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NTE7057 Integrated Circuit TV SIF/AFT/RF AGC

Description:

The NTE7057 is an integrated circuit in a 12-Lead SIP type package designed for providing a high performance SIF for a TV. This device adopts a quasi-parallel inter-carrier detection system for good sound reproduction.

Features:

- 3-Stage Inter-Carrier Amplifier and Inter-Carrier Detector
- High Response Speed Peak AGC using Double AGC Time Constant
- Single AFT Output
- Reverse AGC
- Carrier Synchronous Video Detector
- White Noise Inverter Circuits

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Supply Voltate, V_{CC} 15V
 Power Dissipation, P_D 890mW
 Derate Above 25°C 7.12mW/ $^\circ\text{C}$
 Operating Temperature Range, T_{opr} -25° to $+75^\circ\text{C}$
 Storage Temperature Range, T_{stg} -55° to $+150^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = 9\text{V}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Stage						
Supply Voltage	V_{CC}		8.1	9.0	9.9	V
Supply Current	I_{CC}		20	30	40	ma
Terminal Voltage	V_1		3.3	4.5	5.7	V
	V_3		3.6	4.0	4.4	V
	V_4		3.6	4.0	4.4	V
	$V_5(1)$	SW: A	8.8	-	-	V
	$V_5(2)$	SW: B	-	-	0.1	V
	V_9		5.6	6.2	6.8	V
	V_{10}		5.6	6.2	6.8	V
	V_{11}		2.5	3.0	3.5	V
	V_{12}		4.0	4.5	5.0	V

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$, $V_{CC} = 9\text{V}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
AC Stage						
Input Sensitivity	V_{INmin}	Note 1	-	75	180	μV_{rms}
Maximum IF Input Voltage	V_{INmax}		74	-	-	mV_{rms}
IF AGC Range	ΔA	Note 2	50	60	-	dB
Differential Gain	DG	Note 3	-	-	10	%
Differential Phase	DP	Note 3	-	-	5	deg.
Video DC Voltage	V_{12}	Note 4	4.0	4.5	5.0	V
Sync. Tip Level	V_{SYNC}	Note 5	2.15	2.35	2.55	V
Video Output Level	V_{OUT}	Note 6	1.45	-	2.05	V
White Noise Threshold	V_{WHT}	Note 7	-	5.2	-	V
White Noise Clamp Level	V_{WCL}	Note 7	-	3.5	-	V
Carrier Suppression	CL	Note 8	40	-	-	dB
2 nd Harm. Suppression	$I_{2^{nd}}$	Note 9	40	-	-	dB
AFT Sensitivity	$\Delta F/\Delta V$	Note 10	-	-	37	kHz/V
AFT Output	Lower	V_U	0	-	0.3	V
	Upper	V_L	8.0	-	9.0	V
920kHz Beat	I_{920}	Note 11	30	38	-	dB

- Note 1. PIF IN: $f = 58.75\text{MHz}$, $f_m = 1\text{kHz}$, 30% AM Modulation.
Adjust PIF input level so that the detected output of P12 with high impedance probe will be $6V_{P-P}$ and measure the input level.
- Note 2. Measure PIF Input Level V_1 , V_2 same as Note 1.
Apply P7 = 9V at V_1
Apply P7 = 3V at V_2
 $\Delta A = 20\log(V_1/V_2)$ (dB)
- Note 3. Gain Reduction = 40dB.
PIF IN: CW $f = 58.75\text{MHz}$, APL 50%, 87.5% AM Modulation.
(1) Setting ATT so that the sync tip level of P12 will be 2V DC.
(2) Measure DG and DP.
- Note 4. PIF IN: No Signal.
Measure output level of P12.
- Note 5. PIF IN: $f = 58.75\text{MHz}$ CW 15mV_{rms} .
Measure DC level of P12.
- Note 6. PIF IN: $f = 58.75\text{MHz}$, APL 100% 15mV_{rms} .
Measure detected output voltage.
- Note 7. PIF IN: $f = 58.75\text{MHz} \pm 10\text{MHz}$ variable or sweep 15mV_{rms} .
Measure DC level of P12.
- Note 8. PIF IN: 58.75MHz , 1kHz , 87.5% AM Modulation 15mV_{rms} .
(1) Setting AGC so that output AC level of P12 will be $2V_{P-P}$.
(2) Measure CL of P12 after setting 0% AM of SG.
- Note 9. Measure $I_{2^{nd}}$ carrier of P12 same as Note 8.
- Note 10. PIF IN: SG = VARIABLE, 15mV_{rms} CW.
(1) P1 DC voltage will be 4.5V.
(2) Apply SG signal to P3 and measure P1 voltage change.

Note 11. SG1: 58.75MHz (P: Picture) $15mV_{rms}$.

SG2: 54.25MHz (S: Sound) $-6dB$ of SG1

SG3: 55.17MHz (C: Chroma) $-6dB$ of SG1

(1) Setting AGC so that the output tip level of P12 will be $2V_{P-P}$.

(2) Measure the level difference (dB) between C-Level and 920kHz Level.

Pin Connection Diagram
(Front View)

