



3541

CMOS IC

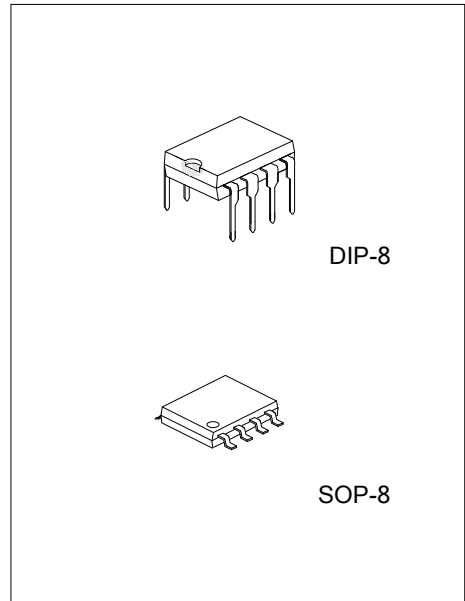
# CLASS AB STEREO HEADPHONE DRIVER WITH MUTE

## DESCRIPTION

The UTC 3541 is a class AB stereo headphone driver with Mute feature.

## FEATURES

- \* Built-in Mute Function
- \* No Switch ON/OFF pops
- \* Short-Circuit Protection
- \* Low Power Consumption
- \* Large Output Voltage Swing
- \* High Signal-to-Noise Ratio

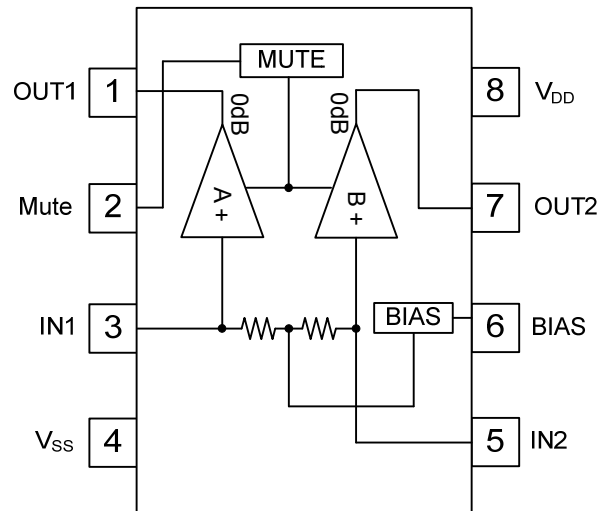


## ORDERING INFORMATION

| Ordering Number |              | Package | Packing   |
|-----------------|--------------|---------|-----------|
| Lead Free       | Halogen Free |         |           |
| 3541L-D08-T     | 3541G-D08-T  | DIP-8   | Tube      |
| 3541L-S08-R     | 3541G-S08-R  | SOP-8   | Tape Reel |
| 3541L-S08-T     | 3541G-S08-T  | SOP-8   | Tube      |

|   |   |
|---|---|
| <p>3541L-D08-T</p> <p>(1) Packing Type<br/>(2) Package Type<br/>(3) Lead Free</p> | <p>(1) R: Tape Reel, T: Tube<br/>(2) D08: DIP-8, S08: SOP-8<br/>(3) G: Halogen Free, L: Lead Free</p> |
|---|---|

## ■ BLOCK DIAGRAM



## ■ PIN DESCRIPTION

| PIN NO. | PIN NAME        | I/O | DESCRIPTION                                   |
|---------|-----------------|-----|---|
| 1       | OUT 1           | O   | Output pin for Channel A                      |
| 2       | Mute            | I   | Mute control input, high for normal operation |
| 3       | IN 1            | I   | Input pin for Channel A                       |
| 4       | V <sub>SS</sub> |     | Power ground                                  |
| 5       | IN 2            | I   | Input pin for Channel B                       |
| 6       | BIAS            | I   | Right channel bias input pin                  |
| 7       | OUT 2           | O   | Output pin for Channel B                      |
| 8       | V <sub>DD</sub> |     | Power supply input                            |

### ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER  | SYMBOL      | RATINGS    | UNIT             |
|--|-------------|------------|------------------|
| Supply Voltage   | $V_{DD}$    | 7          | V                |
| Output Short-Circuit Duration ( $T_A=25^\circ\text{C}$ , $P_D=1\text{W}$ ) | $t_{SC(O)}$ | 20         | S                |
| Junction Temperature   | $T_J$       | 150        | $^\circ\text{C}$ |
| Operating Temperature  | $T_{OPR}$   | -40 ~ +85  | $^\circ\text{C}$ |
| Storage Temperature  | $T_{STG}$   | -65 ~ +150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ THERMAL DATA

| PARAMETER                  | SYMBOL | RATINGS | UNIT               |
|----------------------------|--------|---------|--------------------|
| Junction to Ambient (Note) | DIP-8  | 108     | $^\circ\text{C/W}$ |
|                            | SOP-8  | 210     |                    |
| Junction to Case           | DIP-8  | 45      | $^\circ\text{C/W}$ |
|                            | SOP-8  | 40      |                    |

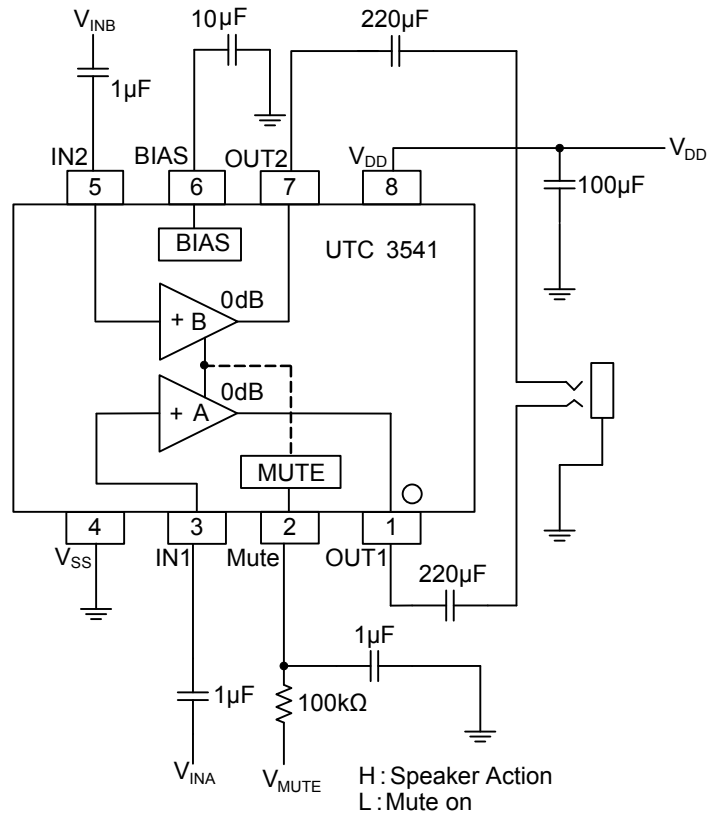
Note:  $\theta_{JA}$  is measured with the component mounted on a high effective thermal conductivity test board in free air.

### ■ ELECTRICAL CHARACTERISTICS

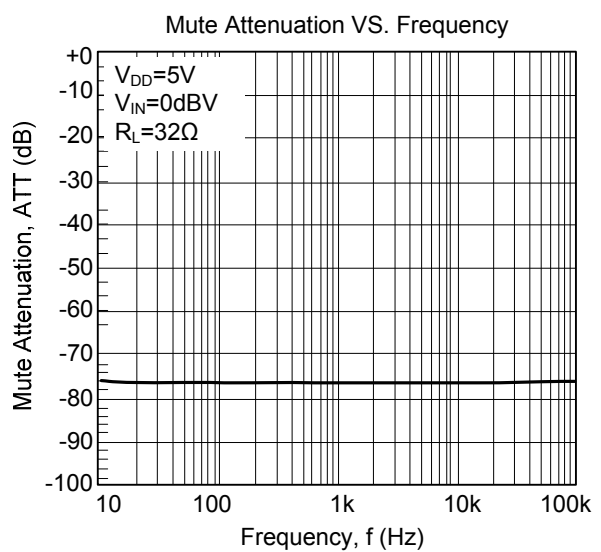
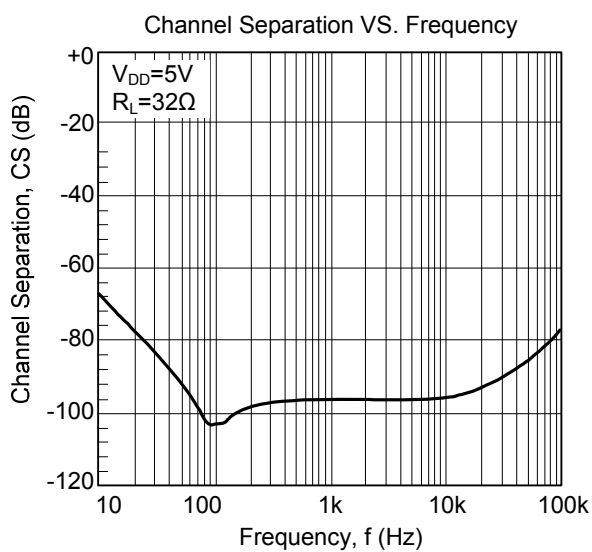
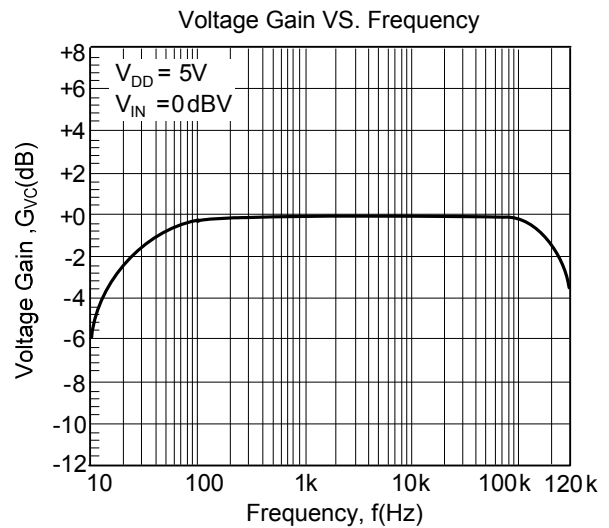
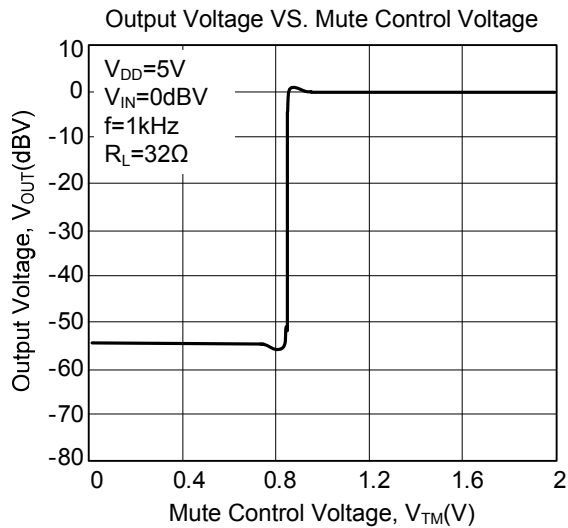
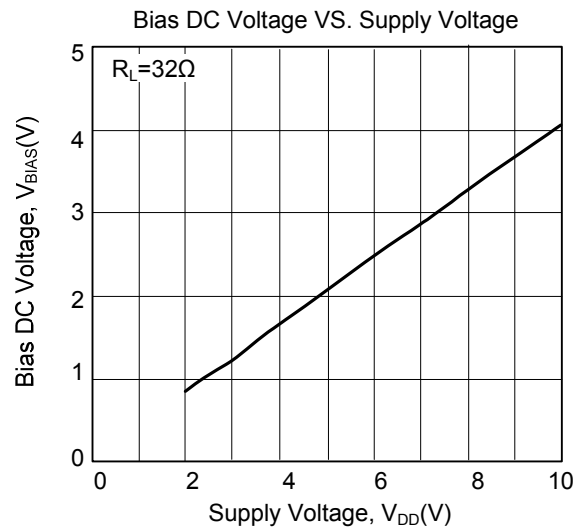
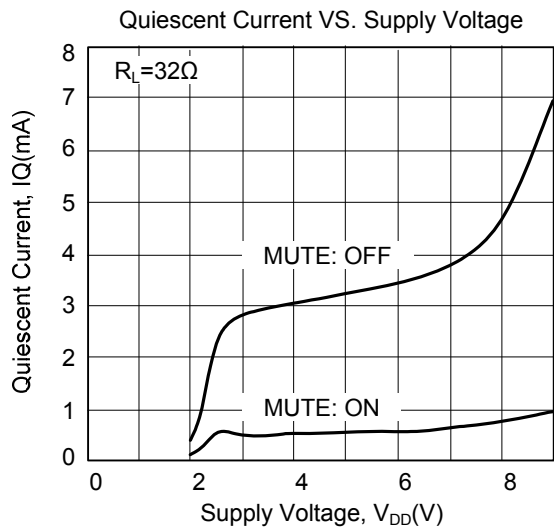
( $V_{IN}=0\text{dBV}$ ,  $V_{CC}=5\text{V}$ ,  $T_A=25^\circ\text{C}$ ,  $f=1\text{kHz}$ ,  $R_L=32\Omega$ , unless otherwise specified.)

| PARAMETER                         | SYMBOL           | TEST CONDITIONS                                      | MIN            | TYP   | MAX | UNIT          |
|-----------------------------------|------------------|--|----------------|-------|-----|---------------|
| Supply Voltage                    | $V_{DD}$         |  | 3.0            | 5.0   | 6.0 | V             |
| Mute Terminal Voltage             | $V_{TM}$         |  | 0.3            | 0.7   | 1.6 | V             |
| Quiescent Current                 | $I_Q$            | $V_{IN} = 0V_{RMS}$                                  |                | 3.5   | 5   | mA            |
| Mute Current                      | $I_{MUTE}$       |  |                | 200   |     | $\mu\text{A}$ |
| Voltage Gain                      | $G_{VCL}$        | $V_{IN}=1V_{RMS}$ , $f=1\text{kHz}$ , $R_L=32\Omega$ | -2             | 0     | 2   | dB            |
| Differential Channel Voltage Gain | $\Delta G_{VCL}$ |  | -0.5           | 0     | 0.5 | dB            |
| Channel Separation                | CS               | $f=1\text{kHz}$                                      | -90            | -92.5 |     | dB            |
| Mute Attenuation                  | ATT              | $V_{IN} = 1V_{rms}$ , $f=1\text{kHz}$ , Mute=L       | 65             | 70    |     | dB            |
| Ripple Rejection                  | RR               | $F_{RR} = 100\text{Hz}$ , $V_{RR} = -20\text{dBV}$   | 50             | 60    |     | dB            |
| Output Noise Voltage              | $V_{NO}$         | $BW = 20\sim 20\text{kHz}$ , $V_{IN}=0V_{RMS}$       |                | -93   | -85 | dBV           |
| Total Harmonic Distortion         | THD              | $BW < 120\text{kHz}$                                 |                | 0.03  | 0.1 | %             |
| Rated Output Power 1              | $P_{O1}$         | THD+N=0.1%, $BW < 120\text{kHz}$                     | $R_L=32\Omega$ | 50    | 55  | mW            |
| Rated Output Power 2              | $P_{O2}$         |  | $R_L=16\Omega$ | 105   | 110 | mW            |

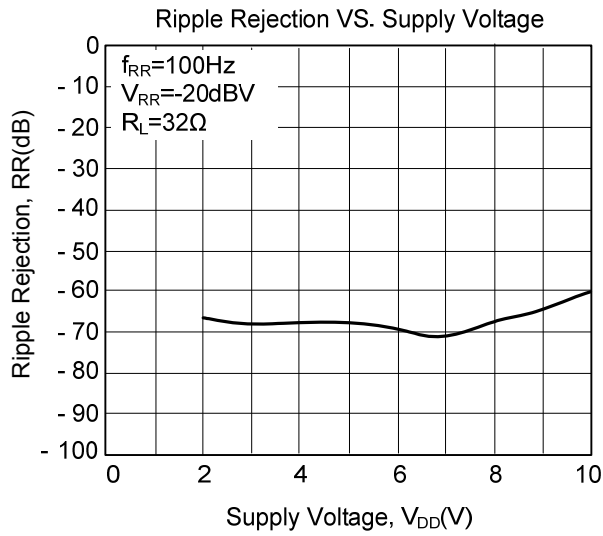
■ TEST AND APPLICATION CIRCUIT



■ TYPICAL CHARACTERISTICS



### ■ TYPICAL CHARACTERISTICS(Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.