

## MICROPOWER VOLTAGE SUPERVISOR RESET ACTIVE LOW OR HIGH INTEGRATED TIMER

- ULTRA LOW POWER CONSUMPTION :  
12 $\mu$ A max. @  $V_{CC} = 5V$
- BOTH ACTIVE HIGH AND ACTIVE LOW  
OUTPUTS
- RESET TIMER WITH DISABLE FUNCTION
- PRECISION RESET THRESHOLD (guaran-  
teed over Temperature)
- 4.33V typ. THRESHOLD VOLTAGE
- GUARANTEED RESET OPERATION DOWN  
TO 1.5V
- OPEN DRAIN OUTPUT WITH
- $V_{ol} = 450mV$  typ. @  $I_{ol} = 8mA$  &  $V_{CC} = 4V$
- FAST RESPONSE TIME : 20 $\mu$ s FOR A 10mV  
OVERDRIVE
- 100mV INTERNAL HYSTERESIS

### DESCRIPTION

The TS834 is a voltage supervisor providing two different outputs (one active low and one active high) with an integrated timer that can be disabled.

It incorporates a high stability bandgap voltage reference and a comparator with open drain output.

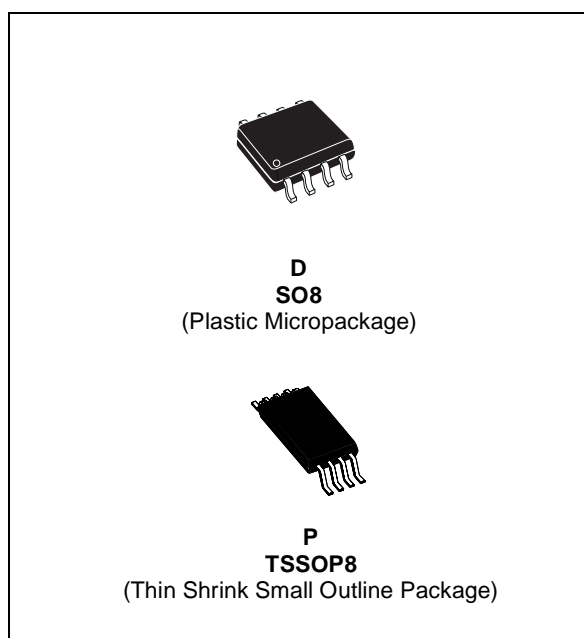
The threshold voltage is set at 4.33V by internal thermally matched resistors.

The comparator exhibits a 20 $\mu$ s response (with 10mV overdrive).

An internal hysteresis of 100mV increases the comparator noise margin and prevents false reset operation.

### APPLICATION

- Computers
- Microcontrollers
- Microprocessor systems
- Intelligent instruments
- Power failure detection

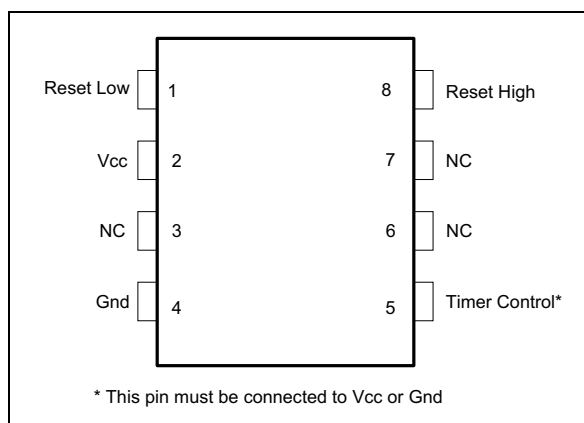


### ORDER CODE

Part Number	Temperature Range	Package	
		D	P
TS834-5I	-40, +85°C	•	•

D = Small Outline Package (SO) - also available in Tape & Reel (DT)  
P = Thin Shrink Small Outline Package (TSSOP) - only available  
in Tape & Reel (PT)

### PIN CONNECTIONS (top view)



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage <sup>1)</sup>	7	V
$V_{out}$	Output Voltage - See note 1	-0.3 to $V_{CC} + 0.3$	V
$I_{out}$	Output Current	20	mA
$P_d$	Power Dissipation <sup>2)</sup>	SO8 700 TSSOP8 625	mW
$T_{oper}$	Operating Free Air Temperature Range	-40 to +85	°C
$T_{stg}$	Storage Temperature	-65 to +150	°C

1. All voltages values, except differential voltage are with respect to network ground terminal.

2.  $T_j = 150^\circ\text{C}$ ,  $T_{amb} = 25^\circ\text{C}$  with  $R_{thja} = 175^\circ\text{C/W}$  for SO8 package  
 $R_{thja} = 200^\circ\text{C/W}$  for TSSOP8 package

**OPERATING CONDITIONS**

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	1.5 to 5.5	V
$T_{oper}$	Operating Free Air Temperature Range	-40 to +85	°C

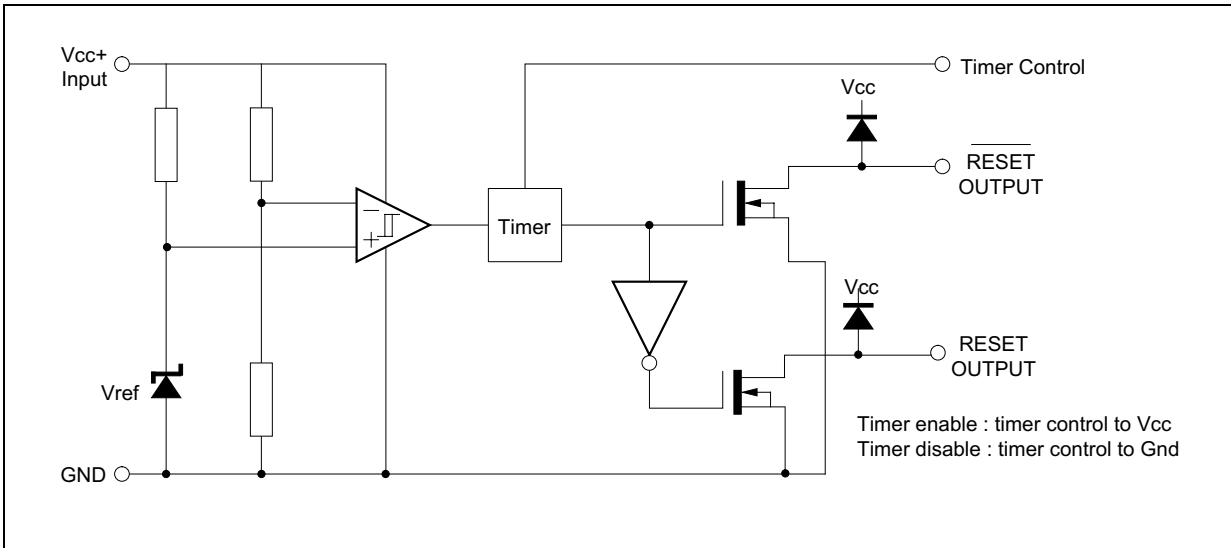
**TS834-5**

**ELECTRICAL CHARACTERISTICS**  $T_{amb} = 25^\circ\text{C}$  (unless otherwise specified)

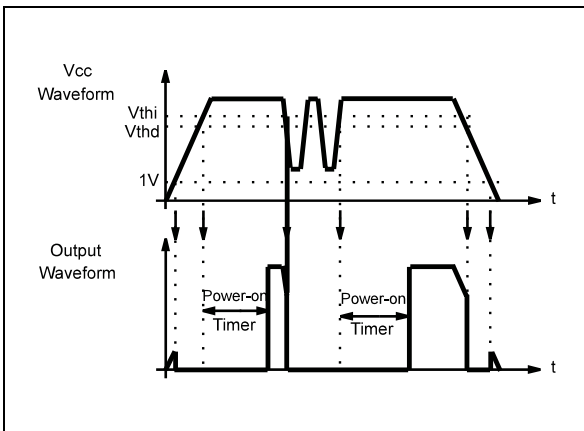
Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{thi}$	Threshold Voltage - $V_{CC}$ Increasing $T_{amb} = 25^\circ\text{C}$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$	4.10	4.33	4.46	V
$V_{thd}$	Threshold Voltage - $V_{CC}$ Decreasing $T_{amb} = 25^\circ\text{C}$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$	4.10	4.23	4.46	V
$V_{hys}$	Hysteresis Voltage	50	100	200	mV
$I_{CC}$	Current Consumption $V_{CC} = 5V$			12	$\mu\text{A}$
$V_{OL1}$	Low Level Output Voltage (OUTPUT 1) $V_{CC} = 4V, I_{OL} = 8\text{mA}$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$		450	800 1000	mV
$V_{OL2}$	Low Level Output Voltage (OUTPUT 2) $V_{CC} = 5V, I_{OL} = 8\text{mA}$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$		450	800 1000	mV
$I_{OH1}$	Low Level Output Voltage (OUTPUT 1) $V_{CC} = 5V$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$		2	40 1000	nA
$I_{OH2}$	Low Level Output Voltage (OUTPUT 2) $V_{CC} = 4V$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$		2	40 1000	nA
tphl	Response Time High to Low $R_L = 10\text{k}\Omega, C_L = 15\text{pF}, V_{CC} = V_{thd} - 10\text{mV}$		20		$\mu\text{s}$
trst	Reset Pulse width (Timer enabled) $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$	125	300	500	ms

**TIMING DIAGRAMS**

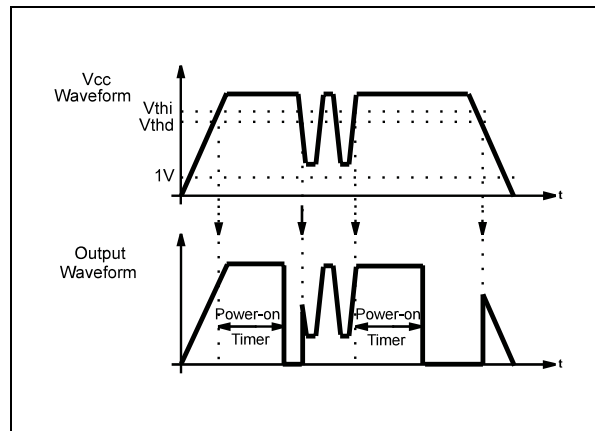
All the timing diagrams are given with outputs loaded by 10 kΩ resistors to V<sub>CC</sub>



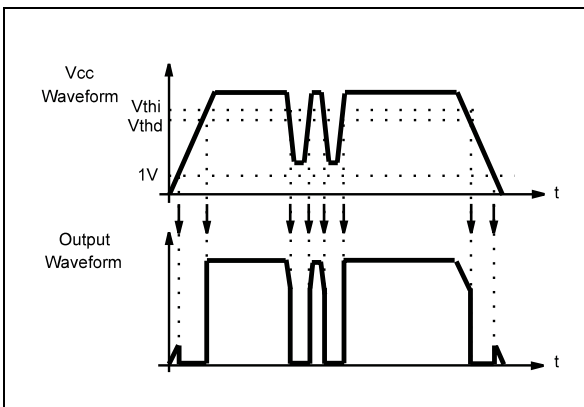
**Active Low Reset, Timer Enabled**



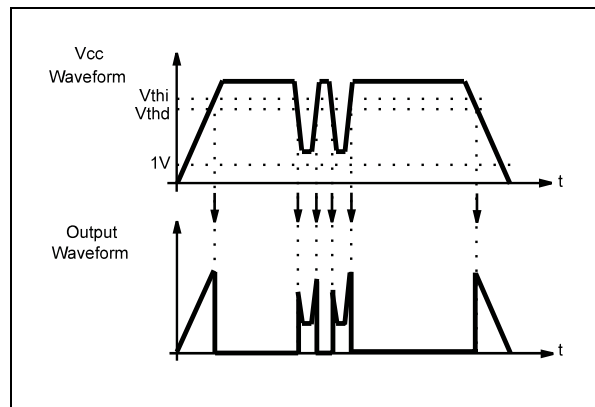
**Active High Reset, Timer Enabled**



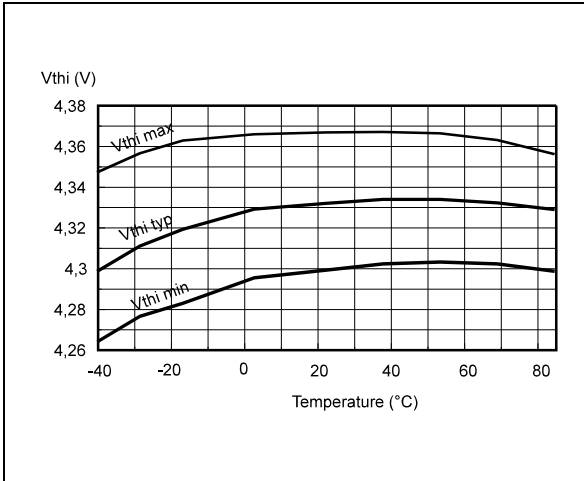
**Active Low Reset, Timer Disabled**



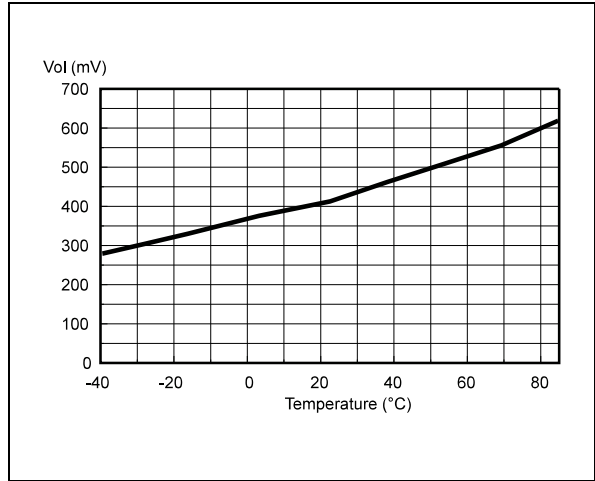
**Active High Reset, Timer Disabled**



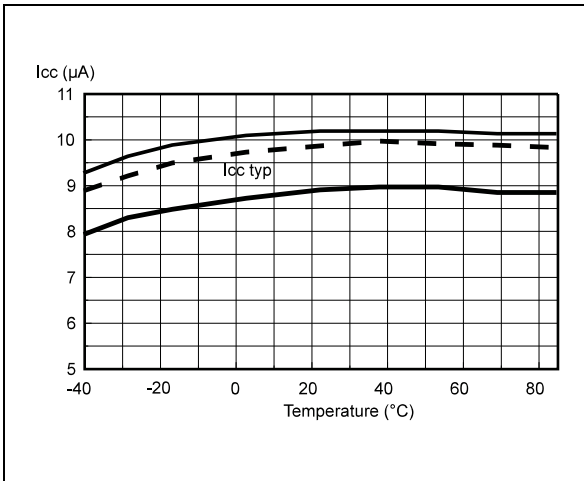
Voltage Threshold (Vthi) vs Temperature



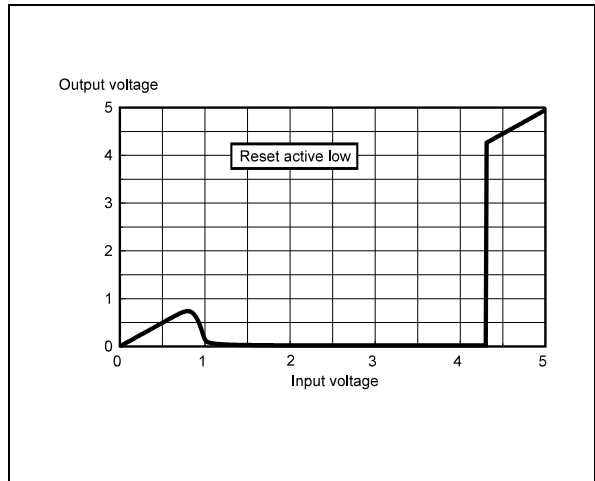
Vol vs Temperature



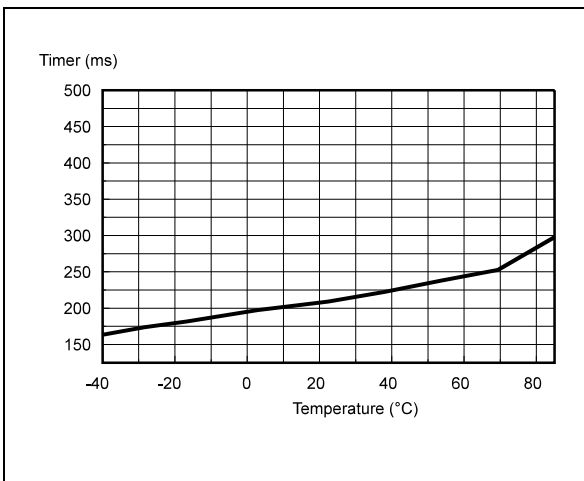
Current Consumption vs Temperature



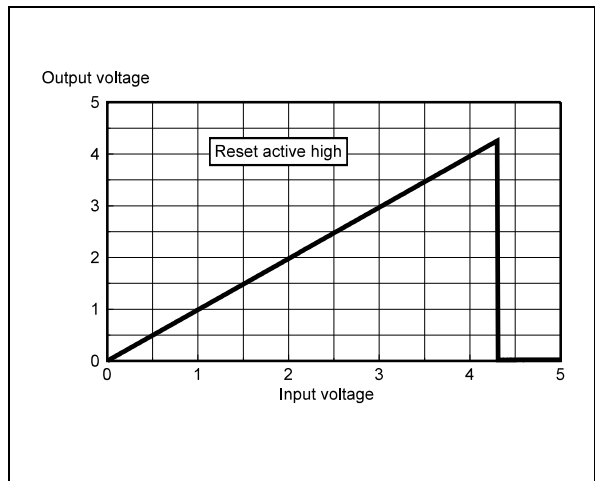
Output Voltage vs Input



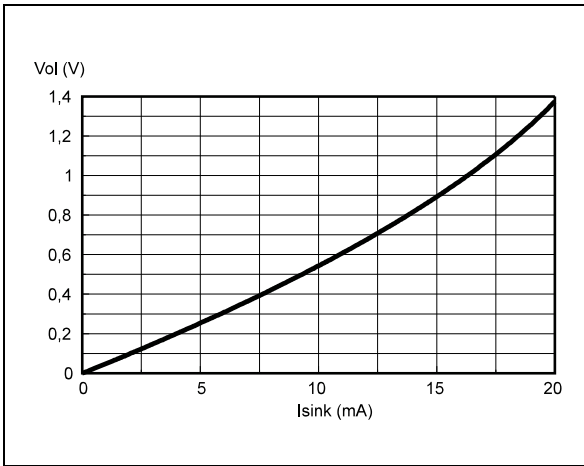
Timer Period (trst) vs Temperature



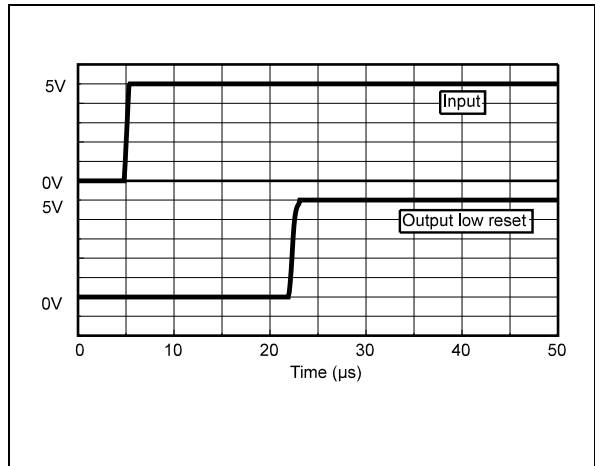
Output Voltage vs Input



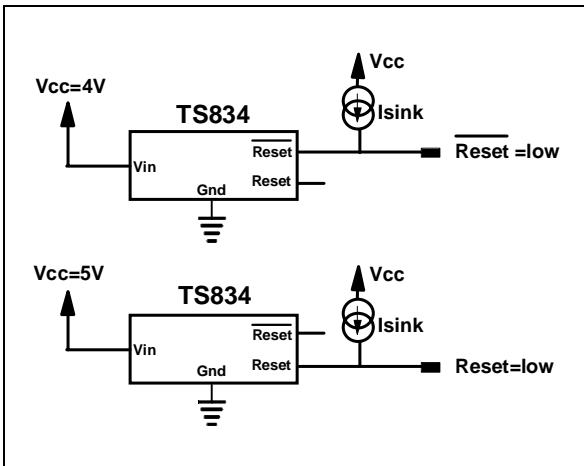
**Vol vs Isink**



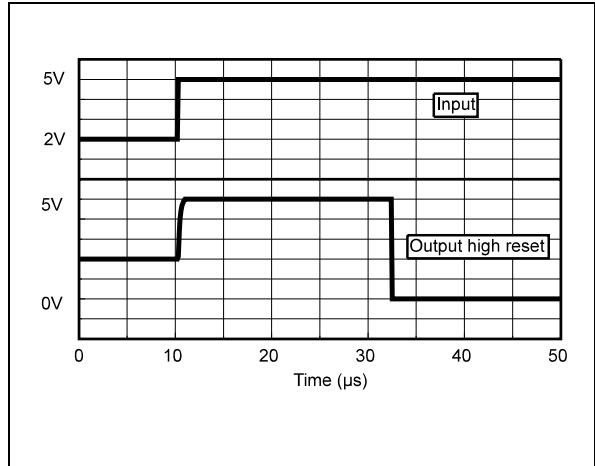
**Reset High After V<sub>CC</sub> Transition (timer disabled)**



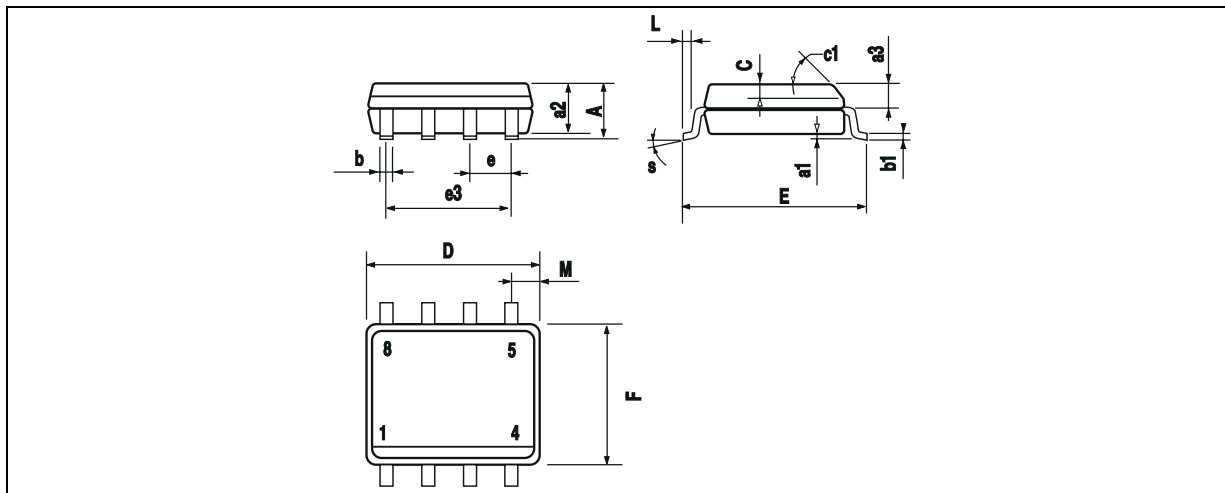
**Schematic to Measure Vol vs Isink**



**Reset Low After V<sub>CC</sub> Transition (timer disabled)**

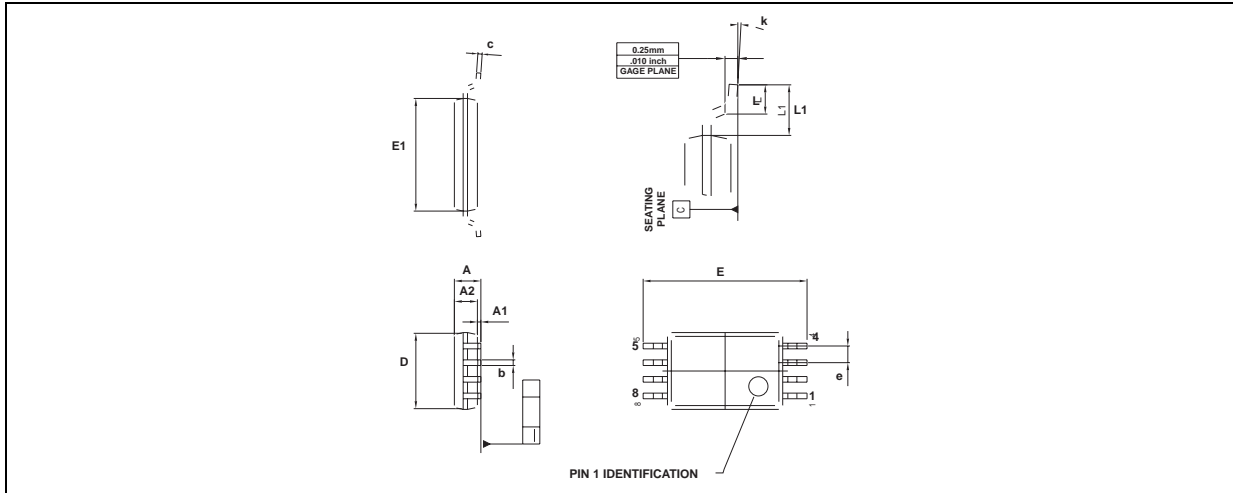


**PACKAGE MECHANICAL DATA**  
**8 PINS - PLASTIC MICROPACKAGE (SO)**



Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					

**PACKAGE MECHANICAL DATA**  
**8 PINS - THIN SHRINK SMALL OUTLINE PACKAGE**



Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.20			0.05
A1	0.05		0.15	0.01		0.006
A2	0.80	1.00	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.15
c	0.09		0.20	0.003		0.012
D	2.90	3.00	3.10	0.114	0.118	0.122
E		6.40			0.252	
E1	4.30	4.40	4.50	0.169	0.173	0.177
e		0.65			0.025	
k	0°		8°	0°		8°
l	0.50	0.60	0.75	0.09	0.0236	0.030
L	0.45	0.600	0.75	0.018	0.024	0.030
L1		1.000			0.039	

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