TOSHIBA INTEGRATED CIRCUIT
TECHNICAL DATA

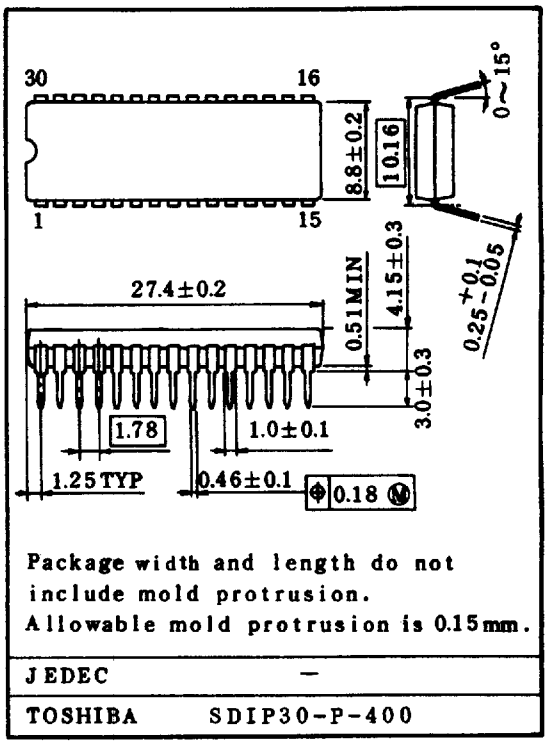
TA8631N

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT
SILICON MONOLITHIC

TENTATIVE

LINEAR RGB PROCCESSOR FOR A MONITOR/ DISPLAY APPLICATION

Unit in mm



Package width and length do not include mold protrusion.
Allowable mold protrusion is 0.15mm.

JEDEC	—
TOSHIBA	SDIP30-P-400

The TA8631N is a linear RGB signal proccessor which is designed for a monitor or a display application. The drightness control is possible in both CRT driving circuits, a direct couplling circuit or an AC couplling circuit.

- 60MHz RGB signal band width (Typ.)
- AC couplling CRT driving circuit (peak clamp construction): Adjustable Blanking Pulse ampltude and Clamping pulse input are applied.
- Direct couplling CRT driving circuit: Pedestal clamp and equiped DC feedback circuit are applied.

- Contrast Control
- Blanking pulse amplitude adjustment
- Clamping circuit
- DC feedback (DC restoration)
- Brightness Control
- ACL circuit

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}-V_{EE}	15	V
Terminal 2 Voltage	V_2	0~V_{CC}	V
Terminal 6,9,12 and 7,10,13 Voltage	V_6,V_9,V_{12} V_7,V_{10},V_{13}	V_{EE}~V_{CC}	V
Terminal 4,8 Voltage	V_{CC}-V_4 V_{CC}-V_8	10	V
Terminal 16,21,25 Voltage	V_{16},V_{21},V_{25}	V_{EE}~5	V
Terminal 17,22,27 Cource Current	I_{17},I_{22},I_{27}	10	mA
Terminal 17,22,27 Voltage	V_{17},V_{22},V_{27}	V_{CC}	V
Terminal 20,23,28,29 Voltage	V_{20},V_{23},V_{28},V_{29}	0~5	V
Terminal 30 Voltage	V_{30}	0~V_{CC}	V
Power Dissipation	P_D MAX	1.6	W
Operating Temperature	Topr	-20~65	°C
Storage Temperature	Tstg	-55~150	°C

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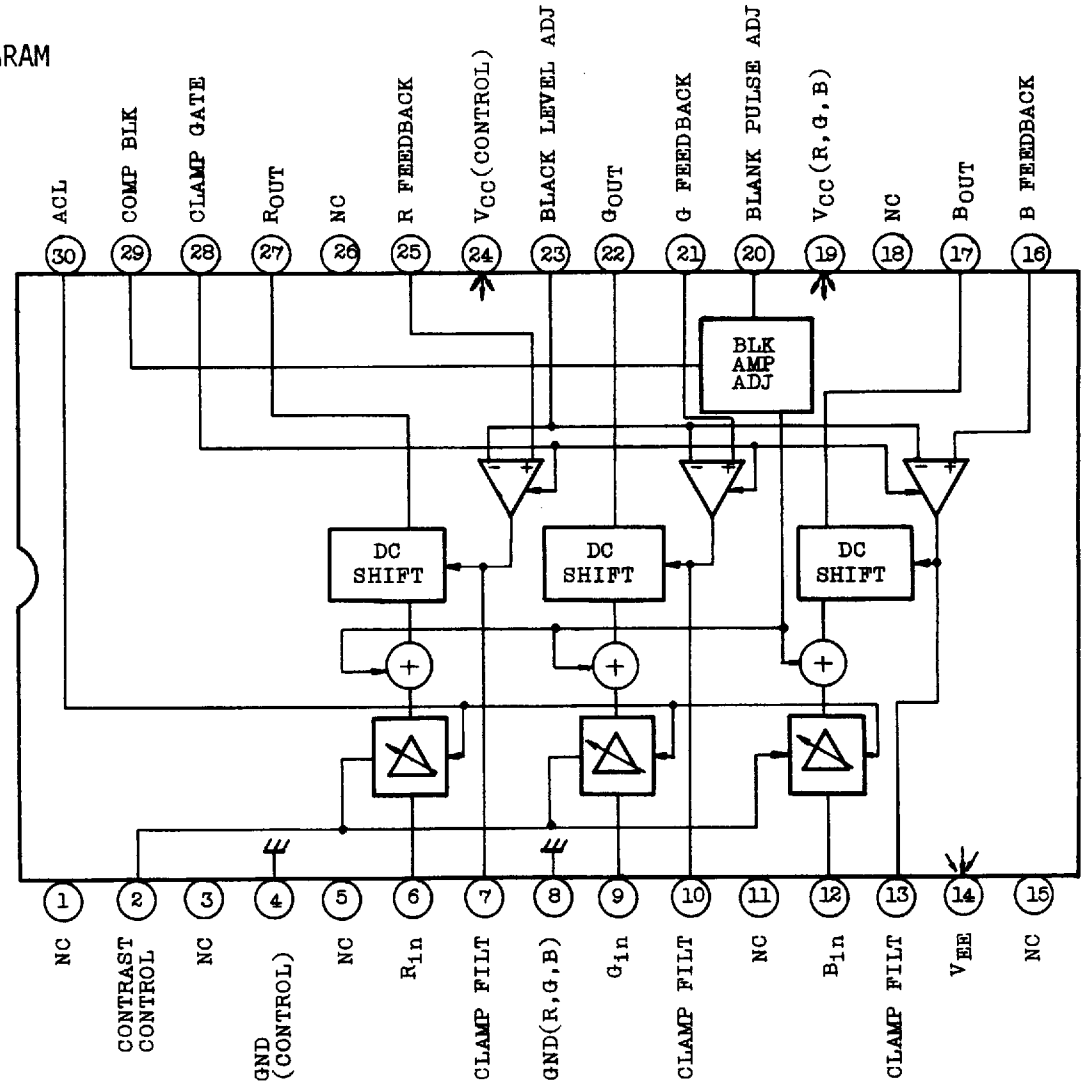
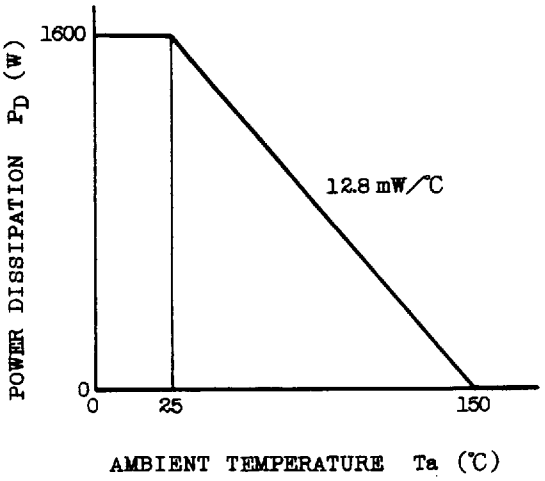
BLOCK DIAGRAM



POWER DISSIPATION



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ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25°C±1.5°C, V_{CC}=8V, V_{EE}=-5V)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Recommendable Supply Voltage	#19.24	V_{CC}	1		7.2	8.0	8.8	V
	#14	V_{EE}			-5.5	-5.0	-4.5	
Supply Current	#24	I_{CC24}	1	Note 1	7	9	13	mA
	#19	I_{CC19}			34	45	64	
	#14	I_{EE14}			30	39	56	
Input Signal Dynamic Range		V_{6+},V_{9+},V_{12+}	1	Note 2	1.4	1.5	1.6	V
		V_{6-},V_{9-},V_{12-}			-0.8	-1.0	-1.2	
		V_6, V_9, V_{12}			-	0.7	1.0	Vp-p
Output Amplitude		V_O	1	Note 2	-	5.0	-	Vp-p
Maximum Gain		Gm	1	Note 3	11.5	12.5	13.5	dB
Contrast Range		R_{CONT}	1	V_2=6V→V_2=1V	12.0	-	-	dB
Contrast Tracking		TR_{CONT}	1	Note 4	-	±2	±3	dB
Blanking Pulse Adjustable Range		$V_{BLK\ MAX}$	1	Note 5	-0.1	0	0.1	Vp-p
		$V_{BLK\ MIN}$			0.8	1.0	1.2	
Blanking Pulse Tracking		TR_{BLK}	1	Note 6	-	-	±50	mVp-p
Blanking Pulse	"H" level	$V_{H\ BLK}$	1		3.5	-	V_{CC}-2	V
	"L" level	$V_{L\ BLK}$			-0.4	-	2.5	
Blanking Pulse Delay Time		τ_{blk}	1		-	50	100	nsec
Blanking Pulse Range		R_{BLK}	1	Note 5	1.9	2.2	2.5	V
Black Level Control Range		R_{BL}	1	Note 7	0.1	-	4.0	V
RGB Black Level Difference		ΔV_{BL}	1	Note 8	-	-	±50	mV
Black Level Temperature Drift		ΔT_{BL}	1	Note 9	-	0	±1	mV/°C
ACL Threshokd Voltage Gain		$V_{TH\ ACL}$ G_{ACL}	1	Note 10	5.9	6.3	6.6	V dB/V
R.G.B Freq. Response		f_{BW}	1	Note 11	-	45	-	MHz
Response Ripple		R	1	0~10MHz	-	-	±0.5	dB
				10MHz~30MHz	-	2.5	3.5	

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ELECTRICAL CHARACTERISTICS

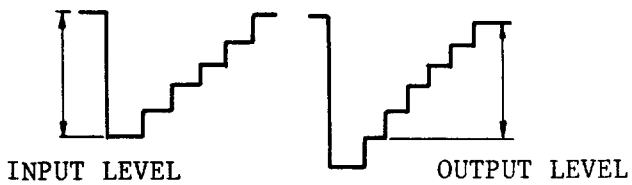
(Unless otherwise specified, Ta=25°C±1.5°C, V_{CC}=8V, V_{EE}=-5V)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
R.G.B Gain Difference	G	1	Contrast Max.	-	±5.0	±15	%
			0~10MHz				
			10MHz~30MHz	-	±20	±25	
Cross Talk Between Channels	CT	1	0~10MHz	-	-	-40	dB
			10MHz~30MHz	-	-	-25	
Contrast Deviation at High Frequency	D_{CONT}	1	Contrast -12dB	-	±2	±3	dB
			0~10MHz				
			10MHz~30MHz	-	±3	-	
R.G.B Output Impedance	Z_o	1		-	50	100	Ω

Note 1 ABL:8V, CONTRAST:8V, Clamp Gate:0V, Comp Blank:0V
Apply 3.5V D.C. to the filter terminals.

Note 2 INPUT:5 steps, Staircase
ABL:8V
Contrast:8V
Clamp Gate:5V

Pulse Input



Note 3 INPUT:0.5Vp-p, 500kHz Sinusoldal wave.
ABL:8V
Contrast:8V
Clamp Gate:4.0V
Comp Blank:2.0V
Black ADJ:3.0V

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Note 4 Conditions are the same as Note 3 except contrast control voltage.
Set contrast control so that the contrast of R channel will be -12dB of the maximum.
Measure contrast tracking of G and B channel.

Note 5 Apply D.C. voltages to filter terminals so that the output level will be 3.0V. Then turn of composite blanking.
Measure the output D.C. level changing blanking adj.
(Clamp Gete : 2.0V)

Note 6 Pefter Note 5.
Tracking of blanking pulse when blanking adj is 2.0V.

Note 7 #23 voltage range which #17.22 and 27 voltage track the change.

Note 8 Black level differences between channels when black level is changed 0.1V to 4.0V.

Note 9 Clamp Gate:4.0V, Black ADJ:0.5V (Ta=25°C)
Change Ta=-20~70°C, and measure output voltage changes.

Note 10 INPUT 0.5Vp-p 500kHz
Contrast:8V, Black ADJ:3.0V
Clamp Gate:4.0V
Comp Blank:2.0V

Note 11 ABL:8.0V
Comp Blank:2.0V
Clamp Gate:4.0V
Black ADJ :3.7V
Contrast (Max. Gain, -6dB, -12dB)

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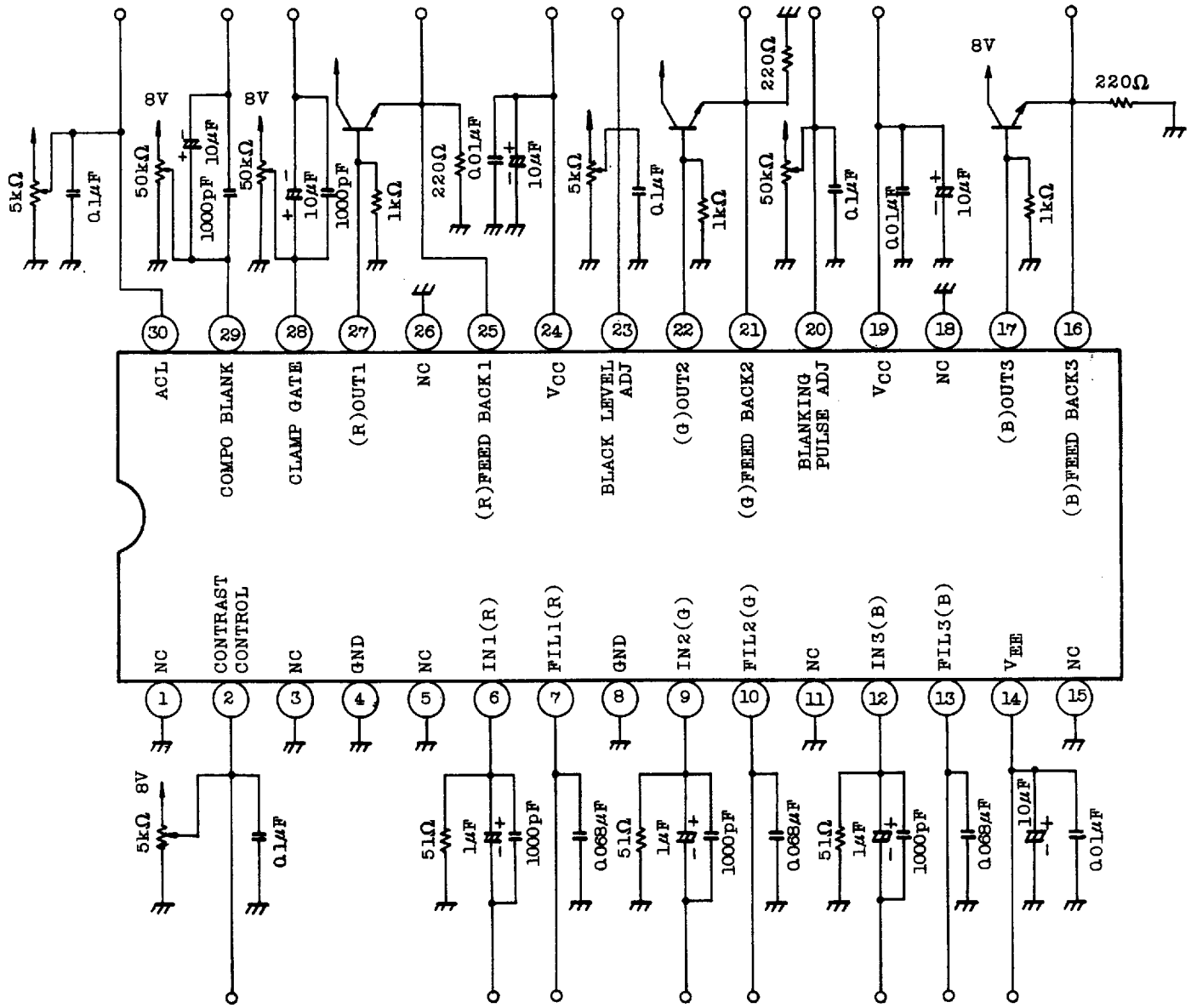
AC TEST CIRCUIT 1



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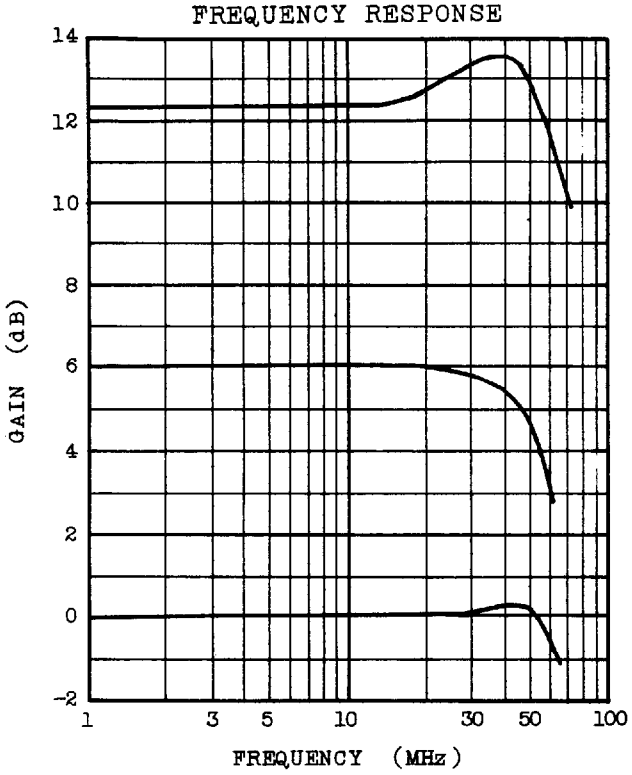
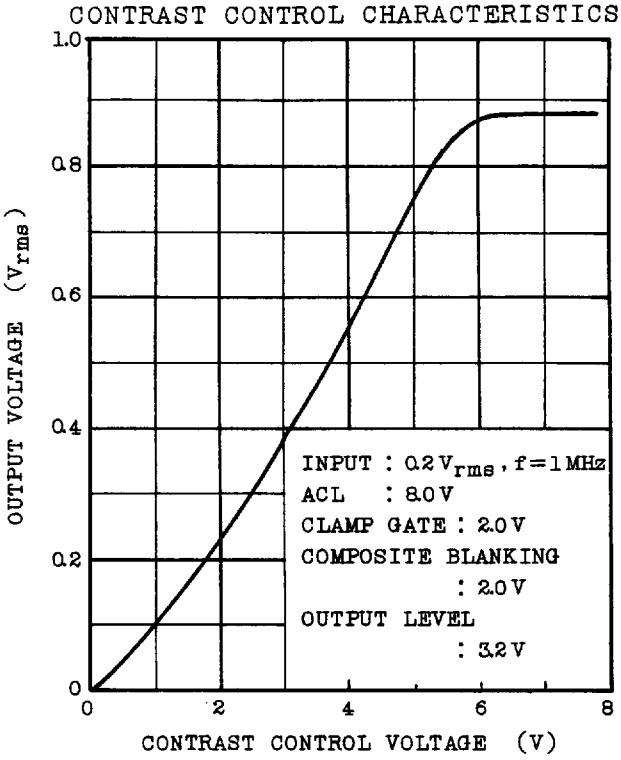
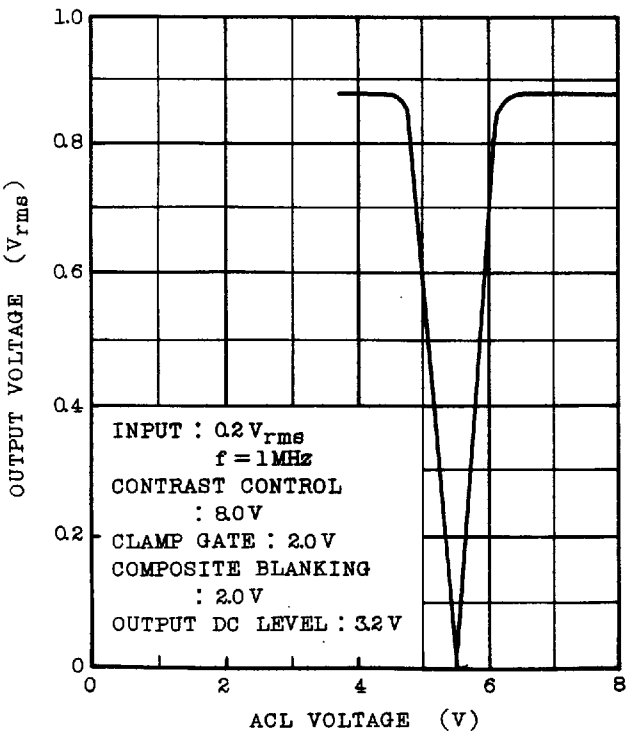
FREQUENCY RESPONSE



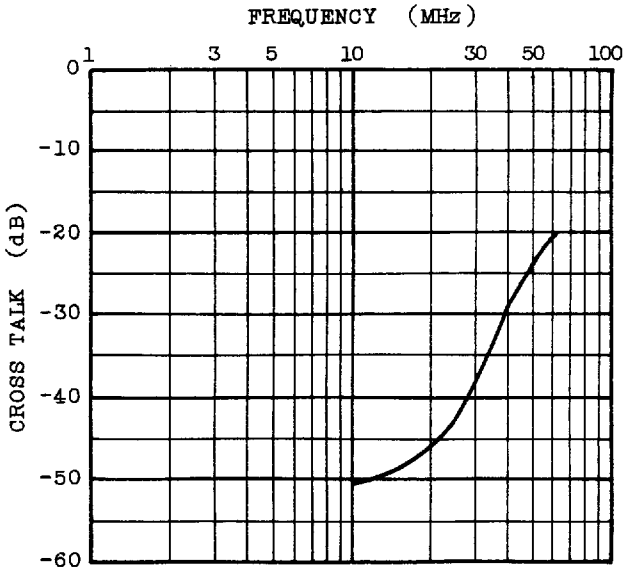
CONTRAST CONTROL CHARACTERISTICS



ACL CHARACTERISTICS



CROSS TALK BETWEEN CHANNELG



APPLICATION CIRCUIT