

Triple Operational Amplifier and Voltage Reference

Operational Amplifier:

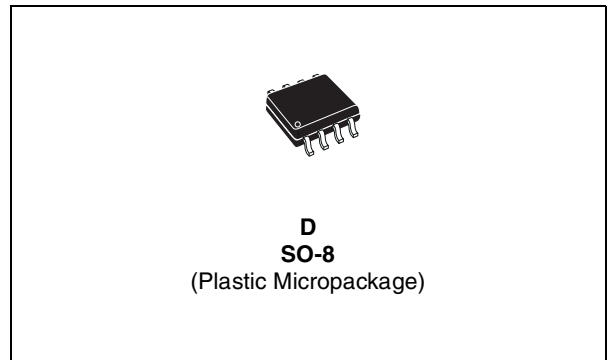
- Medium bandwidth (unity gain): 0.9MHz
- Large output voltage swing: 0V to ($V_{CC} - 1.5V$)
- Input common mode voltage range includes ground
- Wide power supply range: 3.8 to 32V ± 1.9 TO $\pm 16V$
- 1.5kV ESD Protection (HBM)

Voltage Reference:

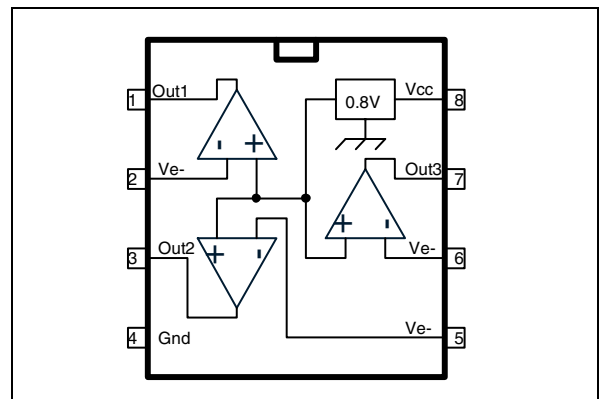
- Fixed output voltage reference 0.83V
- $\pm 1.6\%$ Voltage precision including V_{io}

Description

The TSM107 is a monolithic IC that includes three op-amp for which the non-inverting input is wired to a 0.83V fixed voltage reference. This device offers both space and cost savings in many applications such as power supply management or data acquisition systems..



PIN CONNECTIONS (top view)



Order Codes

Part Number	Temperature Range	Package	Packaging	Marking
TSM107ID	-40°C, +105°C	SO	Tube	M107
TSM107IDT			Tape & Reel	

1 Absolute Maximum Ratings

Table 1. Key parameters and their absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	36	V
V_{id}	Differential Input Voltage	36	V
V_i	Negative Input Voltage	-0.3 to $V_{CC} + 0.3V$	V
T_{oper}	Operating Free-air Temperature Range	-40 to +105	°C
T_j	Maximum Junction Temperature	150	°C
R_{thja}	Thermal Resistance Junction to Ambient (SO package)	175	°C/W
T_l	Maximum Lead Temperature (10 seconds maximum)	260	°C
ESD	Electrostatic Discharge Protection	1.5	kV

2 Electrical Characteristics

Table 2. General electrical characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
I_{CC}	Total Supply Current $V_{CC+} = 5V$, no load $T_{min.} < T_{amb} < T_{max.}$		2.5	4.5	mA
	$V_{CC+} = 30V$, no load $T_{min.} < T_{amb} < T_{max.}$		5.5	8.5 10	

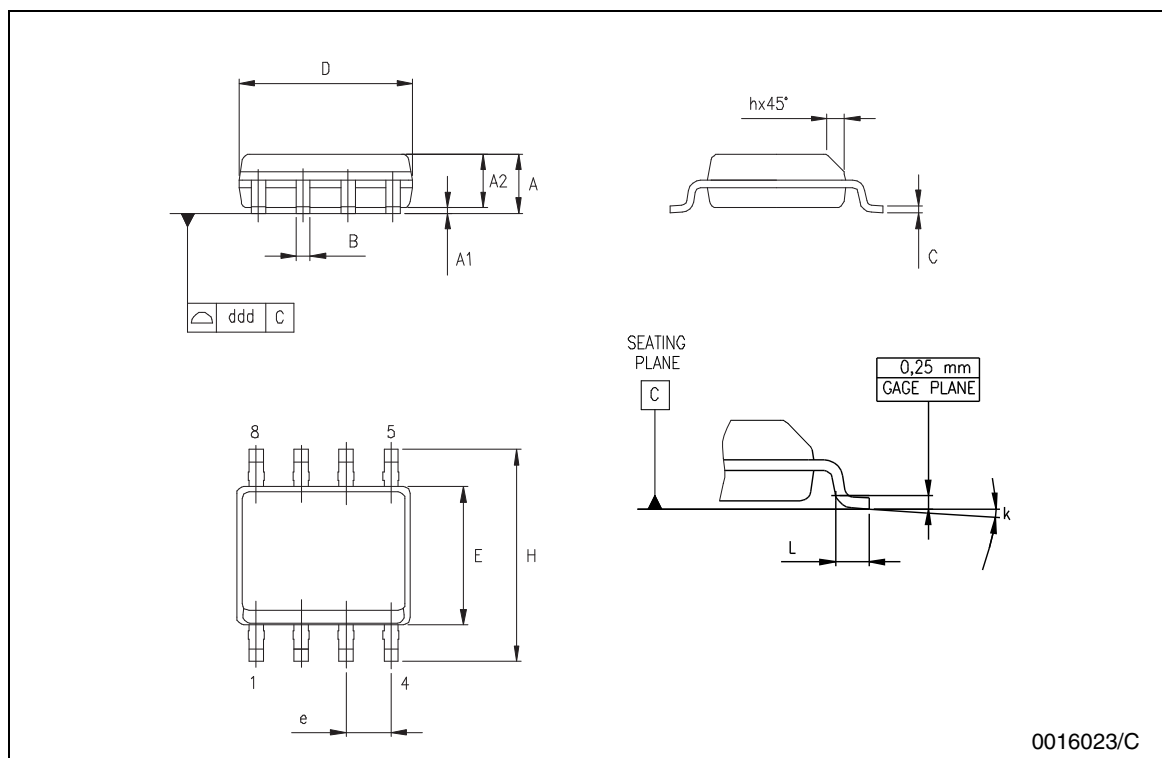
**Table 3. Electrical characteristics for operator/ $V_{CC+} = +5V$, $V_{CC-} = \text{Ground}$, $T_{amb} = 25^{\circ}\text{C}$
(unless otherwise specified)**

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{ref} + V_{io}$	Input Offset Voltage $T_{amb} = 25^{\circ}$ $T_{min.} \leq T_{amb} \leq T_{max.}$	0.818 0.748	0.83	0.842 0.872	V
I_{ib}	Input Bias Current negative input		20		nA
I_{source}	Output Current Source $V_o = 2V$ $V_{CC} = +15V$	20	40		mA
I_o	Short Circuit to Ground $V_{CC} = +15V$		40	60	mA
I_{sink}	Output Current Sink $V_{CC} = +15V$, $V_o = 2V$	10	20		mA
V_{OH}	High Level Output Voltage $V_{CC+} = 30V$ $T_{amb} = 25^{\circ}\text{C}$, $R_L = 10k$ $T_{min.} \leq T_{amb} \leq T_{max.}$	27 27	28		V
V_{OL}	Low Level Output Voltage $R_L = 10k$ $T_{min.} \leq T_{amb} \leq T_{max.}$		5	20 20	mV

3 Package Mechanical Data

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



4 Revision History

Date	Revision	Description of Changes
01 Dec. 2004	1	First Release

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