

HA12425



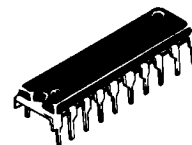
45MHz Detector IC For Mobile Telephone Communications

■ FUNCTIONS

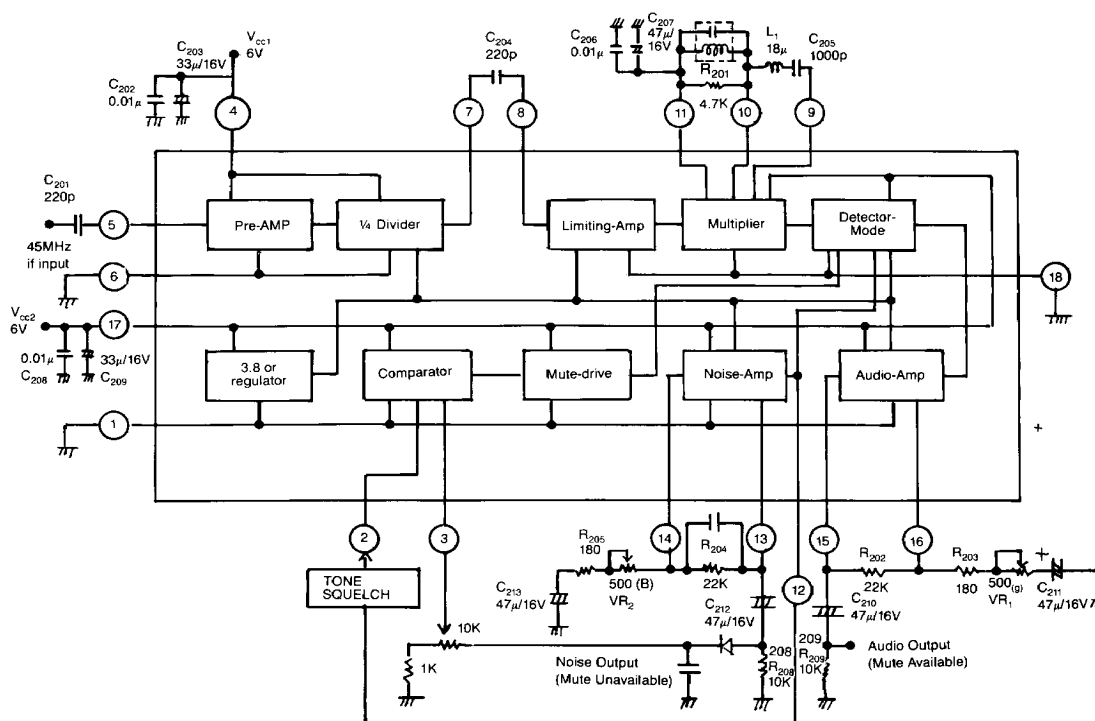
- (1) Quadrant Circuit
- (2) Quadrature Detector
- (3) Low Noise AF Post Amplifier (two circuit)
- (4) Muting (Tone Squelch) Circuit

■ FEATURES

- (1) Capable to detect at Input Frequency, 45MHz.
(Single super configuration capable by combining with HA12424).
- (2) Capable to detect at Input Frequency, 10.7MHz.
(However, detection coil requires to be modified)
- (3) Audio Amp. Output and Noise Amp. Output; High Signal to Noise Ratio



DP-16-2



Note) The specifications of this device are subject to change without notice.
Please contact your nearest Hitachi's Sales Dept. regarding specifications.

■ ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V _{CC}	8	V
Power Dissipation	P _T	400	*mW
Operating Temperature	T _{opr}	-35 to +85	°C
Storage Temperature	T _{stg}	-55 to +150	°C

* The value at Ta = 85°C.

■ ELECTRICAL CHARACTERISTICS Unless otherwise specified; Standard Condition (V_{cc} = 6.0 V, V_{in} = 105dBμ, f_{in} = 45.0MHz, fm = 1kHz, Δf = ± 8kHz Dev.)

Item	Symbol	Test Conditions	MIN	TYP	MAX	Unit
Audio Amp. Output f-characteristics	S(AF)-f	*Note 1) Output ratio at So(AF) and fm = 25kHz		0.2		dB
Noise Amp. Output f-characteristics	S(NO)-f	*Note 2) Output ratio at So(NO) and fm = 25kHz		0.2		dB
Audio Amp. Output Signal to Noise Ratio	S/N (AF)			63		dB
Noise Amp. Output Signal to Noise Ratio	S/N (NO)			55		dB
Audio Amp. Output Distortion	THD (AF)			-58		dB
Noise Amp. Output Distortion	THD (NO)			-54		dB
Maximum Audio Amp. Output (1)	V(AF) MAX(1)	Distortion at f = ± 16kHz		-52		dB
Maximum Noise Amp. Output (1)	V(NO) MAX(1)	Distortion at f = ± 16kHz		-52		dB
Maximum Dividing Frequency	fdiv. MAX	Measure output at pin-7		110		MHz
Mute Attenuation	Mute(ATT)	VS ₁ = 0.5V (Audio Amp.)		52		dB
Audio Amp. Output Deviation (1)	S(AF)-v	*Note 1) Output ratio at So(AF) and V _{in} = 114dBμ		0		dB
Mute Recover	Mute(RC)	VS ₁ = 0.5V VS ₂ = 1.6V		0		dB
Audio Amp. Output Deviation (2)	S(AF) 5.5V	*Note 1) Output ratio at So(AF) and V _{cc} = 5.5V		0		dB
Audio Amp. Output Deviation (3)	S(AF) 7.0V	*Note 1) Output ratio at So(AF) and V _{cc} = 7.0V		0		dB
Noise Amp. Output Deviation (1)	S(NO) 5.5V	*Note 2) Output ratio at So(NO) and V _{cc} = 5.5V		0		dB
Noise Amp. Output Deviation (2)	S(NO) 7.0V	*Note 2) Output ratio at So(NO) and V _{cc} = 7.0V		0		dB
Maximum Audio Amp. Output (2)	V(AF) MAX(2)	Distortion at V _{cc} = 5.5V and f = ± 16kHz Dev.		-52		dB
Maximum Noise Amp. Output (2)	V(NO) MAX(2)	Distortion at V _{cc} = 5.5V and f = ± 16kHz Dev.		-52		dB
Quiescent Current	I _{cc}			36		mA

*Note 1) So(AF): Audio Amp. Output at the standard conditions.

*Note 2) So(NO): Noise Amp. Output at the standard conditions.

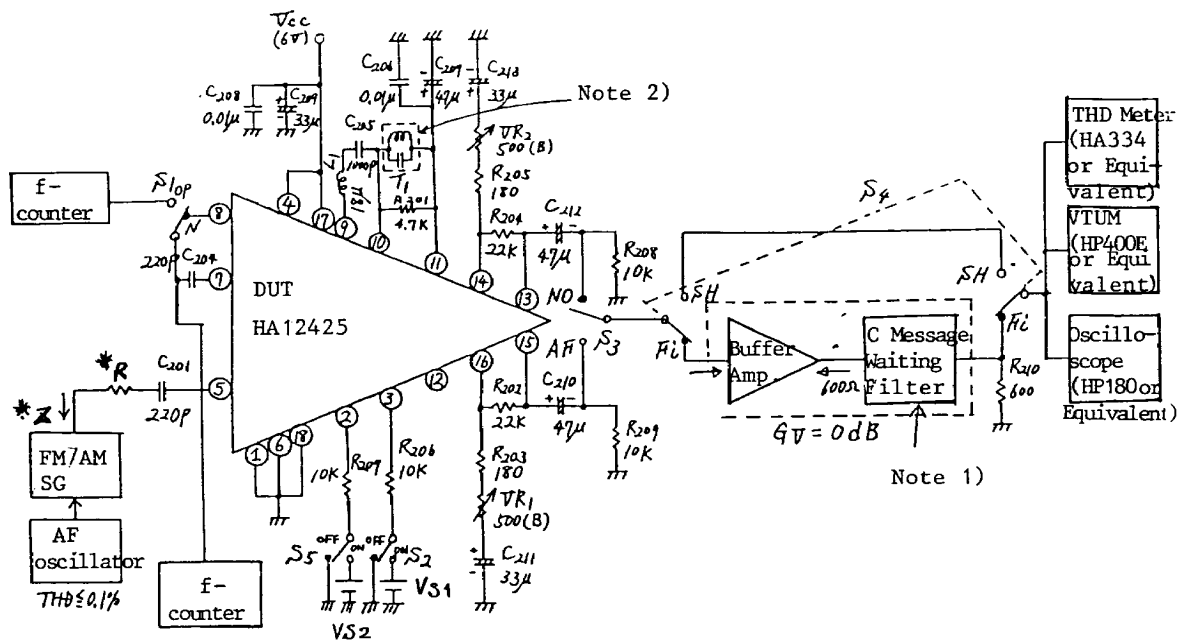
NOTICE

The example of an applied circuit or combination with other equipment shown herein indicates characteristics and performance of a semiconductor-applied product. The Company shall assume no responsibility for any problem involving a patent caused when applying the descriptions in the example.

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■ TEST CIRCUIT



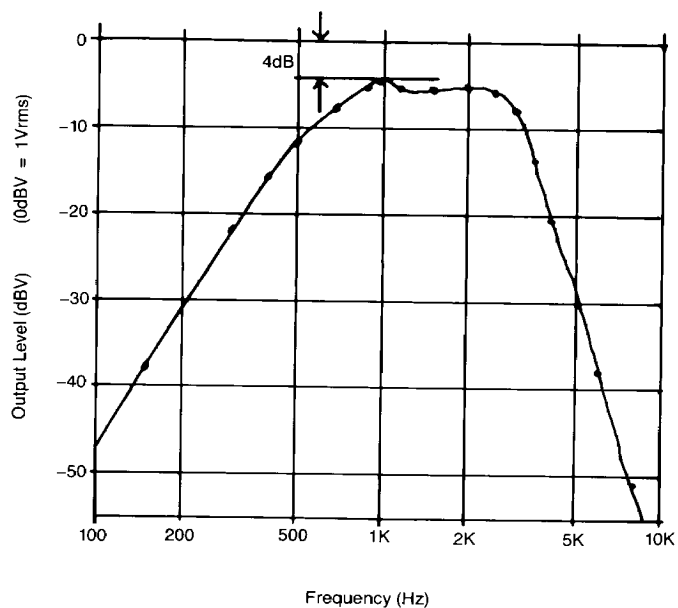
* Set the R value so that $R + Z = 390$ ohms.

Item	Position of Switch				
	S1	S2	S3	S4	S5
S(AF)-f	N	OFF	AF	SH	OFF
S(NO)-f	N	OFF	NO	SH	OFF
S/N(AF)	N	OFF	AF	Fi	OFF
S/N(NO)	N	OFF	NO	Fi	OFF
THD(AF)	N	OFF	AF	Fi	OFF
THD(NO)	N	OFF	NO	Fi	OFF
V(AF) MAX(1)	N	OFF	AF	Fi	OFF
V(NO) MAX(1)	N	OFF	NO	Fi	OFF
f div. MAX	DP	OFF	—	—	OFF
Mute(ATT)	N	ON	AF	Fi	OFF
S(AF) -v	N	OFF	AF	SH	OFF
Mute(RC)	N	ON	AF	Fi	ON
S(AF) 5.5V	N	OFF	AF	SH	OFF
S(AF) 7.0V	N	OFF	AF	SH	OFF
S(NO) 5.5V	N	OFF	NO	SH	OFF
S(NO) 7.0V	N	OFF	NO	SH	OFF
V(AF) MAX(2)	N	OFF	AF	Fi	OFF
V(NO) MAX(2)	N	OFF	NO	Fi	OFF

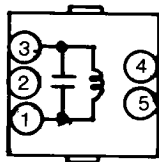
(Note 1)

The following figure shows the passing characteristics of C Message Waiting Filter characteristics.

(Input Output Impedance is adjusted to be 600ohms)



(Note 2) Use the following detecting Coil T₁.



Bottom View

Made by TOKO: 10k Type
(Trial Production No. YTKAC-28747Z)
Center Frequency: 11.25MHz
Capacitor: 82pF

■ INITIAL ADJUSTMENTS

- 1) At the test circuit, adjust FMSG as follows, $f_c = 45.0\text{MHz}$, $V_{in} = 105\text{dB}\mu$ (the specified value at the termination of SG), $f = \pm 8\text{kHz}$, $f_m = 1\text{kHz}$

Then, set S_1 , S_2 , S_3 , S_4 and S_5 as follows;

$S_1 \rightarrow \text{N}$

$S_2 \rightarrow \text{OFF}$

$S_3 \rightarrow \text{AF}$

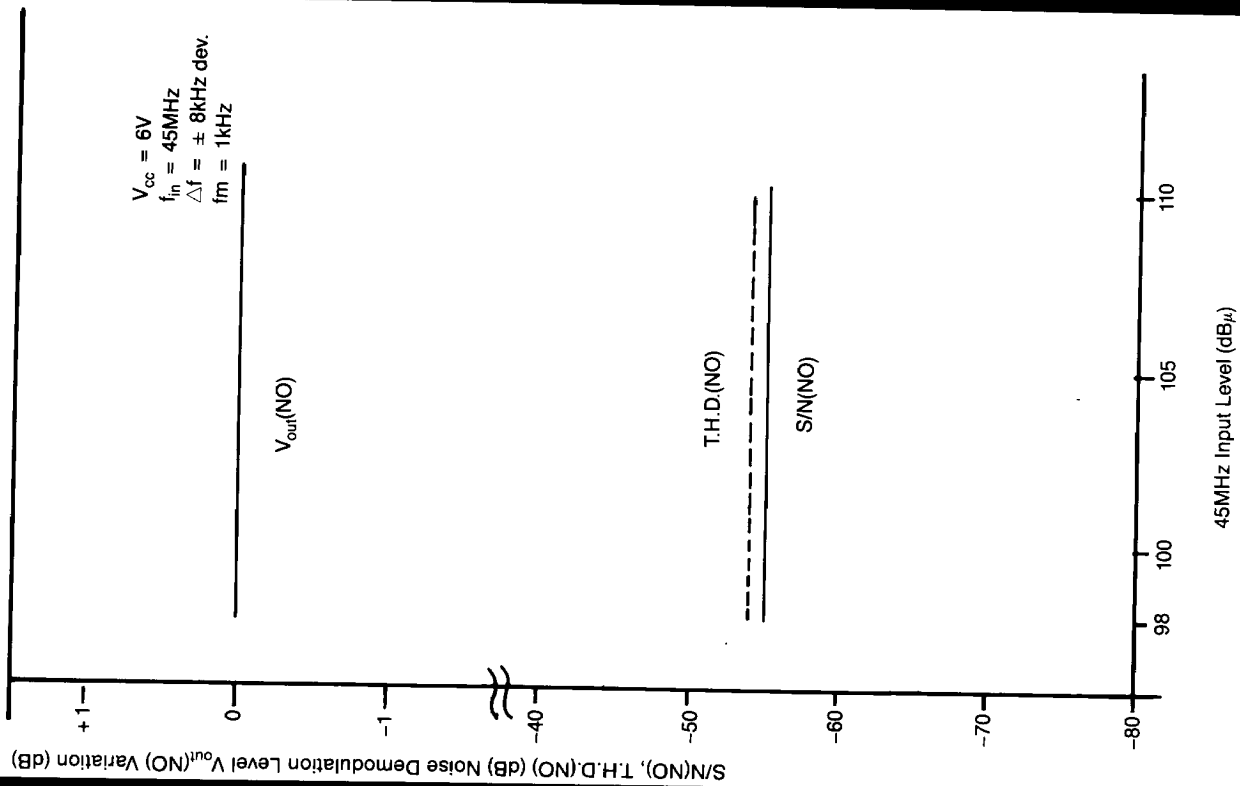
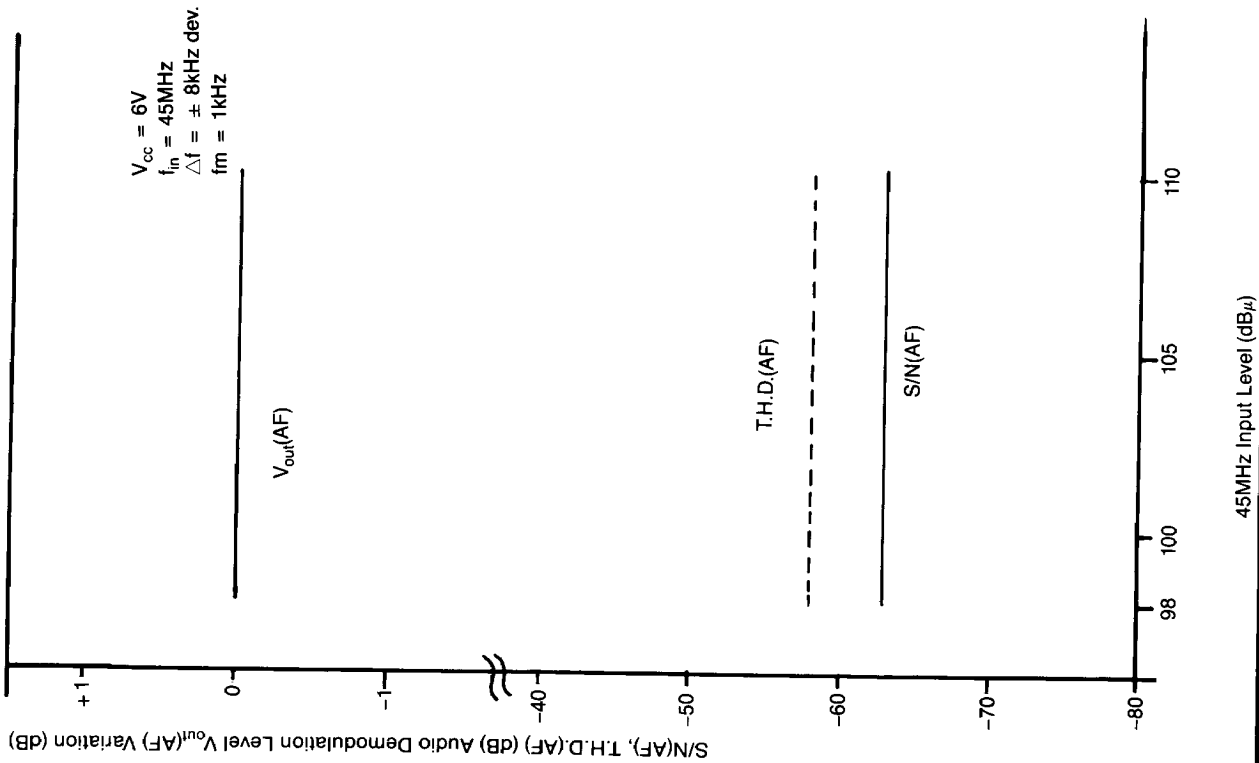
$S_4 \rightarrow \text{Fi}$

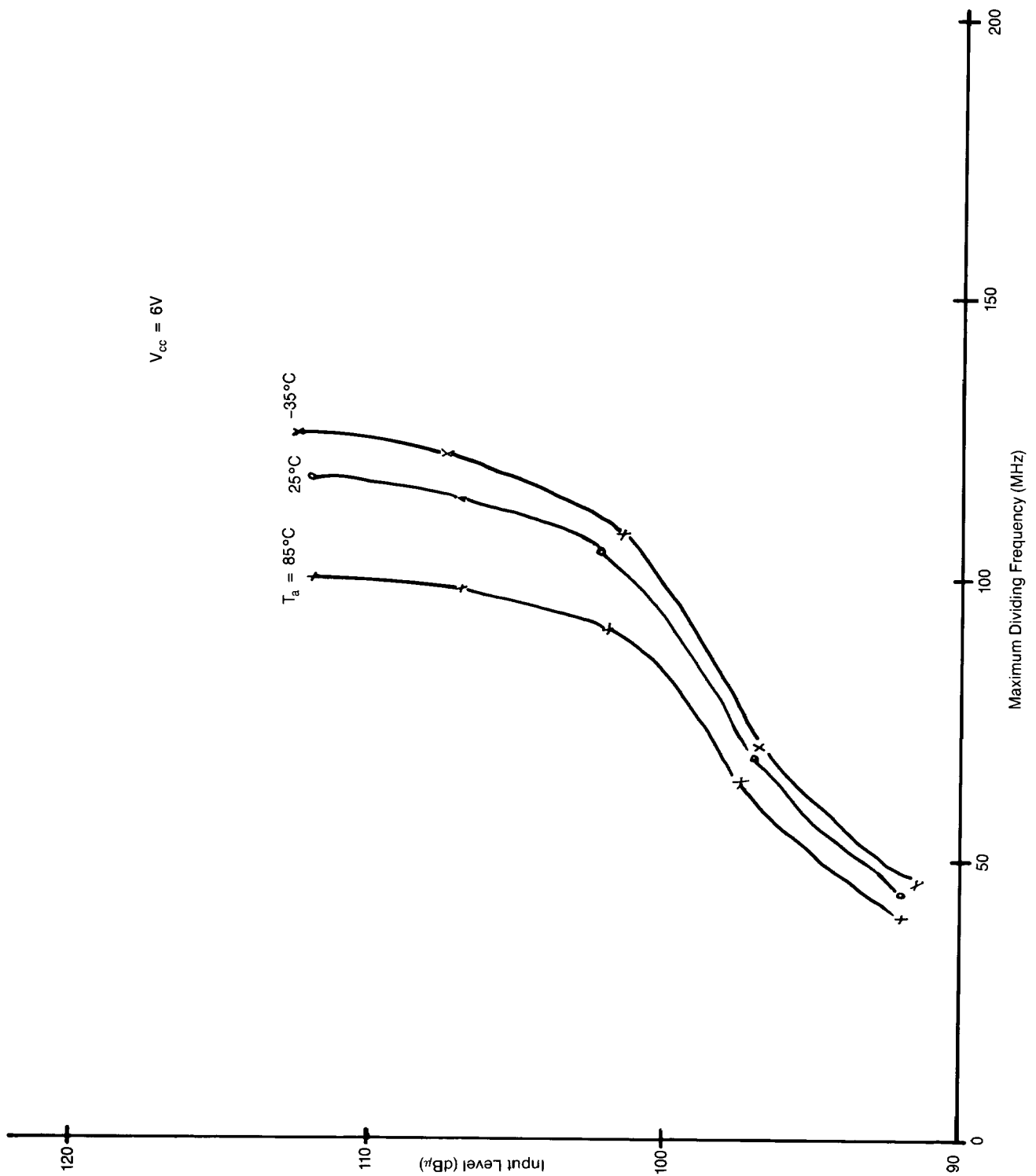
$S_5 \rightarrow \text{OFF}$

The core of T_1 should be adjusted so that T.H.D. might be minimum.

- 2) After the above adjustment, set S_4 to be SH and turn VR_1 . Adjust VTVM to be -8.5dBV ($0\text{dB} = 1 \text{ Vrms}$).
- 3) After that, Set S_3 to be NO and turn VR_2 . Adjust VTVM to be -8.5dBV .

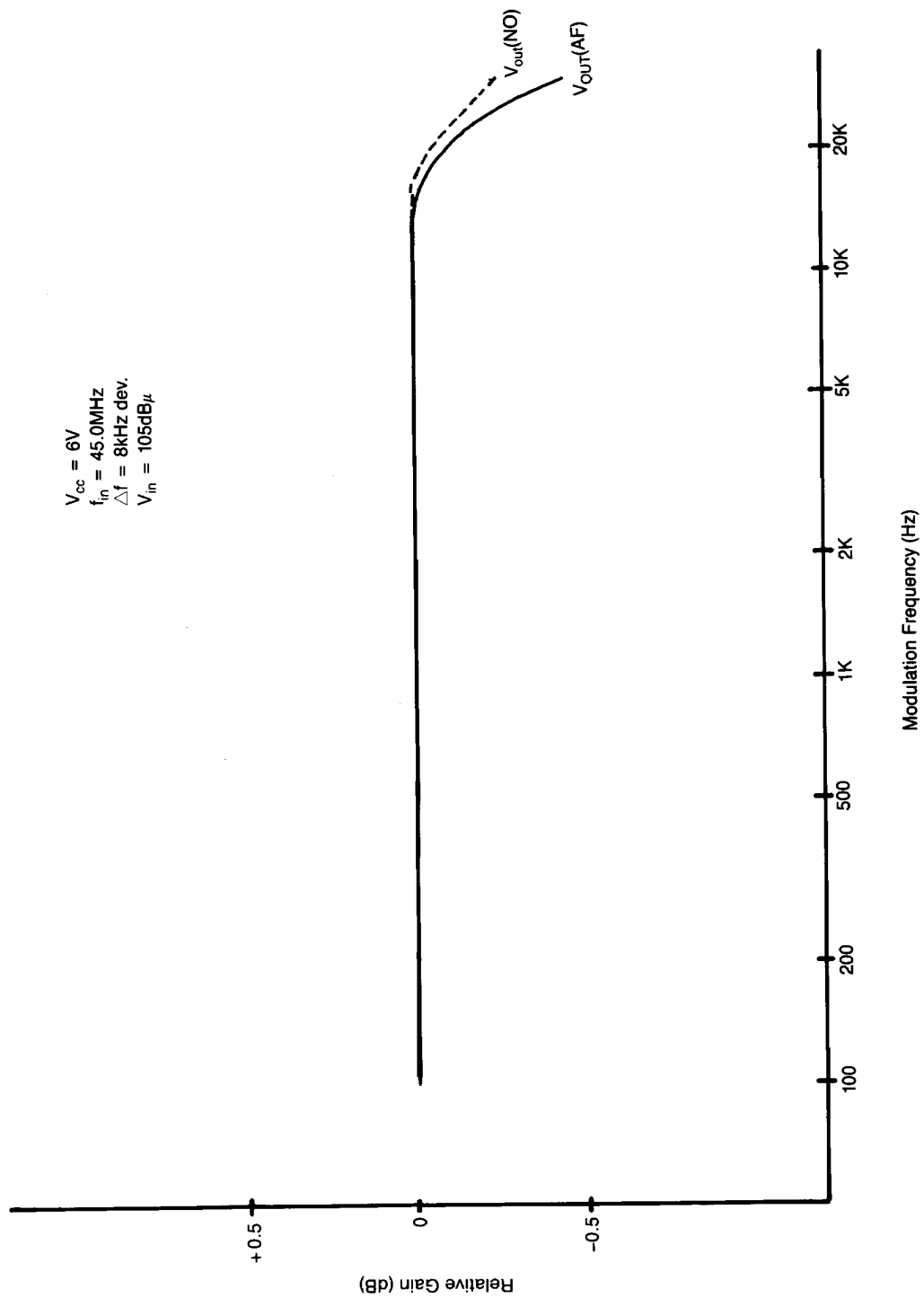
45MHz IF Signal Circuit vs.
Input Level Characteristics



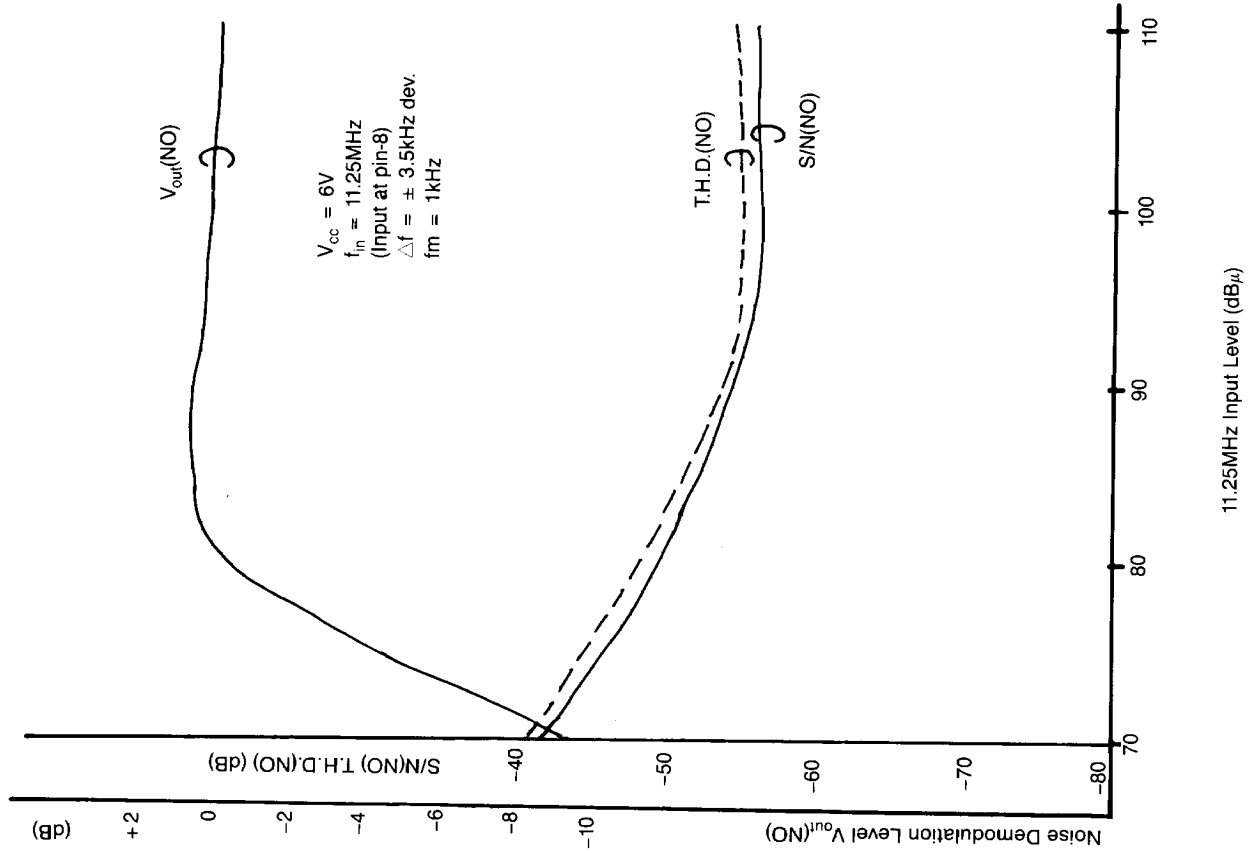
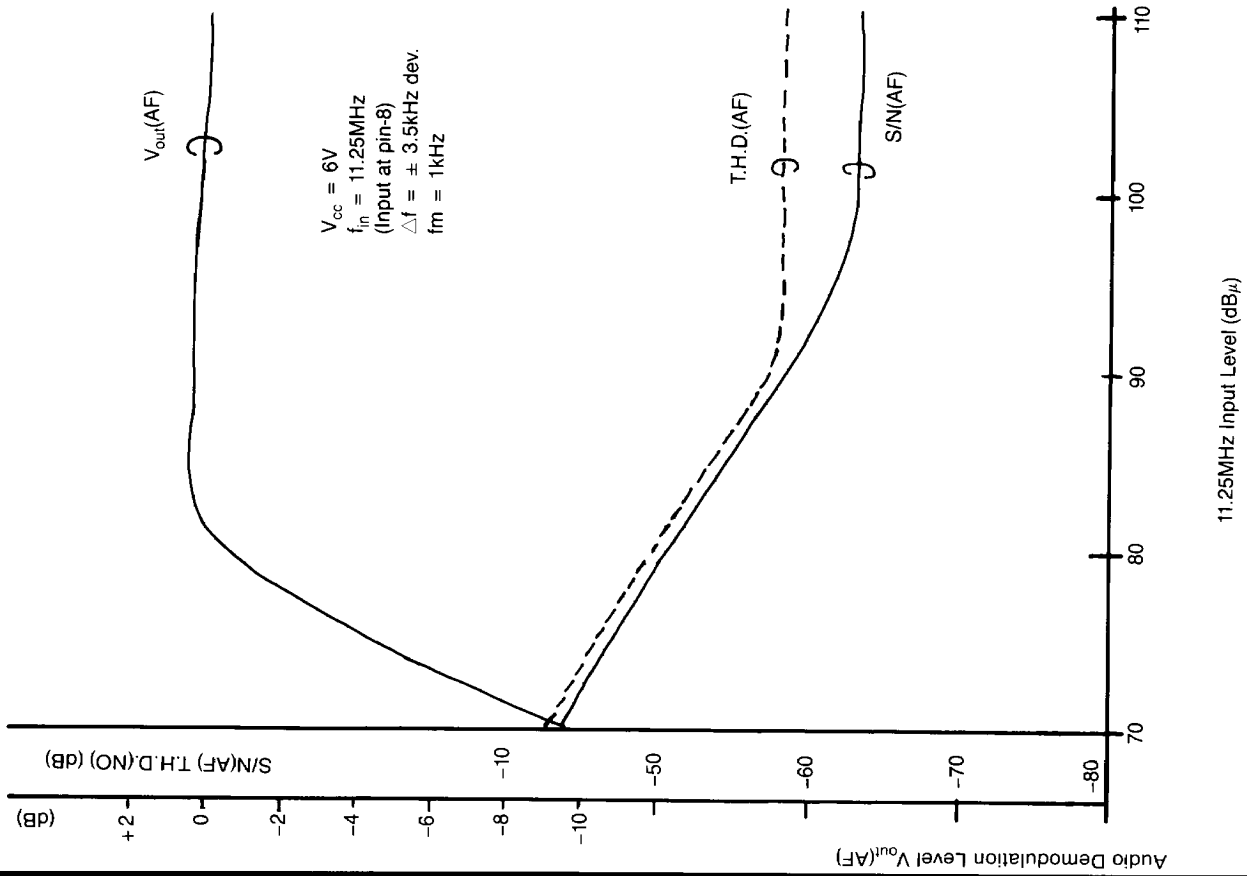


45MHz IF Signal Circuit
Input Level vs. Maximum Dividing Frequency
(T_a : parameter)

Audio, Noise Demodulation Output
vs. Frequency Characteristics



11.25MHz IF Signal Circuit vs. Input Level Characteristics



The information in this data sheet has been carefully checked; however, the contents of this data sheet may be changed and modified without notice. The company shall assume no responsibility for inaccuracies, or any problem involving a patent caused when applying the descriptions in this data sheet.



We make things possible

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(*6-5)
AUGUST, 1986

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Printed in U.S.A.