

# TDA 440

## VIDEO IF AMPLIFIER/ DEMODULATOR

The TDA440 incorporates the following functions:

1. Three-stage symmetrical IF (broad band) amplifier with first and second stages AGC-controlled.
2. Controlled video carrier demodulator.
3. Video drive amplifier with low-pass response and output independent of supply fluctuations.
4. Gated AGC section for IF amplifier.
5. Delayed regulated output voltage for the tuner preamplifier.

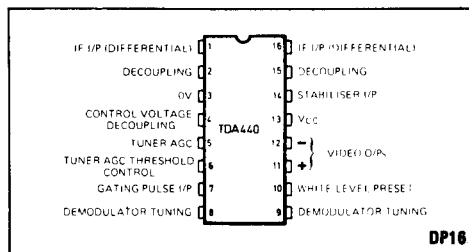


Fig. 1 Pin connections.

### FEATURES

- High Gain — High Stability
- Constant Input Impedance Independent of AGC
- Low Noise Independent of AGC
- High Supply Rejection
- Low RF Breakthrough to Video O/Ps
- Fast AGC Action
- Very Low Intermodulation Products
- Minimum Differential Error
- Positive and Negative Video O/Ps
- Low Impedance Video O/Ps
- Temperature Compensated
- Peak White Adjustable

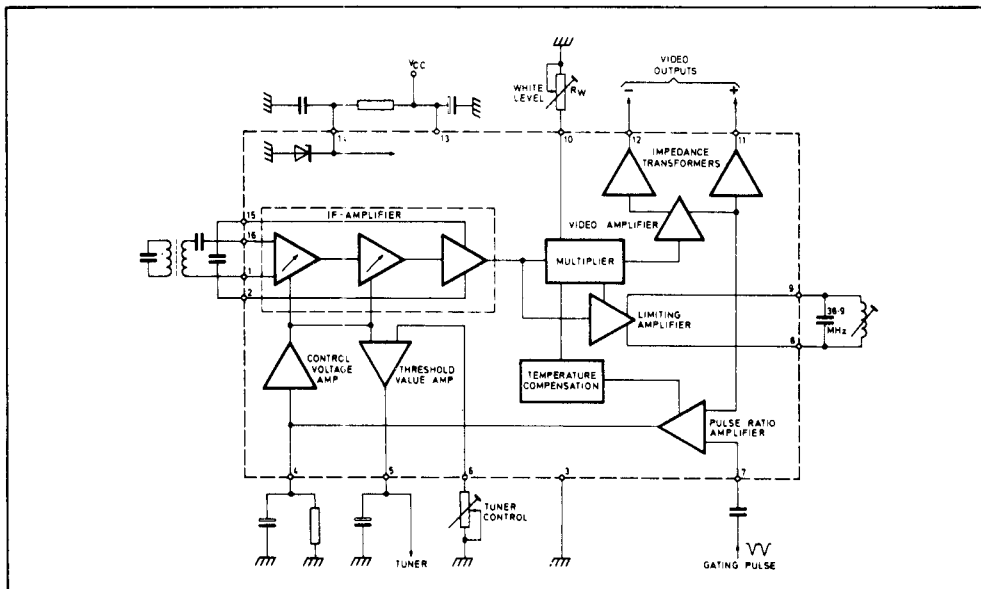


Fig. 2 TDA440 block diagram.

# ABSOLUTE MAXIMUM RATINGS

Reference point is pin 3

Rating	Pin	Symbol	Value	Units
Supply voltage range	13	$V_{CC}$	10 to 15	V
Low voltage stabiliser supply current	14	$I_s$	50	mA
Open loop voltage	5	$V_5$	15	V
Video DC output current				mA
Average positive	12	$I_{12}$	5	mA
Peak positive	12	$I_{12}$	30	mA
Average negative	11	$I_{11}$	5	mA
Peak negative	11	$I_{11}$	30	mA
White level control	10	$V_{10}$	3.2	V
Power dissipation at $T_{amb} \leq 55^\circ\text{C}$		$P_{tot}$	700	mW
Ambient temperature range		$T_{amb}$	-10 to +65	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to +125	$^\circ\text{C}$

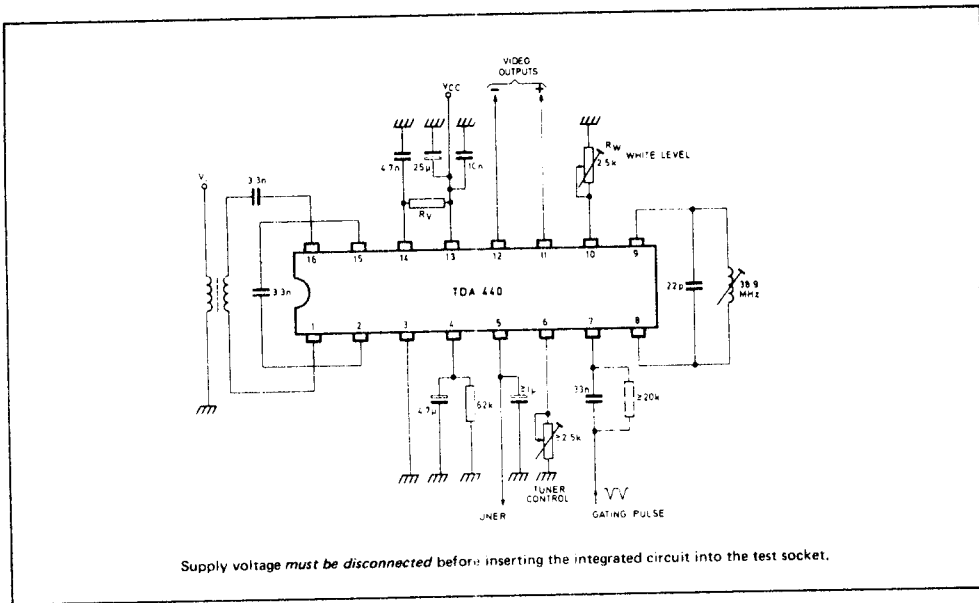


Fig. 3 Test and application circuit.

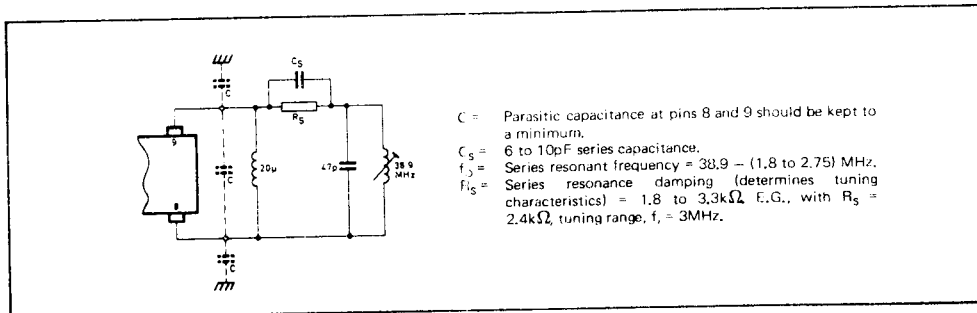


Fig. 4 Modifications to Fig. 3 for improving audio interference and cross-colour characteristics.

## ELECTRICAL CHARACTERISTICS

Test Conditions (unless otherwise stated):

$T_{amb} = +25^{\circ}\text{C}$

$V_{CC} = +12\text{V}$

Reference point is pin 3

Characteristic	Pin	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply voltage, $V_{CC}$	13	10	12	15	V	
Supply current, $I_{13}$	13	15	19	25	mA	
Supply voltage, stabiliser input	14	5.5	5.8	6.4	V	$I_{14} = 40\text{mA}$
Positive video DC output voltage	11		5.5		V	
White level adjustment range for positive video DC output voltage	11			4.8	V	$R_W$ (pin 10) = $\infty$
		6.5			V	$R_W$ (pin 10) = 0
Peak black clamping level for positive video DC output voltage	11	1.75	1.9	2.15	V	
DC output current	11		3.2		mA	Reference point pin 13
Negative video DC output voltage	12		5.6		V	
Available tuner control current	5	7	7.5		mA	10dB after onset of tuner control action
Negative gating pulse	7	1.5	3	5	Vp-p	
Composite video output level	11		3.3		Vp-p	$V_{11} = 5.5\text{VDC}$
			4.2		Vp-p	$V_{11} = 6.4\text{VDC}$
AGC range, $\Delta\text{AGC}$		50	56		dB	
Video 3dB bandwidth		8	10		MHz	
Video frequency response change			1.0	2.0	dB	$\Delta\text{AGC} = 50\text{dB}$ , video bandwidth = 0 to 5 MHz
Symmetrical input voltage for 3.3Vp-p output (pin 11)	1-16	100	150	220	$\mu\text{Vr.m.s}$	
Maximum IF voltage level present at video outputs over the full AGC range	11,12			30	mV	$f = 38.9\text{MHz}$
				50	mV	$f = 77.8\text{MHz}$ (2nd harmonic)
Sound IF voltage level present at video outputs with selective circuit	12	30			mV	$f = 5.5\text{MHz}$ , $\frac{\text{picture carrier level}}{\text{sound carrier level}} = 30\text{dB}$
Differential gain of negative comp. video output signal for full black to white swing				15	%	
Suppression of sound carrier/colour subcarrier (1.07MHz) w.r.t colour subcarrier level		40			dB	Picture carrier = 0dB, IF colour subcarrier level = -6dB, IF sound carrier level = -24dB
Input impedance	1					Reference point pin 16
AGC max.			1.4/2		$\text{k}\Omega/\text{pF}$	
AGC min.			1.4/1.9		$\text{k}\Omega/\text{pF}$	