

SANYO

No. 3047A

LA1861M

Monolithic Linear IC
Car-Use Single-Chip Tuner System

Applications

Car-use IF, noise canceller, multiplex

Functions

IF amp, peak detector, AF preamp, AFC output, signal meter, soft muting, IF buffer output, noise canceller, adjustment-free VCO, pilot cancel (level follow-up type), HCC, SNC

Maximum Ratings at Ta = 25°C

				unit
Maximum Supply Voltage	Vccmax	Pin 8	10	V
Allowable Power Dissipation	Pdmax	Ta=25°C	720	mW
Input Voltage	VinIF	Pins 36,35 (IF input)	±0.7	Vp-p
	VinMPX	Pin 26(MPX input)	1.0	Vrms
Input Current	ILmax	Pin 25 (ST lamp drive current)	20	mA
Output Current	ISDmax	Pin 5 (SD output)	1.0	mA
Operating Temperature	Topp		-30 to +80	°C
Storage Temperature	Tstg		-40 to +150	°C

Operating Conditions at Ta=25°C

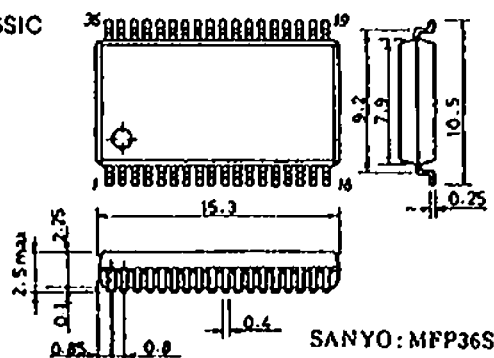
			unit
Recommended Supply Voltage	Vcc	8.5	V
Operating Voltage Range	Vcc op	7.5 to 10	V

Operating Characteristics at Ta=25°C, Vcc=8.5V, f=10.7MHz, see specified Test Circuit,

			min	typ	max	unit
Quiescent Current	IccQ	No signal		45	70	mA
Current Dissipation	Icc-100	Vin=100dBu		47	72	mA
Demodulation Output	Vo	Vin=100dBu, 1kHz, 100% modulation, pin 15 output	200	320	450	mVrms
Total Harmonic Distortion	THD(1)	Monaural, Vin=100dBu, 1kHz, 100% modulation, pin 15 output		0.3	1.2	%
	THD(2)	Main, Vin=100dBu, 1kHz, 100% modulation, pin 15 output		0.5	1.2	%
Signal to Noise Ratio	S/N	Vin=100dBu, 1kHz, 100% modulation	64	71		dB
Input Limiting	Vin lim	Referenced to Vin=100dBu, at output 3dB attenuation, IF input level, soft muting	30	39	48	dB

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Case Outline 3129-M36SIC
(unit: mm)



SANYO: MFP36S

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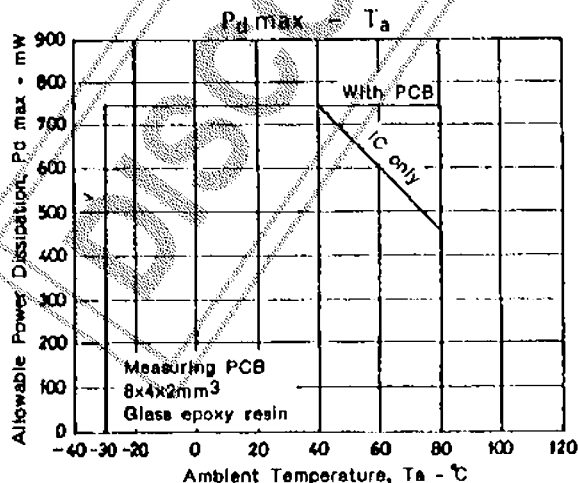
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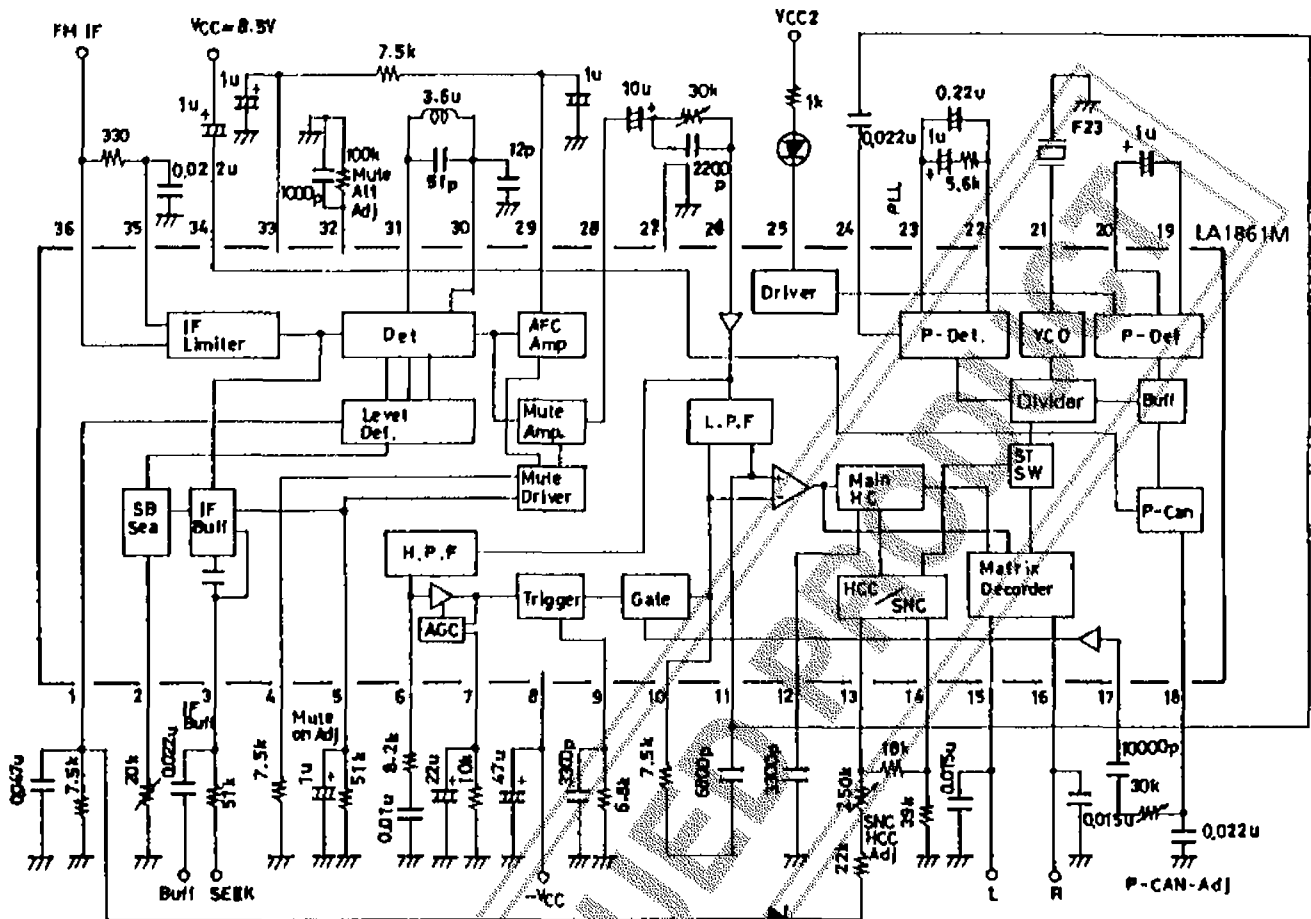
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			min	typ	max	unit
Muting Attenuation(1)	Mute Att	V5=5.0V, Vin=100dBu, 1kHz, 100% modulation	22	26	30	dB
Muting Attenuation(2)	Mute Att	V5=2.0V, Vin=100dBu, 1kHz, 100% modulation	6	11	16	dB
Muting Bandwidth	BW Mute	Vin=100dBu, V5=2V	150	215	330	kHz
AM Suppression Ratio	AMR	Vin=100dBu, FM400Hz, 100% modulation, AM 1kHz, 30% modulation	47	60		dB
Muting Drive Output	V5-0	No signal	3.5	4.7		V
	V5-100	Vin=100dBu		0	0.3	V
Signal Intensity Indicator	V1-0	No signal		0.5	1.5	V
Output	V1-50	Vin=50dBu	1.4	2.4	3.4	V
	V1-100	Vin=100dBu	5.5	6.5	7.5	V
IF Count Output Sensitivity		IF Input level at IF COUNT ON, SW-1 ON	31	40	49	dBu
If Buffer Output	VIF-ON	Vin=100dBu, SW-1 ON	200	300	480	mVrms
Input Impedance	ZIn	f=1kHz		20		kΩ
Output Noise Voltage	VNO	Pin 26 grounded		27		μV
Gate Time	Tgate	Vin=100mVp-p, 1μsec, f=1kHz	14	25	38	μs
Noise Sensitivity	SN	Vin=1μsec, f=1kHz			35	mVp-o
Channel Separation	Sep	f=1kHz, L+R=90%, PILOT=10% IIF-BPF Inserted	36	50		dB
Lamp on Level		PILOT modulation factor at lamp on 1.0		2.5	5.0	%
Lamp Hysteresis	hy	Lamp on level-lamp off level		3.2	6.5	dB
Capture Range	C.R	C.R=1(f-456)/456X100		±1.2		%
SCA Rejection	SCA rej	L+R=90%, PILOT=10%, SCA(67kHz)×10%		75		dB
SNC Output Attenuation	AttSNC	V14=0.6V, L+R=90%, PILOT=10%	-10.0	-5.5	-1.0	dB
SNC Output Voltage	Vo sub	V14=0.1V, L+R=90%, PILOT=10%			5	mV
HCC Output Attenuation	AttHCC(1)	V13=0.6V, L+R=90%, PILOT=10%	-15	-5	0	dB
	AttHCC(2)	V13=1.1V, L+R=90%, PILOT=10%	-2.0		0	dB
Power Supply Ripple	Rr	50Hz, 100mVrms		27		dB
Rejection						
Channel Balance	CB	IPin15 output-pin 16 output		0	1.5	dB
Pilot Cancel Level		Lch regulation, Lch measurement DIN audio-filter inserted*	15	22		dB
Stereo Lamp Current		Minimum stereo operation current	1.0			mA
Pin 25 Saturation Voltage		IL=10mA		1.0		V

*: Where no filter is specified, Insert IIF BPF in MPX output for measurement.



Sample Application Circuit



Pin Names

Pin No.	Name	Pin No.	Name
1	S meter output	19	Pilot detection
2	IF buffer sensitivity control	20	Pilot detection
3	IF buffer output	21	VCO
4	Mute start point control	22	Phase detection
5	Mute drive terminal	23	Phase detection
6	Noise sensitivity control	24	PLL input
7	Noise AGC sensitivity control	25	Stereo indicator lamp terminal
8	Vcc	26	Noise canceller input
9	Gate time control	27	GND
10	Memory circuit	28	Muting amp output (AF output)
11	LPF output	29	AFC output
12	High cut attenuation control	30	Peak detector input
13	HCC control input	31	IF output
14	SNC control input	32	Muting attenuation control
15	MPX Lch output	33	Regulated voltage output
16	MPX Rch output	34	Pilot cancel signal detection
17	Pilot cancel signal input	35	IF input
18	Pilot cancel signal output	36	IF bypass

Pin Description

Pin No.	Function	Internal Equivalent Circuit	Remarks
35 36	IF input IF bypass		
1	S meter output		Current-drive-type S meter circuit
4	MUTE-Adj		
30 31	Peak detector input Regulated voltage output		

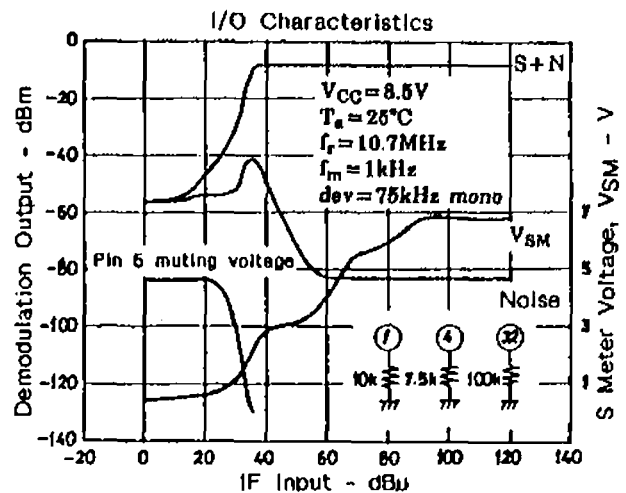
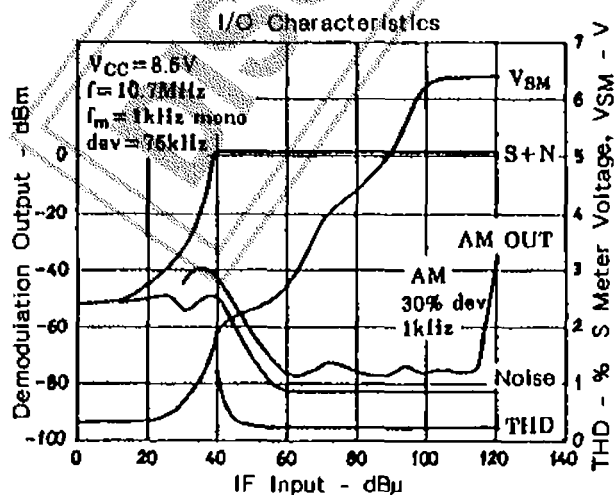
Pin No.	Function	Internal Equivalent Circuit	Remarks
33	Regulated voltage output		
28 32	Muting circuit output Muting attenuation adj		
29	AFC output		
3	IF buffer output		Control signal For SEEK: VDD For STOP: GND When no IF count is made, pin 3 can be left open

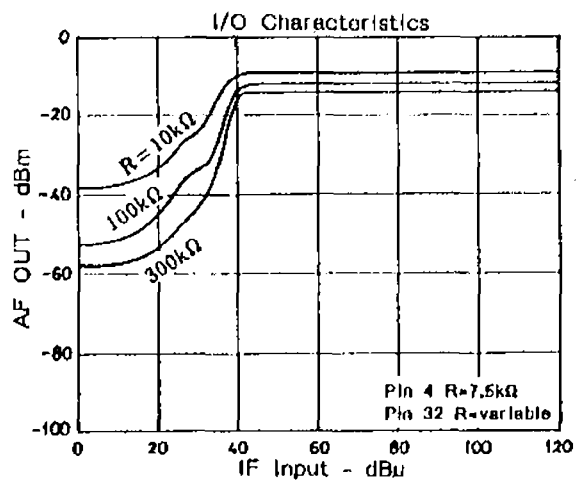
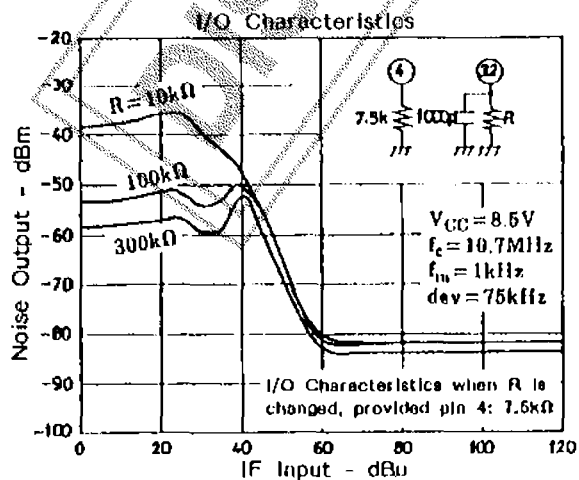
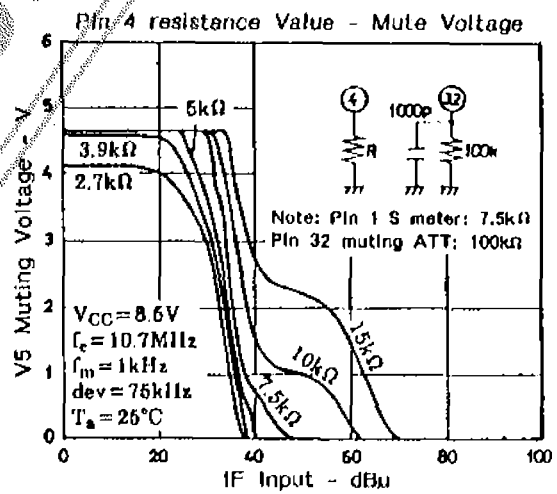
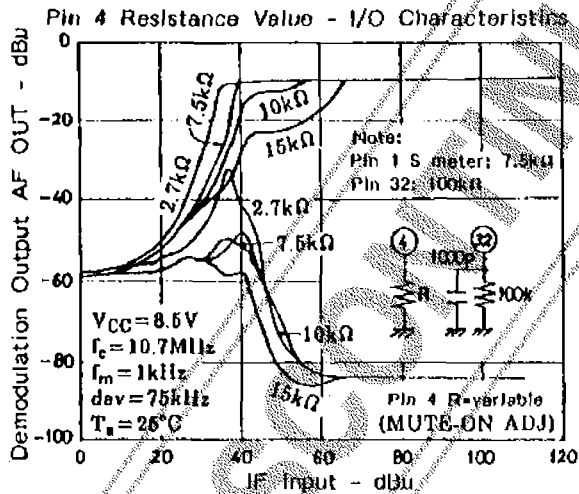
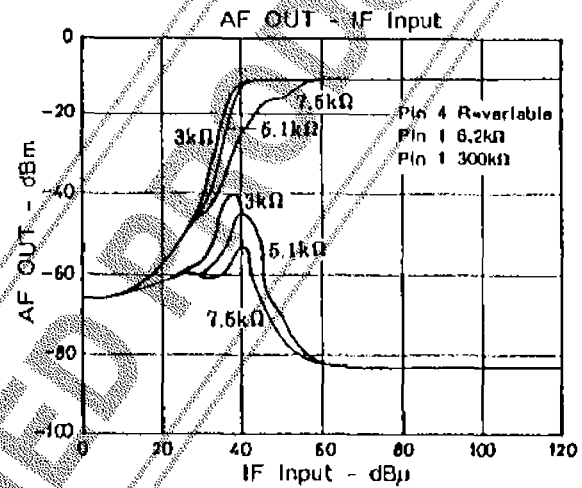
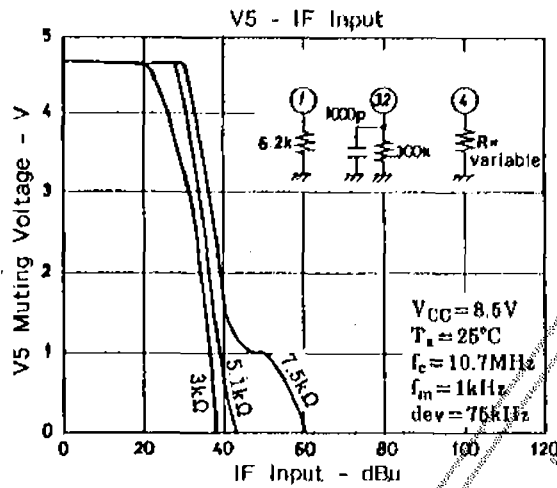
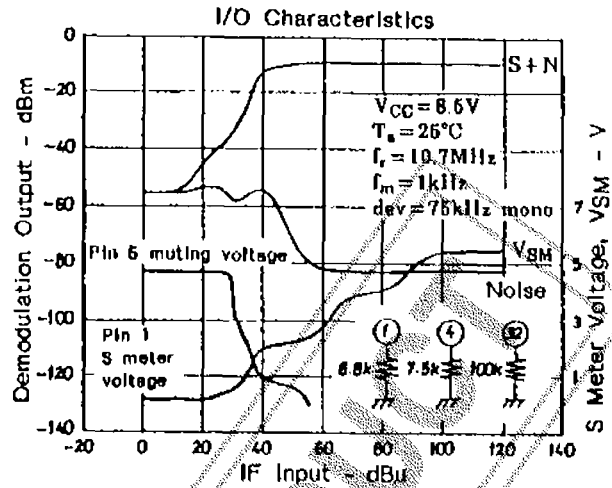
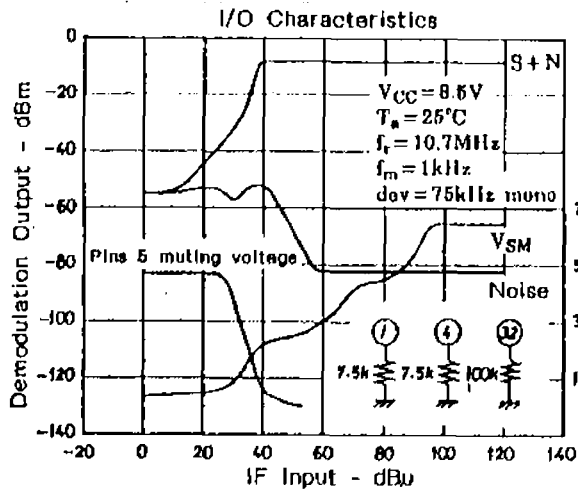
Pin No.	Function	Internal Equivalent Circuit	Remarks
2	IF buffer ON adj		
5	Mute Drive		
6 7	Noise sensitivity adj Noise AGC		
9	Gate time adj		Gate opens when pin 9 voltage is 1.4V (2V_D) or greater.

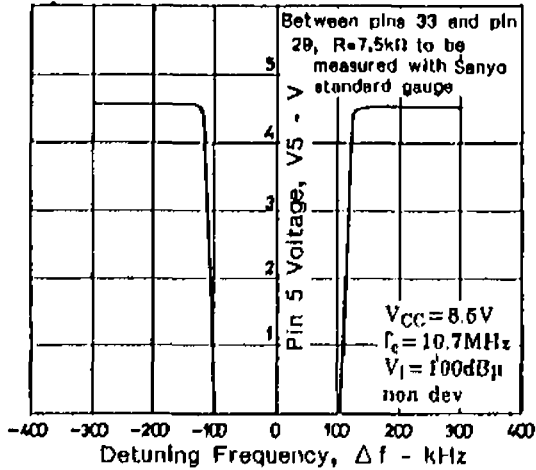
Pin No.	Function	Internal Equivalent Circuit	Remarks
10 11 17	Memory circuit L.P.F. output Pilot cancel signal Input		
26	Noise canceller Input		
12	High cut capacity connection		High cut frequency setting terminal
24	PLL Input		

Pin No.	Function	Internal Equivalent Circuit	Remarks
18 34	Pilot cancel signal output Pilot cancel signal detection		
15 16	MPX OUT		Output R=33k Load R built-in
23 22	Phase detection		
21	VCO		
20 19	Pilot detection		

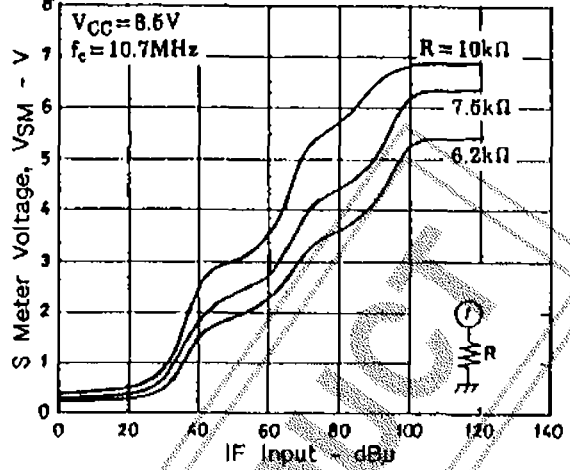
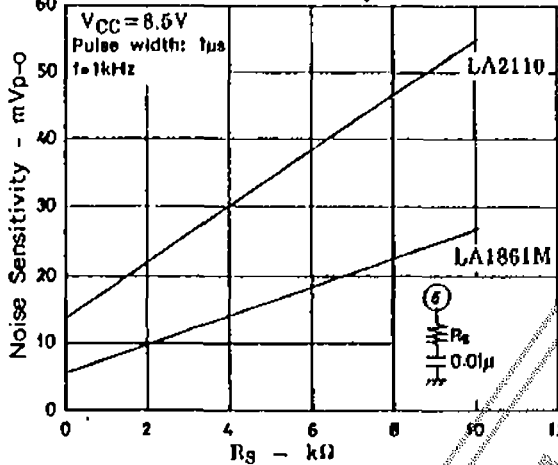
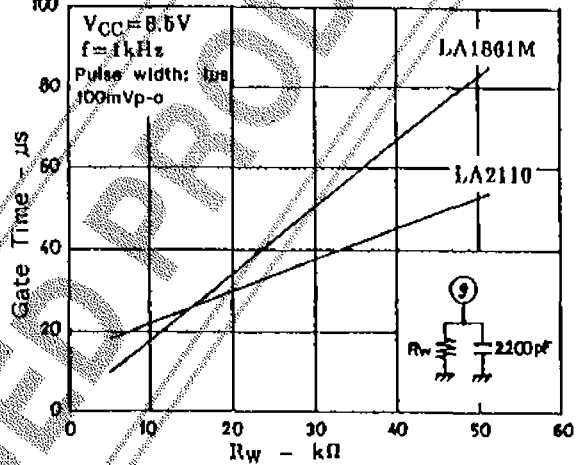
Pin No.	Function	Internal Equivalent Circuit	Remarks
13	HCC control input		
14	SNC control input		
25	ST display terminal		ST display terminal MONO:(H) ST.:(L)



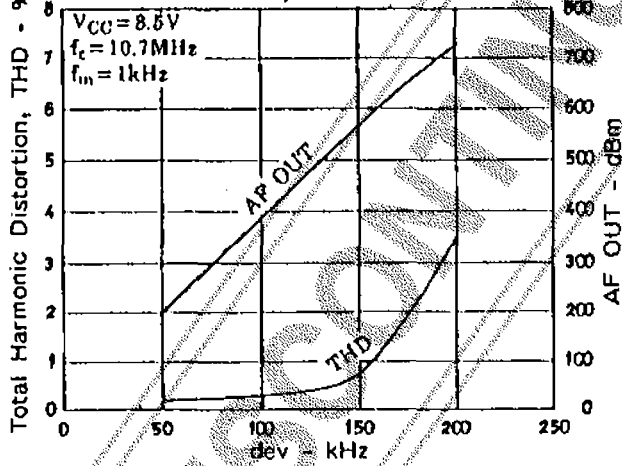
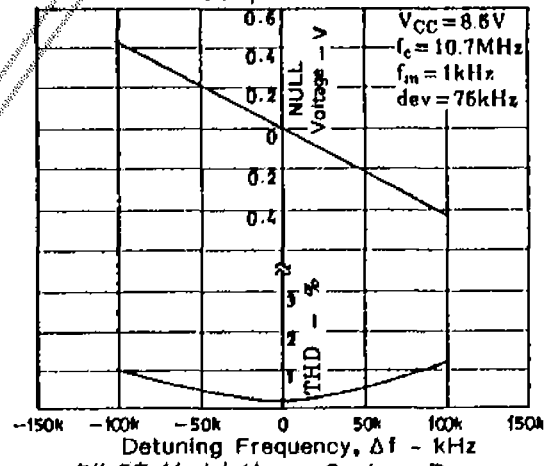


V5 - Δf 

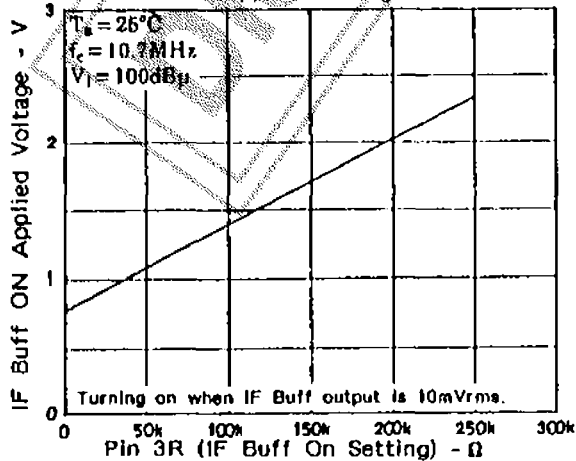
S Meter Voltage Characteristics

Noise Sensitivity - R_s Gate Time - R_w 

AF-OUT, THD - dev

NULL, THD - Δf 

IF Buff ON Applied Voltage - Pin 3 R



PILOT Modulation - Capture Range

