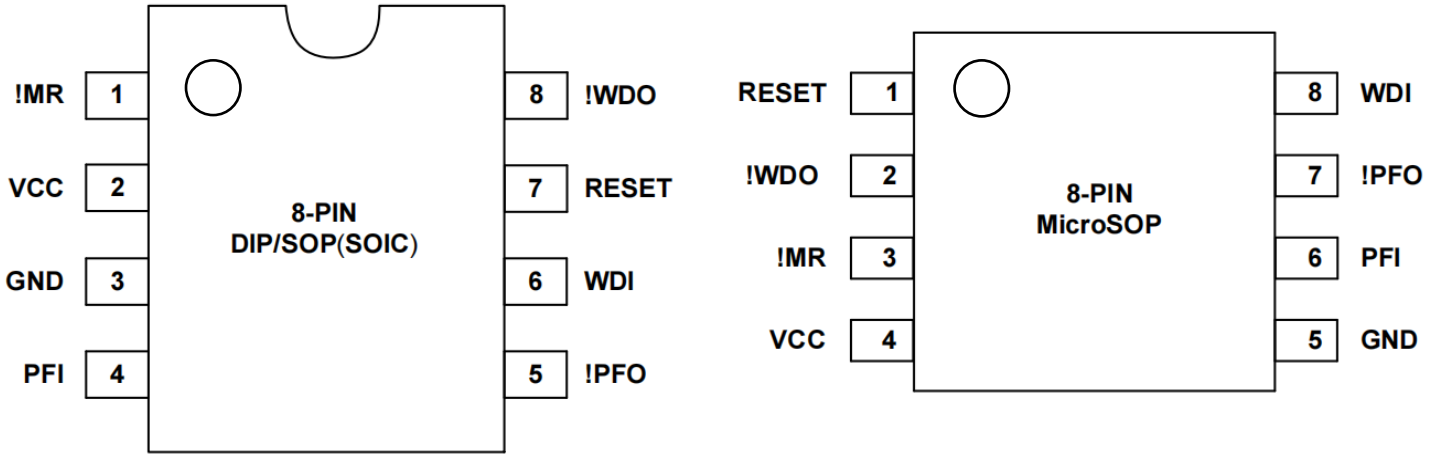


Figure 2: Pin Layout Diagram of 813L

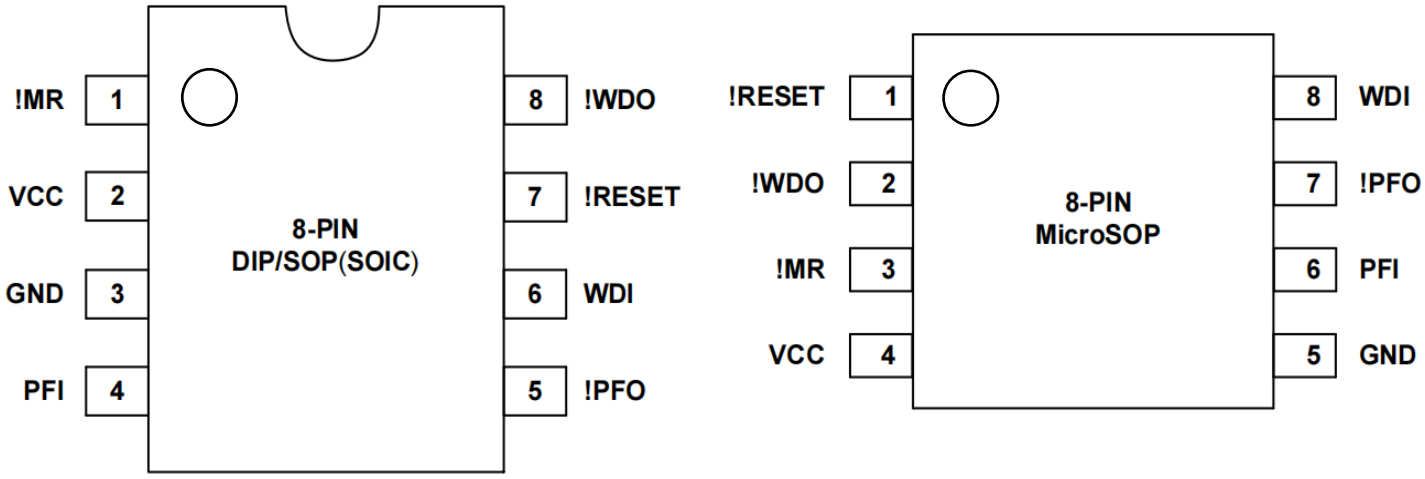


Figure 3: Pin Layout Diagram of 705 and 706

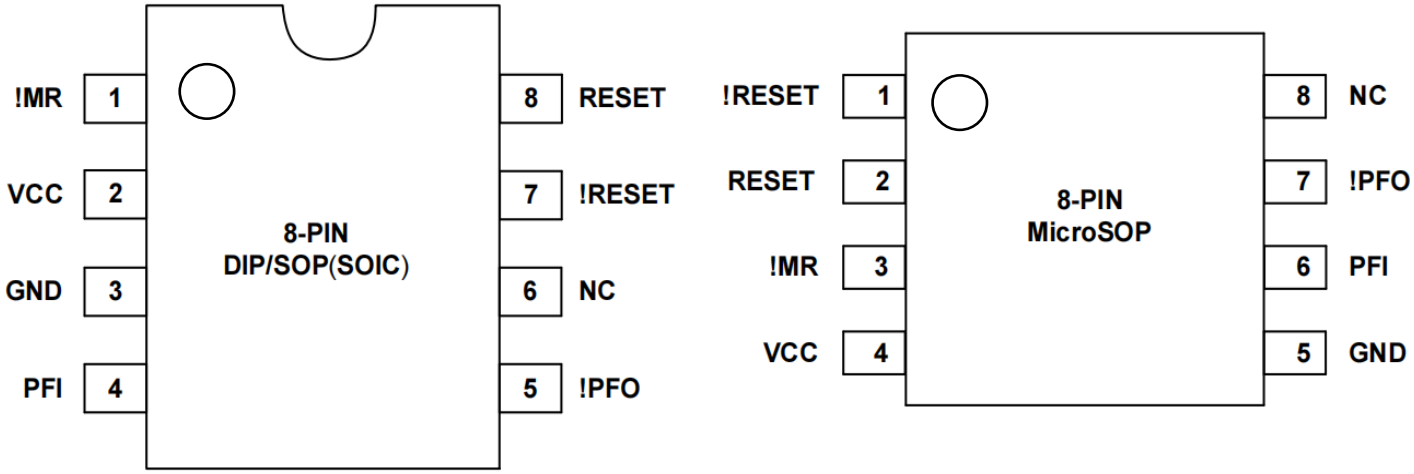


Figure 4: Pin Layout Diagram 707 and 708

Electrical Parameters

(VCC = 4.75V to 5.5V for 705/707/813L, VCC = 4.5V to 5.5V for 706/708, TA = TMIN to T STM, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Operating Voltage Range	Vcc	70_C		1.0		5.5	V
		813LC		1.1		5.5	
		70_E,813LE		1.2		5.5	
Supply Current	SUPPLY	705C,706C,813LC			150	350	μA
		705E,706E,813LE			150	500	
		707C,708C			50	350	
		707E,708E			50	500	
Reset Threshold(Note 2)	VRT	705,707,813L		4.50	4.65	4.75	V
		706,708		4.25	4.40	4.50	
Reset Threshold Hysteresis(Note 2)					40		mV
Reset Pulse Width (Note 2)	tRS			140	200	280	ms
RESET Output Voltage		ISOURCE=800μA			Vcc-1.5		V
		ISINK=3.2mA			0.4		
		70_C,Vcc=1V,ISINK=50μA			0.3		
		70_E,Vcc=1.2V,ISINK=100μA			0.3		
RESET Output Voltage		707,708,IsOURCE=800μA			Vcc-1.5		V
		707,708,ISINK=1.2mA			0.4		
		813LC,IsOURCE=4μA,Vcc=1.1V			0.8		
		813LE,ISOURCE=4μA,Vcc=1.2V			0.9		
		813L	IsOURCE=800μA		Vcc-1.5		
			ISINK=3.2mA		0.4		

Table 3 Electrical Characteristics of 705/6/7/8, and 813L (continued)

Electrical Parameters

(VCC = 4.75V to 5.5V for 705/707/813L, VCC = 4.5V to 5.5V for 706/708, TA = TMIN to T STM, unless otherwise noted.)

PARAMETER		SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Watchdog Timeout Period		twD	705,706,813L	1.00	1.60	2.25	S
WDI Pulse Width		twP	VIL=0.4V,VIH=(Vcc)(0.8)		50		ns
WDI Input Threshold	Low		705,706,813L,Vcc=5V		0.8		V
	High				3.5		
WDI Input Current			705,706,813L,Vcc=5V	50		150	μA
			705,706,813L,WDI=0V	-150		-50	
WDO Output Voltage			705,706,813L, IsOURCE=800μA		Vcc-1.5		V
			705,706,813L, ISINK=1.2mA		0.4		
MR Pull-Up Current			MR=OV	100	250	600	μA
MR Pulse Width		tMR			150		ns
MR Input Threshold	Low				0.8		V
	High				2.0		
MR to Reset Out Delay(Note 2)		tMD			250		ns
PFI Input Threshold			Vcc=5V	1.20	1.25	1.30	V
PFI Input Current				-25.00	+0.01	+25.00	nA
PFO Output Voltage			IsOURCE=800μA		Vcc-1.5		V
			ISINK=3.2mA		0.4		

Table 3 Electrical Characteristics of 705/6/7/8, and 813L (continued)

Note 1: The input-voltage limits on PFI and MR can be exceeded if the input current is less than 10mA.
Stresses beyond those listed under " Absolute STMimum Ratings " may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute STMimum rating conditions for extended periods may affect device reliability.
Note 2: Applies to both RESET in the 705 – 708 and RESET in the 707/708/813L.

Typical Performance Parameters

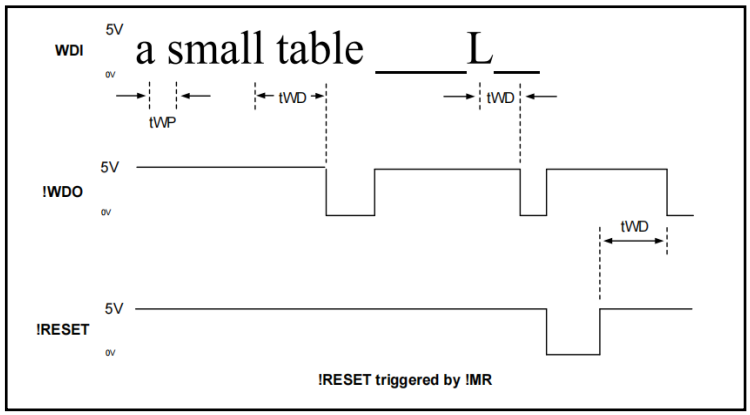


Figure 5： Watchdog Timing Diagram

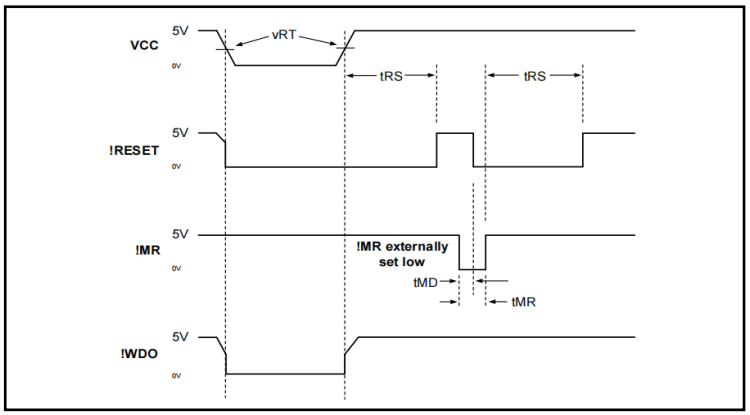


Figure 6: Reset Signal Timing Diagrams for 705/6/7/8, and 813L

Key Performance Parameters (continued)

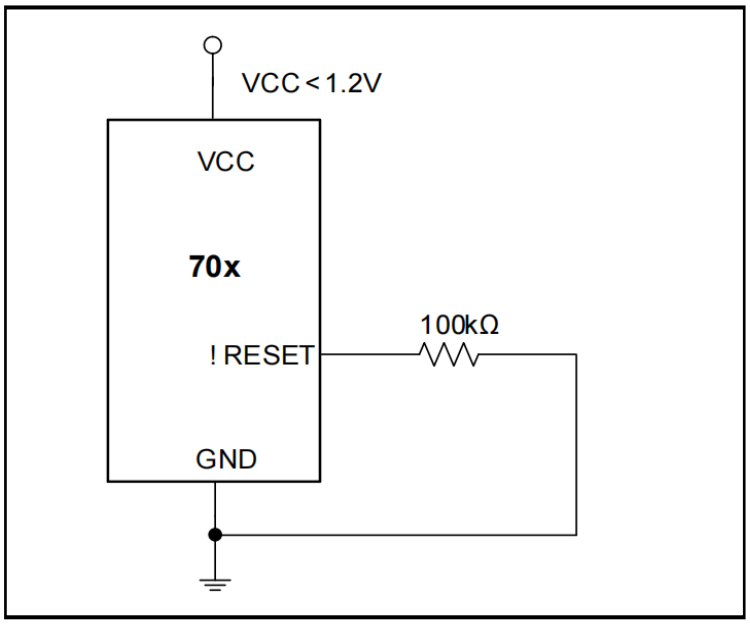


Figure 7 Ensure the RESET Circuit Is Functioning Properly

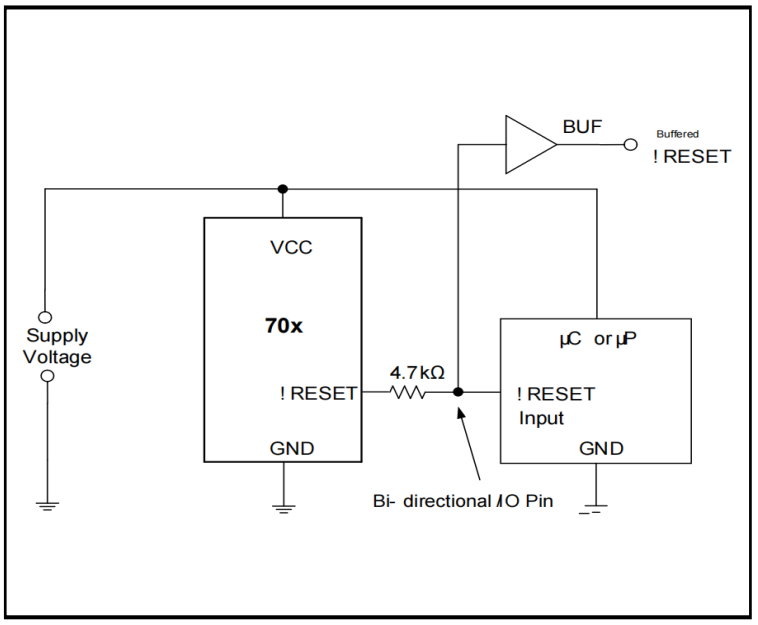


Figure 8 Schematic Diagram of a Bidirectional Reset Port Connection

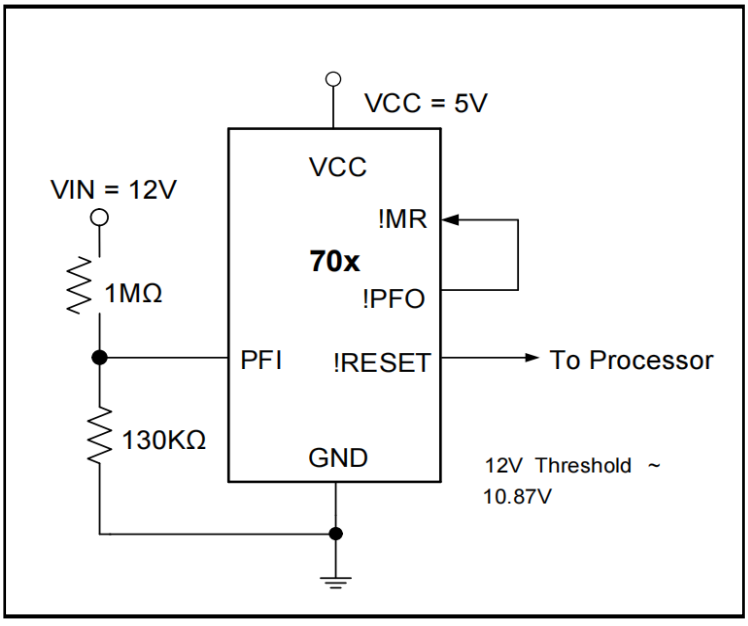


Figure 9 Diagram of Voltage Monitoring Outside VCC

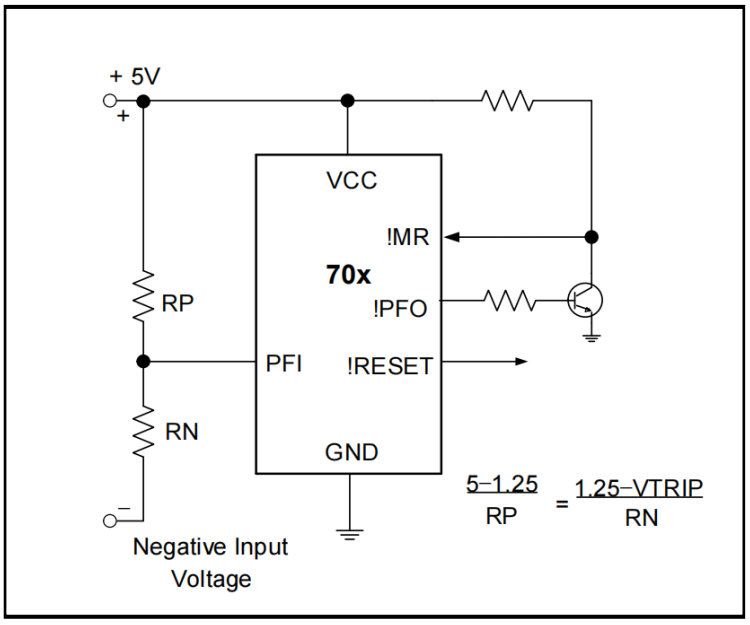
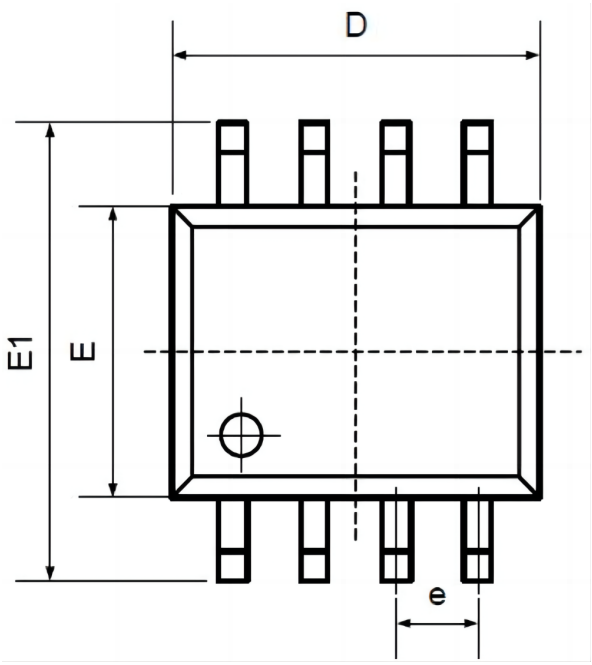
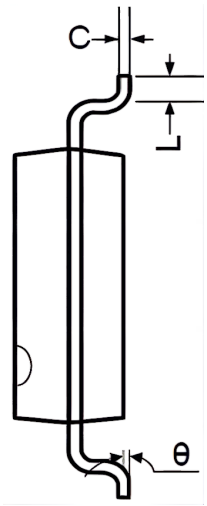
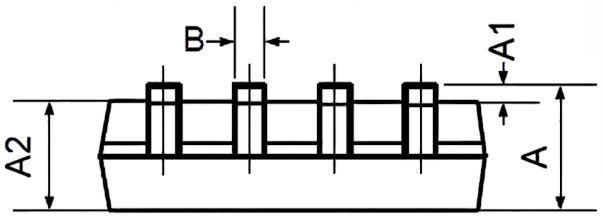


Figure 10 Negative Voltage Monitoring Circuit

Package SOP8







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
B	0.330	0.510	0.013	0.020
C	0.190	0.250	0.007	0.010
D	4.780	5.000	0.188	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.248
e	1.270TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Order information

Order Number	Package	Package Quantity	Marking On The park	Operating Voltage
STM705M6F-TUDI	SOP8	Tape,Reel,4000	705	4.63 V
STM706M6F-TUDI	SOP8	Tape,Reel,4000	706	4.38 V
STM707M6F-TUDI	SOP8	Tape,Reel,4000	707	4.63 V
STM708M6F-TUDI	SOP8	Tape,Reel,4000	708	4.38V
STM813LM6F-TUDI	SOP8	Tape,Reel,4000	813L	4.63 V

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