

LA 7670 : Features & Functions

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[VIF]

- * PLL type video detector for the high picture & sound quality
- * High gain VIF amp (Pre-amp unnecessary)
- * High speed AGC
- * Built in APC time constant SW

[SIF]

- * Audio IN/OUT at same time
- * Video/Audio simultaneous muting, or audio-only muting possible

[AV SW]

- * INT/EXT AV SW

Delay Line	Video EXT, Audio EXT	SW Condition
OFF	IN	D
OFF	EXT	C
ON	EXT	B
ON	IN	A

[OSD]

- * RGB 3 input
- * RGB Liner amp (-6dB Input:2v-5v)
- * Fast blanking (With B IN)

[CHROMA]

- * Built in ACC filter, Killer filter
- * Built in carrier filter

[VIDEO]

- * BlackExpansion
- * DC restoration compensation
- * Built in Delay Line
- * Wide band width (9MHz): Delay Line short
- * A quadratic differentiation circuit allowing soft video tone operation also incorporated
- * S Input for VCR
- * DC restoration variable (by external circuit)

[DEFLECTION]

- * Hor. and Vert. sync are no-adjustable
- * Dual AFC system with excellent horizontal noise characteristics
- * Y-sync sensitivity external adjustable
- * Vertical size is constant with no-signal (60Hz constant frequency)
- * High stability for copy guard tape (macrovision)
- * High stability for skew of VCR



Electrical Characteristics at $T_a=25^\circ\text{C}$, $V_{CC}=V_{EE}=V_{11}=9\text{V}$, $I_{CC}=I_{EE}=13\text{mA}$

			min	typ	max	unit
[VIF] $f_p=5.7\text{MHz}$						
Video Detector DC Output Voltage-1	V_{e1}	Quiescent	4.2	4.6	5.0	V
AFT Output Voltage	V_{e2}	Quiescent	2.8	4.4	5.8	V
Maximum RFACC Control Voltage	V_{e2H}	CW=85dB μ , RFACC VR=min	7.6	8.0	8.3	V
Minimum RFACC Control Voltage	V_{e2L}	CW=85dB μ , RFACC VR=max	0	0.01	0.3	V
VIF Input Sensitivity	V_i	VIF input level at which video output is 0.8V $_{r-r}$ (40 μ MOD).	30	36	42	dB μ
VIF AGC Control Range	GR	Maximum input ($V_o=0.8V_{r-r}$) -input sensitivity	60	68		dB
VIF Maximum Permissible Input	V_i	VIF input level at which video output is +1dB.	100	107		dB μ
Video detector Output Differential Gain	V_{o11}	$V_i=80\text{dB}\mu$, AM=78 μ MOD	1.7	2.0	2.3	V $_{r-r}$
Differential Phase	DP	$V_i=80\text{dB}\mu$, 87.5%, VideoMOD		3.0	10	deg
Video S/N	S/N	Same as above		3.0	10	dB
Sync-Tip level	V_{e1} TIP	$V_i=80\text{dB}\mu$ (AM/78 μ MOD)/CW	47	53		dB
Video Frequency Characteristic	f_c	CW=80dB μ	2.0	2.3	2.6	V
VIF Intermodulation	I_{320}	Frequency at which video output is down 3dB	5.0	7.0		MHz
Maximum AFT Control Voltage	V_{e2H}	V3.58MHz/1920KHz, $V_i=80\text{dB}\mu$	35	42		dB
Minimum AFT Control Voltage	V_{e2L}	CW=80dB μ , frequency change	8.0	8.6	8.9	V
AFT Detector Sensitivity	Sf	Same as above	0.1	0.4	0.9	V
AFT Switch Operation Start Voltage	$V_{AFT SW}$	Test with sweep signal	30	45	65	mV/KHz
Black Noise Threshold level	V_{BTH}	Same as above	0.5	1.2		V
White Noise Threshold level	V_{WTH}	Same as above	1.2	1.5	1.8	V
APC Pull-in Range(U)1	f_{PU-1}		0.45	0.8		MHz
APC Pull-in Range(L)1	f_{PL-1}			-0.8	-0.45	MHz
APC Pull-in Range(U)2	f_{PU-2}		1.0	1.7		MHz
APC Pull-in Range(L)2	f_{PL-2}			-1.7	-1.0	MHz
VCD Maximum Variable Range	Δf_u		1.2	2.1		MHz
VCD Control Sensitivity	β			-2.1	-1.2	MHz
			1.4	2.8	5.6	KHz/mV
[SIF, AF] $f_s=4.5\text{MHz}$						
SIF Input Limiting Sensitivity	$V_i(\text{lim})$	SIF input level at which detection output is down		5	52	dB μ

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			min	typ	max	unit
FM Detector Output Voltage	V_{DO}	$V_i=100\text{dB}\mu, \Delta f=\pm 25\text{kHz}$	380	550		mVrms
FM Detector Output Distortion	THD	$V_i=100\text{dB}\mu, \Delta f=\pm 25\text{kHz}$		0.4	1.0	%
AM Rejection	AMR	$V_i=100\text{dB}\mu$ (FM: $\Delta f=\pm 25\text{kHz}$)/(AM: 30%)	43	56		dB
AF Amp Voltage Gain	G_{AF}	$V_i=100\text{mVrms}, f=400\text{Hz}$	18	20	22	dB
AF Maximum Output Voltage	$V_{O6 \text{ max}}$	Output level at which AF Amp Output distortion is 10%.	2.0	2.8		Vrms
AF Electronic Attenuator Range	ATT	$V_i=200\text{mVrms}, f=400\text{Hz}$	70	80		dB
[AV SW]						
Video Detector DC Output Voltage-2	V_{2a}	Quiescent		3.3		V
Internal Video Input Voltage	V_{4z}	Quiescent		4.8		V
External Video Input Voltage	V_{4o}	Quiescent		4.8		V
External Audio Input Voltage	V_3	Quiescent		5.6		V
[Black Expansion]						
Black Expansion Ratio	ΔV_{BL}					%
Ratio of DC Restoration Compensation	ΔV_{RC}					%
[Video]						
Soft Video Tone Variable Range	Δ_{Soft}	$f=2\text{MHz}, 100\text{mV}_{r-r}$, Video Tone VR: 4V-0V	-6	-4	-2	dB
Sharp Video Tone Variable Range	Δ_{Sharp}	$f=2\text{MHz}, 100\text{mV}_{r-r}$, Video Tone VR: 4V-9V	3	6	9	dB
Video Voltage Gain	G_V	$f=100\text{kHz}, 100\text{mV}_{r-r}$ Contrast VR: 9V, Video Tone VR: 4V	17	20	23	dB
Contrast Control Center	C_{CEN}	$f=100\text{kHz}, 100\text{mV}_{r-r}$ Contrast VR: 9V	0.45	0.57	0.69	V _{r-r}
Contrast Control Variable Range	ΔC_V	$f=100\text{kHz}, 100\text{mV}_{r-r}$ Contrast VR: 3V-9V	20	22	24	dB
Bright Control	BR_{VI} BR_{CEN} BR_L	Bright VR: 2V Bright VR: 4.5V Bright VR: 7V	5.8 2.6	3.1	3.6	V V V
Frequency Response 1	f_{V1}	Contrast VR: 9V at delay line short. Video Tone VR: 4V, 3dB down	7	9		MHz
Frequency Response 2	f_{V2}	Contrast VR: 9V	3	5		MHz

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			min	typ	max	unit
[On Screen Display]						
Blanking Pulse			0.7	1.0	1.3	V
Threshold level						
-Y Out DC Voltage		B-In:2V	2.7	3.0	3.3	V
R.G.B Input			1.7	2.0	2.3	V
Threshold level						
R.G.B. Output DC Voltage		Input:3V		5.5		V
		Input:4V		6.0		V
		Input:5V		6.5		V
[Chroma]						
Color Control Minimum	$E_c \text{ min}$	Color VR:0V Contrast VR:9V			30	mV _{r-r}
Color Control Center	$W_c \text{ cen}$	Color VR:4.5V Contrast VR:6V	1.2	1.5	1.8	V _{r-r}
Color Contrast	C_c	Color VR:B-Y=2.5V _{r-r} Contrast VR:3V-9V	18.5	20	21.5	dB
Variable Range						
Demodulator Output	V_{c-r}	Burst signal only	4.7	5.2	5.7	V
DC Voltage		Color VR:0V				
Demodulator Output	ΔV_{c-r}	Same as above	-30	0	30	mV
Offset Voltage						
Residual Carrier	E_{car}				0.03	V _{r-r}
APC Pull-in Range	Δf_{APC}		±500			Hz
ACC Amplitude	ACC_{MIN}	+6dB	-3	0	+3	dB
Characteristics	ACC_{MAX}	-20dB	-7		+2	dB
ACC Phase Characteristics	ACC_{MIN}	+6dB	-3	0	+3	deg
	ACC_{MAX}	-20dB	-7		+7	deg
Tint Control Center	T_{cen}	Tint VR:4.5V Color VR:4.5V Contrast VR:6V	-9	+3	+15	deg
Tint Variable Range	ΔT	Tint VR:0V-4.5V-9V Color VR:4.5V Contrast VR:6V	±40			deg
Demodulator Output Ratio	R/B_N		0.81	0.9	0.98	
	G/B_N		0.24	0.3	0.38	
Demodulator Phase Angle	$\Delta R/B_N$		99	105	111	deg
	$\Delta G/B_N$		-130	-120	-110	deg
Killer Operating Point	E_{KONH}					dB
Maximum Demodulator	$E_c \text{ max}$	Color VR:9V Contrast VR:9V	4.0	5.0		V _{r-r}
Output						
[Deflection]						
Sync Separator Input	$V_s \text{ DC}$		6.0	6.3	6.6	V
DC level						
Vertical Maximum	$T_v \text{ max}_{\text{H}}$			297		H
Running Period						
Vertical Minimum	$T_v \text{ min}_{\text{H}}$			25		H

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			<u>min</u>	<u>typ</u>	<u>max</u>	<u>unit</u>
Vertical Blanking Pulse Voltage	$V_{II\ VBL}$		7.0	7.5		V
Vertical Output Pulse Width	$P_W\ V_{OUT}$			8.5		H
Vertical Output Pulse Voltage	$V_{OUT\ H}$			6		V
	$V_{OUT\ M}$			4.6		V
	$V_{OUT\ L}$				0.3	V
Vertical External Trigger Load Resistor	R_{TR}			2.5	3.6	Kohm
Vertical Automatic Synchronizer Stop Voltage	V_{SAS}			1.9	2.4	V
Vertical Operation Start Voltage	S_{VV}				4	V
Horizontal Free Running Frequency Deviation	Δf_H	Deviation from 15.734KHz	-70	30	130	Hz
Horizontal Sync Pull-in Range	$\Delta f_H\ Pull$	Deviation from 15.734KHz		± 400		Hz
Horizontal Operation Start Voltage	S_{HV}			4.3	5	V
AFC II FBP Peak Voltage	FBP_H		4.1	4.6	5.1	V
VCR SW Input Voltage	YCR			1.3	2.0	V

OSD (On Screen Display) CHARACTERISTIC

(1) INPUT THRESHOLD LEVEL

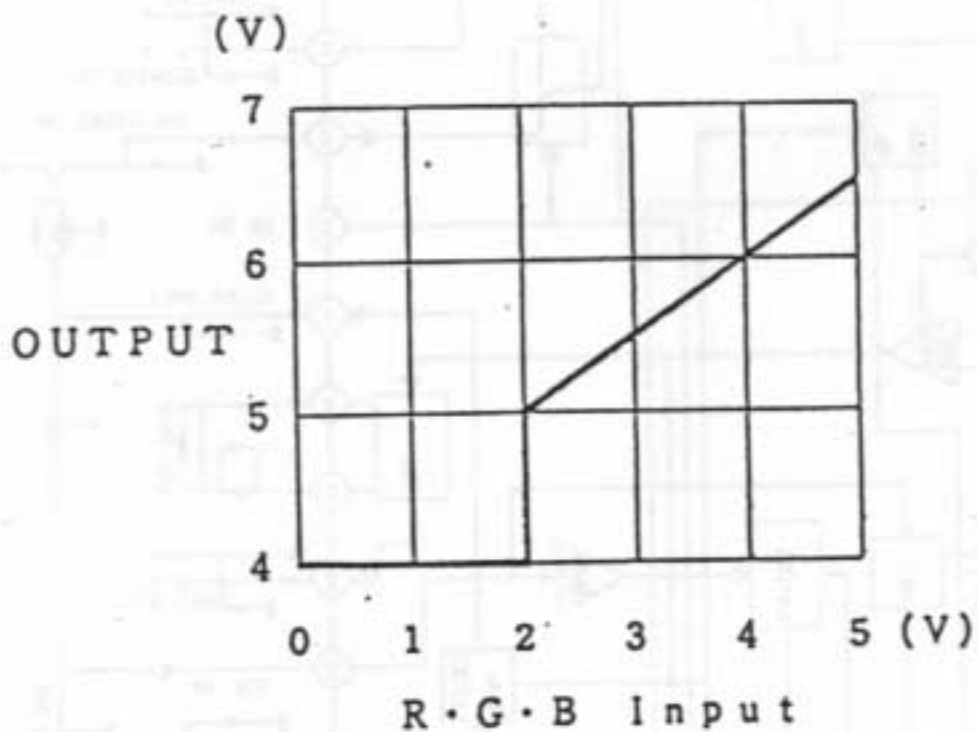
- Fast Blanking --- 1 V
- R·G·B Input --- 2 V

(2) -Y OUT

- -Y Output DC Voltage --- 3 V
(at B-Input > 1 V)

(3) R-Y, G-Y, B-Y OUT

R·G·B AMP CHARACTERISTIC



670(NTSC 1CHIP 1C) TENTATIVE (USA)

