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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°C unless otherwise specified)

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

Electrical Characteristics: (T_A = +25°C, V_{CC} = 9V 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°C, V_{CC} = 9V unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
AC Stage						
Input Sensitivity	V_{IN}min	Note 1	–	75	180	μV_{rms}
Maximum IF Input Voltage	V_{IN}max		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
2nd Harm. Suppression	I 2nd	Note 9	40	–	–	dB
AFT Sensitivity	$\Delta F/\Delta V$	Note 10	–	–	37	kHz/V
AFT Output Lower	V_U		0	–	0.3	V
AFT Output Upper	V_L		8.0	–	9.0	V
920kHz Beat	I_{920}	Note 11	30	38	–	dB

Note 1. PIF IN: f = 58.75MHz, fm = 1kHz, 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 = 58.75MHz, 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 = 58.75MHz CW $15mV_{rms}$.
Measure DC level of P12.

Note 6. PIF IN: f = 58.75MHz, APL 100% $15mV_{rms}$.
Measure detected output voltage.

Note 7. PIF IN: f = 58.75MHz ±10MHz 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 2nd 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)