

FEATURES

- Wide range of supply voltages
- Low supply current drain independent of supply voltage
- Low input biasing current
- Low input offset voltage and offset current
- Input common-mode voltage range includes ground
- Differential input voltage range equal to the power supply voltage
- DC voltage gain 100V/mV Typ.
- Internally frequency compensation

SOP-8 / TSSOP-8 Pin Configuration**SOP-8 PKG****TSSOP-8 PKG****ORDERING INFORMATION**

| Device | Package |
|----------|---------|
| TJ358GD | SOP-8 |
| TJ358GTD | TSSOP-8 |

DESCRIPTION

The TJ358 consists of two independent, high gain, internally frequency compensated operational amplifiers 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.

Application areas include transducer amplifiers, DC gain blocks and all the conventional op amp circuits.

ABSOLUTE MAXIMUM RATING

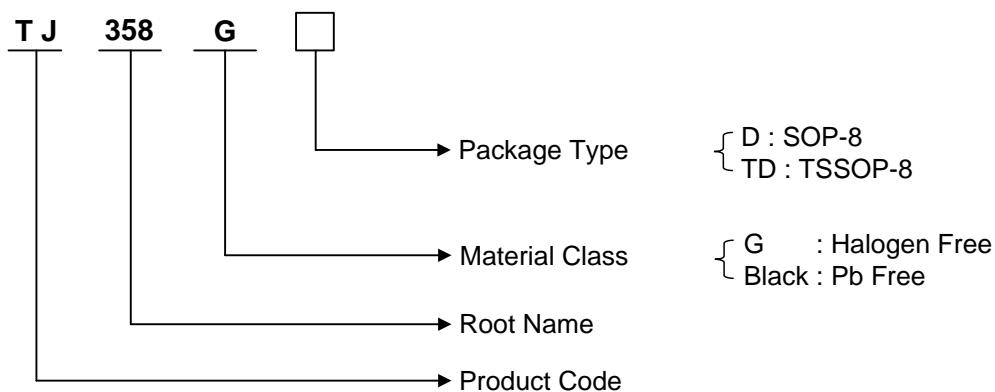
| CHARACTERISTIC | SYMBOL | MIN. | MAX. | UNIT |
|------------------------------------|-----------|------|------|------|
| Supply Voltage | V_{CC} | - | 45 | V |
| Input Voltage | V_{IN} | -0.3 | 45 | V |
| Input Current ($V_{IN} = -0.3V$) | I_{IN} | - | 50 | mA |
| Storage Temperature Range | T_{STG} | -65 | 150 | °C |
| Operating Temperature Range | T_{OPR} | -40 | 125 | °C |

RECOMMENDED OPERATING CONDITION

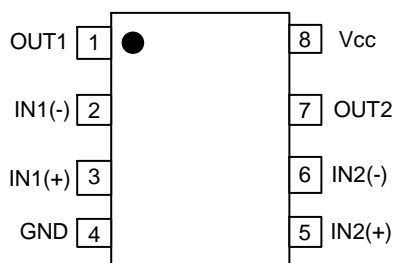
| CHARACTERISTIC | | SYMBOL | MIN. | MAX. | UNIT |
|----------------|--------|-----------|------|------|------|
| Supply Voltage | Single | V_{CC} | 5 | 40 | V |
| | Dual | V_{CC+} | +2.5 | +20 | V |
| | | V_{CC-} | -2.5 | -20 | V |

ORDERING INFORMATION

| Package | Order No. | Description | Supply As | Status |
|---------|-----------|--|-----------|--------|
| SOP-8 | TJ358GD | Dual Operational Amplifier, Halogen-Free | Reel | Active |
| TSSOP-8 | TJ358GTD | Dual Operational Amplifier, Halogen-Free | Reel | Active |



PIN CONFIGURATION



SOP-8 / TSSOP-8

ELECTRICAL CHARACTERISTICS

At specified free-air temperature, $V_{CC}=5V$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | MIN | TYP | MAX | UNIT | |
|---|--|------------|-----|---------|------------------|----|
| V_{IO} Input offset voltage | $V_{CC}=5V$ to MAX, $V_{IC}=V_{ICR}$ min, $V_O=1.4V$ | 25 °C | 3 | 7 | mV | |
| | | Full range | | 9 | | |
| αV_{IO} Average temperature coefficient of input offset voltage | | Full range | 7 | | $\mu V/^\circ C$ | |
| I_{IO} Input offset current | $V_O=1.4V$ | 25 °C | 2 | 50 | nA | |
| | | Full range | | 150 | | |
| αI_{IO} Average temperature coefficient of input offset current | | Full range | 10 | | $pA/^\circ C$ | |
| I_{IB} Input bias current | $V_O=1.4V$ | 25 °C | -20 | -250 | nA | |
| | | Full range | | -500 | | |
| V_{ICR} Common-mode input voltage range | $V_{CC}=5V$ to MAX | 25 °C | 0 | VCC-1.5 | V | |
| | | Full range | 0 | VCC-2.0 | | |
| V_{OH} High-level output voltage | $V_{CC}=MAX, R_L=2k\Omega$ | Full range | 26 | | V | |
| | $V_{CC}=MAX, R_L \geq 10k\Omega$ | Full range | 27 | 28 | | |
| V_{OL} Low-level output voltage | $R_L \geq 10k\Omega$ | Full range | 5 | 20 | mV | |
| A_{VD} Large-signal differential voltage amplification | $V_{CC}=15V$ $V_O=1V$ to 11V $R_L \geq 2k\Omega$ | 25 °C | 25 | 100 | V/mV | |
| | | Full range | 15 | | | |
| CMRR Common-mode rejection ratio | $V_{CC} = 5 V$ to MAX, $V_{IC} = V_{ICR}$ min | 25 °C | 65 | 80 | dB | |
| k_{SVR} Supply voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$) | $V_{CC} = 5 V$ to MAX | 25 °C | 65 | 100 | dB | |
| V_{O1}/V_{O2} Crosstalk attenuation | $f=1$ kHz to 20 kHz | 25 °C | | 120 | dB | |
| I_O Output current | $V_{CC}=15V,$ $V_{ID}=1V, V_O=0V$ | 25 °C | -30 | -50 | mA | |
| | | Full range | -20 | | | |
| | $V_{CC}=15V,$ $V_{ID}= -1V, V_O=15V$ | 25 °C | 15 | 35 | mA | |
| | | Full range | 7 | | | |
| | $V_{CC} = 15 V,$ $V_{ID}= -1 V, V_O= 2V$ | 25 °C | 15 | 28 | mA | |
| $V_{ID}= -1 V, V_O= 200mV$ | 25 °C | 12 | 50 | μA | | |
| I_{OS} Short-circuit output current | $V_{ID} = -1 V, V_O = 15 V$ | 25 °C | | 50 | 70 | mA |
| I_{CC} Supply current (two amplifiers) | $V_O=2.5 V, \text{No load}$ | Full range | | 0.7 | 1.2 | mA |
| | $V_{CC} = MAX,$ $V_O = 0.5V_{CC}, \text{No load}$ | Full range | | 1 | 2 | |

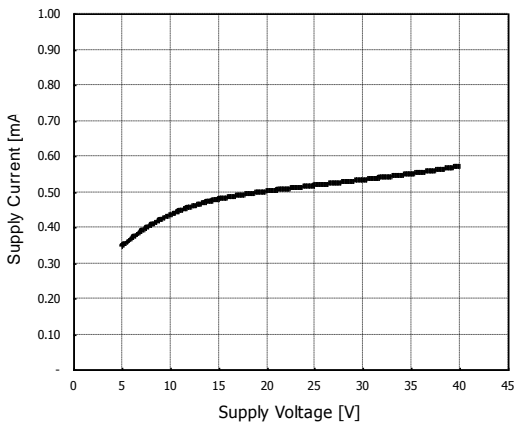
* All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified.

"MAX" V_{CC} for testing purposes is 36V, $V_{CCmax} = 45V$, Temperature full range is -40 °C to +125 °C.

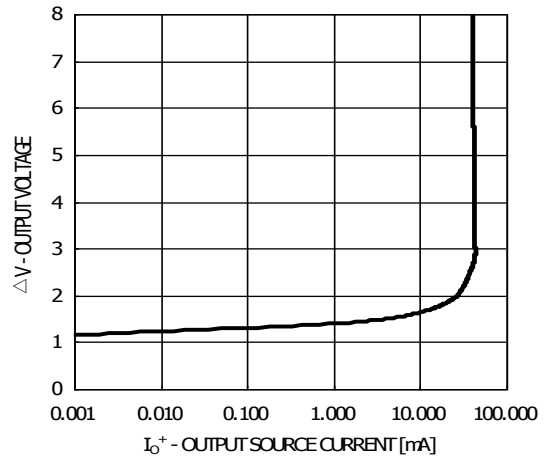
ELECTRICAL CHARACTERISTICS (CONTINUED)At specified free-air temperature, $V_{CC}=5V$ (unless otherwise noted)

| PARAMETER | TEST CONDITIONS* | MIN | TYP | MAX | UNIT |
|---------------------------|---|-----|------|-----|------|
| Slew rate | $V_{CC}=15V$, $V_{IN}=0.5$ to $3V$, $R_L=2k\Omega$, $C_L=100pF$, unity gain | | 0.7 | | V/us |
| Gain bandwidth | $V_{CC}=30V$, $f=100kHz$, $V_{IN}=10mV$, $R_L=2k\Omega$, $C_L=100pF$ | | 700 | | kHz |
| Total harmonic distortion | $f = 1kHz$, $A_v = 20dB$, $R_L=2k\Omega$, $V_o = 2V_{pp}$, $C_L=100pF$ | | 0.04 | | % |

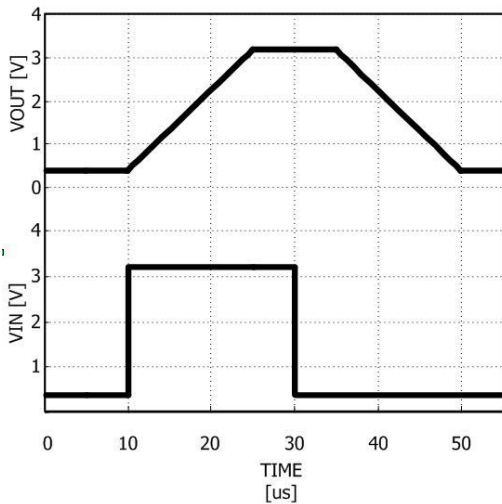
TYPICAL ELECTRICAL CHARACTERISTICS



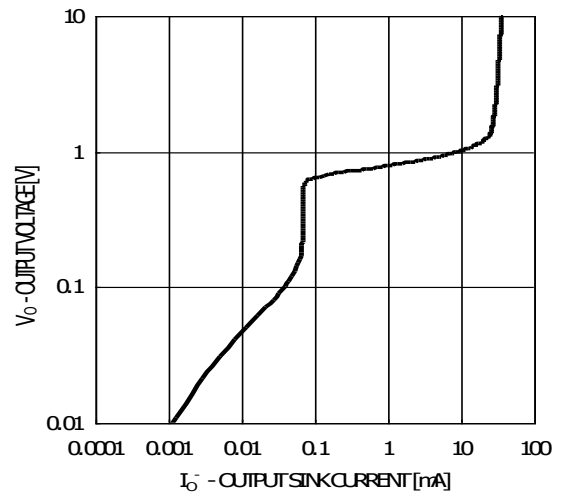
Supply current vs. Supply voltage



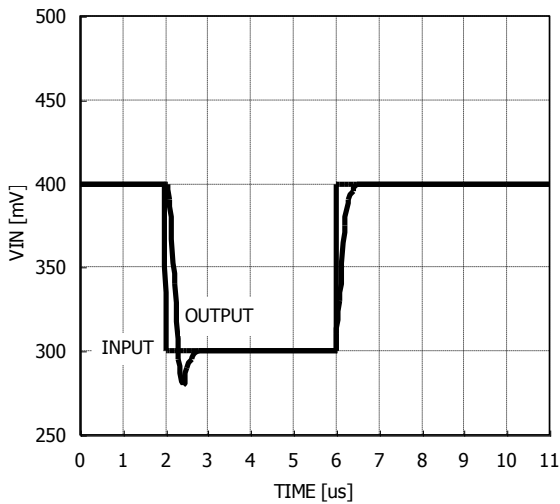
Current Sourcing vs. Output Characteristics



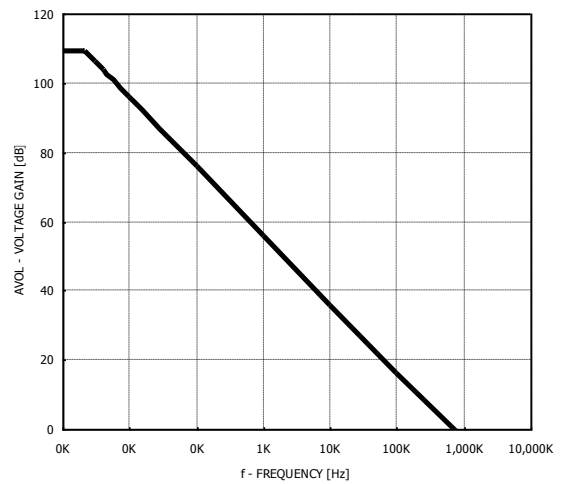
Voltage Follower Pulse Response



Current Sinking vs. Output Characteristics



Voltage Follower Pulse Response (Small Signal)



Open Loop Frequency Response

REVISION NOTICE

The description in this datasheet can be revised without any notice to describe its electrical characteristics properly.