

Description

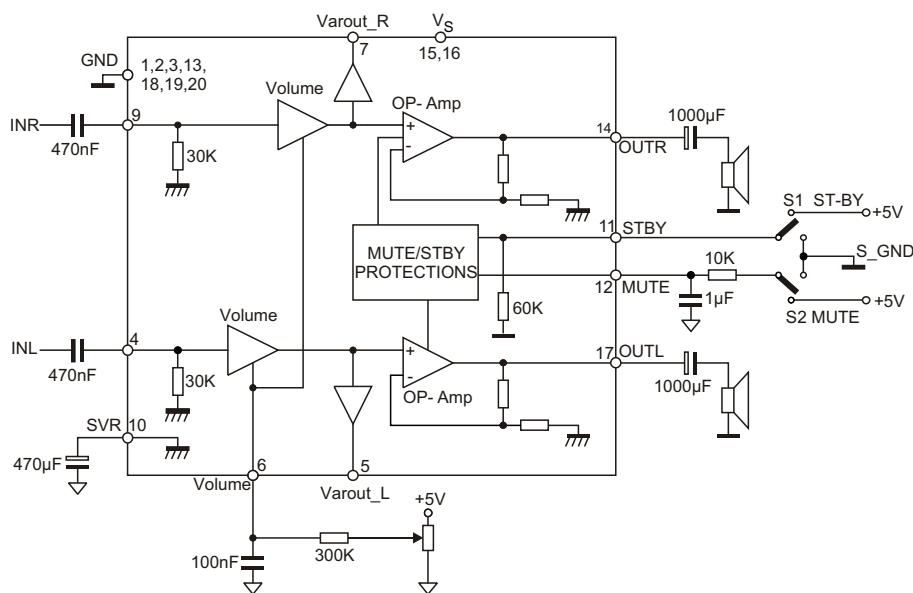
The GMA7496L is a stereo 2W+2W class AB power amplifier assembled in the @DIP-20 package, specially designed for high quality sound, TV and Monitor applications.

Features of the GMA7496L include linear volume control , Standby and Mute functions.

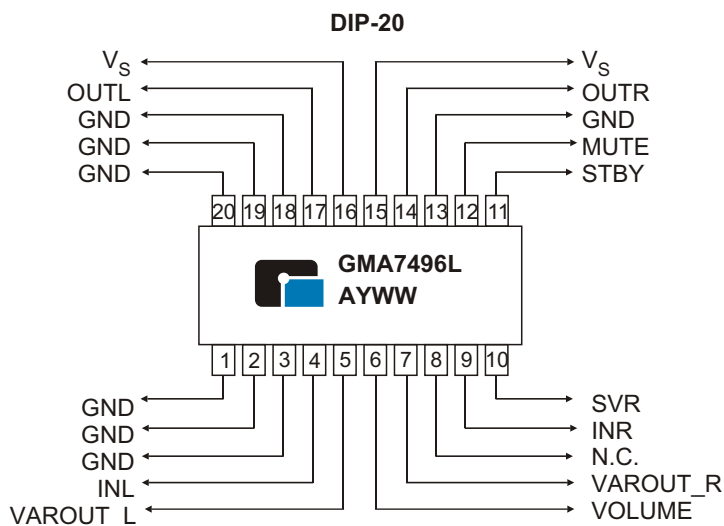
Features

- ◆ 2W+2W Output Power
- ◆ $R_L = 8 \quad @THD = 10\% \quad V_{CC} = 14V$
- ◆ Standby and Mute Functions
- ◆ Low Turn- on Turn-off POP Noise
- ◆ Linear Volume Control DC Coupled With Power Op- amp.
- ◆ No Boucherot Cell
- ◆ No St-by RC Input Network
- ◆ Single Supply Ranging up to 15V
- ◆ Short Circuit Protection
- ◆ Thermal Overload Protection
- ◆ Internally Fixed Gain
- ◆ Soft Clipping
- ◆ Variable Output After Volume Control Circuit
- ◆ DIP- 20 Package

TYPICAL APPLICATION CIRCUITS



◆ MARKING INFORMATION & PIN CONFIGURATIONS (TOP VIEW)



A : Assembly Location

Y : Year

W W : weekly

◆ ORDERING INFORMATION

ORDERING NUMBER	PACKAGE	SHIPPING
GMA7496LD20	DIP-20	18 Units/ Tube

* For detail Ordering Number identification, please see last page.

◆ **ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Value	Unit
DC Supply Voltage	V_S	26	V
Maximum Input Voltage	V_{IN}	8	V _{pp}
Total Power Dissipation (T _{case} = 60°C)	P_{tot}	6	W
Ambient Operating Temperature	T _{amp}	0 to 70	°C
Storage and Junction Temperature	T _{stg} , T _j	-40 to 150	°C
Volume CTRL DC Voltage	V_6	7	V

◆ **THERMAL DATA**

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-pins (max.)	$R_{th\ j-pins}$	15	°C/ W
Thermal Resistance Junction-ambient (max.)	$R_{th\ j-amb}^{(*)}$	50	°C/W

(*) Mounted on PCB with no heatsink

◆ ELECTRICAL CHARACTERISTICS

(Refer to the test circuit $V_S = 14V$; $R_L = 8\ \Omega$, $R_g = 50\Omega$, $T_{amb} = 25^\circ C$).

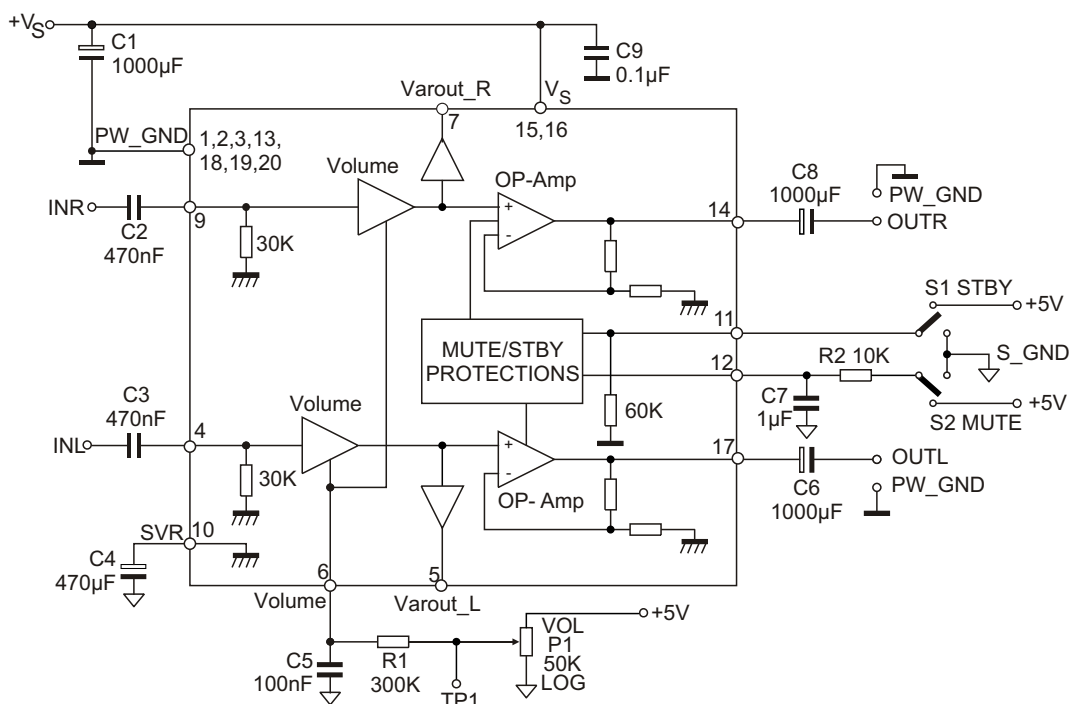
Parameter	SYMBOL	TEST CONDITIONS	Min	Typ	Max	Unit
Supply Voltage Range	V_S		10		18	V
Total Quiescent Current	I_Q			25	50	mA
Output DC Offset Referred to SVR Potential	DCV_{OS}	No Input Signal		200		mV
Quiescent Output Voltage	V_O			7		V
Output Power	P_O	THD= 10%; $R_L = 8\ \Omega$	1.6	2		W
		THD= 1%; $R_L = 8\ \Omega$		1.3		W
Total Harmonic Distortion	THD	$G_V = 30dB$; $P_O = 1W$; $f = 1kHz$			0.4	%
Output Peak Current	I_{peak}	(Internally Limited)	0.7	0.9		A
Input Signal	V_{IN}				2.8	Vrms
Closed Loop Gain	G_V	Vol Ctrl > 4.5V	28.5	30	31.5	dB
Monitor Out Gain	G_{VLine}	Vol Ctrl > 4.5V; $Z_{load} > 30K$	-1.5	0	1.5	dB
Attenuation at Minimum Volume	$A_{min} V_{OL}$	Vol Ctrl < 0.5V	80			dB
Frequency Response	BW			0.6		MHz
Total Output Noise	e_N	$f = 20Hz$ to $22kHz$ Play, max volume		500	800	μV
		$f = 20Hz$ to $22kHz$ Play, max attenuation		100	250	μV
		$f = 20Hz$ to $22kHz$ Mute		60	150	μV
Slew Rate	SR		5	8		V/ μs
Input Resistance	R_i		22.5	30		K
Variable Output Resistance	$R_{var out}$			30	100	
Variable Output Load	$R_{load var out}$		2			K
Supply Voltage Rejection	SVR	$f = 1kHz$; max volume $C_{SVR} = 470\mu F$; $V_{RIP} = 1V_{rms}$	35	39		dB
		$f = 1kHz$; max attenuation $C_{SVR} = 470\mu F$; $V_{RIP} = 1V_{rms}$	55	65		dB
Thermal Muting	T_M			150		$^\circ C$
Thermal Shut-Down	T_S			160		$^\circ C$
MUTE STAND- BY & INPUT SELECTION FUNCTIONS						
Stand- by ON Threshold	$V_{ST ON}$		3.5			V
Stand- by OFF Threshold	$V_{ST OFF}$				1.5	V
Mute ON Threshold	$V_{M ON}$		3.5			V
Mute OFF Threshold	$V_{M OFF}$				1.5	V
Quiescent Current @ Stand- by	I_{QST-BY}			0.6	1	mA
Mute Attenuation	A_{MUTE}		50	65		dB
Stand- by Bias Current	$I_{stbyBIAS}$	Stand by on $V_{ST-BY} = 5V$ $V_{MUTE} = 5V$		80		μA
Mute Attenuation		Play or Mute	-20	-5		μA
Mute Bias Current	$I_{muteBIAS}$	Mute		1	5	μA
		Play		0.2	2	μA

◆ APPLICATION SUGGESTIONS

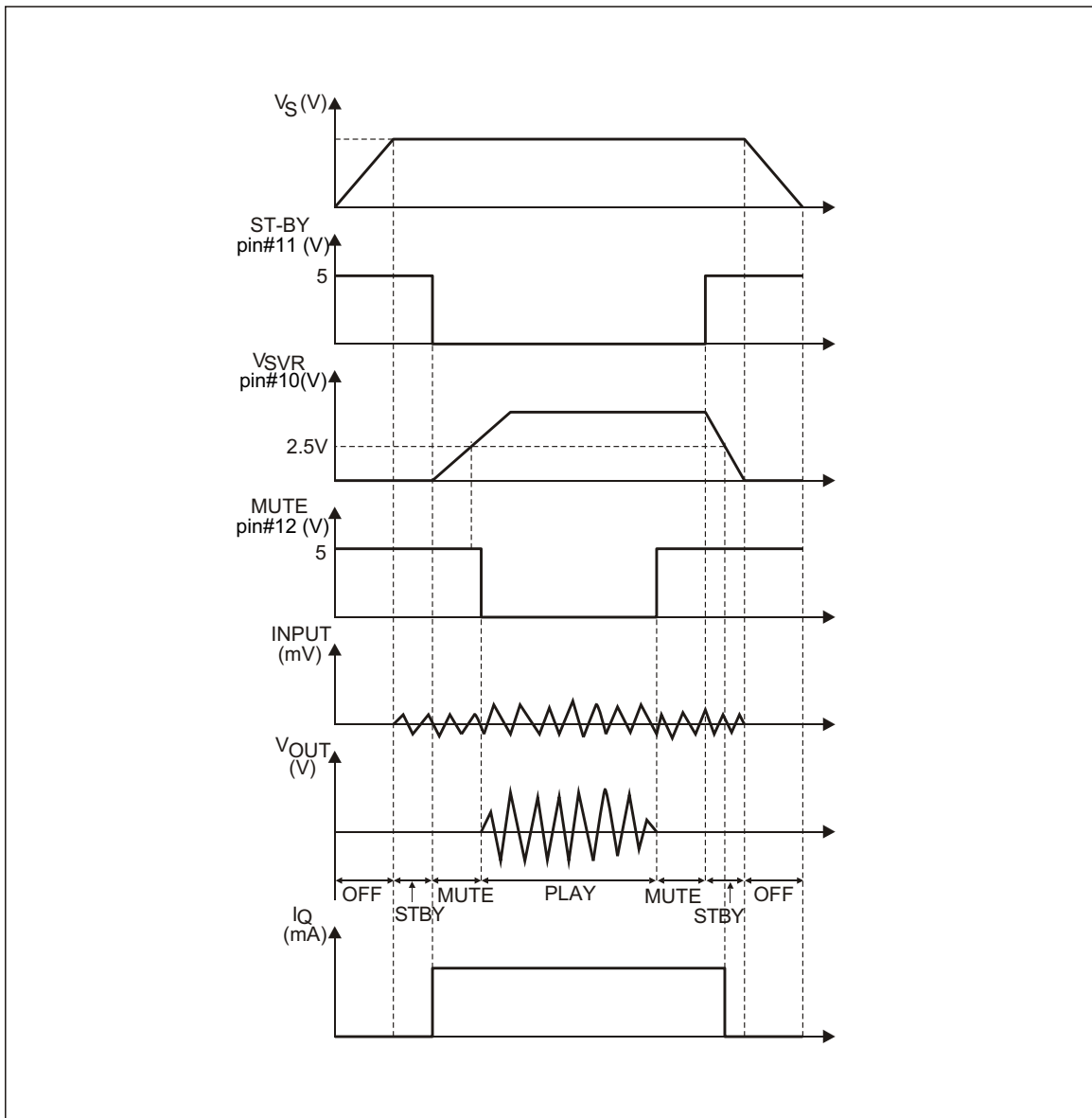
The recommended values of the external components are those shown on the application circuit of figure 1A. Different values can be used, the following table reference for the designer.

Component	Suggestion Value	Purpose	Larger than Suggestion	Smaller than Suggestion
R1	300k	Volume control Circuit	Larger volume regulation time	Smaller volume regulation time
R2	10k	Mute time control	Larger mute on/ off time	Smaller mute on/ off time
P1	50k	Volume control Circuit		
C1	1000 μ F	Supply voltage bypass		Danger of oscillation
C2	470nF	Input DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C3	470nF	Input DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C4	470 μ F	Ripple rejection	Better SVR	Worse SVR
C5	100nF	Volume control time constant	Larger volume regulation time	Smaller volume regulation time
C6	1000 μ F	Output DC decoupling	Lower Low frequency cutoff	Higher low frequency cutoff
C7	1 μ F	Mute time constant	Larger mute on/ off time	Smaller mute on/ off time
C8	1000 μ F	Output DC decoupling	Lower low frequency futoff	Higher low frequency cutoff
C9	100nF	Supply voltage bypass		Danger of oscillation

◆ APPLICATION CIRCUIT



- ◆ Turn ON/OFF Sequences (for optimizing the POP performances)
(A) USING MUTE AND STAND-BY FUNCTIONS



(B) USING ONLY THE MUTE FUNCTION

To simplify the application, the stand-by pin can be connected directly to Ground. During the ON/OFF transitions it is recommended to respect the following conditions.

- At the turn-on, the transition mute - play must be made when the SVR pin is higher than 2.5V
- At the turn-off, the GMA7496L must be brought to mute from the play condition when the SVR pin is higher than 2.5V.

◆ TYPICAL PERFORMANCE CHARACTERISTICS

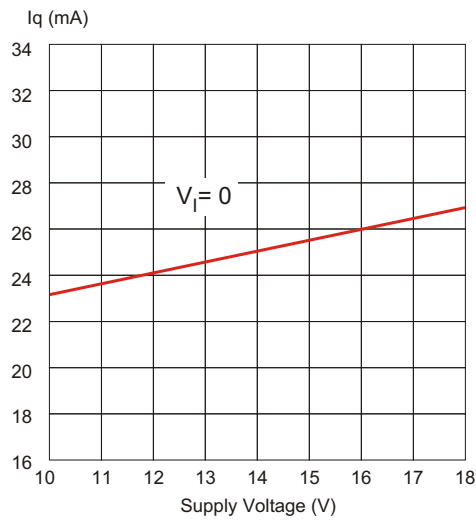


Figure 1. Quiescent current vs. Supply voltage

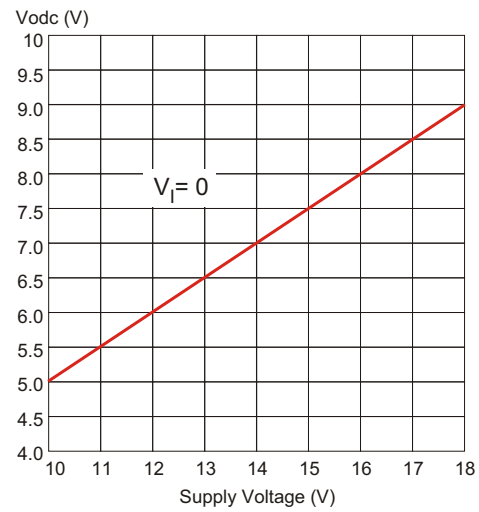


Figure 2. Output DC Voltage vs. Supply Voltage

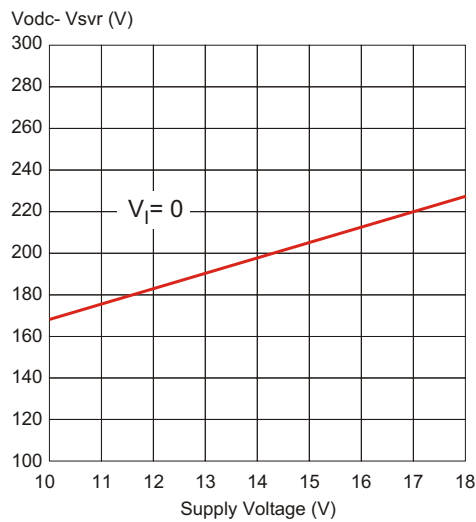


Figure 3. Output DC Offset vs. Supply Voltage

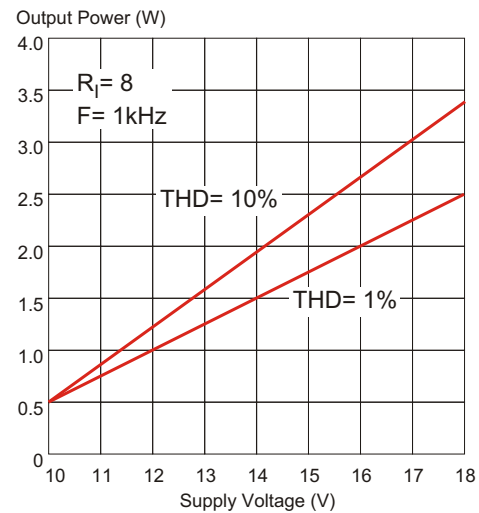


Figure 4. Output DC Voltage vs. Supply Voltage

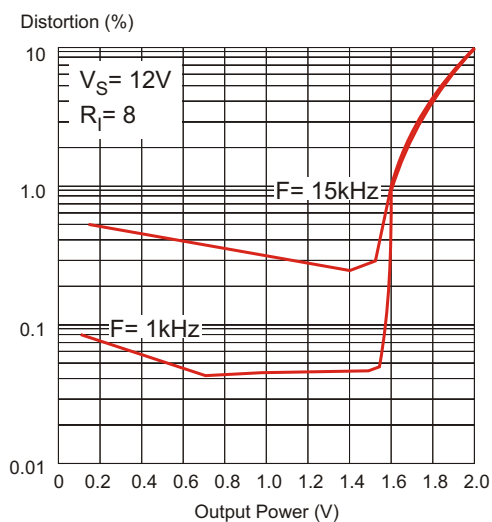


Figure 5. Output DC Offset vs. Supply Voltage

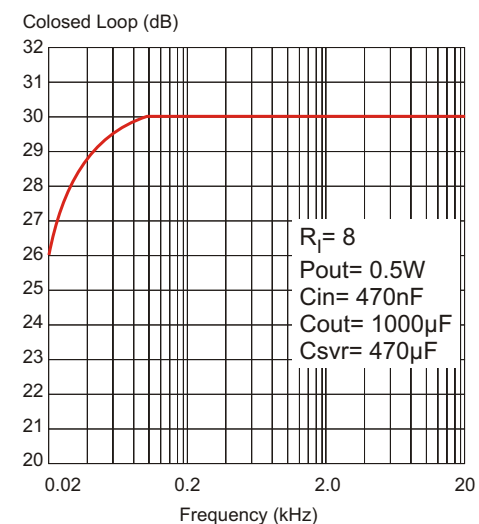


Figure 6. Closed Loop gain vs. Frequency

◆ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

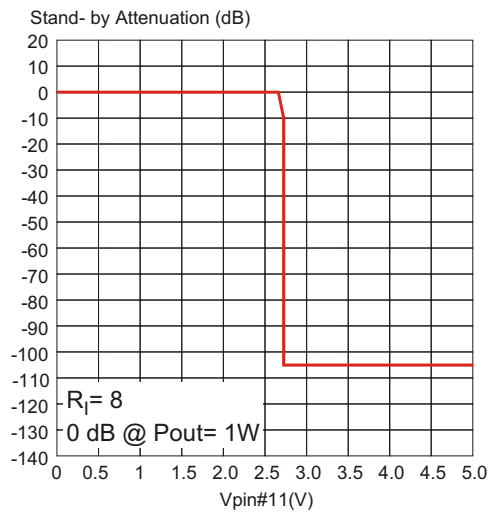


Figure 7. St- By Attenuation vs. Vpin 11

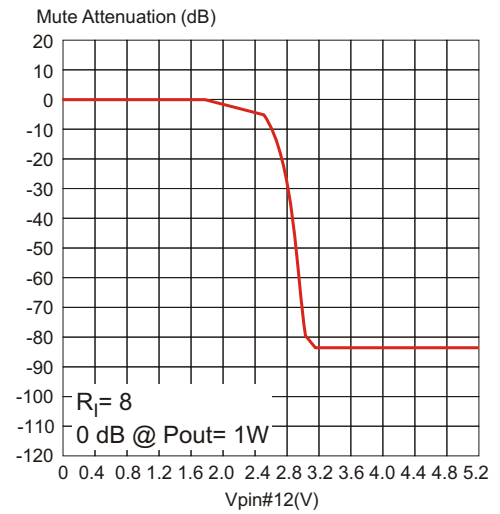
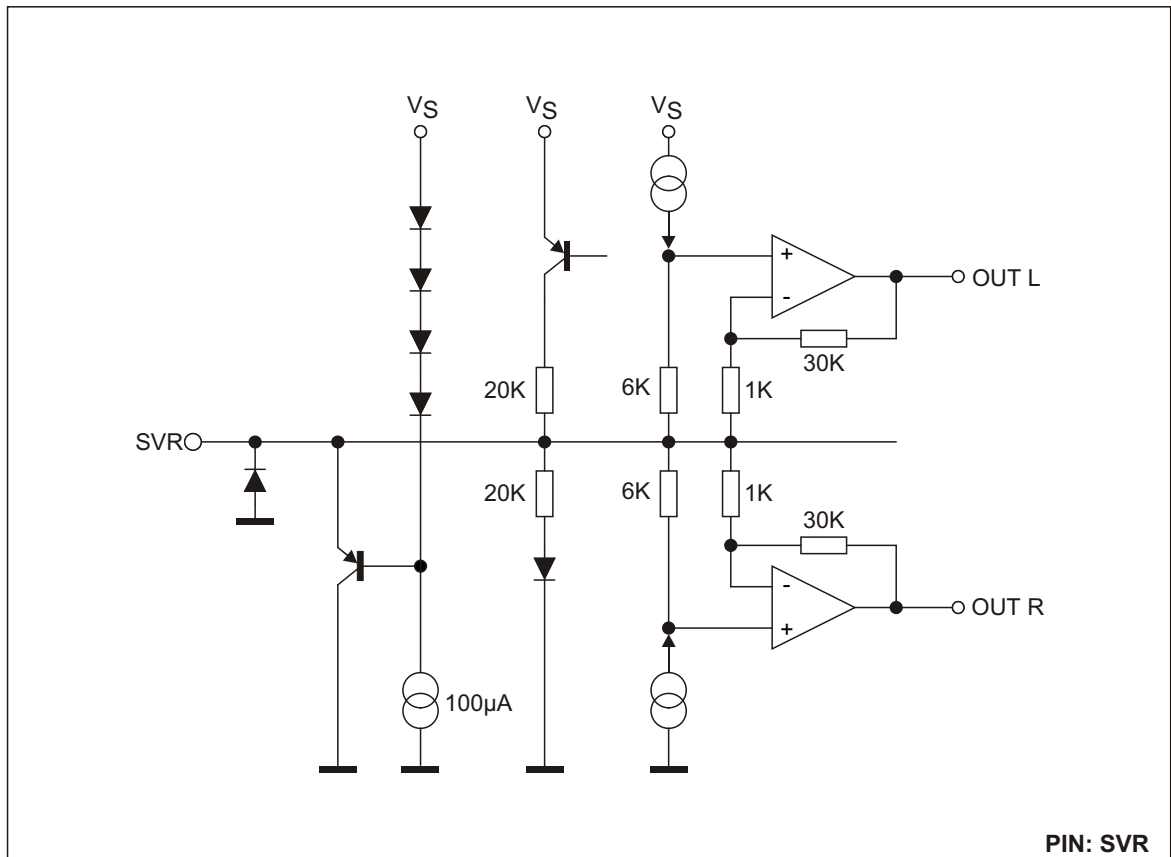


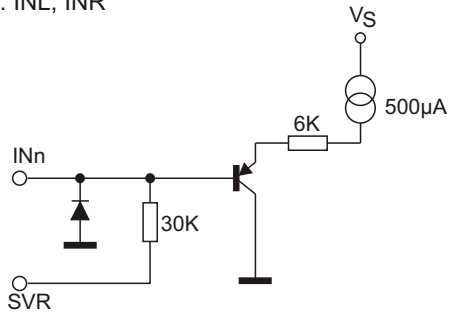
Figure 8. Mute Attenuation vs. Vpin 12

◆ PIN DESCRIPTION

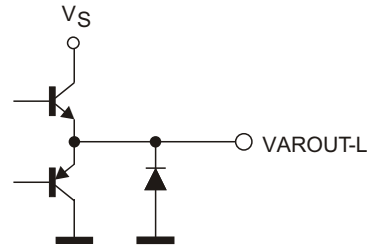


◆ PIN DESCRIPTION (Continued)

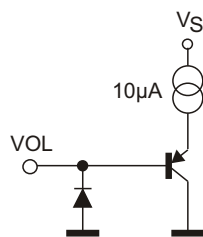
PINS: INL, INR



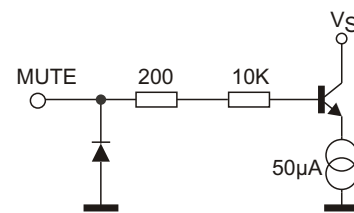
PINS: VAROUT- L, VAROUT-R



PIN: VOLUME



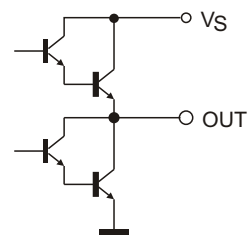
PIN: MUTE



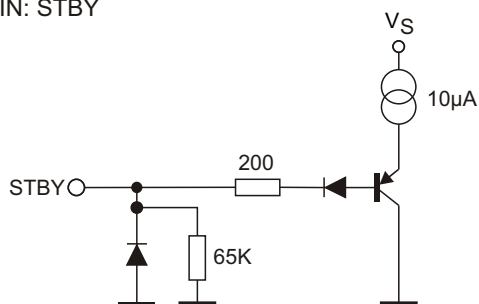
PIN: PW- GND, S- GND



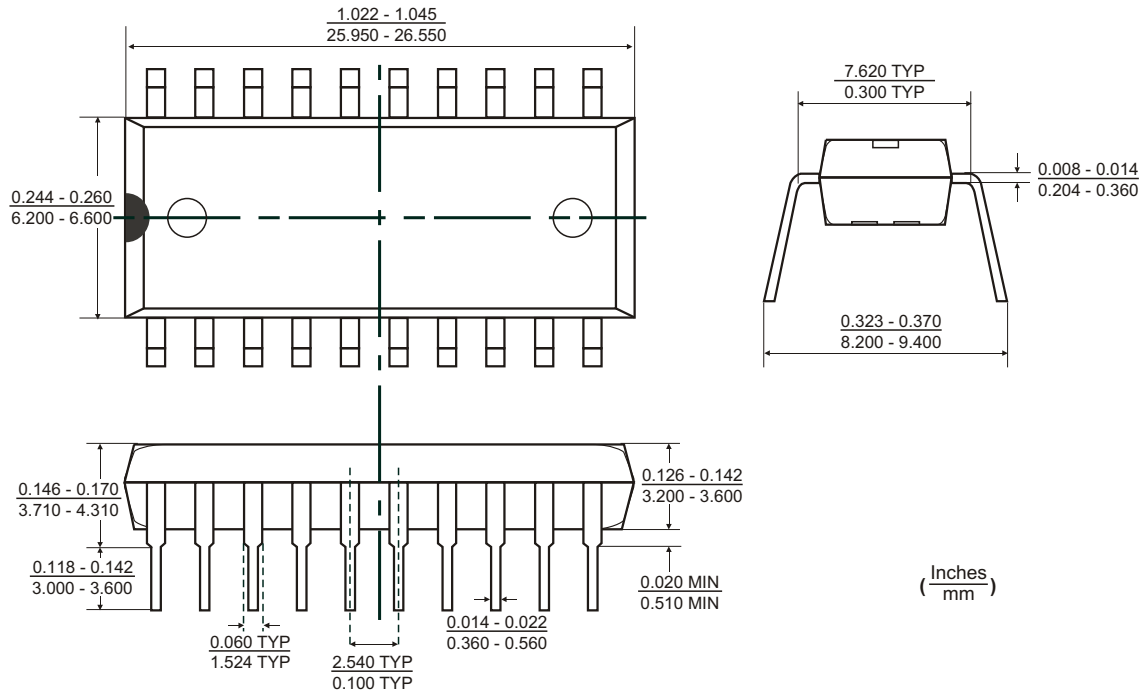
PIN: OUT R, OUT L



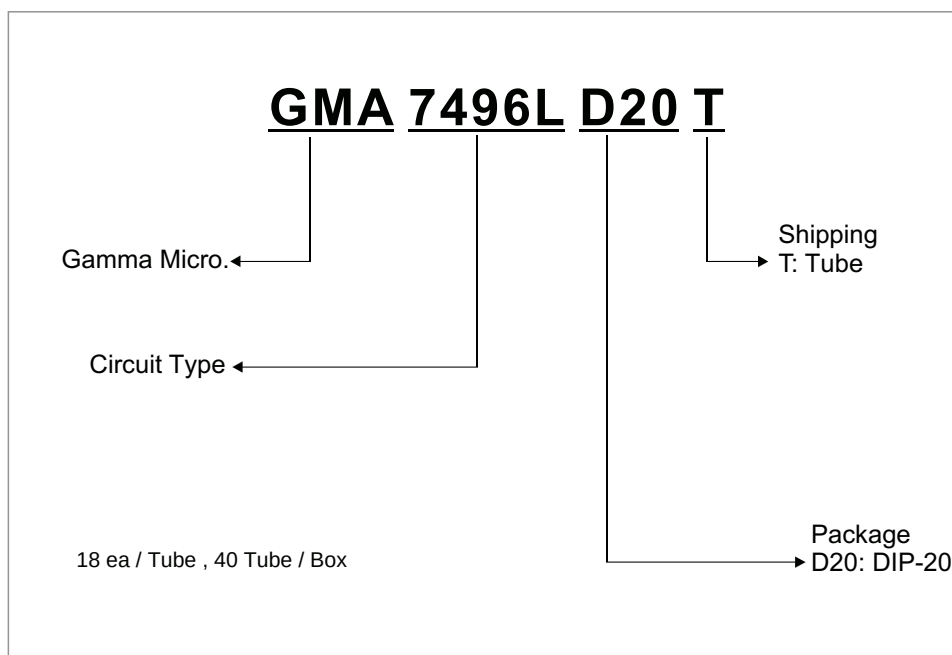
PIN: STBY



◆ DIP-20 PACKAGE OUTLINE DIMENSIONS



◆ ORDERING NUMBER





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