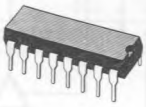
SGS-THOMSON MICROELECTRONICS

TDA4443

VIDEO IF AMPLIFIER FOR MULTISTANDARD APPLIANCES

- SWITCHING OFF THE IF AMP. WHEN OPERATING IN VTR MODE VIA DIN PLUG
- DEMODULATION OF NEGATIVE OR POSITIVE IF SIGNALS. THE OUTPUT REMAINS ON THE SAME POLARITY IN EVERY CASE
- IF AGC AUTOMATICALLY ADJUSTS TO THE ACTUAL STANDARD
- TWO AGC POSSIBILITIES FOR B/G MODE :
  1. GATED AGC
  2. UNGATED AGC ON SYNC. LEVEL AND CONTROLLED DISCHARGE DEPENDENT ON THE AVERAGE SIGNAL LEVEL FOR VTR AND PERI TV APPLICATIONS
  FOR STANDARD L : FAST AGC ON PEAK WHITE BY CONTROLLED DISCHARGE
- POSITIVE OR NEGATIVE GATING PULSE
- EXTREMELY HIGH INPUT SENSITIVITY
- LOW DIFFERENTIAL DISTORTION
- CONSTANT INPUT IMPEDANCE
- VERY HIGH SUPPLY VOLTAGE REJECTION
- FEW EXTERNAL COMPONENTS
- LOW IMPEDANCE VIDEO OUTPUT
- SMALL TOLERANCES OF THE FIXED VIDEO SIGNAL AMPLITUDE
- ADJUSTABLE, DELAYED AGC FOR PNP TUNERS
- PIN COMPATIBLE WITH THE IF IC's TDA4426 AND TDA4427

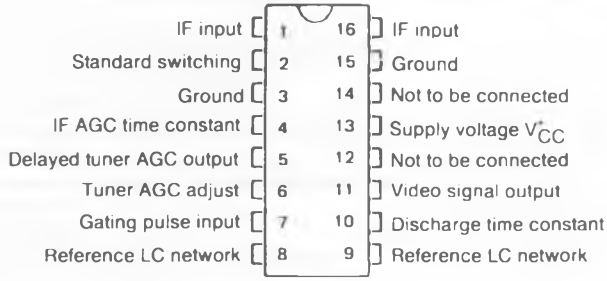


TDA4443
DIP16
(Plastic Package)

DESCRIPTION

The TDA4443 is a Video IF amplifier with standard switch for multistandard colour or monochrome TV sets, and VTR's.

PIN CONNECTIONS



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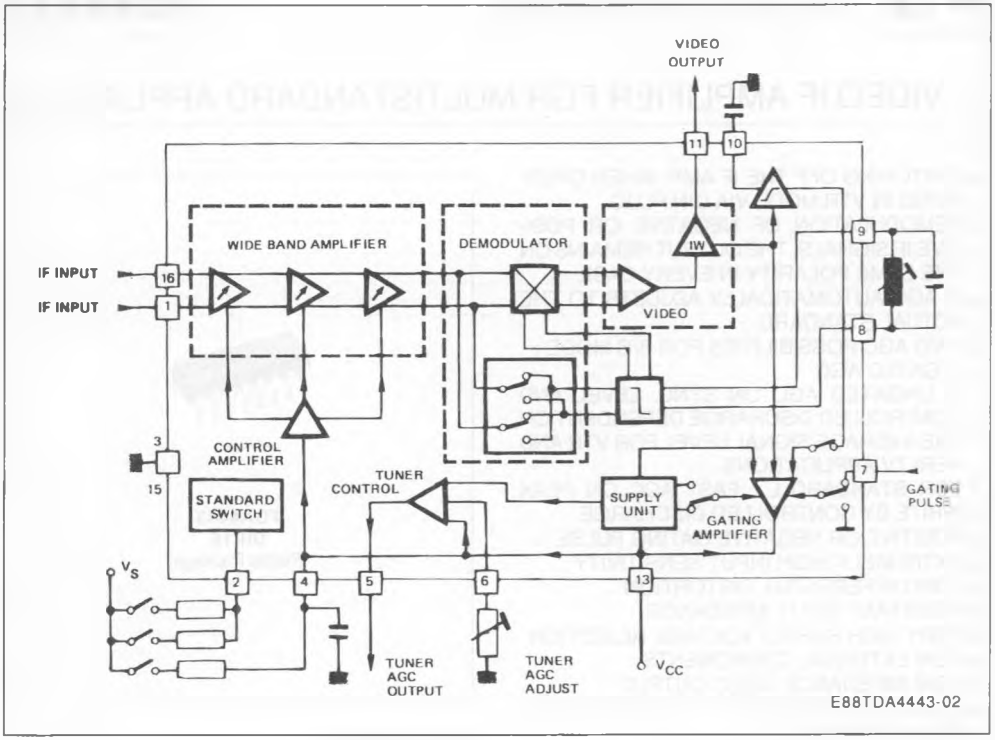
BLOCK DIAGRAM



GENERAL DESCRIPTION

This video IF processing circuit integrates the following functional blocks :

- Three symmetrical, very stable, gain controlled wideband amplifier stages - without feedback by a quasi-galvanic coupling.
- Demodulator controlled by the picture carrier
- Video output amplifier with high supply voltage rejection
- Polarity switch for the video output signal
- AGC on peak white level
- Gated AGC
- Discharge control
- Delayed Tuner AGC
- At VTR reading mode the video output signal is at ultra white level

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage Range	Pin 13	15	V
V_0	Open Loop Voltage	Pin 5	max. V_{CC}	V
V_{ext}	External Voltage	Pin 4	12	V
I_4	Control Current for VTR Mode	Pin 4	0.3	mA
I_2	Control Current for Standard Mode	Pin 2	0.5	mA
I_0	Max. Video Output Current	Pin 11	5	mA
I_0	Short Circuit Current ($t \leq 1$sec)	Pin 11	30	mA
P_{tot}	Power Dissipation		1	W
T_j	Junction Temperature		125	°C
T_{amb}	Ambient Temperature Range		0 to + 70	°C
T_{stg}	Storage Temperature Range		– 25 to + 125	°C

THERMAL DATA

$R_{th(j-a)}$	Junction-ambient Thermal Resistance	70	°C/W

ELECTRICAL OPERATING CHARACTERISTICS

T_{amb} = 25°C, V_{CC} = 12V, unless otherwise specified. Test Circuits Page 6.

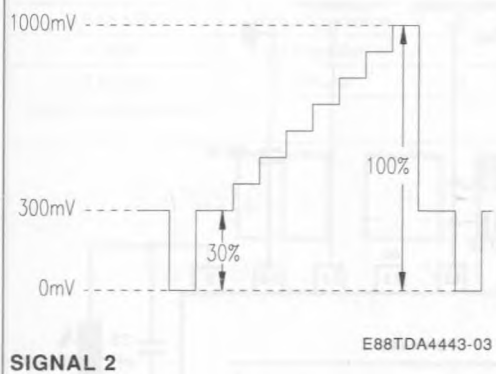
Symbol	Parameter		Min.	Typ.	Max.	Unit
V_{CC}	Supply Voltage	Pin 13	10	12	15	V
I_{CC}	Supply Current V_{CC} = 12V V4 = 3.5V Pin 6 Pin 7 Pin 2 open Vin = 0	Pin 13		55	75	mA
V_{11}	Ultra White Level at Standard B/G VCC = 15V V4 = 3.5V	Pin 11	4.8	5.1	5.6	V
V_{AA}	Ultra black clamping level at standard B/G SIGNAL 1	Pin 11	1.70	1.85	2.10	V
V_O	Picture to sync. output voltage of the video signal without load in standard B/G (residual carrier 10%) without load SIGNAL 1	Pin 11	2.6	2.9	3.3	V_{PP}
V_O	Picture to blanking level output voltage of the video signal without load in standard L (blanking level at 28% of carrier amplitude) SIGNAL 2 (residual carrier 5%)	Pin 11	1.80	2.1	2.40	V_{PP}
$\frac{\Delta(V_p-V_{blank})}{V_p-V_{blank}}$	Output voltage change of the picture to blanking level from standard L to standard B/G (mode BG signal 1 mode L signal 2)	Pin 11			10	%
ΔVblack	Supply voltage influence on the ultra black level in standard B/G	Pin 11		0.5		%V
ΔVwhite	Supply voltage influence on the ultra white level in standard B/G	Pin 11		1		%V
ΔVvideo	Video Bandwith Video Signal Attenuation with Vin at 4.43MHZ	Pin 11		1	1.5	dB
Bvideo	Video Bandwidth at – 3dB	Pin 11	6			MHz

ELECTRICAL OPERATING CHARACTERISTICS (continued)
T_{amb} = 25°C, V_{CC} = 12V, unless otherwise specified. Test Circuits Page 6.

Symbol	Parameter		Min.	Typ.	Max.	Unit
ΔVvideo	Video frequency response changes within the AGC range	Pin 11		0.5	2.0	dB
I_O	DC Output Current V_{11} = 10V V_{CC} = 15V	Pin 11		1.5	2	mA
I_7	Gating Pulse Current	Pin 7	0.30		1.0	mA
V_7	DC Voltage at Gating Input	Pin 7		1.3	1.6	V
V_1	Input Voltage Sensitivity Vin with Vout = VO – 3dB Standard B/G SIGNAL 1	Pin 1–16		120		μV_{RMS}
I	Control Current for Status B (see status of mode switching) V2 = 5V	Pin 2		10	40	μA
I	Control Current for Status C (see status of mode switching) V2 = 6.3V	Pin 2		60	400	μA
ΔG_{IF}	IF AGC Range			60		dB
I_{AGC}	Available Tuner AGC Current (10dB above the AGC starting point)	Pin 5	8	12		mA
ΔAGC	Delay Between Tuner AGC and IF AGC (pin 6 not connected)	Pin 5		50		dB
VIF V2IF	IF residual carrier at the video o/p withing the AGC range 38.9MHz 77.8MHz	Pin 11 Pin 11		20 50		mVRMS mVRMS
d	Differential Distortion on Composite Video Signal Amplitude Signal 3	Pin 11			5	%
aM	Attenuation of sound to color carrier intermodulation signal (1.07MHz) referred to the demodulated color carrier Picture Carrier = 0dB Color Carrier = – 6dB Sound Carrier = – 24dB	Pin 11		50		dB
$\frac{\Delta Sync}{Sync}$	Sync. Pulse Compression Within the IF AGC Range			3		%
RI CI	Input Impedance : Resistance Capacitance	Pin 1–16 Pin 1–16		2.5 2		KΩ pF
V	Switch off Control Voltage for VTR Mode	Pin 4	9		10	V
I	Switch off Current for VTR Mode	Pin 4			150	μA

SIGNAL 1

Demodulated Signal.



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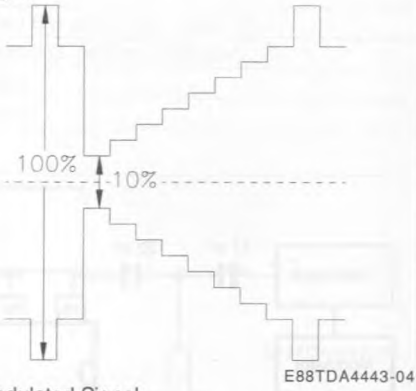
IF Signal.



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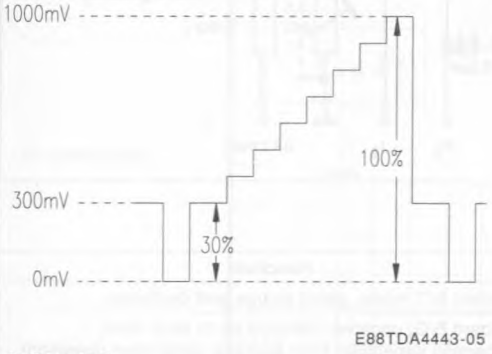
SIGNAL 2

Demodulated Signal.



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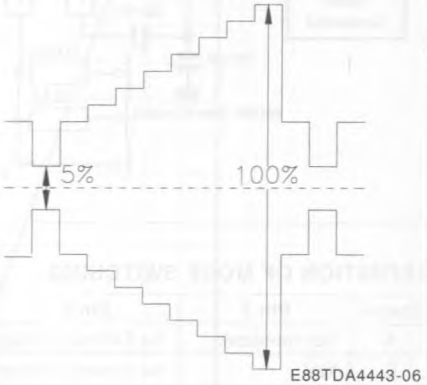

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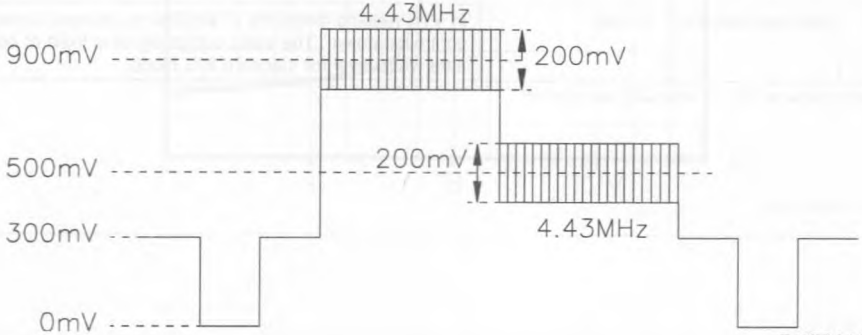
SIGNAL 3

Demodulated Signal.



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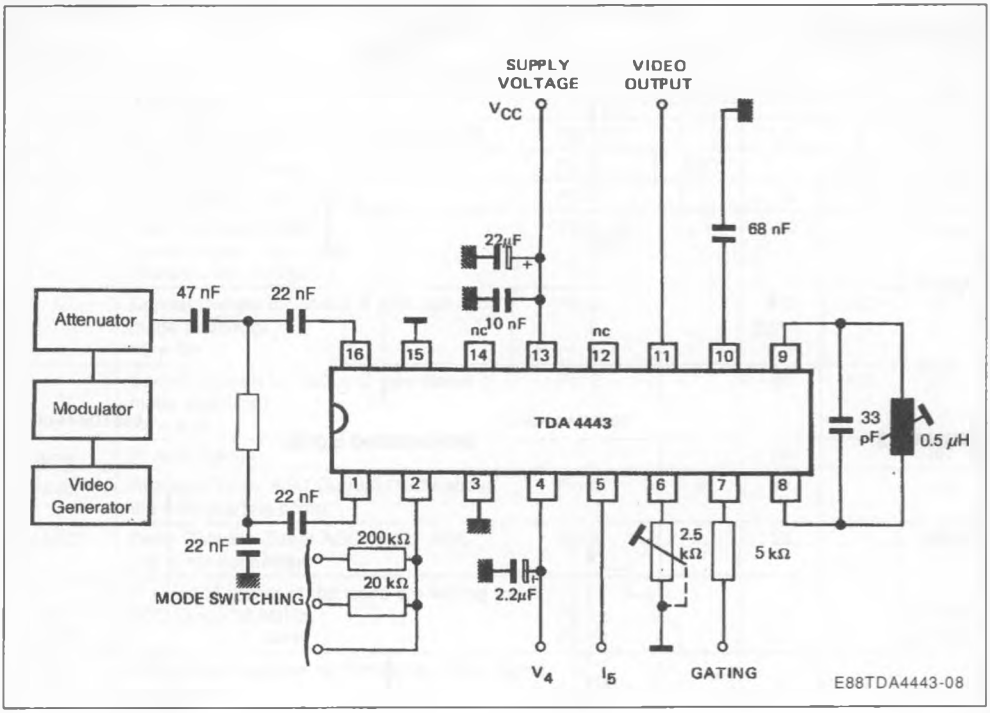
TEST CIRCUIT



DEFINITION OF MODE SWITCHING

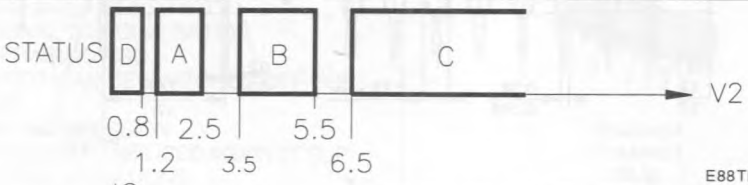
Status	Pin 2	Pin 4	Function
A	Not connected	No External Voltage	Standard B/G mode, gated charge and discharge.
B	12V High Impedance	No External Voltage	Standard B/G, ungated, charging up to sync. level, discharging dependant from average signal (peri operation).
C	12V Low Impedance	No External Voltage	At standard L ungated, charging up to peak white level, discharge dependant from average signal level, inverted polarity of the video output.
D	No Specifications	≥ 7.5V	In VTR reading mode the IF amplifier is blocked, turned gain controlled down : The video output signal is fixed at constant ultra white level for standard B/G mode.

The gating pulse at Pin 7 is internally switched off.

STATUS OF MODE SWITCHING, REFERRING TO CONTROL VOLTAGE PIN 2

Control Voltage Pin 2	Connections of Pin 2	Status	Function
(1.2 to 2.5V*)	Open	A	Standard B/G gated sync. operation.
3.0 to 5.0V	High Impedance	B	Standard B/G, no Sync, Operation
> 6.2V	Low Impedance	C	Standard L
0.0 to 0.8V	Ground	D	Standard L

* Voltage measured on Pin 2.



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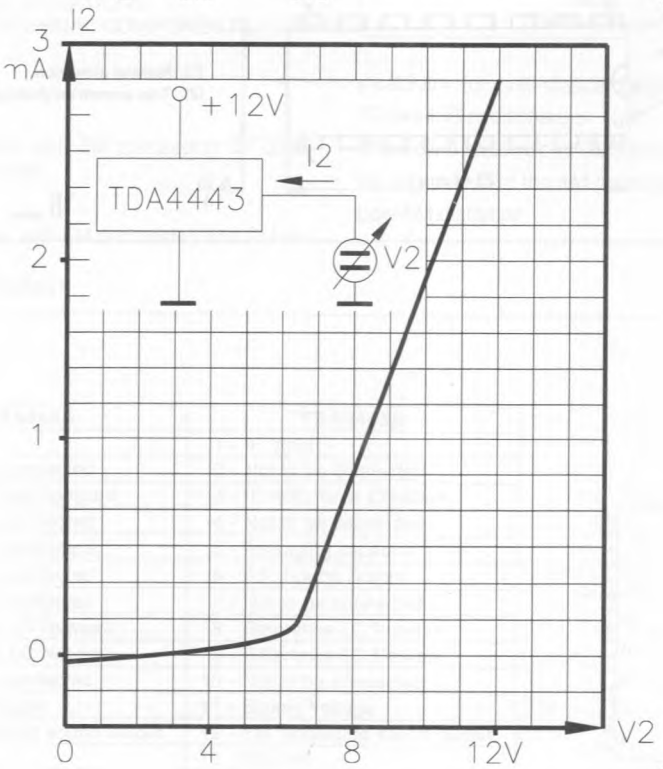

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PACKAGE MECHANICAL DATA

16 PINS– PLASTIC DIP