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NTE1827 Integrated Circuit VIF & SIF Circuit for TV/VCR

Description:

The NTE1827 is an IC containing the VIF section and SIF section on a single chip in the 20-Lead DIP package. The use of the small-sized package serves to make VCR tuner units smaller.

Functions:

- VIF section: VIF AMP, Video Det, Peak IF AGC, B/W Noise Canceller, RF AGC, AFT, Video Mute.
- SIF section: SIF Limiter Amp, FM Det, SND Mute.

Features:

- High-Gain VIF Amp Requiring No Preamp
- Non-Adjusting can be Attained by using a Ceramic Discriminator because of FM Detection being Quadrature Detection.
- Possible to Mute Video, Sound for VCR.
- Small-Sized Package.
- Minimum Number of External Parts Required.
- Operates from 9V Supply Voltage

Operating Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$, $f_s = 54.25\text{MHz}$ (VIF))

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Circuit Current	I_{17}		44	55	73	mA
Maximum RF AGC Voltage	V_{IOH}		8.5	9.0	9.5	V
Minimum RF AGC Voltage	V_{IOL}		–	–	0.5	V
Quiescent Video Output Voltage	V_{11}		4.5	6.5	7.0	V
Input Sensitivity	V_i	$f_m = 400\text{Hz } 40\%\text{AM}$, $V_o = 0.8V_{p-p}$	30	36	42	dBu
AGC Range	GR	$f_m = 15\text{kHz } 78\%\text{AM}$, $V_o = \pm 1\text{dB}$	60	68	–	dB
Maximum Allowable Input	V_{imax}	$f_m = 15\text{kHz } 78\%\text{AM}$, $V_o = \pm 1\text{dB}$	100	–	–	mV _{rms}
Video Output Amplitude	$V_{o(16)}$	$V_i = 10\text{mV}_{rms}$, $f_m = 15\text{kHz } 78\%\text{AM}$	1.9	2.2	2.5	V_{pp}
Output S/N	S/N	$V_i = 10\text{mV}_{rms}$ CW	47	55	–	dB
Carrier Leakage	CL	$V_i = 100\text{mV}_{rms}$, $f_m = 15\text{kHz } 78\%\text{AM}$	50	57	–	dB
Maximum AFT Voltage	V_{IIH}	$V_i = 10\text{mV}_{rms}$ SWEEP	11	11.5	–	V

Operating Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$, $f_s = 54.25\text{MHz}$ (VIF))

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Minimum AFT Voltage	V_{iIL}	$V_i = 10\text{mV}_{\text{rms}}$ SWEEP	–	0.4	1.0	V
AFT Detection Sensitivity	SF	$V_i = 10\text{mV}_{\text{rms}}$ SWEEP	50	88	–	mV/kHz
White Noise Threshold Level	V_{WTH}	$V_i = 10\text{mV}_{\text{rms}}$ SWEEP	6.4	6.8	7.2	V
White Noise Clamp Level	V_{WCL}	$V_i = 10\text{mV}_{\text{rms}}$ SWEEP	4.2	4.6	5.0	V
Black Noise Threshold Level	V_{BTH}	$V_i = 10\text{mV}_{\text{rms}}$ SWEEP	1.9	2.2	2.5	V
Black Noise Clamp Level	V_{BCL}	$V_i = 10\text{mV}_{\text{rms}}$ SWEEP	3.8	4.2	4.6	V
SIF Output Signal Voltage	$V_{OS(16)}$	P/S = 20dB	70	130	210	mV_{rms}
Frequency Characteristic	f_c	–3dB	5	7	–	MHz
Differential Gain	DG	$V_i = 10\text{mV}_{\text{rms}}$ 87.5% VIDEOMOD	–	–	4	%
Differential Phase	DP	$V_i = 10\text{mV}_{\text{rms}}$ 87.5% VIDEOMOD	–	–	3	deg
Input Resistance	r_i		–	1.5	–	kohm
Input Capacitance	c_i		–	3.5	–	pF
SIF Limiting Voltage	V_{ilim}	–3dB	–	200	400	μV_{rms}
Detection Output Voltage	$V_{O(3)}$	$V_i = 100\text{mV}_{\text{rms}}$, $f_m = 400\text{Hz}$, $\Delta f = \pm 25\text{kHz}$	450	650	850	mV_{rms}
Total Harmonic Distortion	THD(3)	$V_i = 100\text{mV}_{\text{rms}}$, $f_m = 400\text{Hz}$, $\Delta f = \pm 25\text{kHz}$	–	0.5	1.0	%
AM Rejection	AMR	$V_i = 100\text{mV}_{\text{rms}}$, $f_m = 400\text{Hz}$, $\Delta f = \pm 25\text{kHz}$, 30%AM	50	60	–	dB

Pin Connection Diagram

