



Voltage Detector with Delay Time circuit ME2805-N

General Description

ME2805-N Series is a series of high-precision voltage detectors with a built-in delay time generator of fixed time developed using CMOS process. Internal oscillator and counter timer can delay the release signal without external parts. Detect voltage is extremely accurate with minimal temperature drift. CMOS output configurations are available.

Features

- Highly accuracy: $\pm 1\%$
- Low power consumption: TYP 1.1 μ A (VIN=3V)
- Detect voltage range : 1.0V~5.5V (step 0.1V)
- Operating voltage range: 0.7V~6V
- Detect voltage temperature characteristics : Better than $\pm 100\text{ppm}/^\circ\text{C}$
- Output configuration: CMOS
- Delay circuit: Fix delay time

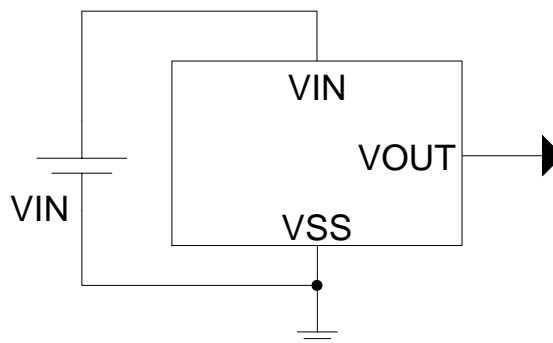
Typical Applications

- Microprocessor reset circuitry
- Charge voltage monitors
- Memory battery back-up switch circuits
- Power failure detection circuits

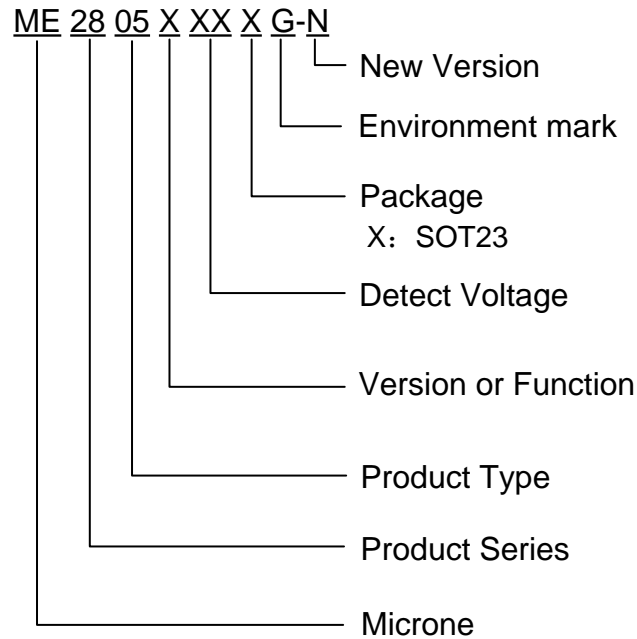
Packages

- 3-pin SOT23

Typical Application Circuit



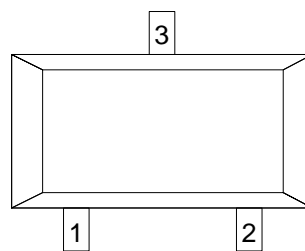
Selection Guide



product series	product description
ME2805A263XG-N	$V_{DET}=2.63V$, Package: SOT23
ME2805A293XG-N	$V_{DET}=2.93V$, Package: SOT23

NOTE: If you need other voltage and package, please contact our sales staff.

Pin Configuration

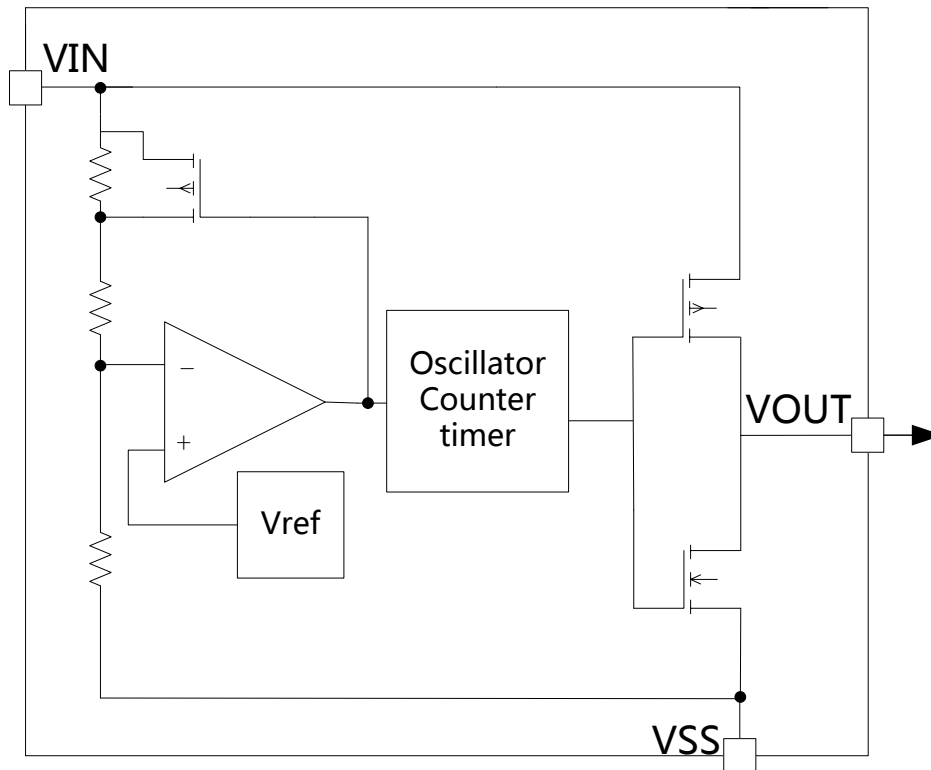


SOT23

Pin Assignment

PIN Number	Pin Name	Function
SOT23		
1	VSS	Ground
2	VOUT	Output Voltage
3	VIN	Input Voltage

Block Diagram



Absolute Maximum Ratings

Parameter		Maximum Ratings	Units
Input Voltage V_{IN}		$V_{SS}-0.3 \sim 7.0$	V
Output Current I_{OUT}		50	mA
Output Voltage V_{OUT}	CMOS	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Continuous Total Power Dissipation P_D	SOT23	250	mW
Operating Ambient Temperature T_a		$-40 \sim +85$	$^{\circ}\text{C}$
Storage Temperature T_{stg}		$-55 \sim +150$	$^{\circ}\text{C}$
Soldering temperature and time		$260^{\circ}\text{C}, 10\text{s}$	

Electrical Characteristics

(-VDET(S)=2.63/2.93V Ta=25°C unless otherwise noted)

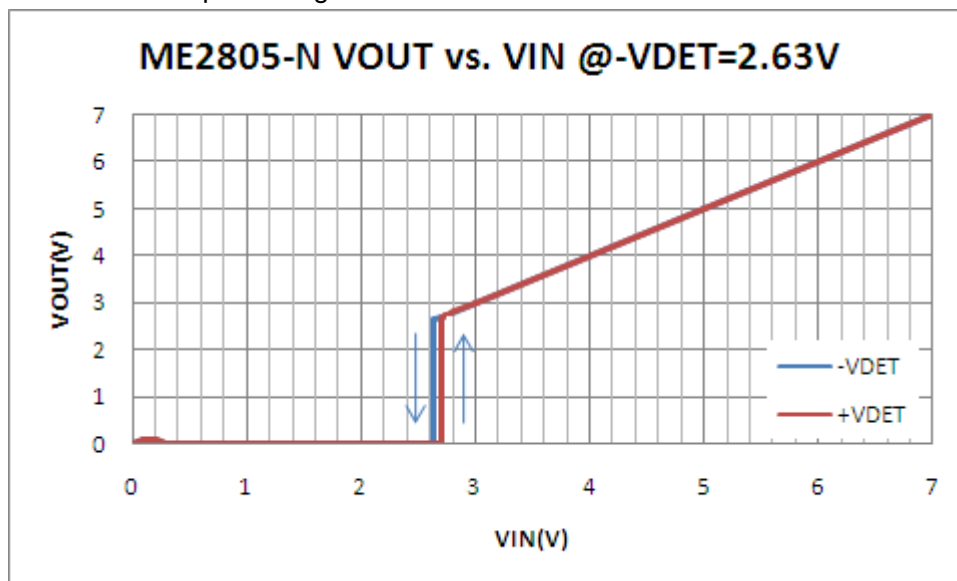
Parameter	Symbol	Conditions	Min.	Typ	Max.	Units
Input Operating voltage	VIN		0.7		6	V
Detect Voltage (Output Voltage)	-VDET	VIN=5V-0V	0.99x -VDET(S)	-VDET(S)	1.01x -VDET(S)	V
Hysteresis Range	VHYS	-	0.03	0.08	0.1	V
Supply Current	ISS	VDD=3V (below 2.5V)	--	1.3	1.8	μA
		VDD=5V (2.5V-4.5V)	--	1.8	3.0	
		VDD=7V (4.5V-6.5V)	--	2.0	3.8	
Output Current	IOUT1 N-ch	VIN=0.7V DS=0.5V(Nch)	0.01	0.19	--	mA
	IOUT2 P-ch	VIN=5.5V DS=0.5V(Pch)	1.7	3.4	--	mA
Release Delay time	TD	VIN=5V-1V	130	200	290	ms
Temperature characteristics	Δ -VDET/ Δ Ta*-VDET	Ta=-40°C~85°C		100		ppm

Note:

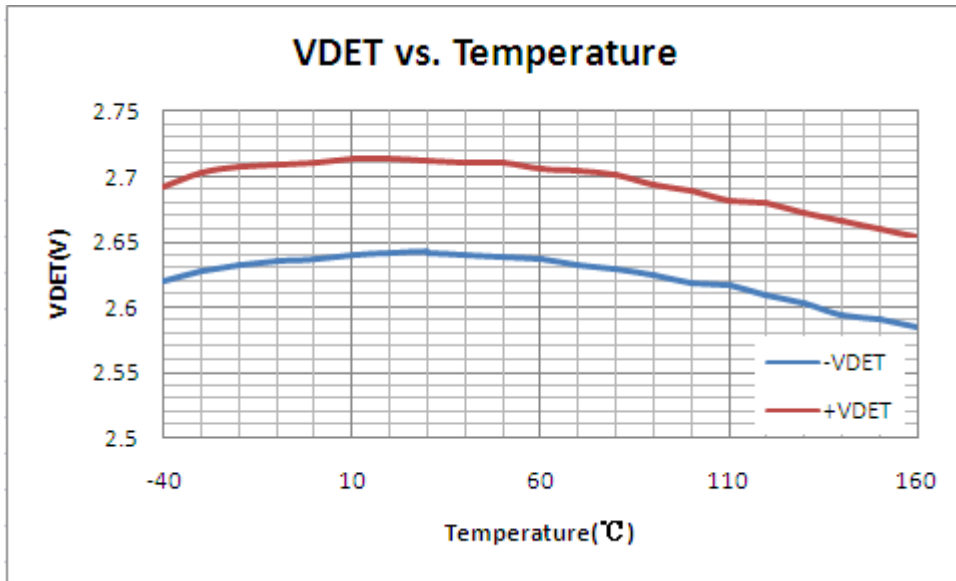
- 1、-VDET(S) : Specified Detection Voltage value
- 2、-VDET : Actual Detection Voltage value
- 3、Release Voltage: +VDET=-VDET+VHYS

Type Characteristics -VDET(S)=2.63V Ta=25°C

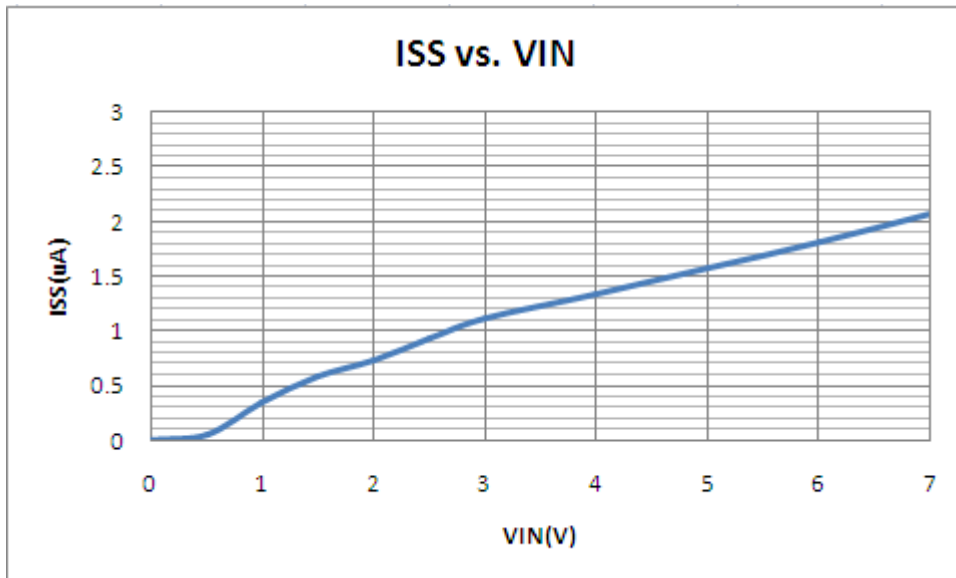
1. Output Voltage (VOUT) vs. Input Voltage (VIN)



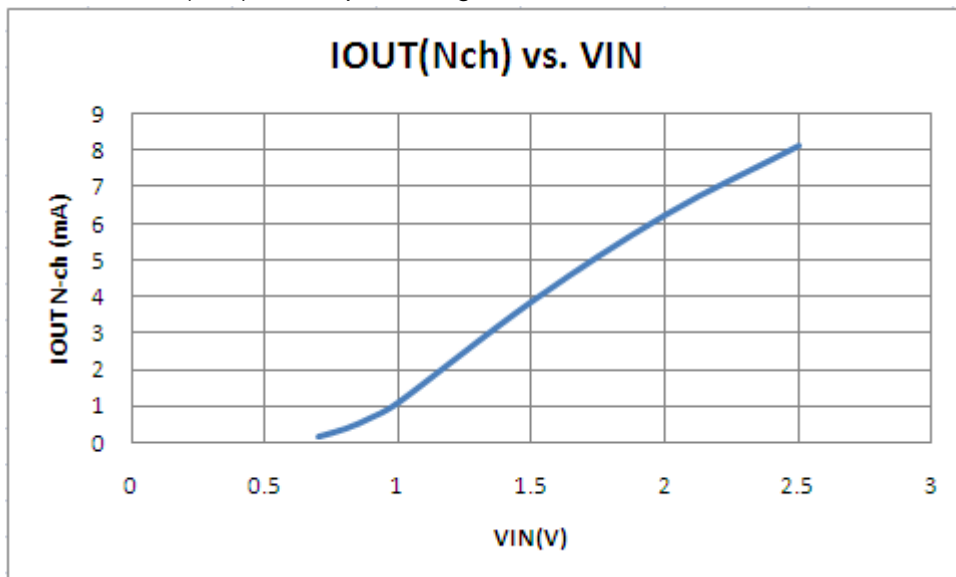
2. Detect Voltage and release voltage (VEDT) vs. Temperature



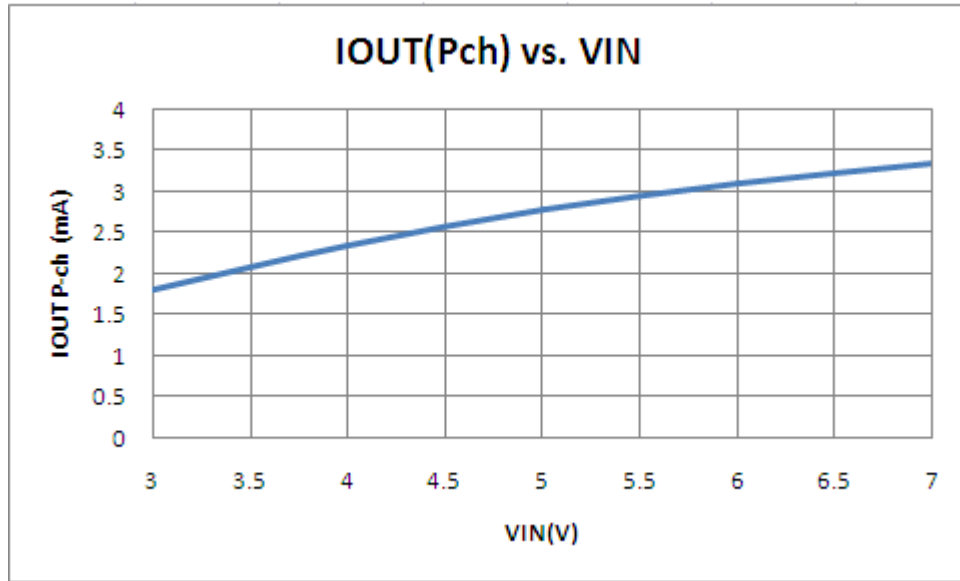
3. Supply Current (ISS) vs. Input Voltage (VIN)



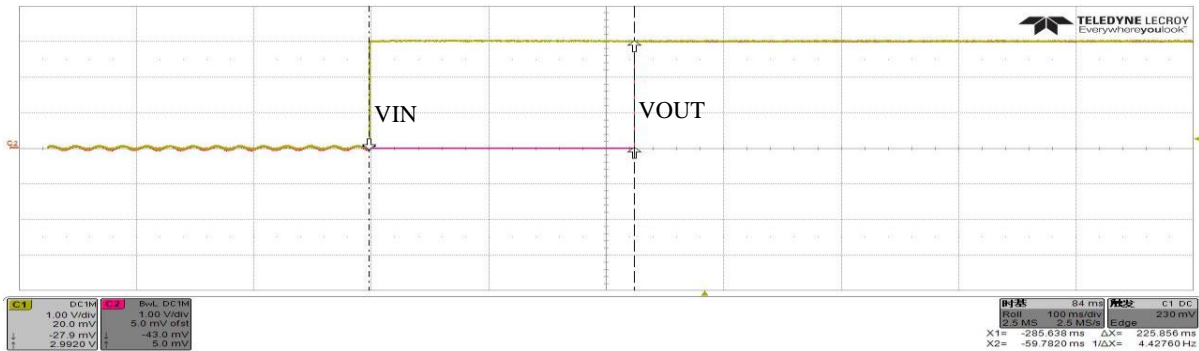
4. Output Current of Nch (IOUT(Nch)) vs. Input Voltage (VIN)



5. Output Current of Pch (IOUT(Pch)) vs. Input Voltage (VIN)



6. release voltage Delay time



Operational Explanation

A typical circuit example is shown in Figure 1, and the timing chart of Figure 1 is shown in Figure 2.

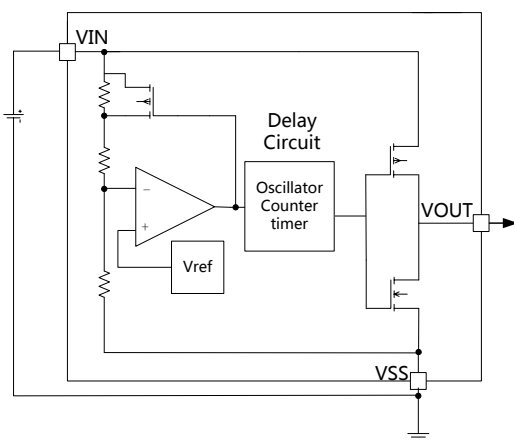


Figure 1

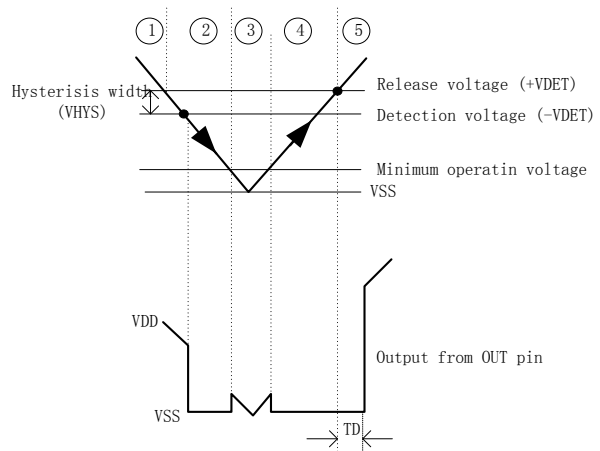


Figure 2

- 1) As an early state, the input voltage pin is applied sufficiently high voltage to the release voltage ,While

the input pin voltage (VIN) starts dropping to reach the detect voltage (-VDET) (VIN>-VDET), the output voltage VOUT keeps the “High” level (=VIN).

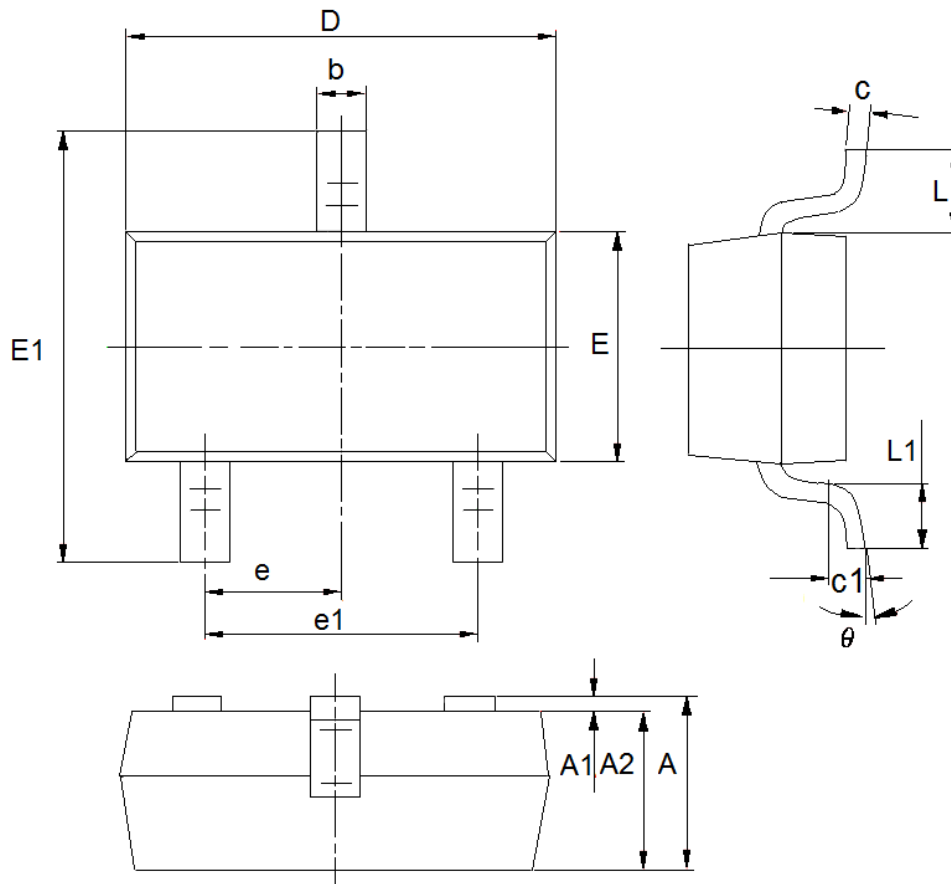
- 2) When the input pin voltage keeps dropping and becomes equal to the detect voltage (VIN=-VDET), the output voltage changes into the “Low” level ($\cong \text{VIN} \times 0.1$)
- 3) While the input pin voltage drops to less than 0.7V and it increases again to 0.7V or more, the output voltage may not be able to maintain the “Low” level. Such an operation is called “Unspecified Operation”, and voltage which occurs at the output pin voltage is defined as unstable operating voltage (VUNS).
- 4) While the input pin voltage increases more than 0.7V and it reaches to the release voltage level (VIN<+VDET), the output voltage (VOUT) maintains the “Low” level.
- 5) When the input pin voltage continues to increase more than 0.7V up to the release voltage level (+VDET), The internal oscillator and counter timer delay the release signal without external parts, TD is defined as time which ranges from VIN=+VDET to the VOUT of “High” level

Notes On Use

1. Please use this IC within the stated maximum ratings. For temporary, transitional voltage drop or voltage rising phenomenon, the IC is liable to malfunction should the ratings be exceeded.
2. The input pin voltage drops by the resistance between power supply and the VIN pin, and by through current at operation of the IC. At this time, the operation may be wrong if the input pin voltage falls below the minimum operating voltage range. In CMOS output, for output current, drops in the input pin voltage similarly occur. Oscillation of the circuit may occur if the drops in voltage, which caused by through current at operation of the IC, exceed the hysteresis voltage. Note it especially when you use the IC with the VIN pin connected to a resistor.
3. Note that a rapid and high fluctuation of the input pin voltage may cause a wrong operation.
4. Power supply noise may cause an operational function error. Care must be taken to put an external capacitor between VIN-GND and test on the board carefully.

Packaging Information

- SOT23



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.15	0.0354	0.0453
A1	0	0.14	0.0000	0.0055
A2	0.9	1.05	0.0354	0.0413
b	0.28	0.52	0.0110	0.0205
c	0.07	0.23	0.0028	0.0091
D	2.8	3.0	0.1102	0.1181
e1	1.8	2.0	0.0709	0.0787
E	1.2	1.4	0.0472	0.0551
E1	2.2	2.6	0.0866	0.1024
e	0.95(TYP)		0.0374(TYP)	
L	0.55(TYP)		0.0217(TYP)	
L1	0.25	0.55	0.0098	0.0217
θ	0	8°	0.0000	8°
c1	0.25(TYP)		0.0098(TYP)	

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