



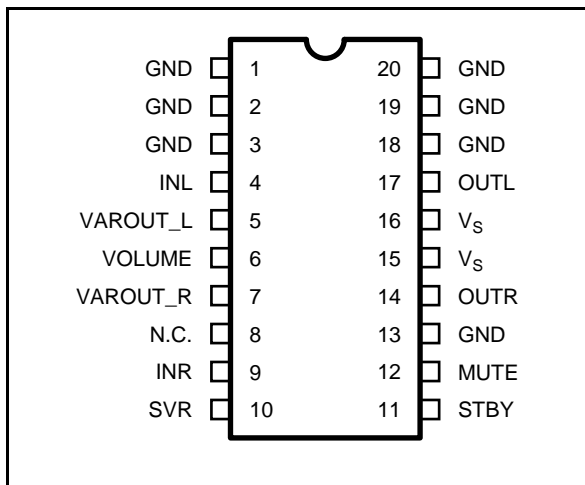


# FC7496L 2W+2W AMPLIFIER WITH DC VOLUME CONTROL

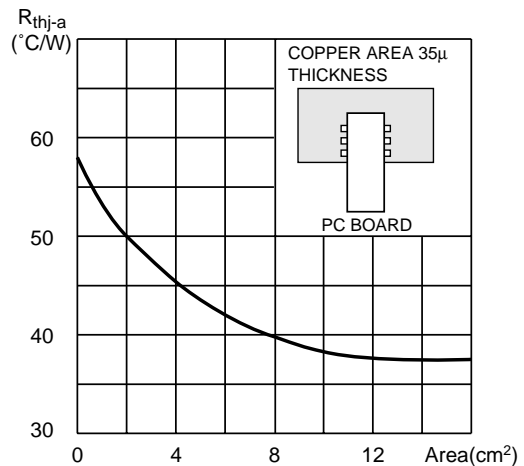
## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_S$	DC Supply Voltage	26	V
$V_{IN}$	Maximum Input Voltage	8	V <sub>pp</sub>
$P_{tot}$	Total Power Dissipation ( $T_{case} = 60^\circ\text{C}$ )	6	W
$T_{amb}$	Ambient Operating Temperature	0 to 70	$^\circ\text{C}$
$T_{stg}, T_j$	Storage and Junction Temperature	-40 to 150	$^\circ\text{C}$
$V_6$	Volume CTRL DC voltage	7	V

## PIN CONNECTION



$R_{th}$  with "on board" Square Heatsink vs. copper area.



## THERMAL DATA

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

(\*) Mounted on PCB with no heatsink

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_S$	Supply Voltage Range		10		18	V
$I_q$	Total Quiescent Current			25	50	mA
DCVos	Output DC Offset Referred to SVR Potential	No Input Signal		200		mV
$V_o$	Quiescent Output Voltage			7		V
$P_o$	Output Power	THD = 10%; $R_L = 8\Omega$ ; THD = 1%; $R_L = 8\Omega$ ;	1.6	2		W
THD	Total Harmonic Distortion	$G_v = 30\text{dB}$ ; $P_o = 1\text{W}$ ; $f = 1\text{KHz}$ ;			0.4	%
$I_{peak}$	Output Peak Current	(internally limited)	0.7	0.9		A
$V_{in}$	Input Signal				2.8	V <sub>rms</sub>
$G_v$	Closed Loop Gain	Vol Ctrl > 4.5V	28.5	30	31.5	dB
$G_{vLine}$	Monitor Out Gain	Vol Ctrl > 4.5V; $Z_{load} > 30\text{K}\Omega$	-1.5	0	1.5	dB
$A_{Min\ Vol}$	Attenuation at Minimum Volume	Vol Ctrl < 0.5V	80			dB
BW				0.6		MHz



# FC7496L 2W+2W AMPLIFIER WITH DC VOLUME CONTROL

## ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
en	Total Output Noise	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
SR	Slew Rate		5	8		V/μs
R <sub>i</sub>	Input Resistance		22.5	30		KΩ
R <sub>Var Out</sub>	Variable Output Resistance			30	100	Ω
R <sub>load Var Out</sub>	Variable Output Load		2			KΩ
SVR	Supply Voltage Rejection	f = 1kHz; max volume C <sub>SVR</sub> = 470μF; V <sub>RIP</sub> = 1V <sub>rms</sub>	35	39		dB
		f = 1kHz; max attenuation C <sub>SVR</sub> = 470μF; V <sub>RIP</sub> = 1V <sub>rms</sub>	55	65		dB
T <sub>M</sub>	Thermal Muting			150		°C
T <sub>s</sub>	Thermal Shut-down			160		°C

### MUTE STAND-BY & INPUT SELECTION FUNCTIONS

V <sub>ST ON</sub>	Stand-by ON Threshold		3.5			V
V <sub>ST OFF</sub>	Stand-by OFF Threshold				1.5	V
V <sub>M ON</sub>	Mute ON Threshold		3.5			V
V <sub>M OFF</sub>	Mute OFF Threshold				1.5	V
I <sub>qST-BY</sub>	Quiescent Current @ Stand-by			0.6	1	mA
A <sub>MUTE</sub>	Mute Attenuation		50	65		dB
I <sub>stbyBIAS</sub>	Stand-by bias current	Stand by on V <sub>ST-BY</sub> = 5V V <sub>MUTE</sub> = 5V		80		μA
		Play or Mute	-20	-5		μA
I <sub>muteBIAS</sub>	Mute bias current	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 can help 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 constant	Larger mute on/off time	Smaller mute on/off time
P1	50K	Volume control circuit		
C1	1000μF	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	470μF	Ripple rejection	Better SVR	Worse SVR
C5	100nF	Volume control time constant	Larger volume regulation time	Smaller volume regulation time
C6	1000μF	Output DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C7	1μF	Mute time constant	Larger mute on/off time	Smaller mute on/off time
C8	1000μF	Output DC decoupling	Lower low frequency cutoff	Higher low frequency cutoff
C9	100nF	Supply voltage bypass		Danger of oscillation



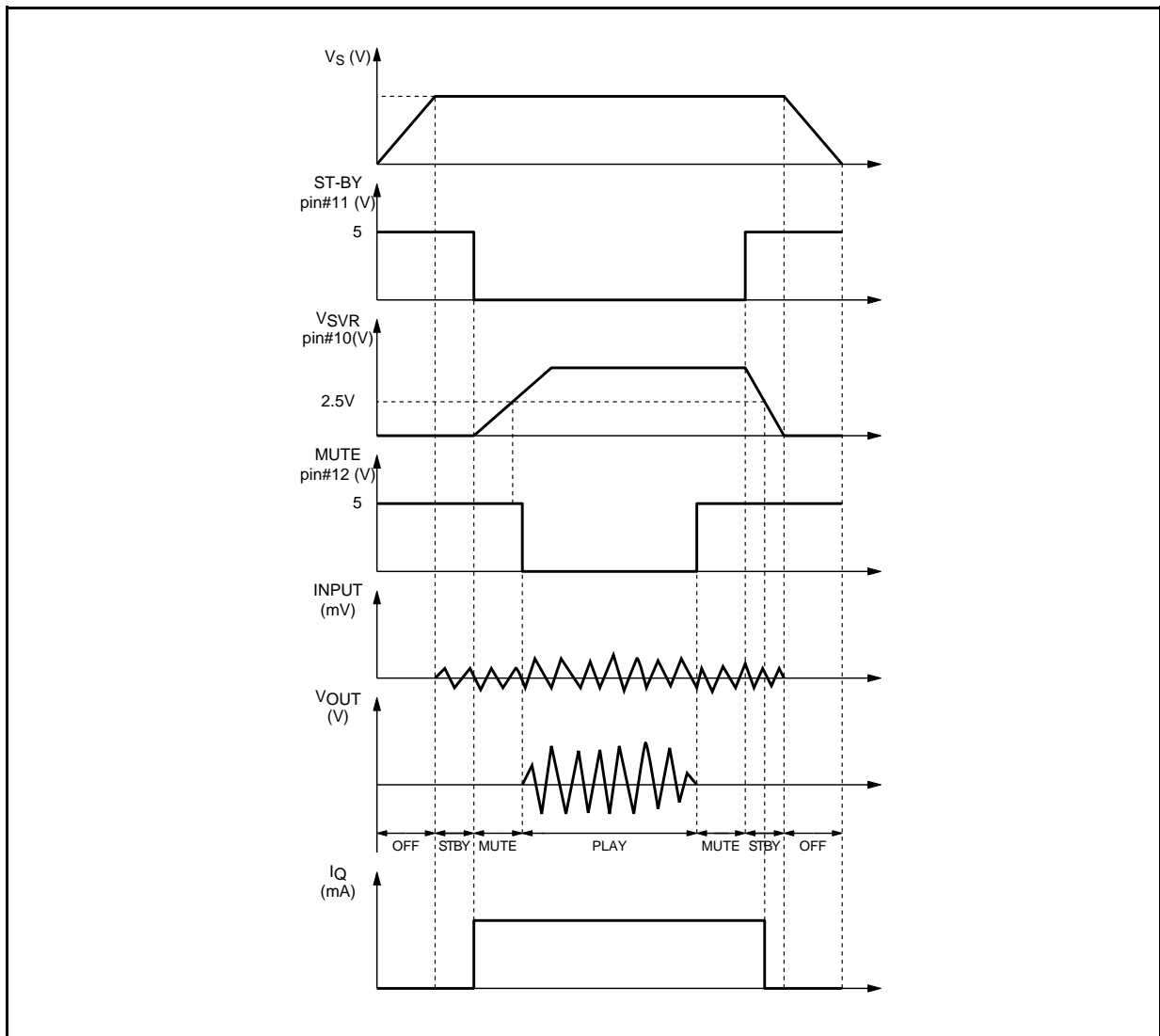
# FC7496L 2W+2W AMPLIFIER WITH DC VOLUME CONTROL

## MUTE STAND-BY TRUTH TABLE

MUTE	ST-BY	OPERATING CONDITION
H	H	STANDBY
L	H	STANDBY
H	L	MUTE
L	L	PLAY

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.

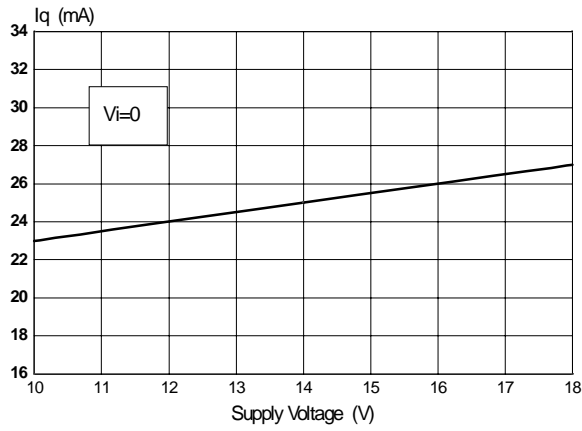
During the ON/OFF transitions it is recommended that the following conditions are respected.

- 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 FC7496L must be brought to mute from the play condition when the SVR pin is higher than 2.5V.

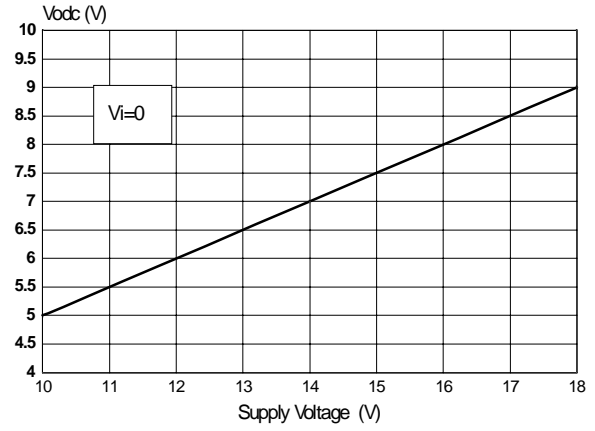


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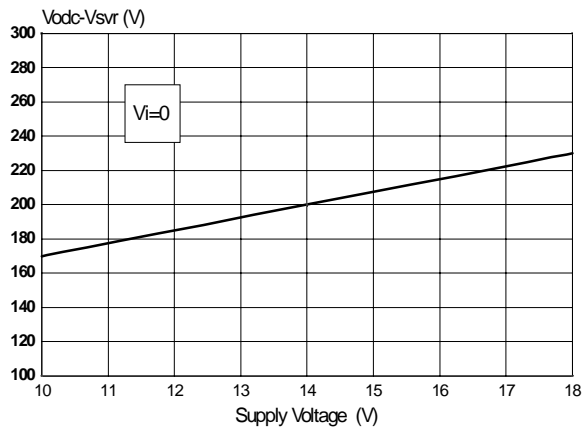
### Quiescent current vs. Supply Voltage



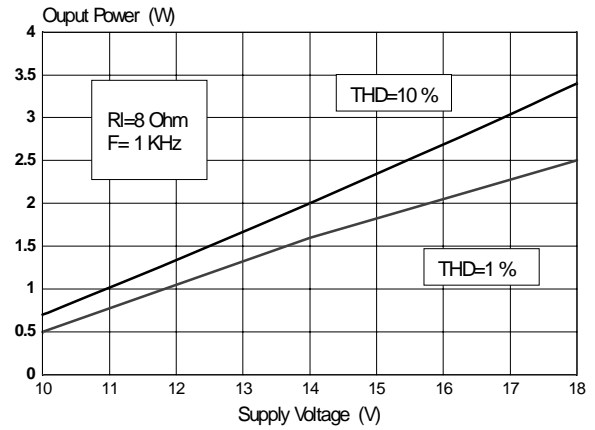
### Output DC Voltage vs. Supply Voltage



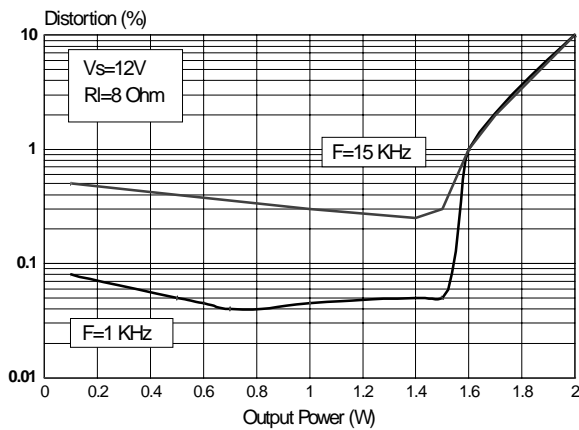
### Output DC Offset vs. Supply Voltage



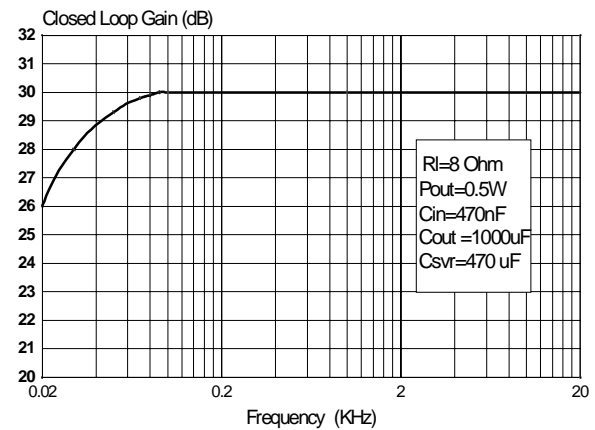
### Output Power vs. Supply Voltage



### Distortion vs. Output Power



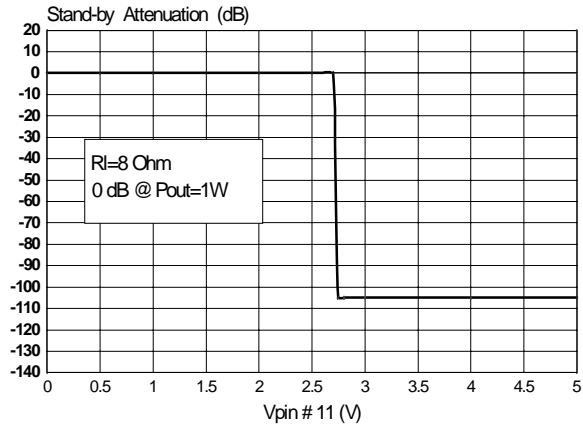
### Closed Loop gain vs. Frequency



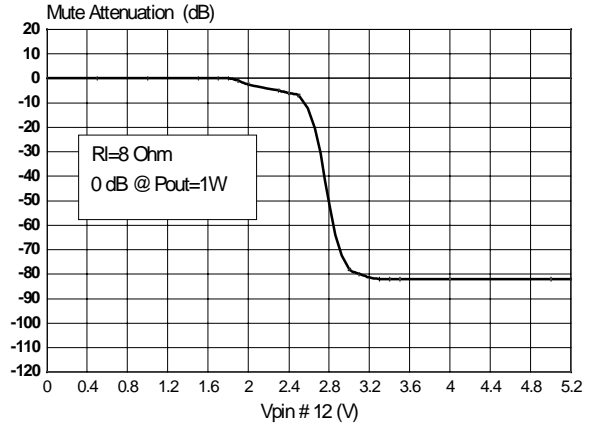


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### St-By Attenuation vs. Vpin 11

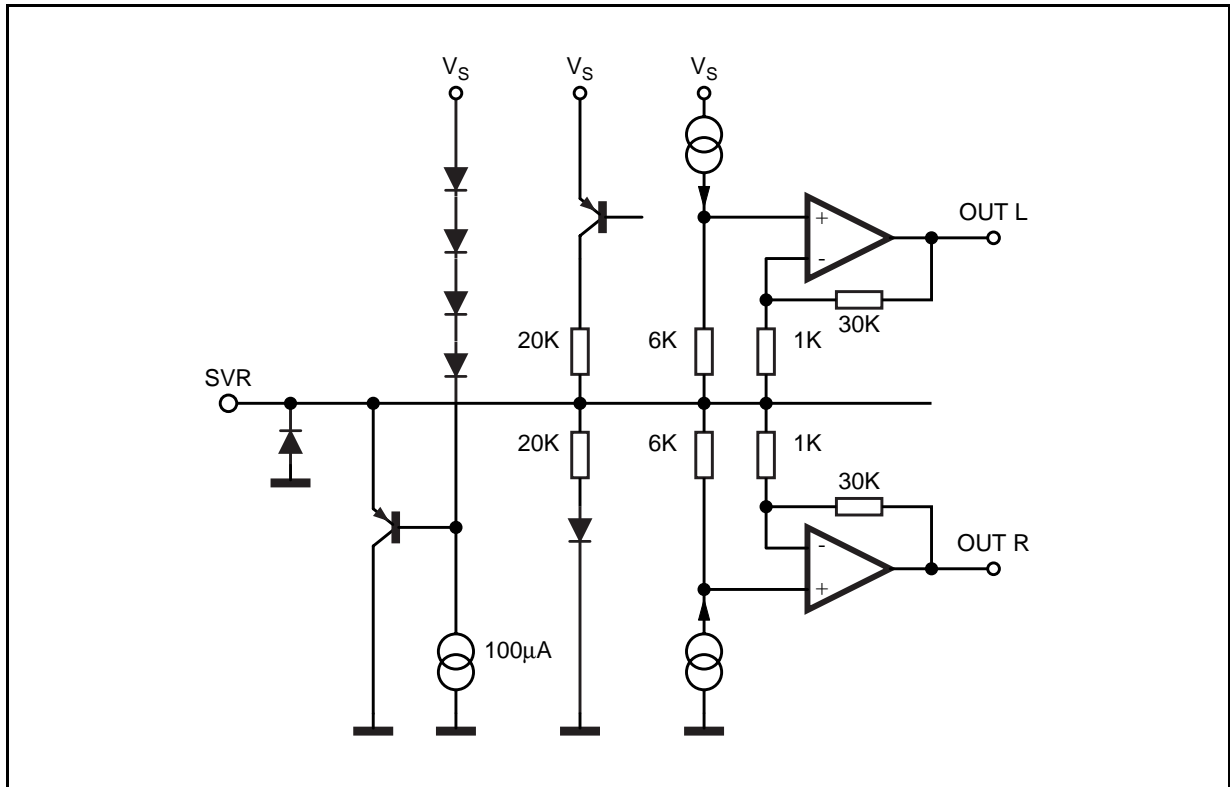


### Mute Attenuation vs. Vpin 12



## FC7496L PIN DESCRIPTION

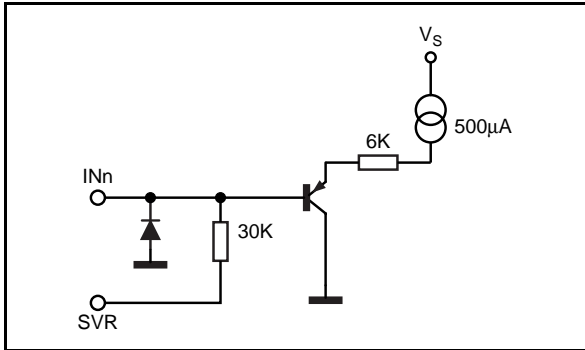
PIN: SVR



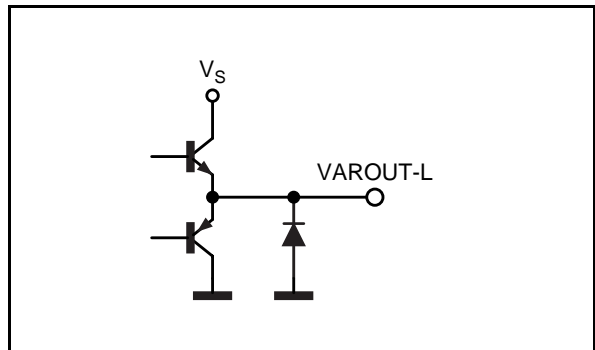


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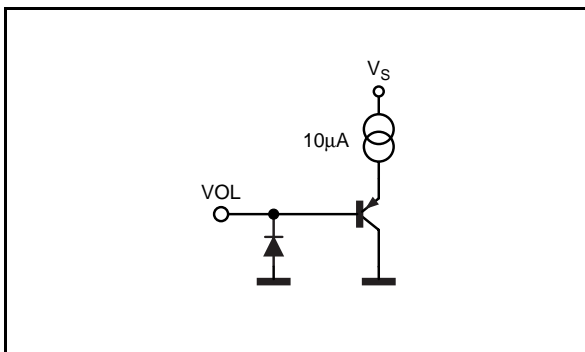
**PINS: INL, INR**



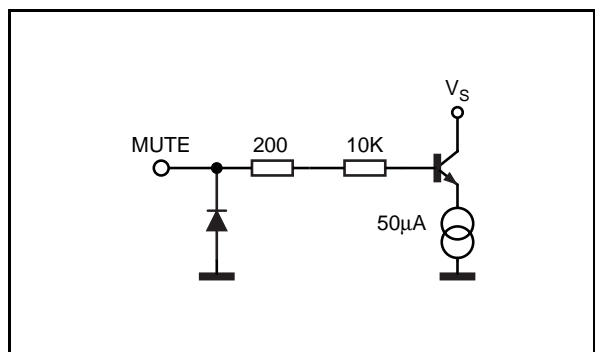
**PINS: VAROUT-L, VAROUT-R**



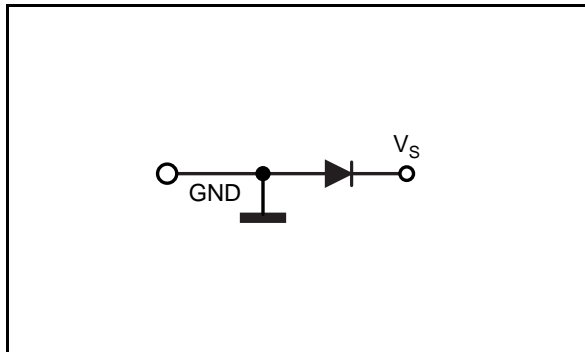
**PIN: VOLUME**



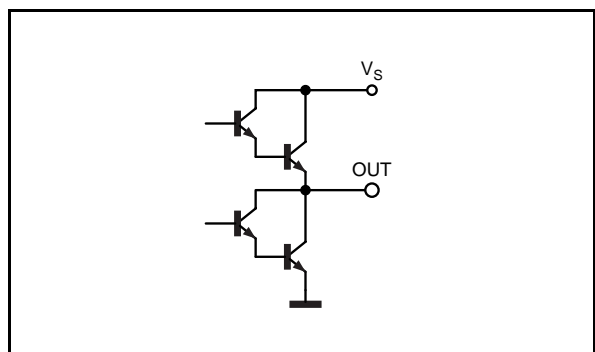
**PIN: MUTE**



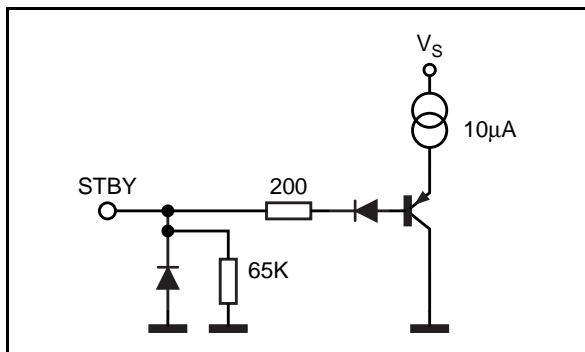
**PINS: PW-GND, S-GND**



**PINS: OUT R, OUT L**



**PIN: STBY**

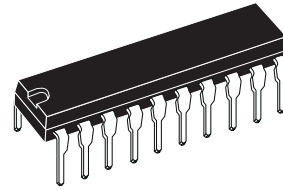




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DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	0.85		1.40	0.033		0.055
b		0.50			0.020	
b1	0.38		0.50	0.015		0.020
D			24.80			0.976
E		8.80			0.346	
e		2.54			0.100	
e3		22.86			0.900	
F			7.10			0.280
I			5.10			0.201
L		3.30			0.130	
Z			1.27			0.050

## OUTLINE AND MECHANICAL DATA



**Powerdip 20**

