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NTE780 Integrated Circuit TV Automatic Fine-Tuning Subsystem

Description:

The NTE780 represents the third generation of integrated circuits designed primarily for AFC (Auto-matic-Frequency-Control) applications. This device provides all of the signal-processing components needed (with the exception of the tuned-phase-detector transformer) to derive the AFT correction signals from the output of the video-if amplifier. The NTE780 is supplied in the 10-Lead TO5 style package, and operates over the temperature range of -55° to $+125^{\circ}\text{C}$.

NTE780 is functionally similar to the NTE711 but embodies a higher-gain input amplifier which provides a 20-dB improvement in sensitivity. The increased sensitivity extends the application of a proven AFT system to the low-level IF-amplifier stages in TV receivers.

Features:

- Cascode Type High-Gain Amplifier (18mV input for rated output)
- Internal Voltage Regulator
- Differential Detector
- For use with either color or monochrome
- Differential Amplifier
- Bipolar Outputs
- Wide Operating-Temperature Range: -55° to $+125^{\circ}\text{C}$

Absolute Maximum Ratings:

Device Dissipation ($T_A \leq +25^{\circ}\text{C}$), P_D 700mW
Derate Above $+25^{\circ}\text{C}$ 5.6mW/ $^{\circ}\text{C}$
Operating Ambient Temperature Range, T_{opr} -55° to $+125^{\circ}\text{C}$
Storage Temperature Range, T_{stg} -65° to $+150^{\circ}\text{C}$
Lead Temperature (During Soldering, 1/16" from Case, 10sec Max), T_L $+265^{\circ}\text{C}$

Electrical Characteristics: ($V_+ = 30\text{V}$, $T_A = +25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Device Dissipation	P_D	$R_S = 1.5\text{k}\Omega$	130	140	150	mW
Current Drain at 10.5 Volts	I_T	$V_{10} = 10.5\text{V}$	4	6.5	9.5	mA
Zener Regulated Voltage	V_{10}	$R_S = 1.5\text{k}\Omega$	10.9	11.8	12.8	V
Quiescent Operating Current	I_2		1	2	4	mA
Quiescent Operating Voltage	V_4		5	6.9	8	V
	V_5		5	6.9	8	V
Output Offset Voltage	V_{4-5}		-1	0	1	V

Electrical Characteristics (Cont'd): ($V_+ = 30V$, $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Dynamic Characteristics (As RF Amplifier)						
Input Voltage Sensitivity	V_i Sensitivity	$V_i = 18mV$	Correction Voltage Output as shown in table below.			
Input Admittance	y_{11}	$f = 45.75MHz$, $R_s = 1.5k\Omega$	–	$0.41 + j1.0$	–	mmho
Reverse Transfer Admittance	γ_{12}		–	$0 + j3.4$	–	μmho
Forward Transfer Admittance	γ_{21}		–	$24.5 - j29$	–	mmho
Output Admittance	γ_{22}		–	$0.04 + j0.9$	–	mmho

Output vs. Frequency Deviation – AFC

Correction–Control Voltage	V corr. 4	$V_i = 18mV_{RMS}$ $f_o = MHz$ as indicated	% of V_{10}		% of V_{10}	
		45.750 – 0.030	85	–	–	V
		45.750 + 0.030	–	–	25	V
		45.750 – 0.900	80	–	–	V
		45.750 + 0.900	–	–	35	V
		45.750 – 1.500	–	–	80	V
		45.750 + 1.500	35	–	–	V
	V corr. 5	45.750 – 0.030	–	–	25	V
		45.750 + 0.030	85	–	–	V
		45.750 – 0.900	–	–	–	V
		45.750 + 0.900	80	–	–	V
		45.750 – 1.500	35	–	–	V
		45.750 + 1.500	–	–	80	V

Pin Connection Diagram
(Top View)



