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## NTE1785 Integrated Circuit TV IF Amp <sup>w</sup>/Demod and AFC (For PNP Tuners)

**Description:**

The NTE1785 is an IF amplifier and demodulator circuit in a 16-Lead DIP type package designed for use in color and black and white television receivers using PNP tuners.

**Features:**

- Gain-Controlled Wide-Band Amplifier Providing Complete IF Gain
- Synchronous Demodulator
- White Spot Inverter
- Video Preamplifier with Noise Protection
- AFC Circuit which can be Switched ON/OFF by a DC Level (e.g. During Tuning)
- AGC Circuit with Noise Gating
- Tuner AGC Output (PNP Tuners)
- VCR Switch which Switches Off the Video Output (e.g. For Insertion of a VCR Playback Signal)

**Absolute Maximum Ratings:**

Supply Voltage,  $V_{11-13}$  ..... 13.2V  
 Tuner AGC Voltage,  $V_{4-13}$  ..... 12V  
 Total Power Dissipation,  $P_{tot}$  ..... 900mW  
 Operating Ambient Temperature Range,  $T_A$  ..... -25° to +60°C  
 Storage Temperature Range,  $T_{stg}$  ..... -55° to +125°C

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{11-13} = 12\text{V}$ ,  $f = 38.9\text{MHz}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage Range	$V_{11-13}$		10.2	12.0	13.2	V
IF Input Voltage for Onset of AGC (RMS Value)	$V_{1-16(rms)}$		–	100	150	$\mu\text{V}$
Differential Input Impedance	$ Z_{1-16} $	In parallel with 2pF	–	2	–	k $\Omega$
Zero-Signal Output Level	$V_{12-13}$	Note 1	–	6 $\pm$ 0.3	–	V
Top Sync Output Level	$V_{12-13}$		2.9	3.07	3.2	V
IF Voltage Gain Control Range	$G_V$		–	64	–	dB
Bandwidth of Video Amplifier	B	3dB	–	6	–	MHz

Note 1. So-called “Projected Zero Point”, e.g. with switched demodulator.

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$ ,  $V_{11-13} = 12\text{V}$ ,  $f = 38.9\text{MHz}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Signal-to-Noise Ratio	S/N	$V_i = 10\text{mV}$ , Note 2	–	58	–	dB
Differential Gain	dG		–	4	10	%
Differential Phase			–	2	10	deg.
Intermodulation, Blue		1.1MHz, Note 3	–	46	60	dB
Intermodulation, Yellow			–	46	50	dB
Intermodulation		3.3MHz, Note 4	–	46	54	dB
Carrier Signal at Video Output			–	4	30	mV
2 <sup>nd</sup> Harmonic of Carrier at Video Output			–	20	30	mV
White Spot Inverter Threshold Level			–	6.6	–	V
White Spot Insertion Level			–	4.7	–	V
Noise Inverter Threshold Level			–	1.8	–	V
Noise Insertion Level			–	3.8	–	V
External Video Switch (VCR) Switched Off	$V_{14-13}$		–	–	1.1	V
Tuner AGC Output Current Range	$I_4$		0	–	10	mA
Tuner AGC Output Voltage	$V_{4-13}$	$I_4 = 10\text{mA}$	–	–	0.3	V
Tuner AGC Output Leakage Current	$I_4$	$V_{14-13} = 11\text{V}$ , $V_{4-13} = 12\text{V}$	–	–	15	$\mu\text{A}$
Maximum AFC Output Voltage Swing	$\Delta V_{5-13}$		10	11	–	V
Detuning for AFC Output Voltage Swing	$\Delta f$	of 10V	–	100	200	kHz
AFC Zero-Signal Output Voltage (Minimum Gain)	$V_{5-13}$		4	6	8	V
AFC Switches ON	$V_{6-13}$		3.2	–	–	V
AFC Switches OFF	$V_{6-13}$		–	–	1.5	V

Note 2.  $S/N = V_O \text{ black-to-white} / V_{n(\text{rms})}$  at  $B = 5\text{MHz}$ .

Note 3.  $20 \log (V_O \text{ at } 4.4\text{MHz} / V_O \text{ at } 1.1\text{MHz}) + 3.6\text{dB}$ .

Note 4.  $20 \log (V_O \text{ at } 4.4\text{MHz} / V_O \text{ at } 3.3\text{MHz})$

**Pin Connection Diagram**



