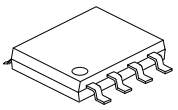
TDA8541 **Preliminary** ***LINEAR INTEGRATED CIRCUIT***

1W BTL AUDIO AMPLIFIER



SOP-8

■ DESCRIPTION

The UTC **TDA8541**(T) is a 1W BTL audio amplifier ,which has a complementary PNP-NPN output stage and standby/mute logic, it uses UTC's advanced technology to provide customers with low saturation voltage of output stage, low standby current and high SVRR, etc.

■ FEATURES

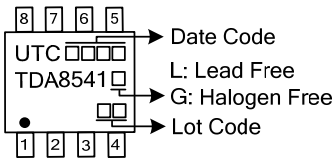
* Low saturation voltage of output stage
* External resistors could fix Gain
* Low standby current
* No switch-on/switch-off plops
* High SVRR
* Protected against outputs short-circuit to ground, V_{CC} and across the load
* Thermal shut-down protection

■ ORDERING INFORMATION

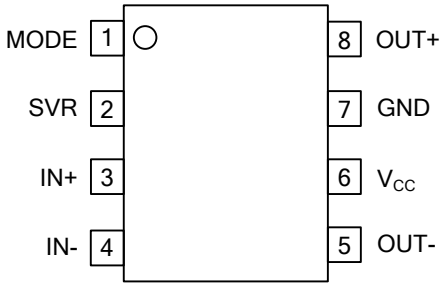
Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA8541L-S08-R	TDA8541G-S08-R	SOP-8	Tape Reel

TDA8541G-S08-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



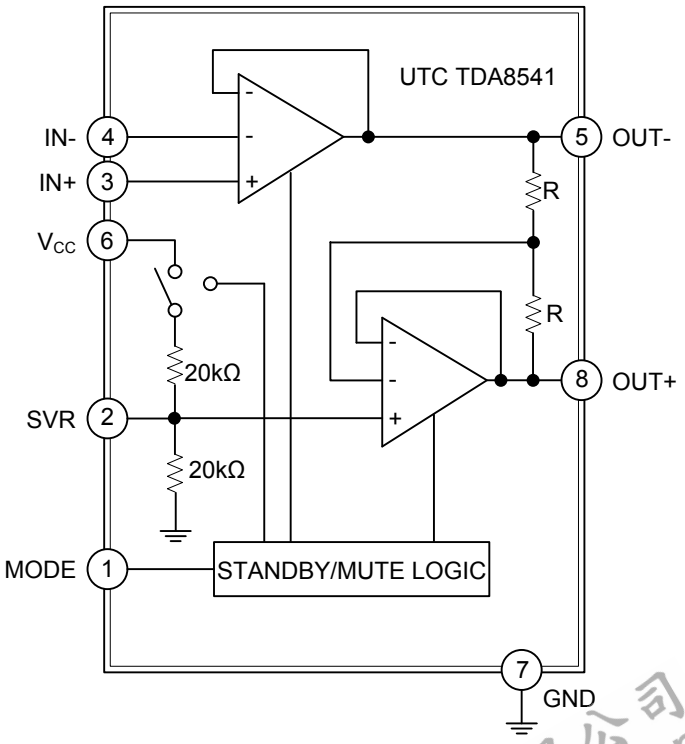
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	MODE	Operating mode select (standby, mute, operating)
2	SVR	Half supply voltage, decoupling ripple rejection
3	IN+	Positive input
4	IN-	Negative input
5	OUT-	Negative loudspeaker terminal
6	V_{CC}	Supply voltage
7	GND	Ground
8	OUT+	Positive loudspeaker terminal

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage	Operating	V_{CC}	-0.3 ~ +18	V
Input Voltage		V_I	-0.3 ~ V_{CC}+0.3	V
Repetitive Peak Output Current		I_{ORM}	1	A
AC and DC Short-Circuit Safe Voltage		V_{PSC}	10	V
Total Power Dissipation		P_D	0.8	W
Storage Temperature	Non-Operating	T_{STG}	-55 ~ +150	°C
Operating Ambient Temperature		T_A	-40 ~ +85	°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	θ_{JA}	160	°C/W

■ DC ELECTRICAL CHARACTERISTICS

(V_{CC}=5V, T_A=25°C, R_L=8Ω, V_{MODE}=0V, measured in test circuit Figure 1, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}	Operating	2.3	5	18	V
Quiescent Current	I_q	R_L=∞ (Note 1)		8	12	mA
Standby Current	I_{stb}	V_{MODE}=V_{CC}			10	μA
DC Output Voltage	V_O	(Note 2)		2.4		V
Differential Output Voltage Offset	$\lvert V_{OUT+}-V_{OUT-}\rvert$				50	mV
Input Bias Current	I_{IN+}, I_{IN-}				500	nA
Input Voltage Mode Select	V_{MODE}	Operating	0		0.5	V
		Mute	1.5		V_{CC}-1.5	V
		Standby	V_{CC}-0.5		V_{CC}	V
Input Current Mode Select	I_{MODE}	0<V_{MODE}<V_{CC}			20	μA

Notes: 1. With a load connected at the outputs the quiescent current will increase, the maximum of this increase being equal to the DC output offset voltage divided by R_L.
2. The DC output voltage with respect to ground is approximately 0.5×V_{CC}.

■ AC ELECTRICAL CHARACTERISTICS

(V_{CC}=5V, T_{amb}=25°C, R_L=8Ω, f=1kHz, V_{MODE}=0V, measured in test circuit Figure 1, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Power	P_o	THD=10%	1	1.2		W
		THD=0.5%	0.6	0.9		W
Total Harmonic Distortion	THD	P_o=0.5W		0.15	0.3	%
Closed Loop Voltage Gain	G_v	(Note 1)	6		30	dB
Differential Input Impedance	Z_i			100		kΩ
Noise Output Voltage	V_{no}	(Note 2)			100	μV
Supply Voltage Ripple Rejection	SVRR	(Note 3)	50			dB
		(Note 4)	40			dB
Output Voltage In Mute Condition	V_o	(Note 5)			200	μV

Notes: 1. Gain of the amplifier is 2×R2/R1 in test circuit of Figure 1.
2. The noise output voltage is measured at the output in a frequency range from 20Hz to 20kHz (unweighted), with a source impedance of R_S=0Ω at the input.
3. Supply voltage ripple rejection is measured at the output, with a source impedance of R_S=0Ω at the input. The ripple voltage is a sine wave with a frequency of 1kHz and an amplitude of 100mV (RMS), which is applied to the positive supply rail.
4. Supply voltage ripple rejection is measured at the output, with a source impedance of R_S=0Ω at the input.

The ripple voltage is a sine wave with a frequency between 100Hz and 20kHz and an amplitude of 100mV (RMS), which is applied to the positive supply rail.

5. Output voltage in mute position is measured with an input voltage of 1V (RMS) in a bandwidth of 20kHz, so including noise.

■ TYPICAL APPLICATION CIRCUIT

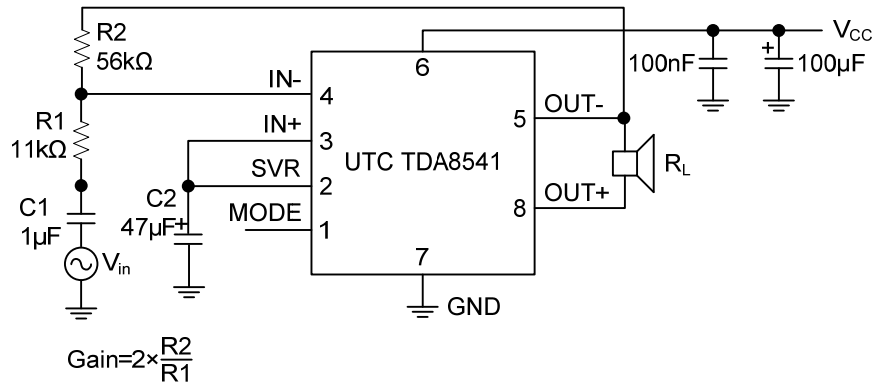


Figure 1. BTL Application.

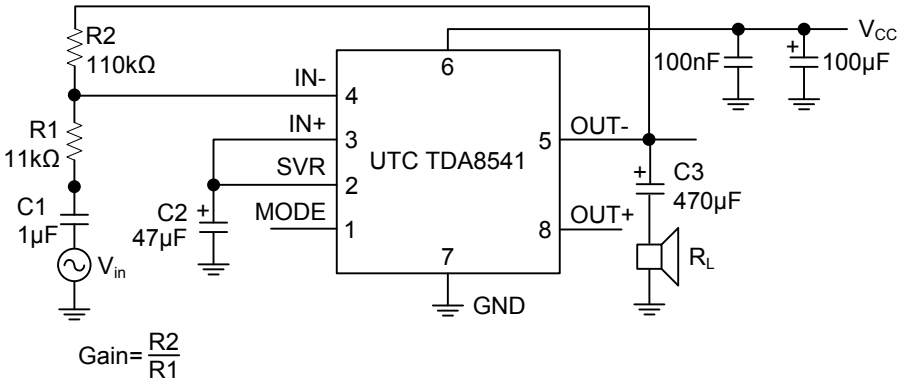


Figure 2. SE Application.