

The TCA 4500 A is a phase-locked loop stereo decoder which incorporates a variable channel separation control. In this IC, the sensitivity to the third harmonics of both the pilot and subcarrier frequencies has been eliminated due to the use of appropriate, digitally generated waveforms in the phase-locked loop and decoder sections.

Features

- Low distortion
- Excellent rejection of ARI subcarrier and pilot tone harmonics
- No need for coils

Maximum ratings

Supply voltage	V_S	16	V
Lamp drive voltage (lamp OFF)	V_T	30	V
Lamp current	I_T	100	mA
Channel separation control voltage	V_{11}	10	V
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	—40 to 125	°C
Thermal resistance (system-air)	$R_{th SA}$	90	K/W

Operating range

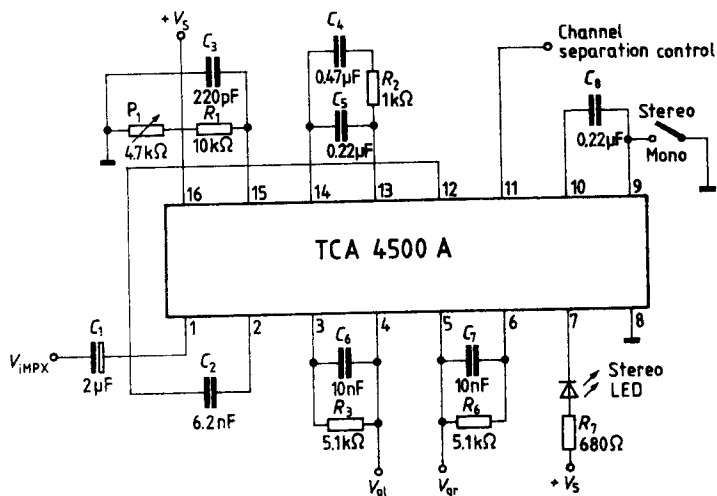
Supply voltage range	V_S	8 to 16	V
Ambient temperature range	T_{amb}	—25 to 85	°C

Characteristics

($V_S = 12\text{ V}$; $T_{\text{amb}} = 25^\circ\text{C}$; $V_{i(\text{MPX})} = 2.5\text{ V}_{\text{pp}}$; $f_{\text{mod}} = 1\text{ kHz}$; $V_{\text{pilot}} = 10\% V_i$)

		min	typ	max	
Current consumption ($I_T = 0$)	I_{16}		35		mA
Stereo channel separation					
unadjusted	a	30			dB
optimized on other channel	a_{opt}	40			dB
Monaural voltage gain	G	0.8	1	1.2	
THD at 2.5 V_{pp}	THD			0.3	%
THD at 1.5 V_{pp}	THD		0.2		%
Signal-to-noise ratio in acc. with DIN 45405	$a_{\text{S/N}}$		85		dB
rms value 20 Hz – 15 kHz	$a_{\text{S/N}}$		90		dB
Frequency rejection 19 kHz	a		31		dB
38 kHz	a		50		dB
Pilot tone harmonic rejection 57 kHz ARI	a		60		dB
Subcarrier harmonic rejection 76 kHz	a		45		dB
114 kHz	a		50		dB
152 kHz	a		50		dB
Input voltage for stereo switching threshold (19 kHz input signal for lamp "ON")	$V_{11\text{rms}}$	12	16	20	mV
Hysteresis for stereo switching threshold	H		6		dB
Quiescent output voltage change with mono/stereo switching	$\Delta V_{\text{ql}}, \Delta V_{\text{qr}}$		5	20	mV
Channel separation control voltage					
3 dB separation	V_{11}		0.7		V
30 dB separation	V_{11}		1.7		V
Minimum channel separation ($V_{11} = 0\text{ V}$)	a			1	dB
Monaural channel imbalance (pilot tone off)	$\Delta V_{\text{ql}, r}$			0.3	dB
Hum suppression	a_{hum}		55		dB
Input resistance	R_{i1}		50		k Ω
Output resistance	R_{q4}, R_{q5}		100		Ω
Channel separation control current	I_{11}			-300	μA
Capture range	$\Delta f/f_0$		± 5		%

Measurement circuit



Pin configuration

Pin No.	Function
1	Input
2	Preamplifier output
3	Left amplifier input
4	Left channel output
5	Right channel output
6	Right amplifier input
7	Stereo indicator lamp
8	Ground
9	Switching threshold
10	Switching threshold
11	19 kHz output/channel separation control
12	Modulator input
13	Loop filter
14	Loop filter
15	Oscillator RC network
16	Supply voltage +VS

Application circuit with low-pass filter

