Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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TSM100

SINGLE OPERATIONAL AMPLIFIER AND SINGLE COMPARATOR

NOT FOR NEW DESIGN

OPERATIONAL AMPLIFIER

- ■ LOW INPUT OFFSET VOLTAGE : 0.5mV typ.
- ■ MEDIUM BANDWIDTH (unity gain) : 0.9MHz
- ■ LARGE OUTPUT VOLTAGE SWING : 0V to (V_{CC} - 1.5V)
- ■ INPUT COMMON MODE VOLTAGE RANGE INCLUDES GROUND
- ■ WIDE POWER SUPPLY RANGE : 5 to 30V ±2.5 TO ±15V
- ■ ESD PROTECTION : 2kV

COMPARATOR (OPEN COLLECTOR)

- ■ INPUT COMMON MODE VOLTAGE RANGE INCLUDES GROUND
- ■ LOW OUTPUT SATURATION VOLTAGE : 250mV @ I_o = 4mA
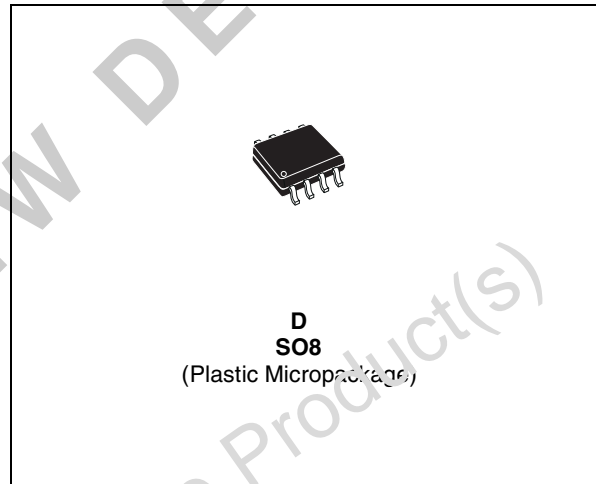
DESCRIPTION

The TSM100 is a monolithic IC that includes one independent op-amp and one independent comparator. This device is offering space and cost saving in many applications like power supply management or data acquisition systems.
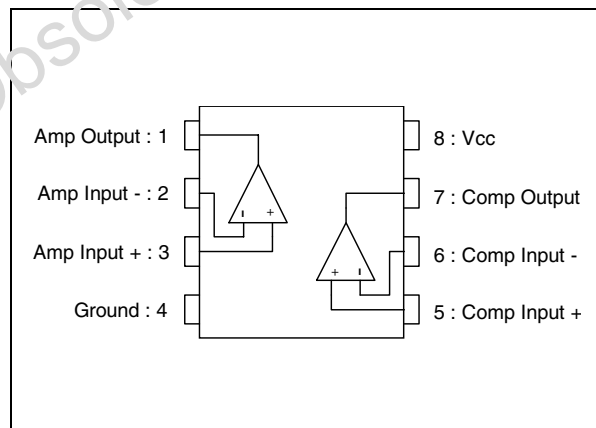

D
SO8
(Plastic Micropackage)

PIN CONNECTIONS (top view)

Amp Output : 1 — 8 : Vcc
Amp Input - : 2 — 7 : Comp Output
Amp Input + : 3 — 6 : Comp Input -
Ground : 4 — 5 : Comp Input +

ORDER CODE

Part Number	Temperature Range	Package
		D
TSM100I	-40°C, +105°C	●

D = Small Outline Package (SO) - also available in Tape & Reel (DT)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	32	V
V_{id}	Differential Input Voltage	32	V
V_i	Input Voltage	-03. to +32	V
T_{oper}	Operating Free-air Temperature Range	-40 to +105	°C
T_j	Maximum Junction Temperature	150	°C
T_l	Maximum Lead Temperature (10 seconds maximum)	260	°C
R_{thja}	Thermal Resistance Junction to Ambient	175	°C/W

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Min.	Typ.	Max.	Unit
I_{CC}	Total Supply Current Vcc+ = 5V, no load Vcc+ = 30V, no load		0.9	1.4 1.8	mA

OPERATIONAL AMPLIFIER

V_{CC}^+ = +5V, V_{CC} = Ground, V_o = 1.4V, T_{amb} = 25°C (unless otherwise specified)

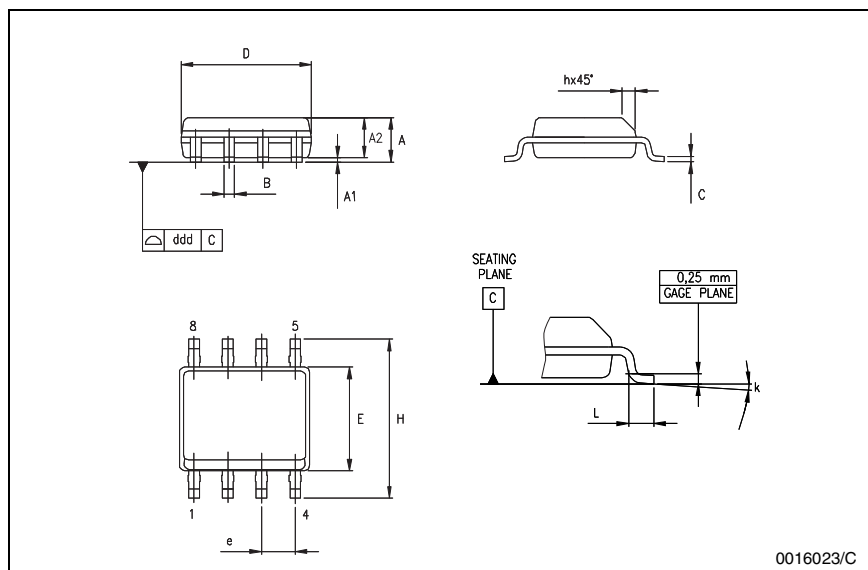| Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{io}	Input Offset Voltage T_{amb} = 25°C $T_{min.} \leq T_{amb} \leq T_{max.}$		0.5	3 4	mV
DV_{io}	Input Offset Voltage Drift		7		µV/°C
I_{io}	Input Offset Current		2	30	nA
I_{ib}	Input Bias Current		20	150	nA
Avd	Large Signal Voltage Gain V_{CC} = 15V, R_L = 2k, Vo = 1.4V to 11.4V	50	100		V/mV
SVR	Supply Voltage Rejection Ratio V_{CC} = 5V to 30V	65	100		dB
Vicm	Input Common Mode Voltage Range V_{CC} = +30V - see note [1]	0		$(V_{CC}+)$ -1.5	V
CMR	Common Mode Rejection Ratio	65	85		dB
I_{source}	Output Current Source V_{CC} = +15V, Vo = 2V, V_{id} = +1V	20	40		mA
I_o	Short Circuit to Ground V_{CC} = +15V		40	60	mA
I_{sink}	Output Current Sink V_{id} = -1V, V_{CC} = +15V, V_o = 2V V_{CC} = +15V, V_o = 0.2V	10 12	20 50		mA µA
V_{OH}	High Level Output Voltage V_{CC}^+ = 30V T_{amb} = 25°C, R_L = 2k T_{amb} = 25°C, R_L = 10k	26 27	27 28		V
V_{OL}	Low Level Output Voltage R_L = 10k		5	15	mV
SR	Slew Rate at Unity Gain V_i = 0.5 to 3V, V_{CC} = 15V R_L = 2k, C_L = 100pF, unity gain	0.2	0.4		V/µs
GBP	Gain Bandwidth Product V_{CC} = 30V, R_L = 2k, C_L = 100pF f = 100kHz, V_{in} = 10mV	0.5	0.9		MHz
THD	Total Harmonic Distortion f = 1kHz A_V = 20dB, R_L = 2k, V_{CC} = 30V C_L = 100pF, V_o = 2V_{pp}		0.015		%
e_n	Equivalent Input Noise Voltage f = 1kHz, Rs = 100Ω Vcc = 30V		40		nV/√Hz

1. The input common-mode voltage of either input signal voltage should not be allowed to go negative by more than 0.3V. The upper end of the common-mode voltage range is V_{CC}^+ - 1.5V.
   But both inputs can go to Vcc+ +0.3V without damage.

COMPARATOR

$V_{CC}^+ = +5V$, V_{CC} = Ground, $T_{amb} = 25°C$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{io}	Input Offset Voltage $T_{amb} = 25°C$		1	5	mV
I_{io}	Input Offset Current		5	50	nA
I_{ib}	Input Bias Current		25	250	nA
Avd	Large Signal Voltage Gain $V_{CC} = 15V$, $R_L = 15k$, Vo = 1V to 11V		200		V/mV
Vicm	Input Common Mode Voltage Range [1]	0		$(V_{CC}+)$ -1.5	V
I_{sink}	Output Sink Current $V_{id} = -1V$, $V_o = 1.5V$	6	16		mA
V_{OL}	Low Level Output Voltage $V_{id} = -1V$, $I_{sink} = 4mA$		250	400	mV
I_{OH}	High Level Output Current $V_{id} = 1V$, $V_{cc} = V_o = 30V$		0.1		nA
t_{re}	Response Time $R_L = 5.1k$ to $V_{CC}+$ [2]		1.3		µs
t_{rel}	Large Signal Response Time $V_i = TTL$, $V_{ref} = +1.4V$, $R_L = 5.1k$ to $V_{CC}+$		300		ns

1. The input common-mode voltage of either input signal voltage should not be allowed to go negative by more than 0.3V. The upper end of the common-mode voltage range is V_{CC}^+ - 1.5V.
   But either of both inputs can go to 36V without damage.

2. The response time is specified for a 100mV input step with 5mV overdrive. For larger overdrive signals, 300ns can be obtained

PACKAGE MECHANICAL DATA

8 PINS - PLASTIC MICROPACKAGE (SO)

SO-8 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	1.35		1.75	0.053		0.069
A1	0.10		0.25	0.04		0.010
A2	1.10		1.65	0.043		0.065
B	0.33		0.51	0.013		0.020
C	0.19		0.25	0.007		0.010
D	4.80		5.00	0.189		0.197
E	3.80		4.00	0.150		0.157
e		1.27			0.050	
H	5.80		6.20	0.228		0.244
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
k	8° (max.)					
ddd			0.1			0.04

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