

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

- ULTRA LOW POWER CONSUMPTION :  
12µA 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 : 20µs 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.

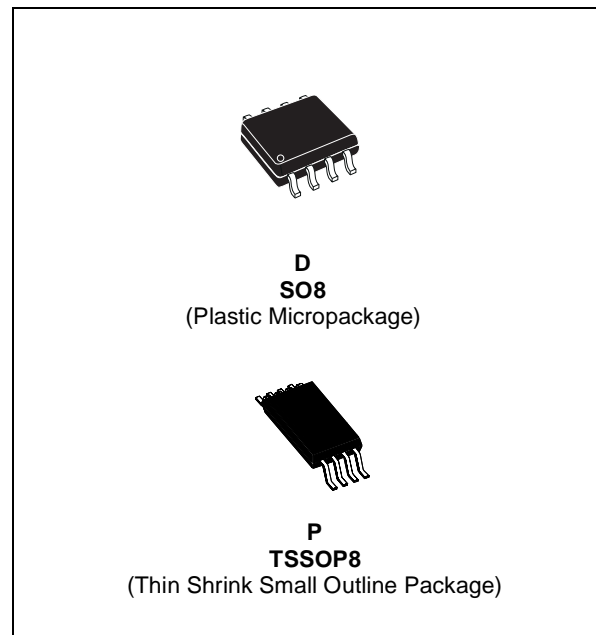
The threshold voltage is set at 4.33V by internal thermally matched resistors.

The comparator exhibits a 20µs 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

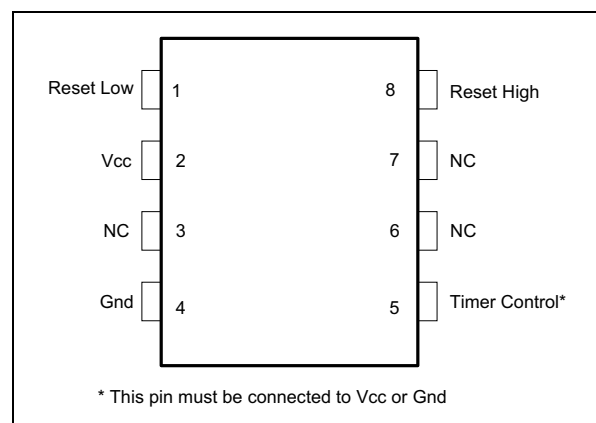


### ORDER CODE

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

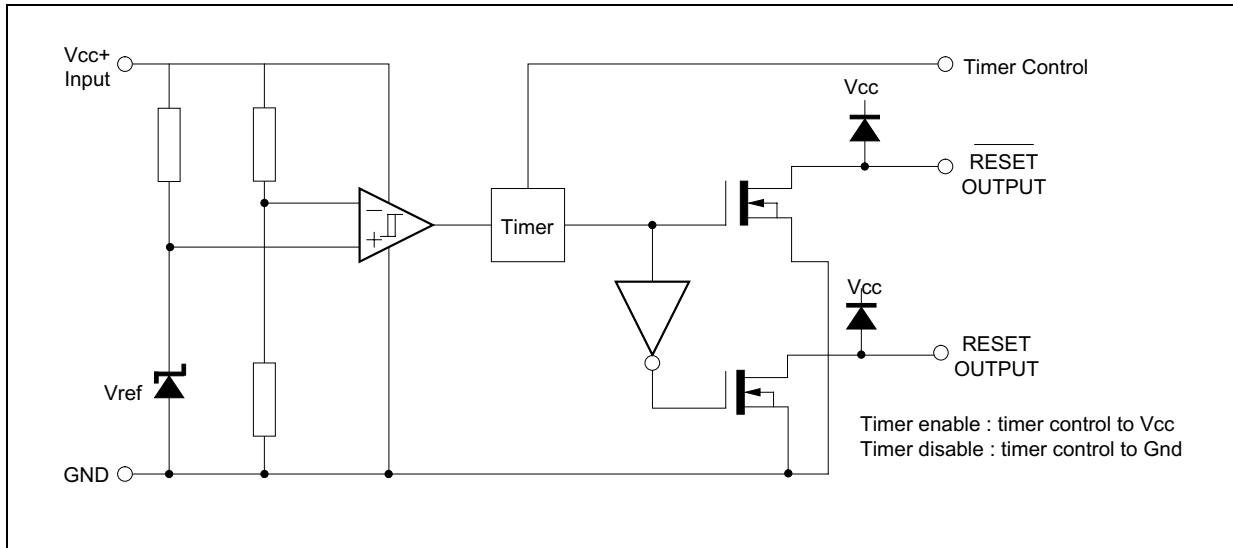
**TS834-5**

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

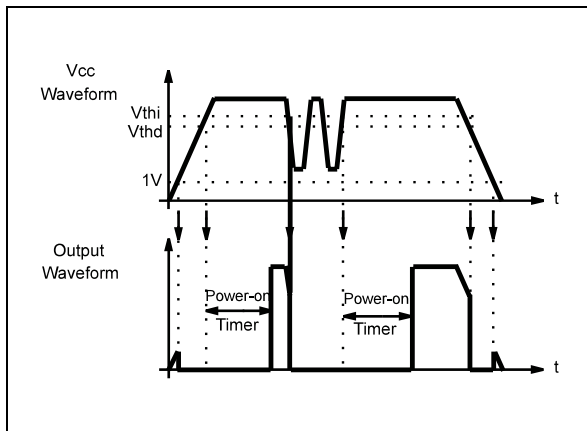
Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{thi}$	Threshold Voltage - $V_{CC}$ Increasing $T_{amb} = 25^\circ\text{C}$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$	4.10	4.33	4.46	V
$V_{thd}$	Threshold Voltage - $V_{CC}$ Decreasing $T_{amb} = 25^\circ\text{C}$ $-40^\circ\text{C} \leq T_{amb} \leq +85^\circ\text{C}$	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**

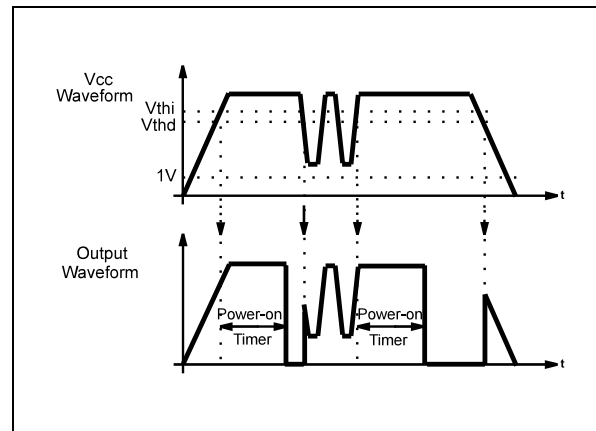
All the timing diagrams are given with outputs loaded by 10 kΩ resistors to V<sub>CC</sub>



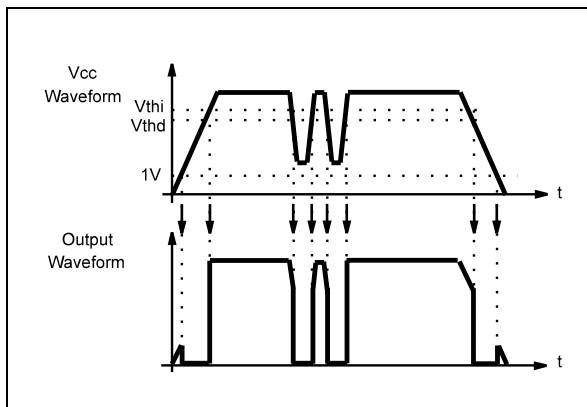
**Active Low Reset, Timer Enabled**



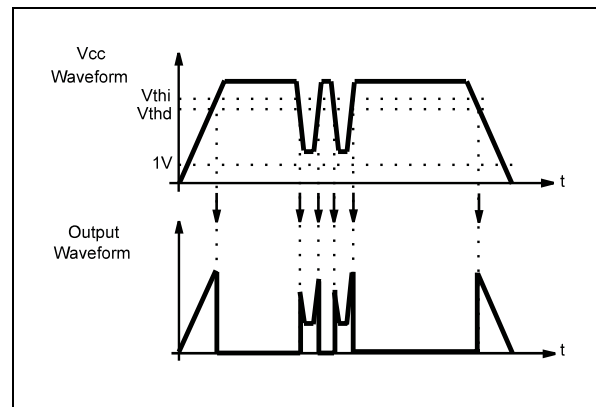
**Active High Reset, Timer Enabled**



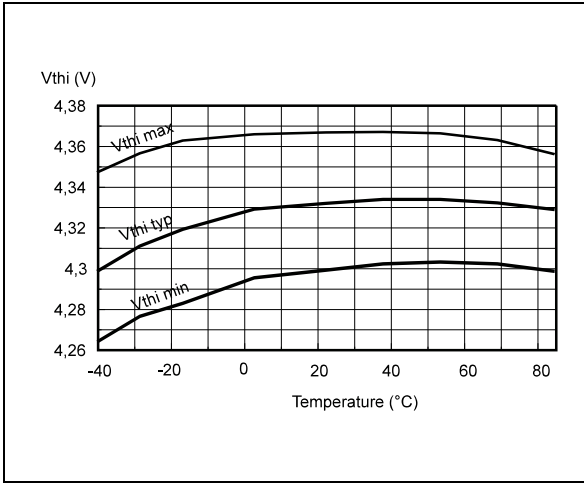
**Active Low Reset, Timer Disabled**



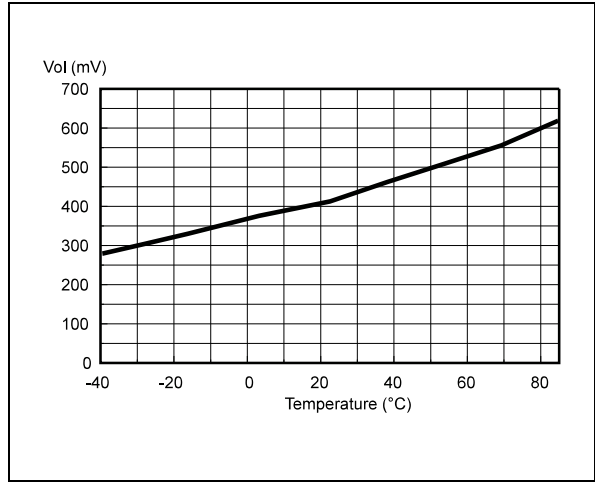
**Active High Reset, Timer Disabled**



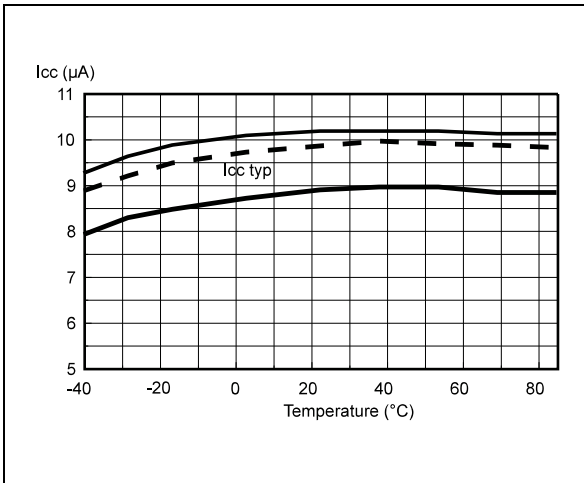
Voltage Threshold (Vthi) vs Temperature



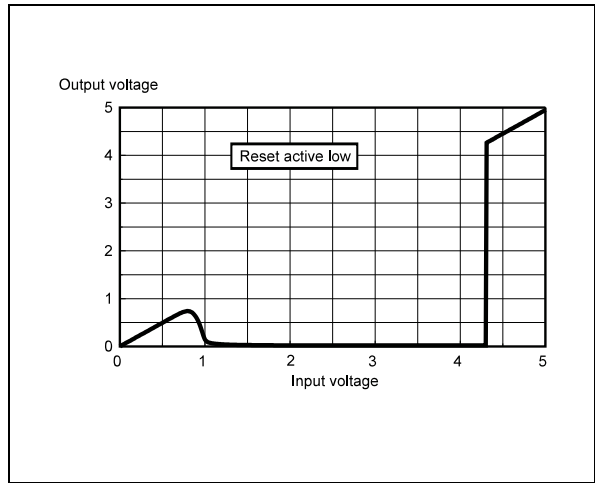
Vol vs Temperature



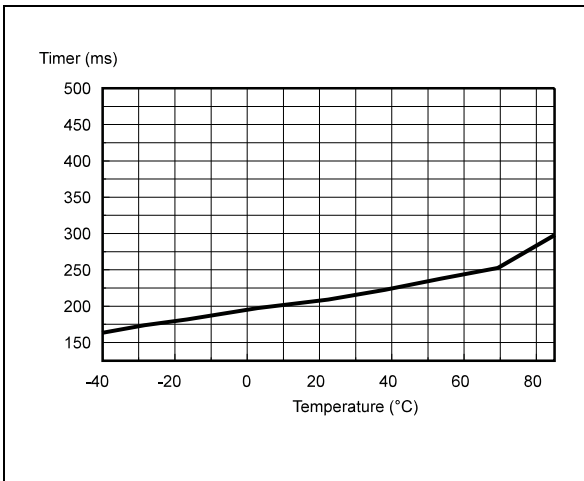
Current Consumption vs Temperature



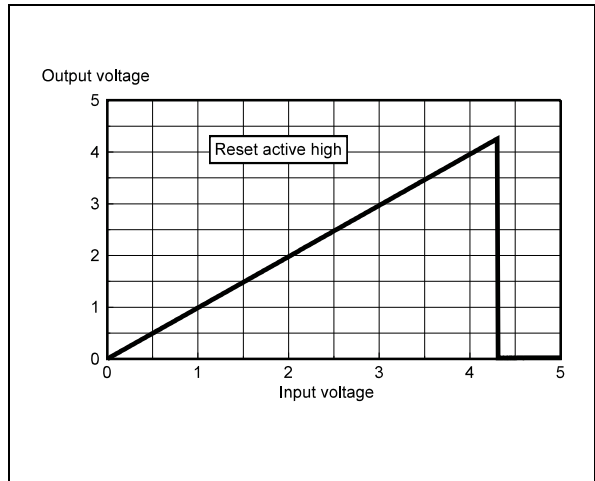
Output Voltage vs Input



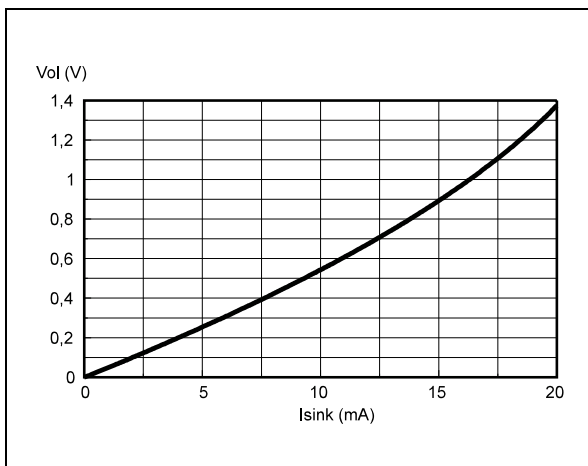
Timer Period (trst) vs Temperature



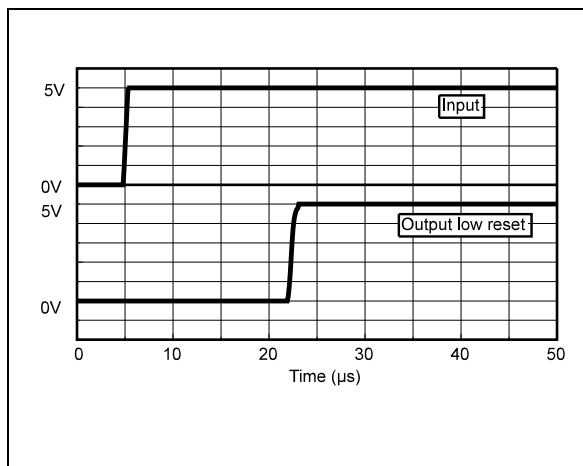
Output Voltage vs Input



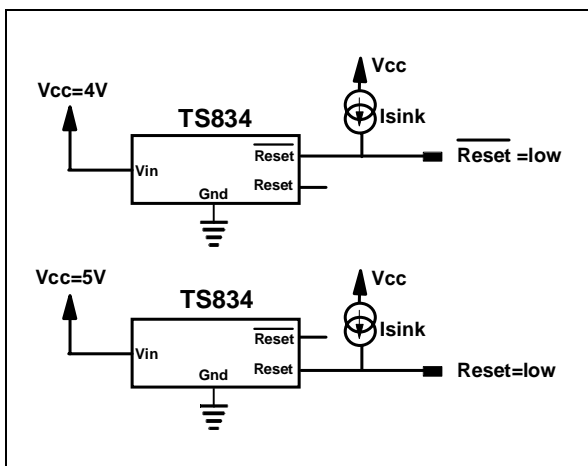
**Vol vs Isink**



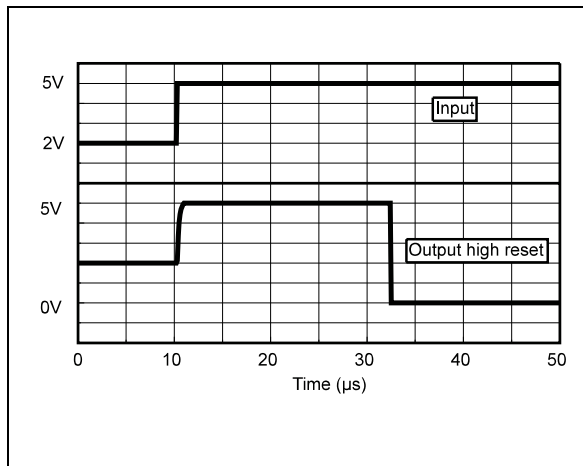
**Reset High After V<sub>CC</sub> Transition (timer disabled)**



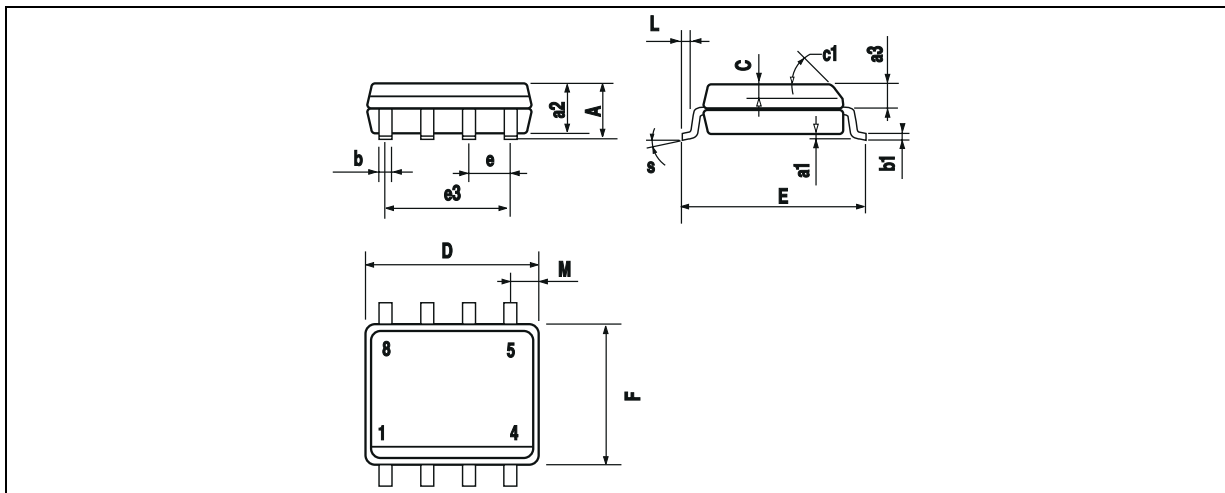
**Schematic to Measure Vol vs Isink**



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

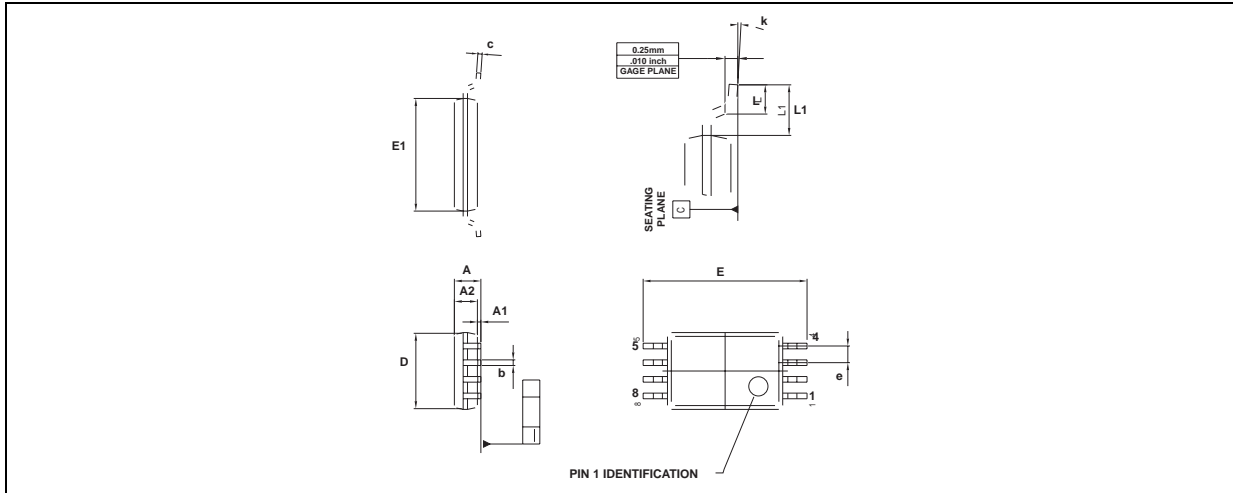


**PACKAGE MECHANICAL DATA**  
8 PINS - PLASTIC MICROPACKAGE (SO)



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	

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

© The ST logo is a registered trademark of STMicroelectronics

© 2001 STMicroelectronics - Printed in Italy - All Rights Reserved  
**STMicroelectronics GROUP OF COMPANIES**

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco  
 Singapore - Spain - Sweden - Switzerland - United Kingdom

© <http://www.st.com>