

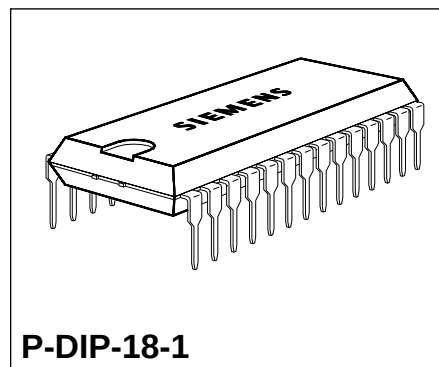
TV-Stereocoder

TDA 6621

Bipolar IC

Features

-
-
-
-
-
-
-



Type	Ordering Code	Package
TDA 6621	Q67000-A5149	P-DIP-18-1

The TDA 6621 is a single-chip TV-A2-Stereosystem Coder. The circuit can be partitioned into two functional blocks:

1. Stereo Matrix

- a) Mono, Dual, Stereo signal processing

2. Pilotone Generator

- a) Line locked PLL for generating all necessary frequencies
- b) External identification tone filter for filtering the square wave identification output signal to sinusoidal waveform
- c) AM-modulator with adjustment for modulation
- d) Pilotone filter

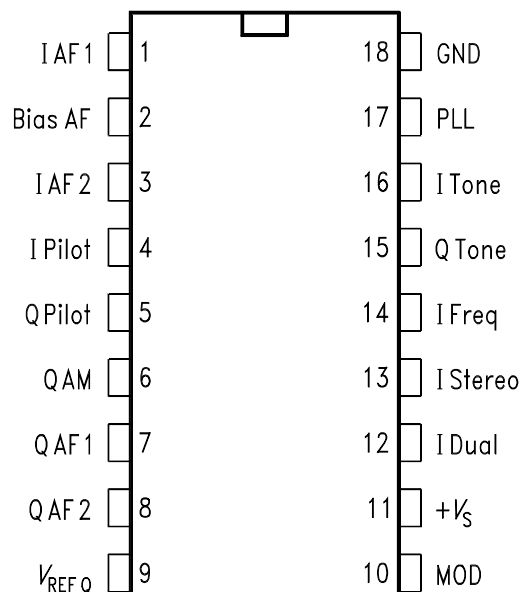
The status control is handled via two TTL compatible control inputs.

Application

Headstations of central aerial television (CATV).

Pin Configuration (top view)

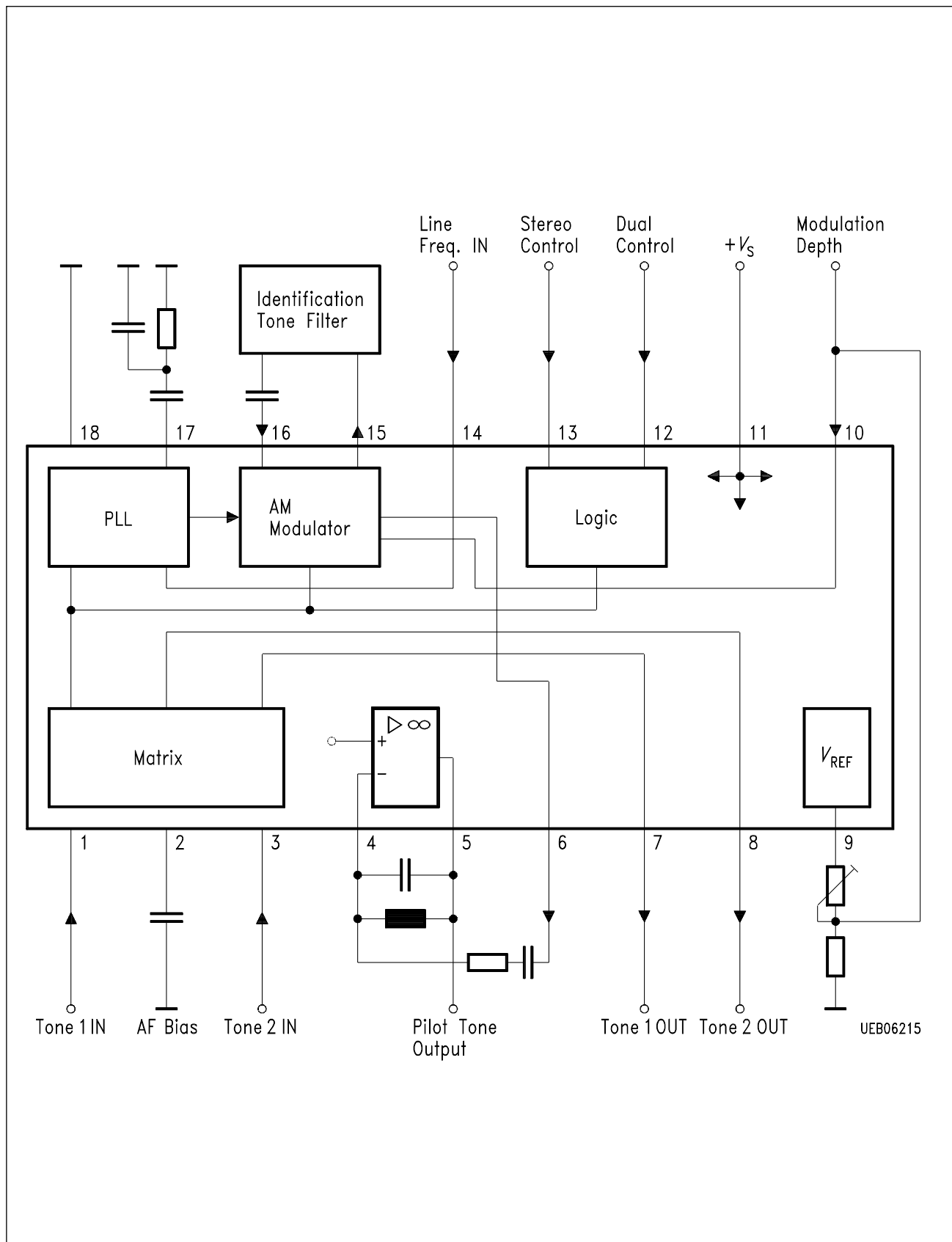
P-DIP-18-1



UEP06217

Pin Functions

Pin No.	Symbol	Function
1	I AF1	AF-input tone 1
2	Bias AF	Bias for AF-operating point
3	I AF2	AF-input tone 2
4	I Pilot	Pilottone filter in (inverting input)
5	Q Pilot	Pilottone filter output
6	Q AM	AM modulator pilottone output
7	Q AF1	AF-output tone 1
8	Q AF2	AF-output tone 2
9	$V_{REF Q}$	Reference voltage output 6 V DC
10	MOD	Modulation depth adjustment
11	$+V_S$	+ V_S supply voltage
12	I Dual	Dual control input
13	I Stereo	Stereo control input
14	I Freq	Line frequency input
15	Q Tone	Identification tone output (square wave)
16	I Tone	Identification tone input
17	PLL	Loop filter PLL
18	GND	Ground



UEB06215

Block Diagram

Circuit Description

Matrix

The audio matrix is generating the correct audio signals for the three possible operation modes. In mono operation the tone 1 input signal is fed to both AF outputs. In dual mode both audiosignals are appearing at both outputs. When stereo operation is selected, a $(L+R)/2$ signal is generated and fed to the tone 1 output, the right AF-Signal is switched to tone 2 output.

Pilottone Generator

The pilottone generator consists of a PLL circuitry and an AM modulator. The PLL is locked with the 15625 Hz line frequency and is generating the unmodulated pilottone and a square wave identification tone. This identification tone has to be filtered in an external filter to a sinusoidal wave form. This is fed into the AM modulator, which generates the AM modulated pilottone. A DC control voltage is adjusting the modulation depth. A high speed OP amp is available for filtering the pilottone harmonics and for level matching.

The status control of the stereocoder happens via two TTL compatible control inputs. The truth table of the control inputs:

	Stereo Control	Dual Control	Tone 1 Output	Tone 2 Output	Pilottone Mod.
Mono mode	0	0	Mono	Mono	Not mod.
Stereo mode	1	0	$(L+R)/2$	R	117 Hz
Dual mode	0	1	Tone 1	Tone 2	274 Hz
Not allowed	1	1	—	—	—

Absolute Maximum Ratings

$T_A = 0$ to 70 °C

Parameter	Symbol	Limit Values		Unit
		min.	max.	
Max. DC-voltage	V_1	0	14	V
Max. DC-voltage	V_2	0	14	V
Max. DC-voltage	V_3	0	14	V
Max. DC-voltage	V_4	0	14	V
Max. DC-current	I_5	0	2	mA
Max. DC-current	I_6	0	2	mA
Max. DC-current	I_7	0	2	mA
Max. DC-current	I_8	0	2	mA
Max. DC-current	I_9	0	2	mA
Max. DC-voltage	V_{10}	0	14	V
Supply voltage	V_{11}	0	14	V
Max. DC-voltage	V_{12}	0	14	V
Max. DC-voltage	V_{13}	0	14	V
Max. DC-voltage	V_{14}	0	14	V
Max. DC-current	I_{15}	0	2	mA
Max. DC-voltage	V_{16}	0	14	V
Max. DC-current	I_{17}	0	1	mA
Junction temperature	T_j		– 150	°C
Storage temperature	T_g		+ 125	°C
Thermal resistance	R_{thSU}		59	K/W

Operational Range

Supply voltage	V_S	10	+ 13.2	V
Ambient temperature	T_A	0	70	°C
Input frequency range	f_i	0.01	20	kHz

AC/DC Characteristics

$V_S = 12\text{ V}$; $T_A = 25\text{ °C}$, in accordance with test circuit 1.

Parameter	Symbol	Limit Values			Unit	Test Circuit	Test Condition
		min.	typ.	max.			
Current consumption	I_{11}		26		mA		

A. Matrix

Gain	G_{7-1}		0		dB	1	Mono
Gain	G_{8-1}		0		dB	1	Mono
Gain	G_{7-1}		0		dB	1	Mono
Gain	G_{8-3}		0		dB	1	Mono
Gain	G_{7-1}		− 6		dB	1	Stereo
Gain	G_{7-3}		− 6		dB	1	Stereo
Gain	G_{8-3}		0		dB	1	Stereo
Max. input voltage	V_1	2			Vrms	1	$k_7 \leq 1\%$
Max. input voltage	V_3	2			Vrms	1	$k_8 \leq 1\%$
Max. output voltage	V_7	2			Vrms	1	$k_7 \leq 1\%$
Max. output voltage	V_8	2			Vrms	1	$k_8 \leq 1\%$
Crosstalk attenuation	a_{cross}	75	80		dB	1	Dual
Distortion	k_7			0.2	%	1	$V_{\text{in}} = 250\text{ mVrms}$
Distortion	k_8			0.2	%	1	$V_{\text{in}} = 250\text{ mVrms}$
Matrix error	ΔV_{Stereo}			2	%	1	Stereo
Signal/noise ratio	$a_{S/N7}$		97		dB	1	$V_1 = 600\text{ mVrms}$
Signal/noise ratio	$a_{S/N8}$		97		dB	1	$V_3 = 600\text{ mVrms}$

AC/DC Characteristics (cont'd)

$V_S = 12\text{ V}$; $T_A = 25\text{ °C}$, in accordance with test circuit 1.

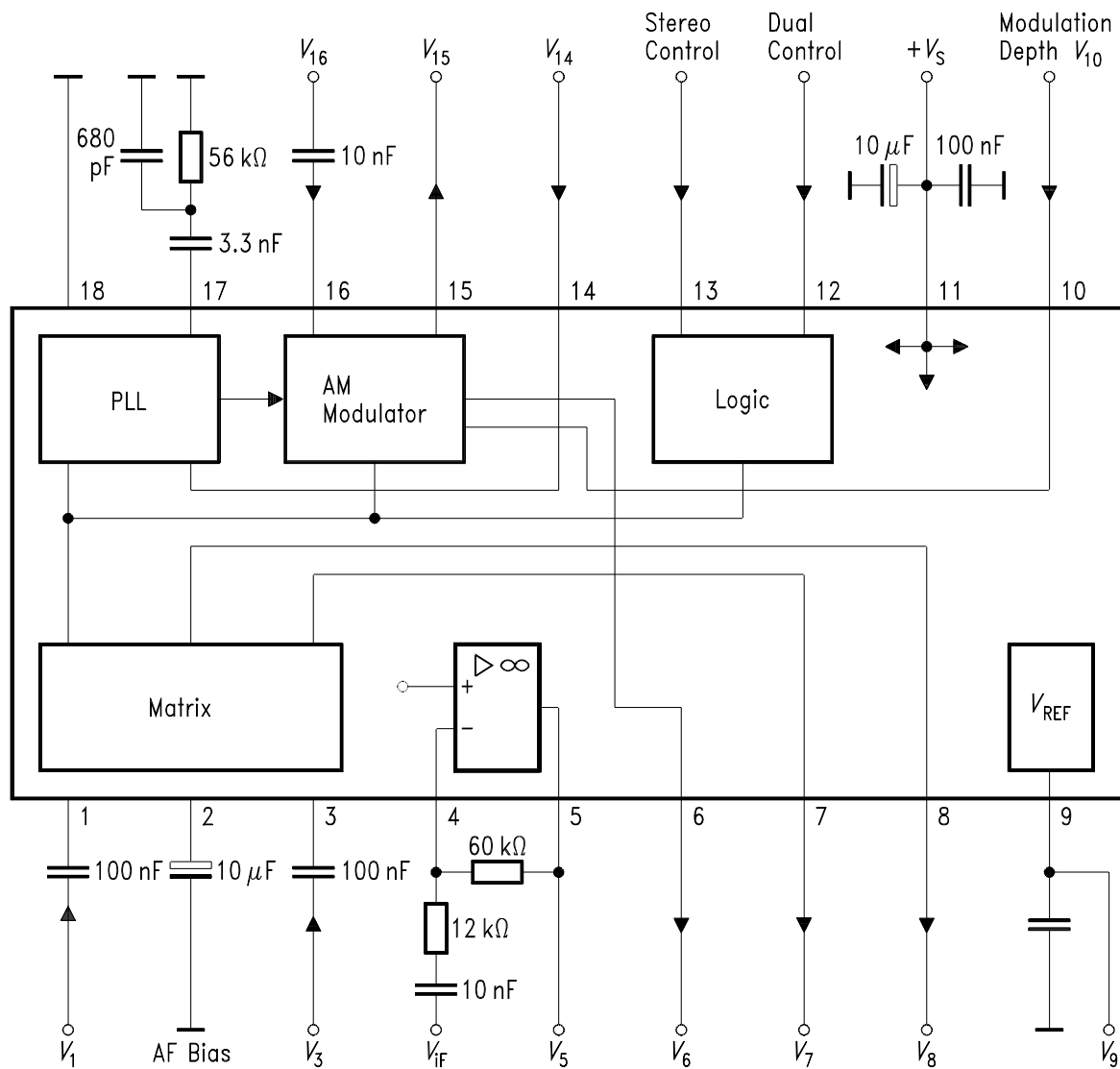
Parameter	Symbol	Limit Values			Unit	Test Circuit	Test Condition
		min.	typ.	max.			

B. Pilotone Generator

VCO-voltage PLL	V_{17}		3		V		$U_{9-10} = 1\text{ V}$ Mono $m = 50\%$
Identification tone	V_{15}		2		Vpp		
output voltage	V_6		400		mVpp		
Pilot voltage							
Identification tone	V_{16}		1		Vpp		
input voltage	G_5		12		dB		
Max. gain pilot filter	V_{14L}	0		1.5	V		
Threshold line input	V_{14H}	3.5		V_S	V		
Threshold line input	$V_{12,13L}$	0		1	V		
Threshold control input	$V_{12,13H}$	2.4		5.5	V		
Threshold control input	V_9		6		V		
Reference voltage							

C. Design Hints

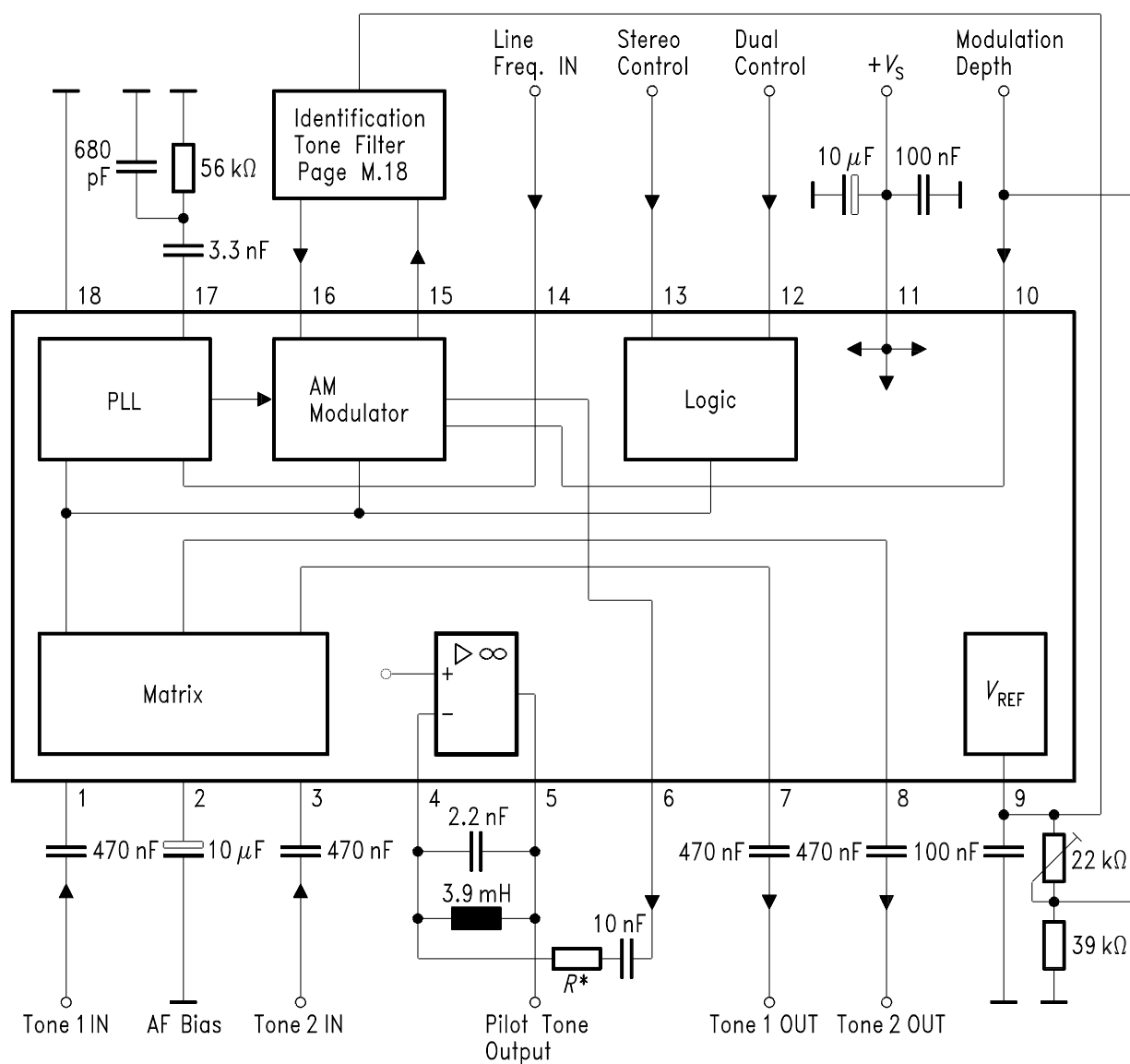
Input resistance	$R_{1,3}$	20			k Ω		
Output resistance	$R_{7,8}$			200	Ω		
Input resistance	R_{14}	7			k Ω		
Input resistance	R_{16}	24			k Ω		
Output resistance	R_{15}			200	Ω		
Output resistance	R_6			15	k Ω		



AF-generator resistor for $V_1, V_3, V_{IF}, V_{14}, V_{16} = 50 \Omega$
 1k Ω termination at pin's 1 and 3 for noise- and crosstalk measurement

UEB06205

Test Circuit



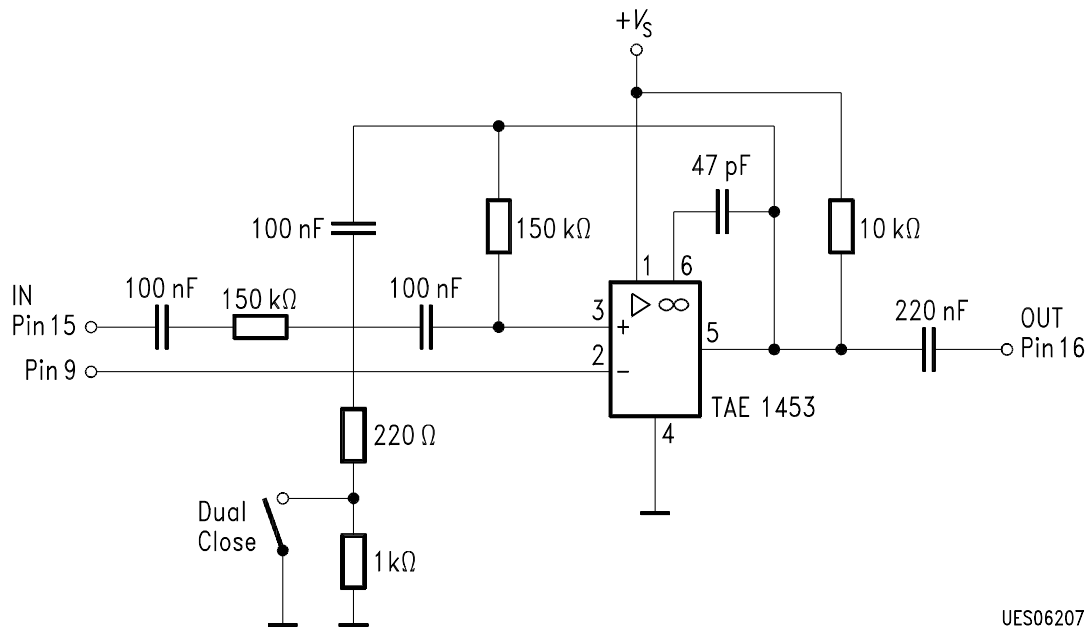
The pilot tone output voltage is set with R^*

R^*_{min} 0 kΩ

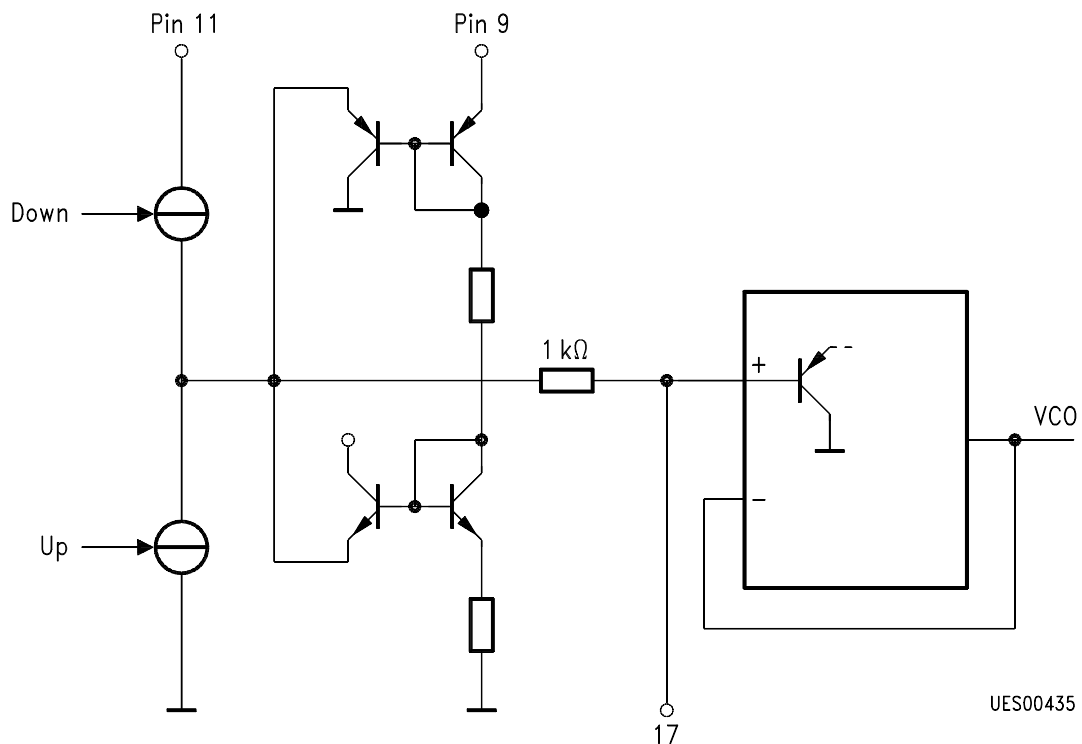
R^*_{max} 1 MΩ

UES06206

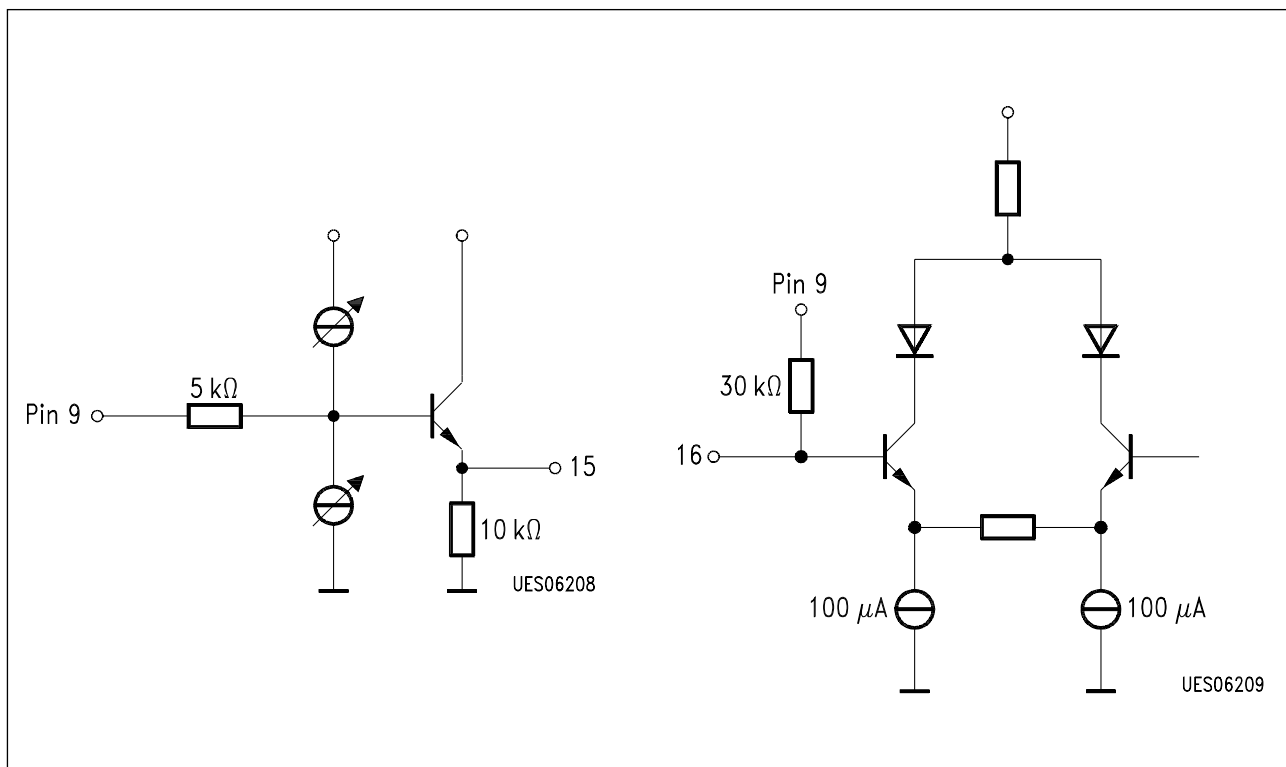
Application Circuit 1



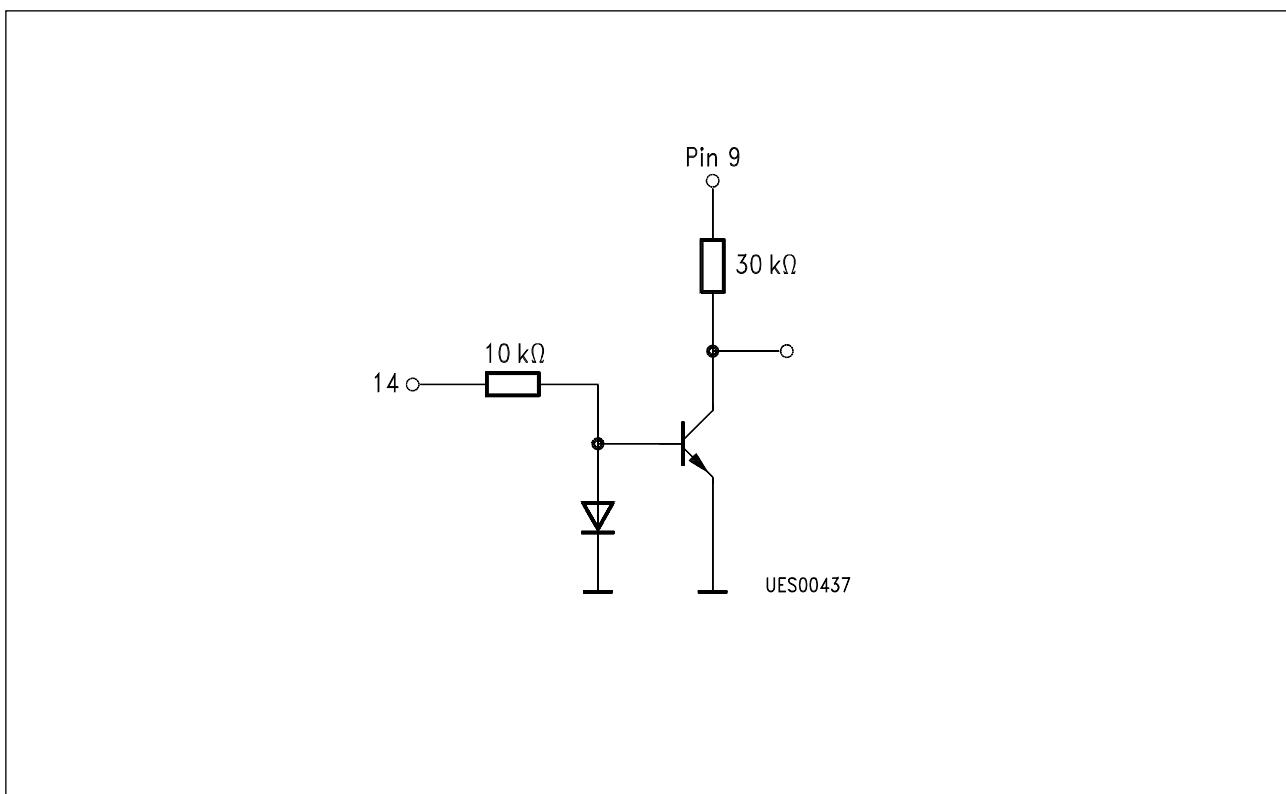
Application Circuit 2



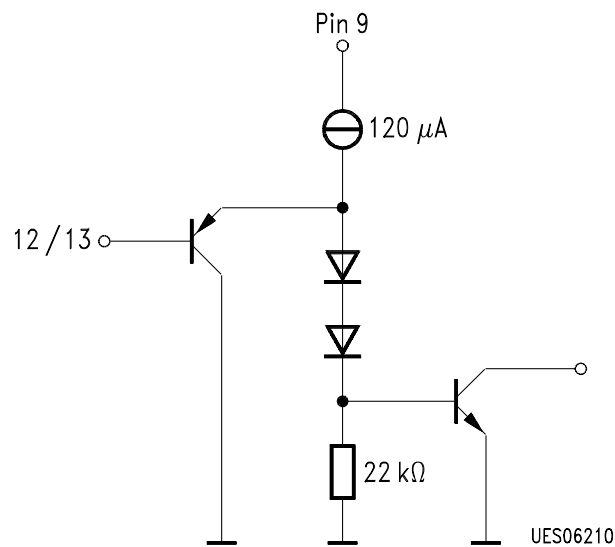
PLL-Filter (pin 17)



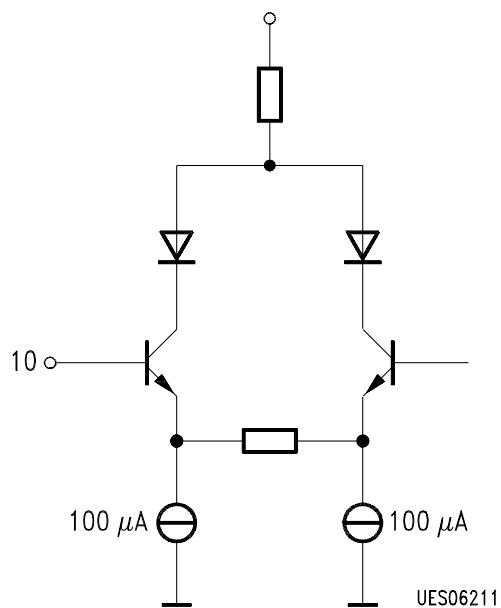
Identification Tone In/Out (pin 15/16)



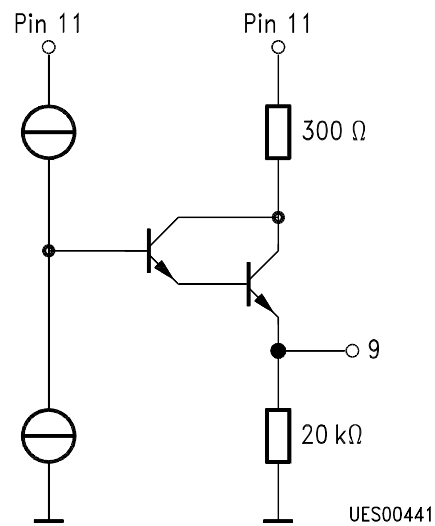
Line Input (pin 14)



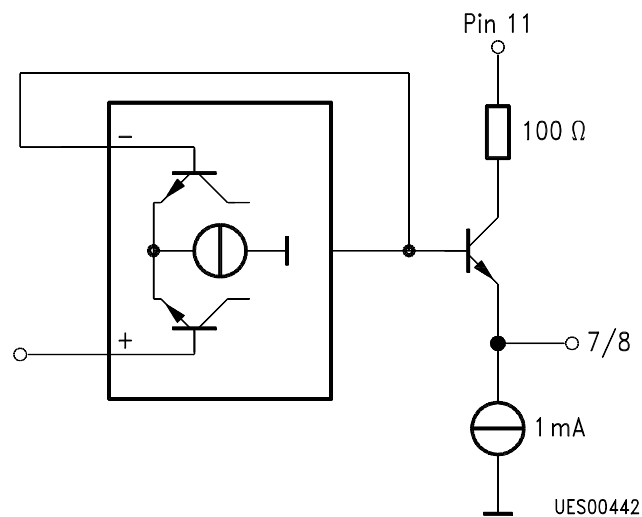
Control Inputs (pin 12/13)



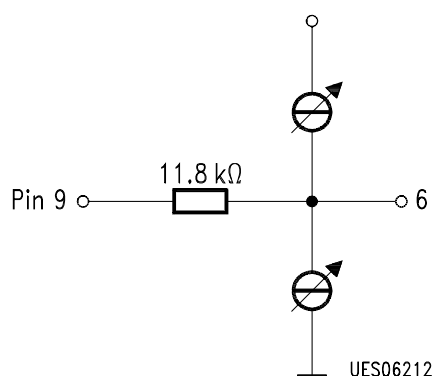
Modulation Depth (pin 10)



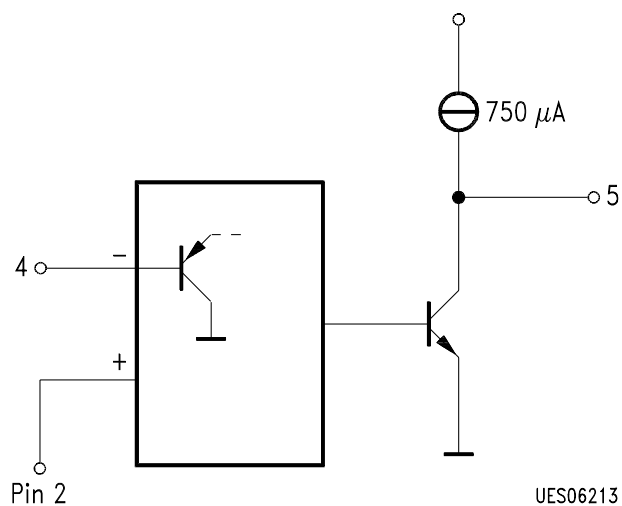
Reference Voltage (pin 9)



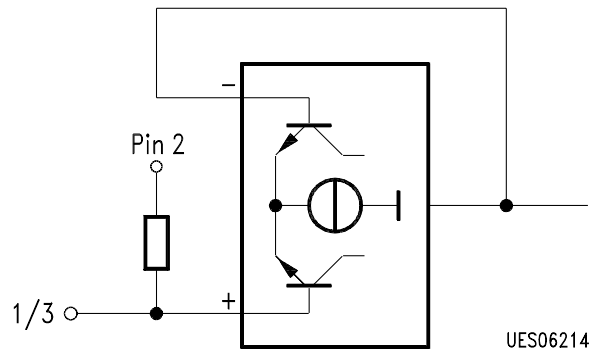
AF-Output (pin 7/8)



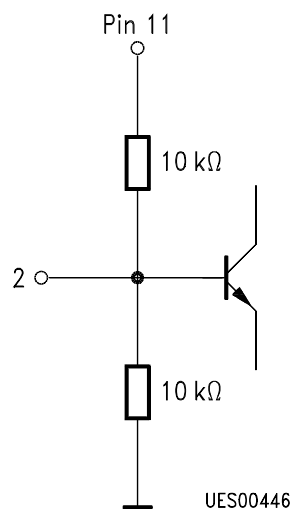
Pilot Tone Output (pin 6)



54 kHz-Filter (pin 4/5)



AF-Inputs (pin 1/3)

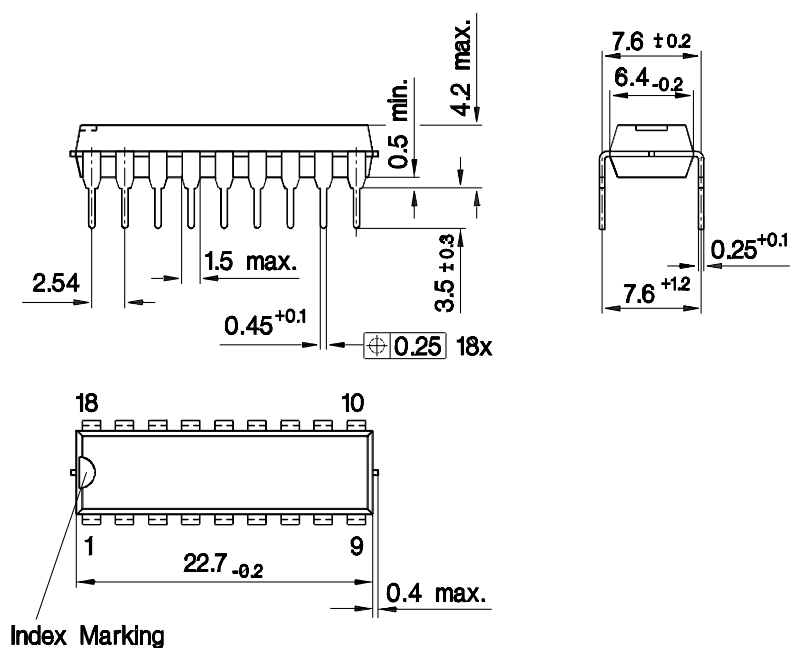


AF Bias (pin 2)

Package Outlines

P-DIP-18-1

(Plastic Dual In-Line Package)



GPD05035

Sorts of Packing

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information"

Dimensions in mm