

# Signetics

## Integrated Circuits—Comparators

### LM2903, LM193 Series—Low Power Dual Voltage Comparator

#### GENERAL DESCRIPTION

The LM193 series consists of two independent precision voltage comparators with an offset voltage specification as low as 2.0mV max for two comparators which were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage. These comparators also have a unique characteristic in that the input common mode voltage range includes ground, even though operated from a single power supply voltage.

The LM193 series was designed to directly interface with TTL and CMOS. When operated from both plus and minus power supplies, the LM193 series will directly interface with MOS logic where their low power drain is a distinct advantage over standard comparators.

#### FEATURES

- Wide single supply voltage range 2.0Vdc to 36Vdc or dual supplies  $\pm 1.0$ Vdc to  $\pm 18$ Vdc
- Very low supply current drain (0.8mA) independent of supply voltage (2.0mW/comparator at 5.0Vdc)
- Low input biasing current 25nA
- Low input offset current  $\pm 5$ nA and offset voltage  $\pm 3$ mV
- Input common-mode voltage range includes ground
- Differential input voltage range equal to the power supply voltage
- Low output 250mV at 4mA saturation voltage
- Output voltage compatible with TTL, DTL, ECL, MOS and CMOS logic systems

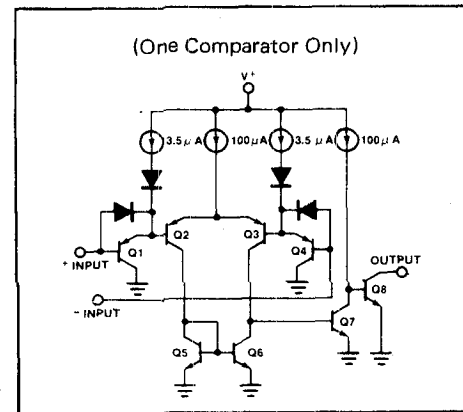
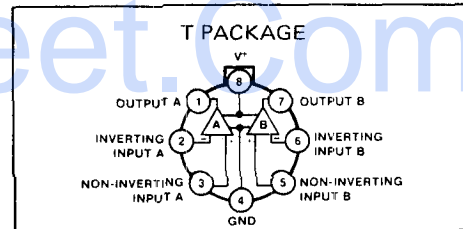
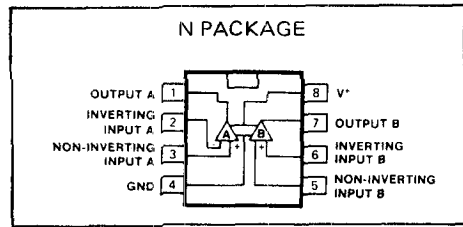
#### APPLICATIONS

- A/D converters
- Wide range VCO
- MOS clock generator
- High voltage logic gate
- Multivibrators

#### MAXIMUM RATINGS

PARAMETER	RATING	UNIT
V <sub>CC</sub> supply voltage	36 or $\pm 18$	Vdc
Differential input voltage	36	Vdc
Input voltage	-0.3 to +36	Vdc
Power dissipation		mW
Molded DIP	570	mW
Metal can	900	mW
Output short circuit to ground	Continuous	
Input current (V <sub>IN</sub> < -0.3Vdc)	50	mA
Operating temperature range		°C
LM193/193A	-55 to +125	°C
LM293/293A	-25 to + 85	°C
LM393/393A	0 to +70	°C
LM2903	-40 to +85	°C
Storage temperature range	-65 to +150	°C
Lead temperature (soldering 10sec)	300	°C

#### CONNECTION DIAGRAM



#### REFERENCE TABLE

TYPE NO	STOCK NO.	OUTLINE DRWG. NO.
LM193T	56003B	7
LM293N	56004X	8
LM393N	56005R	8

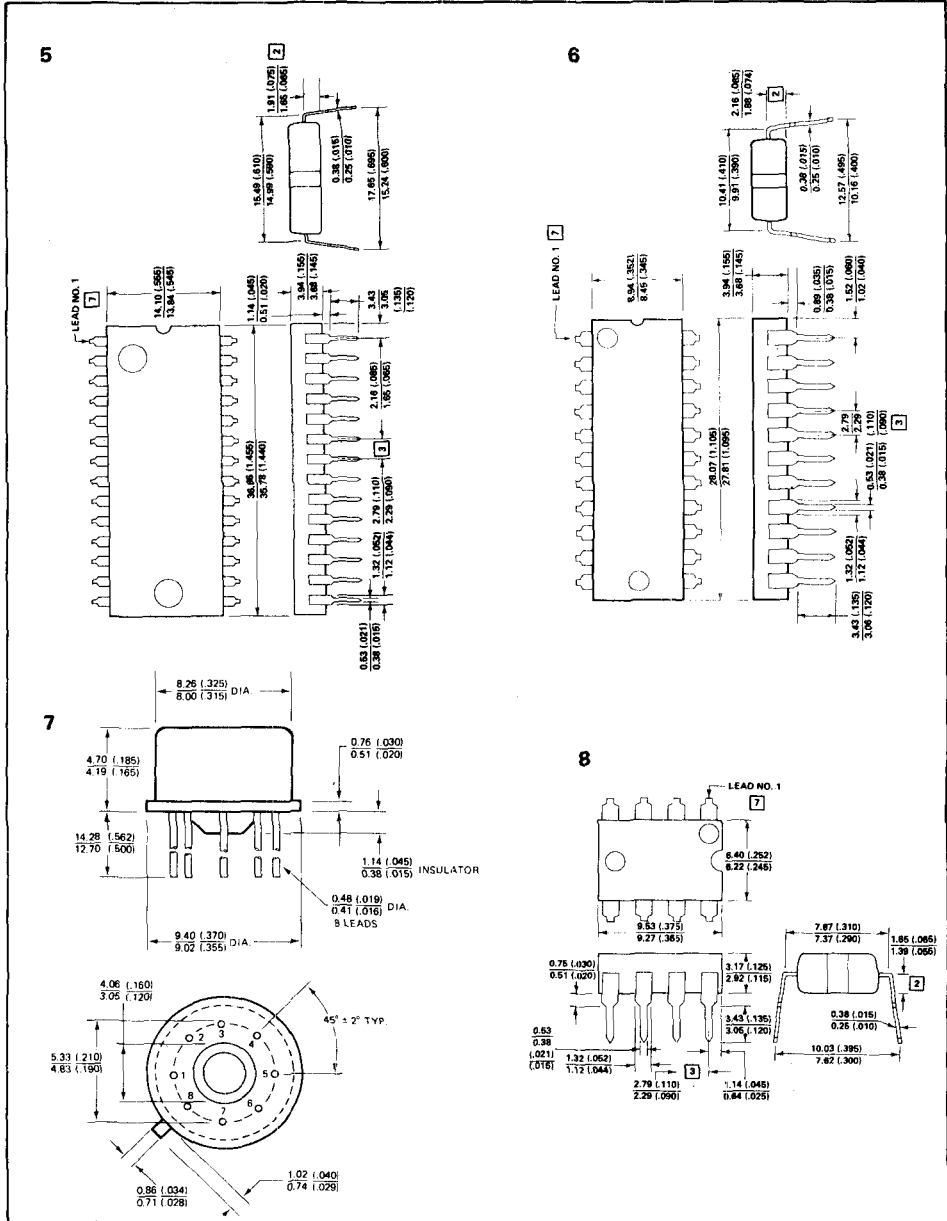


FOR CURRENT PRICES PHONE HARLOW (0279) 29644



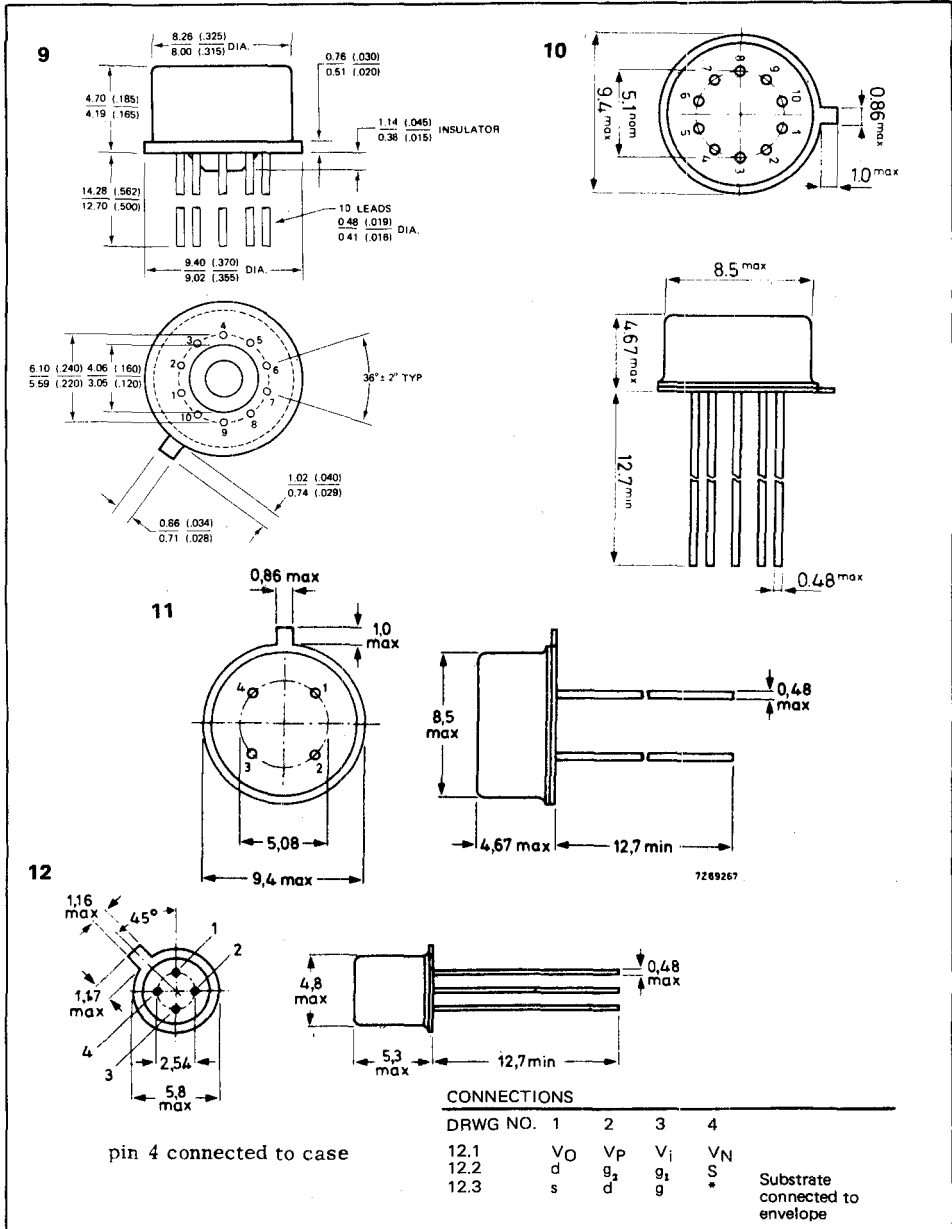
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## Outline Drawings



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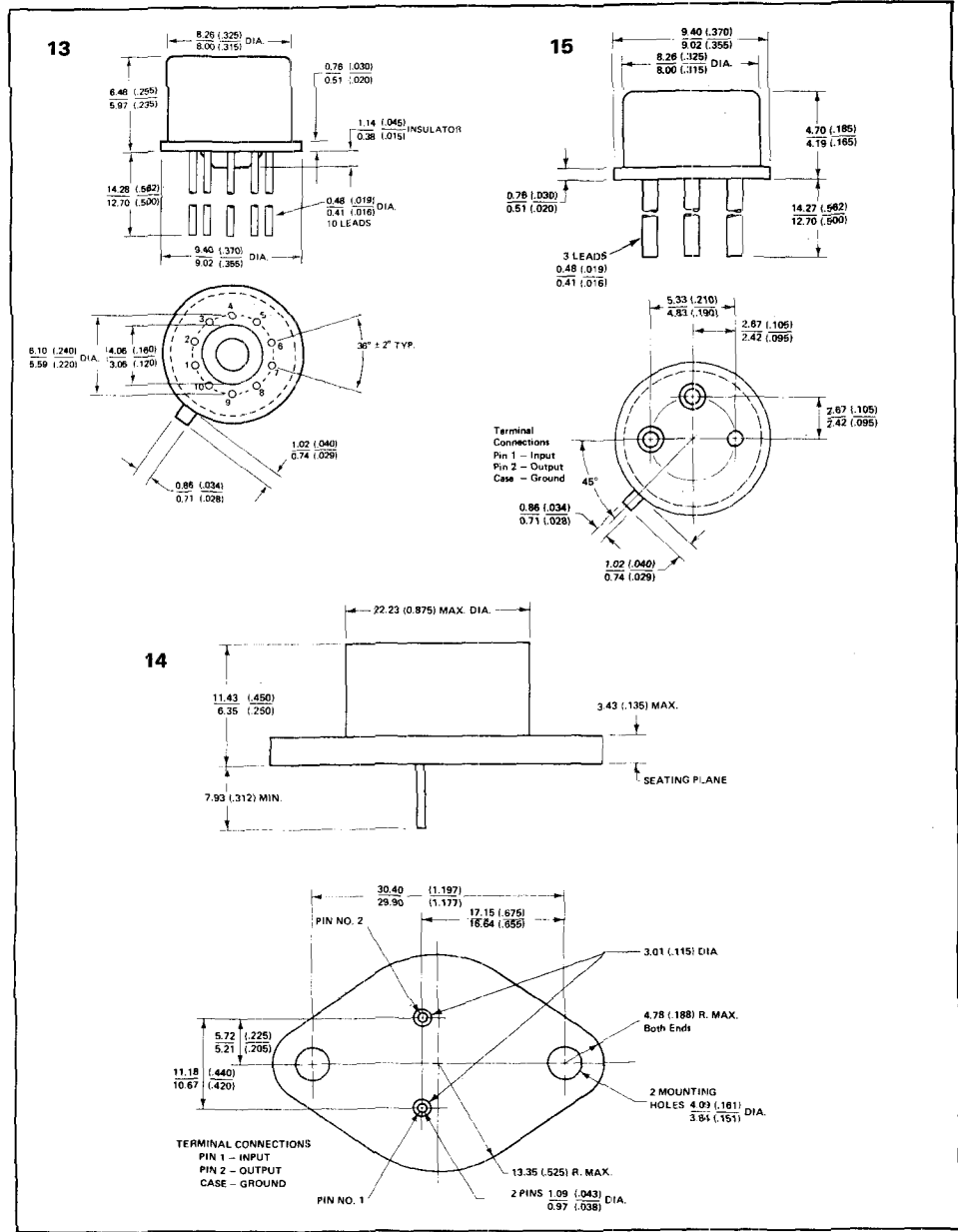


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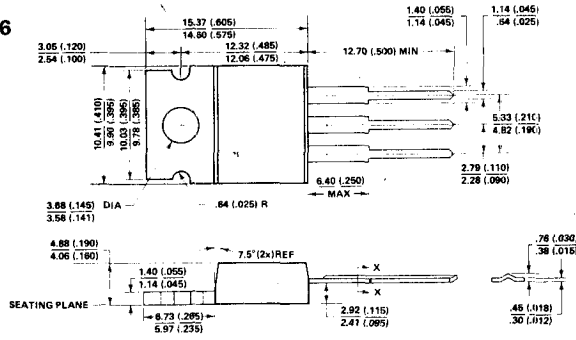
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## Outline Drawings

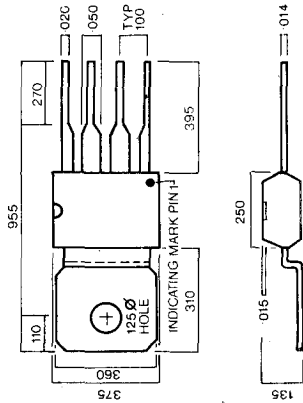


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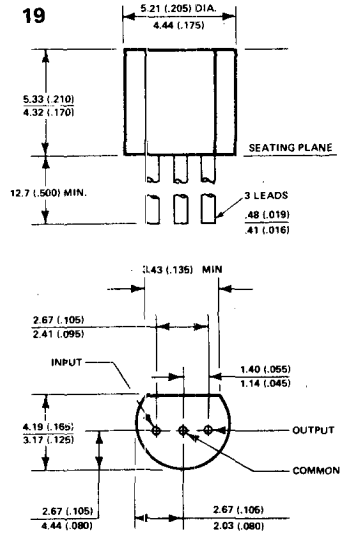
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