

VIDEO IF AND AFC CIRCUIT FOR COLOUR AND MONOCHROME TELEVISION RECEIVERS

Technology: Bipolar

Features:

- o Very high input sensitivity
- o Very low intermodulation products
- o Minimum differential error
- o Constant input impedance independent of AGC
- o Fixed video output, voltage with small tolerance range
- o Negative video signal hardly affected by supply voltage variations
- o Very few external components
- o Extreme fast AGC action - gating largely independent of pulse shape and amplitude
- o Positive as well as neg. video signal available from low-impedance outputs
- o Positive or negative going gating pulse
- o Large AFC output current swing (push-pull output)
- o Switchable AFC
- o Connecting and basic circuitry compatible to the TELEFUNKEN electronic video IF type programme - permits building block system for video IF module

TDA 4427 A: For ceramic sound traps

Case:

18 pin dual inline plastic

Absolute maximum ratings

Reference point pin 3, unless otherwise specified

Supply voltage	Pin 15	V_S	15	V
Supply current	Pin 15	I_S	70	mA
Open loop voltage	Pin 5	V_0	15	V
Video DC output current, short term	Pin 13,14	I_0	5	mA
Short circuit current, short term	Pin 13,14	I_0	30	mA
External voltage	Pin 4	V_{ext}	5.0	V
Power dissipation $T_{amb} \leq 55^\circ\text{C}$		P_{tot}	1	W
Junction temperature		T_j	125	$^\circ\text{C}$
Ambient temperature range		T_{amb}	-25 ... + 70	$^\circ\text{C}$
Storage temperature range		T_{stg}	-25 ... +125	$^\circ\text{C}$

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TDA 4426
TDA 4427
TDA 4427A

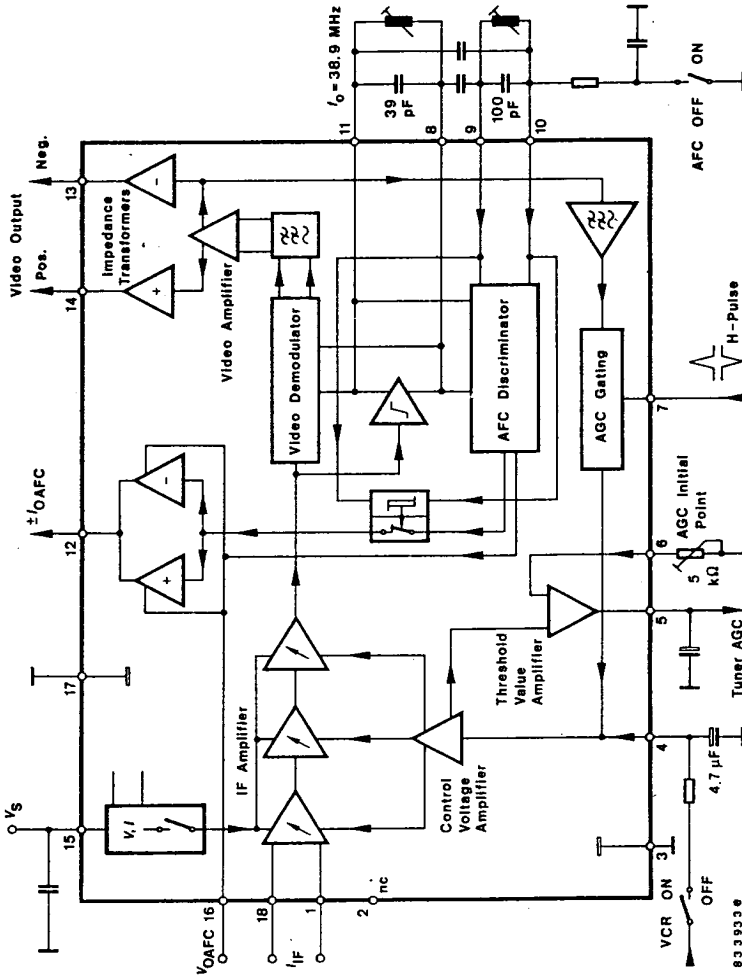


Fig. 1 Block diagram TDA 4427 A: Pin 14 not connected

Electrical characteristics

$V_S = 12\text{ V}$, $T_{\text{amb}} = 25\text{ }^\circ\text{C}$, reference point pin 3,
unless otherwise specified

			Min.	Typ.	Max.	
Supply voltage range	Pin 15	V_S	10	12	15	V
Supply voltage sensitivity of the ultra white level reference point pin 15	Pin 13	k_{SVS}		30		mV/V
Supply voltage sensitivity of the ultra black level reference point pin 15	Pin 13	k_{SVS}		5		mV/V
Supply current	Pin 15	I_S		62		mA
Ultra white level	Pin 13	V_0	4.8	5.2	5.6	V
	Pin 14	V_0		1.8		V
Peak black clamping level at negative video output	Pin 13	V_0	1.75	1.9	2.05	V
Output DC current $V_{12} = 8\text{ V}, V_{13} = 0\text{ V}$	Pin 13, 14	I_0		1.5		mA
TDA 4426, TDA 4427		I_0				mA
TDA 4427 A	Pin 13	I_0	3			mA
Available tuner control current 10 dB after onset of tuner control action	Pin 5	I_0	8	10		mA
Composite video output level, without load	Pin 13	v_0	2.7	3.0	3.3	V_{pp}
	Pin 14	v_0		3.0		$V_{\text{pp}}^{1)}$
AGC range		ΔG_{IF}	60			dB
Video bandwidth $\Delta G_{\text{video}} = -3\text{ dB}$		B_{video}		6		MHz
Video frequency response change $-\Delta G_{\text{IF}} = 0 \dots \text{max}$, $B_{\text{video}} = 0 \dots 5\text{ MHz}$		ΔV_{video}		1.0	2.0	dB
Symmetrical input voltage for AGC action (sync. peak value) $V_4 = 1\text{ V}$	Pin 1-18	v_i		90	200	μV

1) not TDA 4427 A

TDA 4426
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TDA 4427A

			Min.	Typ.	Max.
Maximum IF voltage level present at video outputs over the full AGC range					
$f = 38.9 \text{ MHz}$	Pin 13,14	V_{RF}			15 mV
$f = 77.8 \text{ MHz (2. Harm)}$	Pin 13,14	V_{RF}			30 mV
Sound IF voltage level present at video outputs with selective circuit					
$f = 5.5 \text{ MHz, } \frac{PC}{SC} = 30 \text{ dB}^1)$	Pin 14	V_{SIF}	30		mV
Differential distortion of negative comp. video output signal, for full black to white swing		ΔAM		3	%
Sound/chroma beat					
IP (1.07 MHz) with respect to colour subcarrier level					
$-\Delta G_{IF} = 0 \dots \text{max}$		α_{IM}		50	dB
IF picture carrier	$\alpha_{PC} = 0 \text{ dB}$				
IF colour subcarrier level	$\alpha_{CC} = -6 \text{ dB}$				
IF sound carrier level	$\alpha_{SC} = -24 \text{ dB}$				
Upsetting factor for sync pulse					
$-\Delta G_{IF} = 0 \dots \text{max}$					5 %
Input impedance					
$G_{IF \text{ max}}$	Pin 1-18	R_i		1.4	k Ω
		C_i		2	pF
$G_{IF \text{ min}}$	Pin 1-18	R_i		1.4	k Ω
		C_i		1.9	pF
Automatical AGC initial point	Pin 6	ΔG_{PIF}		61	dB
Gating pulse positive or negative gating pulse	Pin 7	I_I	0.35		1 mA
Open loop voltage	Pin 7	V_O		1.9	V

1) PC:IF picture carrier, SC:IF sound carrier

			Min.	Typ.	Max.
AFC voltage range	Pin 12	V_{OAFC}		$1 \dots (V_S - 1.5)$	V
Max. available AFC current		$\pm I_{OAFC}$			2 mA
AFC-slope	Fig. 2	$\pm \frac{\Delta I_{OAFC}}{\Delta f}$		0.6	$\frac{\text{mA}}{100 \text{ KHz}}$
DC control voltage for AFC switching-OFF	Pin 9,10	I_{OFF}	100	150	μA

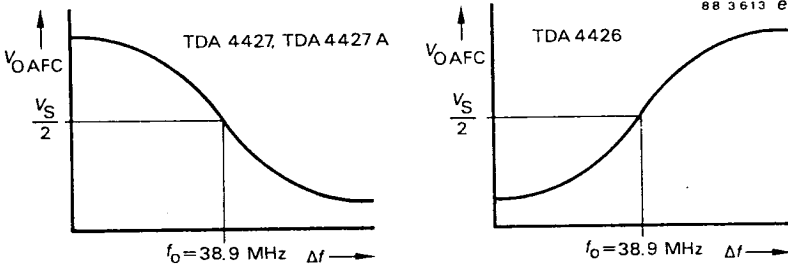


Fig. 2 AFC characteristics

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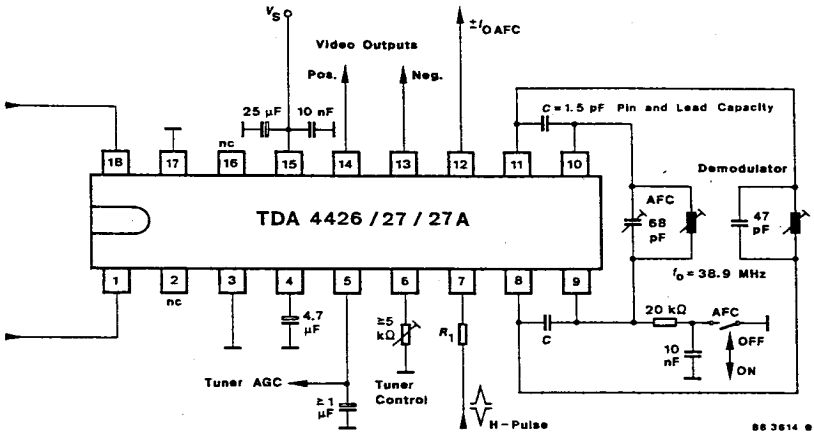
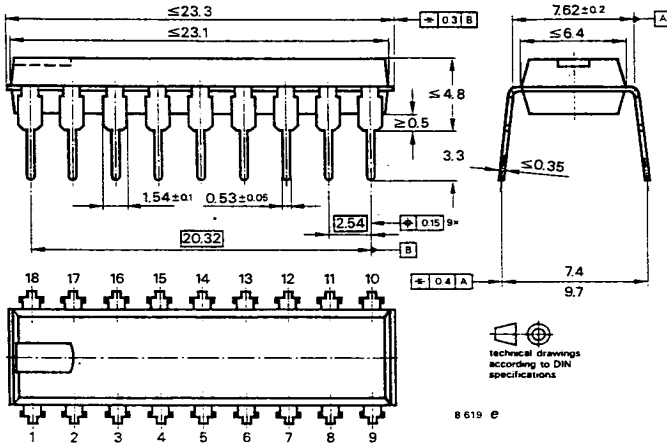


Fig. 3 Test circuit TDA 4427 A: Pin 14 not connected

Supply voltage **must be disconnected** before inserting the integrated circuit in the socket

Dimensions in mm



Case
DIP 18-leads