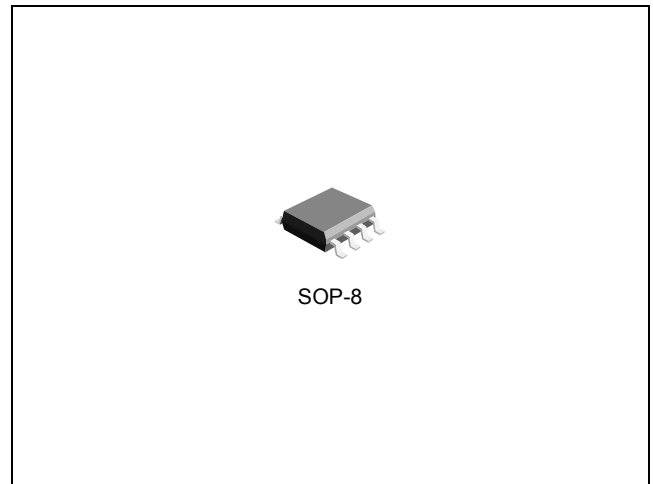


FEATURES

- Wide range of supply voltages
- Low supply current drain independent of supply voltage
- Low input biasing current
- Low input offset current
- Low input offset voltage
- Input common-mode voltage range includes GND
- Differential input voltage range equal to the power supply voltage
- Low output saturation voltage
- Output voltage compatible with TTL, MOS and CMOS logic



DESCRIPTION

The TJ393 consists of two independent voltage comparators. These 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. The outputs can be connected to other open-collector outputs to achieve wired-AND relationships.

ORDERING INFORMATION

| Device | Package |
|---------|---------|
| TJ393GD | SOP-8 |

ABSOLUTE MAXIMUM RATINGS (Note 1)

| CHARACTERISTIC | SYMBOL | MIN. | MAX. | UNIT |
|------------------------------------|-----------|------|----------------|--------------------|
| Supply Voltage | V_{CC} | - | 36 or ± 18 | V |
| Differential Input Voltage | V_{ID} | - | 36 | V |
| Input Voltage Range (either input) | V_{IC} | -0.3 | 36 | V |
| Output Voltage | V_O | - | 36 | V |
| Junction Temperature Range | T_J | -40 | 125 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{STG} | -65 | 150 | $^{\circ}\text{C}$ |

Note 1. Stresses beyond 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-rated conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS (Note 2)

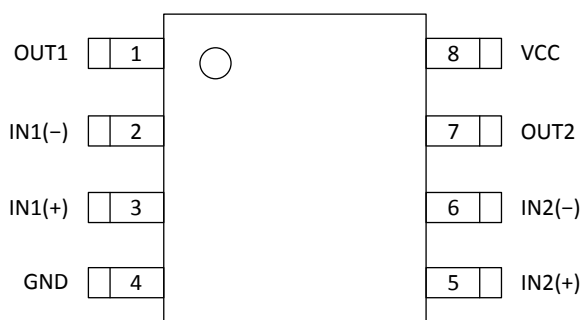
| CHARACTERISTIC | SYMBOL | MIN. | MAX. | UNIT |
|-------------------------------------|-----------|------|------|------|
| Supply Voltage | V_{CC} | 2.0 | 30 | V |
| Operating Ambient Temperature Range | T_{OPR} | -40 | 125 | °C |

Note 2. The device is not guaranteed to function outside its operating ratings.

ORDERING INFORMATION

| Package | Order No. | Description | Supplied As | Status |
|---------|-----------|-------------------------------|-------------|--------|
| SOP-8 | TJ393GD | Dual Differential Comparators | Tape & Reel | Active |

PIN CONFIGURATION



SOP-8

PIN DESCRIPTION

| Pin No. | Pin Name | Pin Function |
|---------|----------|------------------------------------|
| 1 | OUT1 | Output of the Comparator 1 |
| 2 | IN1(-) | Negative Input of the Comparator 1 |
| 3 | IN1(+) | Positive Input of the Comparator 1 |
| 4 | GND | Ground |
| 5 | IN2(+) | Positive Input of the Comparator 2 |
| 6 | IN2(-) | Negative Input of the Comparator 2 |
| 7 | OUT2 | Output of the Comparator 2 |
| 8 | VCC | Power Supply |

ELECTRICAL CHARACTERISTICS

At specified free-air temperature and $V_{CC} = 5V$ unless otherwise specified

| SYMBOL | PARAMETER | TEST CONDITIONS | T_A | MIN | TYP | MAX | UNIT |
|-----------|---|---|------------|-----|-----|----------------|---------|
| V_{IO} | Input Offset Voltage | $V_{CC} = 5V$ to $30V$, $V_{IC} = V_{ICR}$ min, $V_O = 1.4V$ | 25°C | - | 2 | 5 | mV |
| | | | Full range | - | - | 9 | |
| I_{IO} | Input Offset Current | $V_O = 1.4V$ | 25°C | - | 5 | 50 | nA |
| | | | Full range | - | - | 150 | |
| I_{IB} | Input Bias Current | $V_O = 1.4V$ | 25°C | - | -25 | -250 | nA |
| | | | Full range | - | - | -400 | |
| V_{ICR} | Common-mode Input Voltage Range (Note 5) | | 25°C | 0 | - | $V_{CC} - 1.5$ | V |
| | | | Full range | 0 | - | $V_{CC} - 2.0$ | |
| V_{OL} | Low-Level Output Voltage | $I_{OL} = 4mA$, $V_{ID} = -1V$ | 25°C | - | 150 | 400 | mV |
| | | | Full range | - | - | 700 | |
| A_{VD} | Large-Signal Differential Voltage Amplification | $V_{CC} = 15V$, $V_O = 1.4V$ to $11.4V$, $R_L \geq 15k\Omega$ to V_{CC} | 25°C | 50 | 200 | - | V/mV |
| I_{OH} | High-Level Output Current | $V_{OH} = 5V$, $V_{ID} = 1V$ | 25°C | - | 0.1 | 50 | nA |
| | | $V_{OH} = 30V$, $V_{ID} = 1V$ | Full range | - | - | 1 | μA |
| I_{OL} | Low-Level Output Current | $V_{OL} = 1.5V$, $V_{ID} = -1V$ | 25°C | 6 | - | - | mA |
| I_{CC} | Supply Current | $R_L = \infty$, $V_{CC} = 5V$ | 25°C | - | 0.8 | 1 | mA |
| | | $R_L = \infty$, $V_{CC} = 30V$ | Full range | - | - | 2.5 | |

Note 3. All characteristics are measured with zero common-mode input voltage, unless otherwise specified.

Note 4. Temperature full range is $-40^\circ C$ to $125^\circ C$.Note 5. The Voltage at either input or common-mode should not be allowed to go negative by more than 0.3V. The upper end of the common-mode voltage range is $V_{CC} - 1.5V$.

SWITCHING CHARACTERISTICS

 $V_{CC} = 5V$, $T_A = 25^\circ C$

| PARAMETER | TEST CONDITIONS | | TYP | UNIT |
|---------------|---|-------------------------------------|-----|---------|
| Response Time | R_L connected to 5V through 5.1k Ω , $C_L = 15pF$ (Note 6, 7) | 100mV input step with 5mV overdrive | 1.3 | μs |
| | | TTL-Level Input Step | 0.3 | |

Note 6. C_L includes probe and jig capacitance.

Note 7. The response time specified is the interval between the input step function and the instant when the output crosses 1.4V.

TYPICAL OPERATING CHARACTERISTICS

T.B.D.

REVISION NOTICE

The description in this datasheet is subject to change without any notice to describe its electrical characteristics properly.