

MAV393

DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR



CBC Microelectronics
<http://www.cbv.net>

General Description

The MAV393 is a low voltage 2.5V to 5.5V, dual comparator, which has a very low supply current of 100 μ A, making the part an excellent choice for portable electronic systems. The device is pin-for-pin compatible replacement of the LMV393.

The MAV393 is built with BiCMOS process with bipolar input and output stages for improved noise performance. It is a cost-effective solution for portable consumer products where space, low voltage, low power and price are the primary specification in circuit design.

Features

- Guaranteed 2.5V to 5.5V Performance
- Industrial Temperature Range: -40°C to 85°C
- Low Supply Current: 100 μ A Typical
- Input Common Mode Voltage Range Includes Ground
- Low Output Saturation Voltage: 200mV Typical
- Open Collector Output for Maximal Flexibility

Applications

- Notebook and PDA
- Low Power, Low Voltage Applications
- General Purpose Portable Devices
- Mobile Communications
- Battery Powered Electronics



MSOP-8

SOP-8

Figure 1: Package Types of MAV393

Pin Configuration

M/L Package
(SOP-8/MSOP-8)

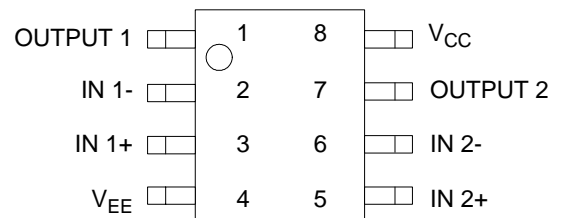
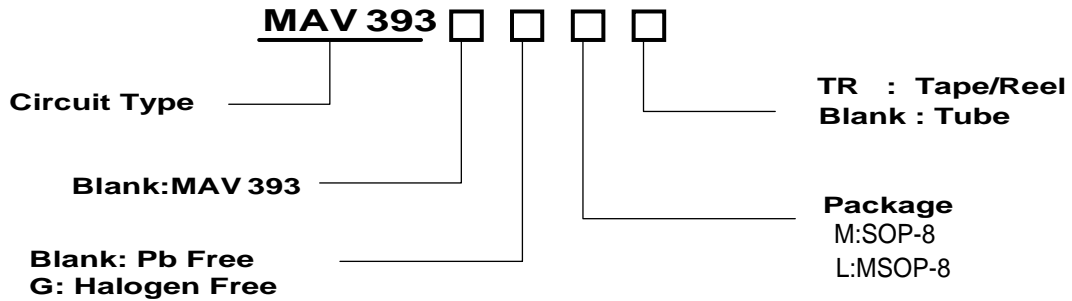


Figure 2: Pin Configuration of MAV393 (TopView)

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Ordering Information



Package	Condition	Part Number		Marking ID		Packing Type
		Pb-free	Halogen-Free	Pb-free	Halogen-Free	
SOP-8	3.0mV	MAV393M	MAV393GM	MA393M	MA393GM	Tube
	3.0mV	MAV393MTR	MAV393GMTR	MA393M	MA393GM	Tape&Reel
MSOP-8	3.0mV	MAV393L	MAV393GL	MA393L	MA393GL	Tube
	3.0mV	MAV393LTR	MAV393GLTR	MA393L	MA393GL	Tape&Reel

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	6	V
Operation Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10 Seconds)	T_{LEAD}	260	°C
ESD (Machine Model)		200	V
ESD (Human Body Model)		2000	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

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Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	2.7	5.5	V
Ambient Operating Temperature Range	T_A	-40	85	°C

2.7V DC Electrical Characteristics

Limits in standard typeface are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=2.7\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, **bold** typeface applies over full temperature ranges, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Offset Voltage	V_{OS}			1.7	7	mV
					9	
Input Offset Voltage Average Drift	TCV_{OS}			5		$\mu\text{V}/^{\circ}\text{C}$
Input Bias Current	I_B	I_{IN+} or I_{IN-} with output in linear range, $V_{CM}=0\text{V}$		10	250	nA
					400	
Input Offset Current	I_{IO}	$I_{IN+} - I_{IN-}$, $V_{CM}=0\text{V}$		5	50	nA
					150	
Saturation Voltage	V_{SAT}	$I_{SINK} \leq 1\text{mA}$		200		mV
					500	
Output Sink Current	I_{SINK}	$V_O \leq 1.5\text{V}$	5	23		mA
Input Common-Mode Voltage Range	V_{CM}		-0.1		2	V
Supply Current	I_{CC}			70	150	μA
					200	
Output Leakage Current	$I_{LEAKAGE}$			0.003		μA

2.7V AC Electrical Characteristics

All limits are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=2.7\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Propagation Delay (High to Low)	T_{PHL}	Input Overdrive=10mV		1000		ns
		Input Overdrive=100mV		350		
Propagation Delay (Low to High)	T_{PLH}	Input Overdrive=10mV		500		ns
		Input Overdrive=100mV		400		

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5V DC Electrical Characteristics

Limits in standard typeface are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, **bold** typeface applies over full temperature ranges, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Offset Voltage	V_{OS}			1.7	7	mV
					9	
Input Offset Voltage Average Drift	TCV_{OS}			5		$\mu\text{V}/^{\circ}\text{C}$
Input Bias Current	I_B	I_{IN+} or I_{IN-} with output in linear range, $V_{CM}=0\text{V}$		25	250	nA
					400	
Input Offset Current	I_{IO}	$I_{IN+} - I_{IN-}$, $V_{CM}=0\text{V}$		2	50	nA
					150	
Saturation Voltage	V_{SAT}	$I_{SINK} \leq 4\text{mA}$		200	400	mV
					500	
Output Sink Current	I_{SINK}	$V_O \leq 1.5\text{V}$	10	84		mA
Input Common-Mode Voltage Range	V_{CM}		-0.1		4.2	V
Voltage Gain	A_V		20	50		V/mV
Supply Current	I_{CC}			100	200	μA
					250	
Output Leakage Current	$I_{LEAKAGE}$			0.003		μA

5V AC Electrical Characteristics

All limits are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Propagation Delay (High to Low)	T_{PHL}	Input Overdrive=10mV		600		ns
		Input Overdrive=100mV		200		
Propagation Delay (Low to High)	T_{PLH}	Input Overdrive=10mV		450		ns
		Input Overdrive=100mV		300		

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Functional Block Diagram

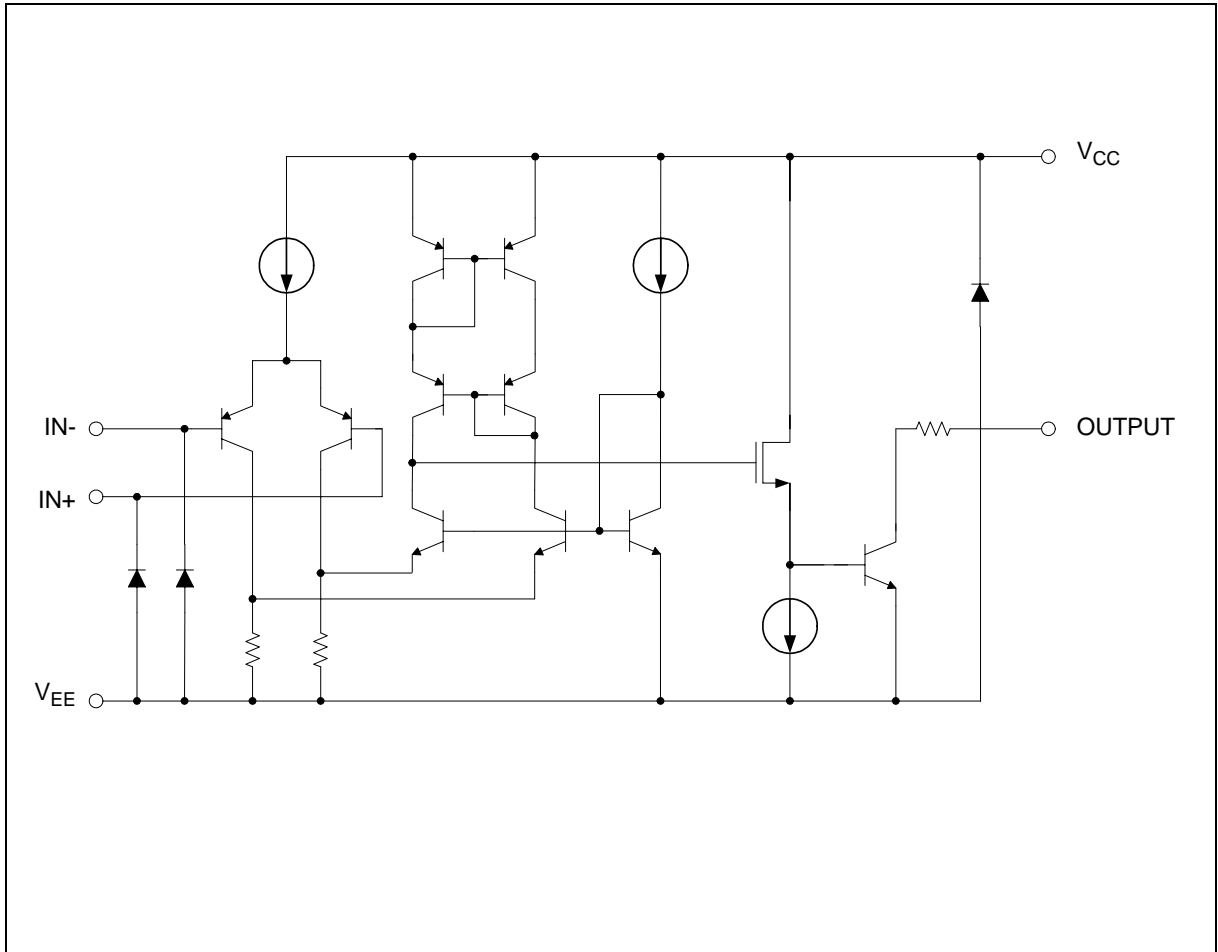


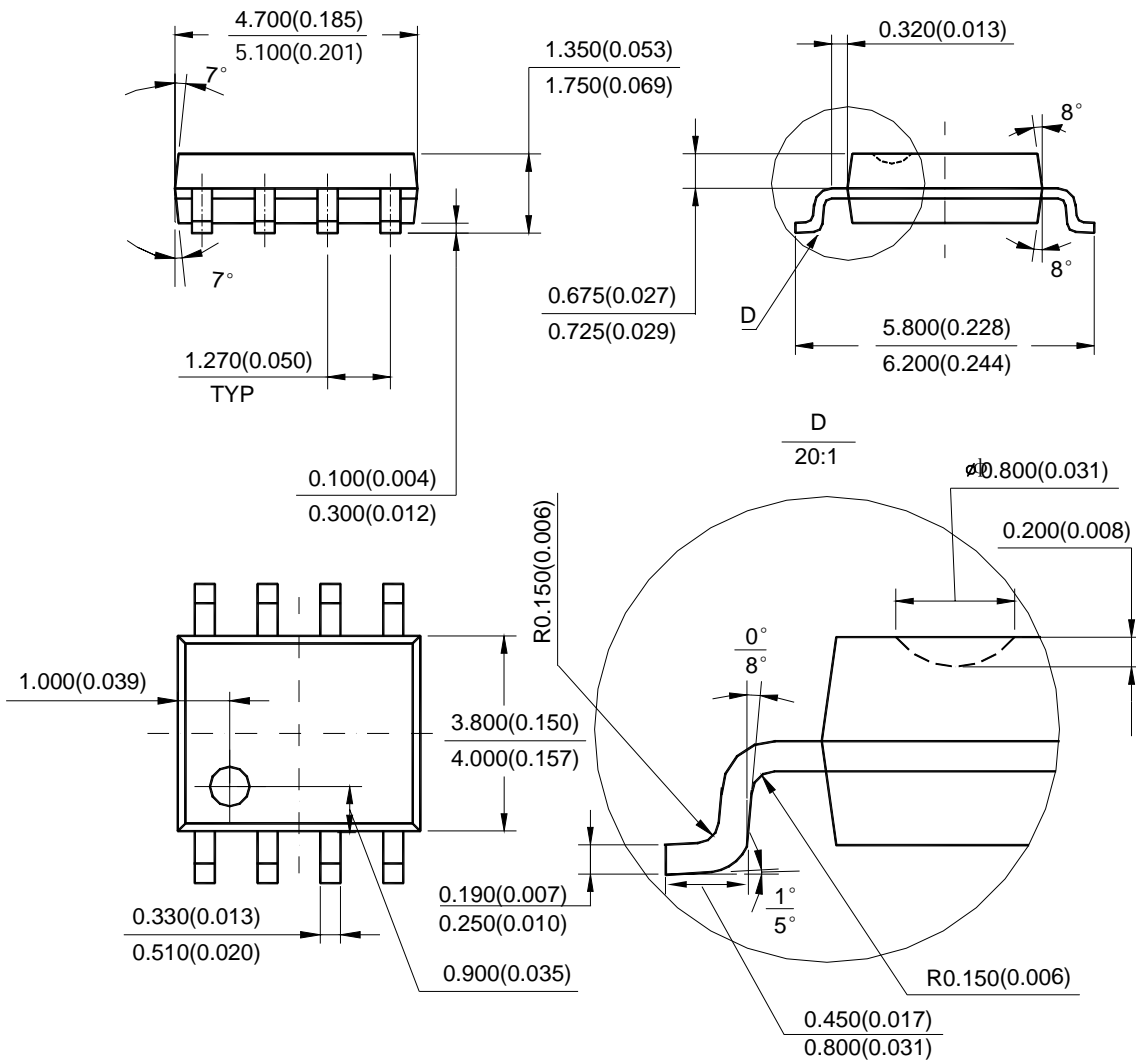
Figure 3 : Functional Block Diagram of MA393 (Each Amplifier)

MAV393

Mechanical Dimensions

SOP-8

Unit: mm(inch)

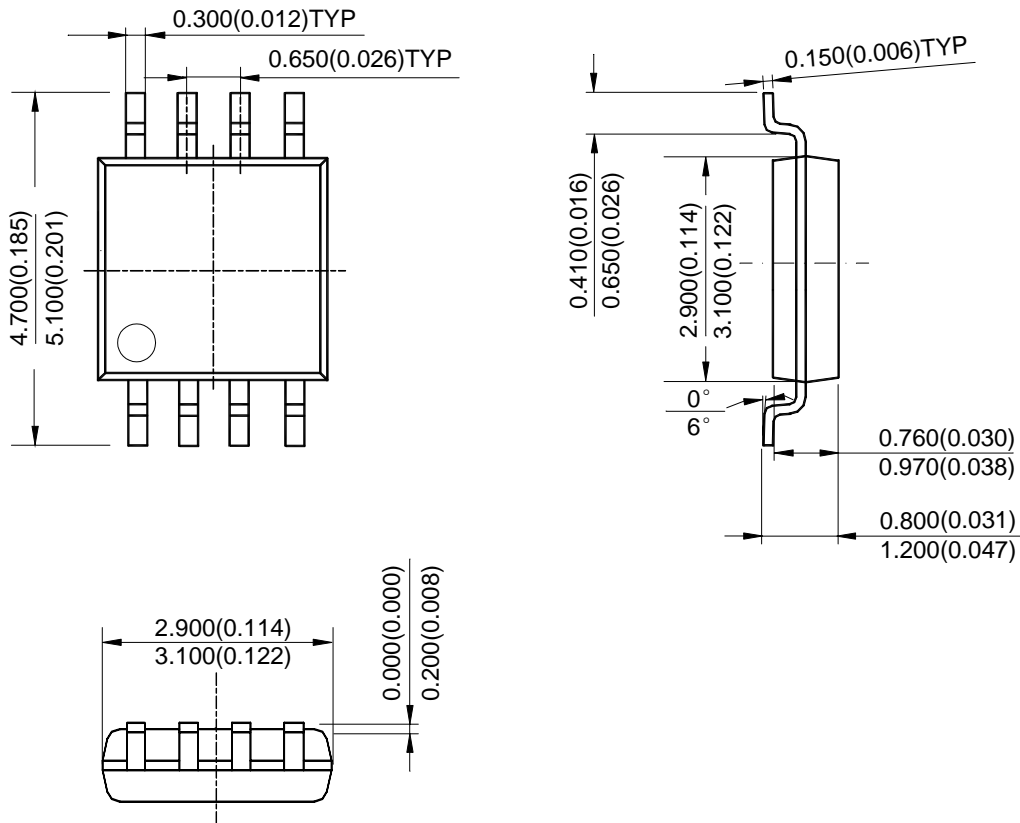


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Mechanical Dimensions (Cont'd)

MSOP-8

Unit: mm(inch)



Note: Eject hole, oriented hole and mold mark is optional.

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