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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 ($T_A = +70^\circ\text{C}$), P_D	1100mW
Operating Ambient Temperature Range, T_{opr}	-20° to +70°C
Storage Temperature Range, T_{stg}	-55° to +150°C

Electrical Characteristics: ($V_{CC} = 12V$, $T_A = +25^\circ\text{C}$ unless otherwise specified)

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

Electrical Characteristics (Cont'd): ($V_{CC} = 12V$, $T_A = +25^{\circ}C$ 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		$R_L = 30\Omega/39k\Omega$	28	35	45	mV/kHz
AFC Center Voltage	V_{19}	$R_L = 30k\Omega/39k\Omega$	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

