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NTE15013
Integrated Circuit
TV VIF Amp, Phase Lock Loop (PLL)

Description:
The NTE15013 is an integrated circuit in a 22–Lead DIP type package designed for color TV video IF signal processing circuits.

Features:
- High Density One–Chip Integration of Video IF Amplifier, PLL Detector, Video Pre–Amplifier, AGC and AFC Circuits
- PLL True Synchronous Detector Incorporates VCO
- Wide Pull–In Range by Time–Constant Auto–Changer of PLL Loop–Filter
- Selective Transformerless AFC Circuit

Absolute Maximum Ratings:
Supply Voltage, V_{CC} 14.4V
Circuit Voltage
$V_{1–8,16}/V_{9–8,16}$ 0V
$V_{2–8,16}/V_{9–8,16}$ 0V
$V_{3–8,16}/V_{9–8,16}$ 0V
$V_{11–8,16}/V_{9–8,16}$ 0V
$V_{19–8,16}/V_{9–8,16}$ 0V
Circuit Voltage
I_{10} . . . . . –10/0.5mA
I_{12} . . . . . –10/1mA
I_{17} . . . . . –2/5mA
Power Dissipation (T_A = +70°C), P_D 1100mW
Operating Ambient Temperature Range, T_{opr} . . . . . –20° to +70°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C

Electrical Characteristics: (V_{CC} = 12V, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
IF Amplifier Detector						
Video Detector Output	V_O	f = 58.75MHz, V_i = 80dBμ, m = 87.5%	1.8	2.05	2.3	$V_{P–P}$
		f = 58.75MHz, V_i = 80dBμ, m = 110%	2.1	2.6	3.1	$V_{P–P}$
Input Sensitivity	$S_{(IN)}$	V_O = –3dB	51	55	60	dBμ
Maximum Allowable Input	$V_{I9max)}$		101	104	–	dBμ
Differential Gain	DG	f = 58.75MHz, V_i = 80dBμ, m = 87.5%	–	2	6	%
		f = 58.75MHz, V_i = 80dBμ, m = 110%	–	5	13	%
Differential Phase	DP	f = 58.75MHz, V_i = 80dBμ, m = 87.5%	–	2	5	deg
		f = 58.75MHz, V_i = 80dBμ, m = 110%	–	5	12	deg
Output Voltage (SIF)	V_O	P/S = 20dB	98	101	104	dBμ

Electrical Characteristics (Cont'd): (V_{CC} = 12V, T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
AGC Circuit						
RF AGC Voltage Gain	G_V	f = 10kHz, V_i = 10mV	33	37	41	dB
AFC Circuit						
Phase Detector Sensitivity		R_L = 30Ω/39kΩ	28	35	45	mV/kHz
AFC Center Voltage	V_{19}	R_L = 30kΩ/39kΩ	5.3	6.6	7.3	V
VCO Circuit						
Maximum Variable Range	Δf_V	V_{18} = 2V	0.85	1.1	–	MHz
		V_{18} = 3V	–	–1.6	–1.3	MHz
Control Sensitivity	β		2.9	3.3	3.7	mV/kHz
APC Circuit						
APC Pull–In Range	f_{APC}	APC Filter SW is set to OFF	+0.8	+1.0	+1.5	MHz
			–2.5	–2.0	–1.7	MHz
Serial Characteristics						
Circuit Current	I_9		45	54	68	mA
	I_{15}		7	9	12	mA

Pin Connection Diagram