

## Triple Operational Amplifier and Voltage Reference

### Operational Amplifier:

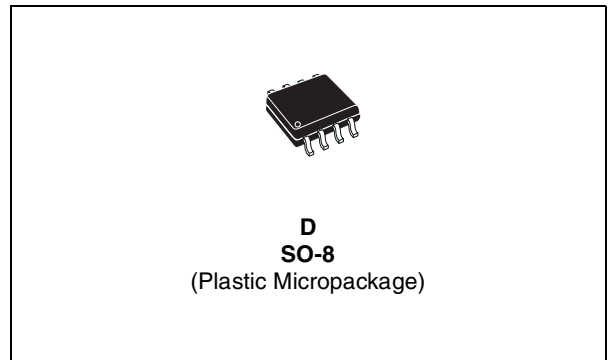
- Medium bandwidth (unity gain): 0.9MHz
- Large output voltage swing: 0V to ( $V_{CC} - 1.5V$ )
- Input common mode voltage range includes ground
- Wide power supply range: 3.8 to 32V  $\pm 1.9$  TO  $\pm 16V$
- 1.5kV ESD Protection (HBM)

### Voltage Reference:

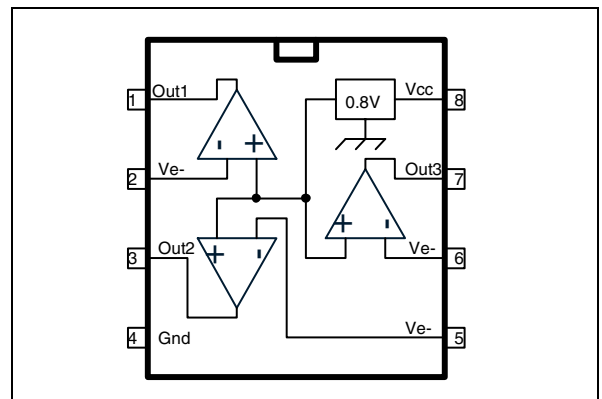
- Fixed output voltage reference 0.83V
- $\pm 1.6\%$  Voltage precision including  $V_{io}$

### 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	

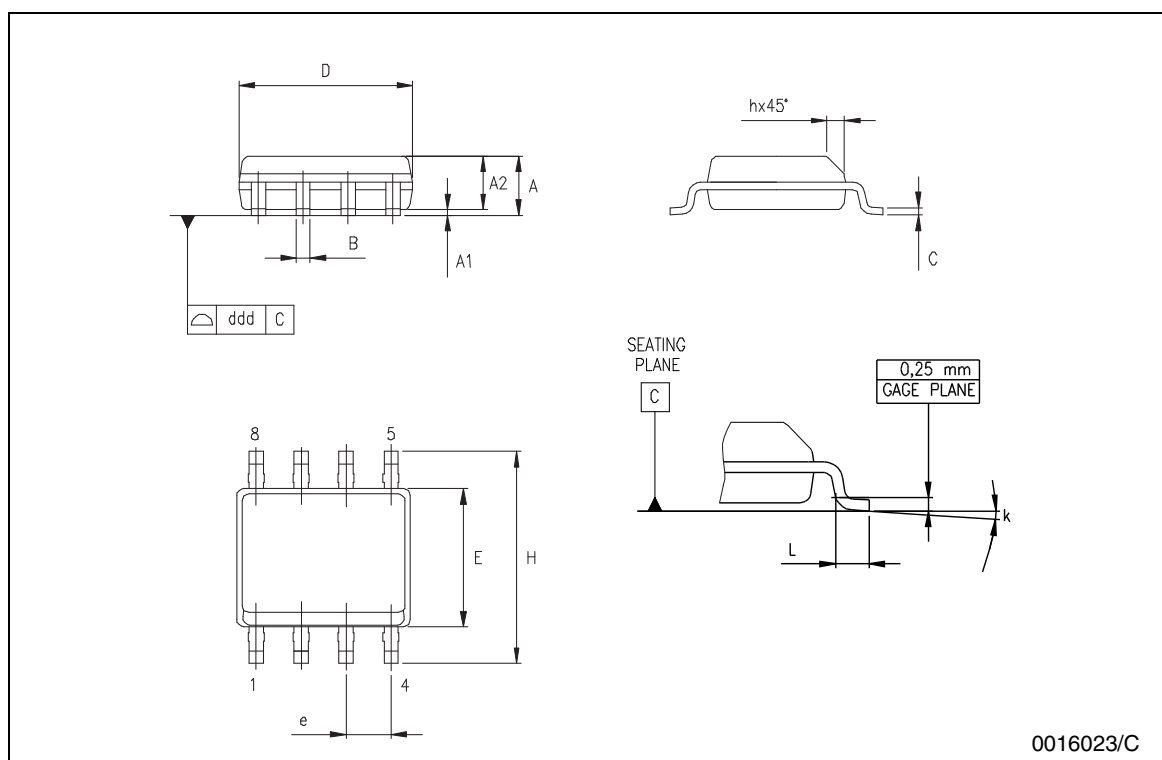
**Table 3. Electrical characteristics for operator/  $V_{CC+} = +5V$ ,  $V_{CC-} = \text{Ground}$ ,  $T_{amb} = 25^{\circ}C$   
(unless otherwise specified)**

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 $V_{CC+} = 30V$ $T_{amb} = 25^{\circ}C$ , $R_L = 10k$ $T_{min.} \leq T_{amb} \leq T_{max.}$	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	$8^\circ$ (max.)					
ddd			0.1			0.04



## 4 Revision History

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

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