

SANYO	No. 1844C	LA1800
	FM/AM Single-Chip Radio	

Functions

- FM: Front end, low-pass filter, IF amp, quadrature detector, muting
- AM: RF amp, detector
- AF: AF driver (earphone driver)

Features

- Minimum number of external parts required: One tuning circuit each for FM, AM
- Low current dissipation: 5.6mA/FM, 3.2mA/AM
- Low-voltage operation: $V_{CC\ min} = 2.5V$

Maximum Ratings at $T_a = 25^\circ C$

				unit
Maximum Supply Voltage	$V_{CC\ max}$	Pin 3	6.0	V
Allowable Power Dissipation	$P_d\ max$		200	mW
Operating Temperature	T_{op}		-20 to +70	$^\circ C$
Storage Temperature	T_{stg}		-40 to +125	$^\circ C$

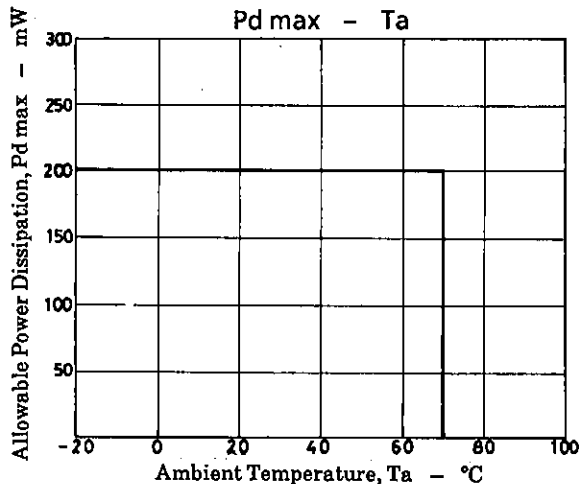
Operating Conditions at $T_a = 25^\circ C$

				unit
Recommended Supply Voltage	V_{CC}		3.0	V
Operating Voltage Range	$V_{CC\ op}$		2.5 to 5.0	V

Operating Characteristics at $T_a = 25^\circ C, V_{CC} = 3V$, See Test Circuit

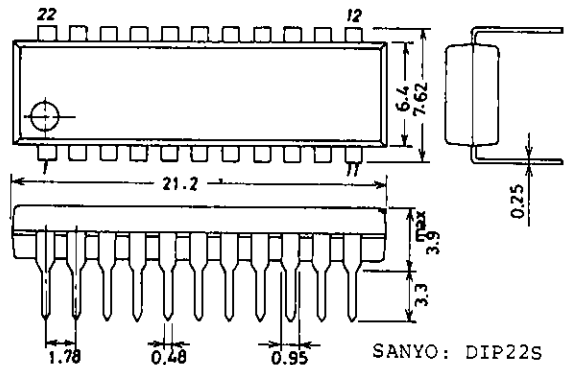
		min	typ	max	unit
[AM]					
Current Dissipation	I_{cc0}		3.6	5.5	mA
Pin 2 Voltage	V_2	1.9	2.4	2.9	V
Pin 14 Voltage	V_{14}	0.4	0.9	1.6	V
Pin 21 Voltage	V_{21}	0.6	0.9	1.2	V
[FM]					
Current Dissipation	I_{cc0}		5.6	8.0	mA
Pin 2 Voltage	V_2	1.9	2.6	2.9	V
Pin 4 Voltage	V_4	1.7	2.3	2.9	V
Pin 5 Voltage	V_5	1.7	2.3	2.9	V
Pin 6 Voltage	V_6	1.1	1.7	2.3	V

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Package Dimensions (unit: mm)

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		min	typ	max	unit
Pin 7 Voltage	V ₇	1.1	1.7	2.3	V
Pin 8 Voltage	V ₈	1.1	1.7	2.3	V
Pin 9 Voltage	V ₉	1.9	2.6	2.9	V
Pin 10 Voltage	V ₁₀	1.8	2.5	2.9	V
Pin 13 Voltage	V ₁₃		0	0.6	V
Pin 14 Voltage	V ₁₄	0.5	1.0	1.7	V
Pin 16 Voltage	V ₁₆	1.6	2.3	2.9	V
Pin 17 Voltage	V ₁₇	1.6	2.3	2.9	V
Pin 19 Voltage	V ₁₉	0.6	0.86	1.4	V
Pin 20 Voltage	V ₂₀	0.6	0.86	1.4	V
[AF]					
Pin 11 Current	I ₁₁	0.5	1.0	1.5	mA
Pin 12 Voltage	V ₁₂		0	0.5	V

[Reference Characteristics]

Operating Characteristics at Ta = 25°C, V_{CC} = 3V, See Test Circuit 2

[AM : f_C = 1MHz, fm = 400Hz]

			typ	unit
Current Dissipation	I _{cco}	Quiescent	3.6	mA
Detection Output	V _{O(1)}	V _i = 40dB _μ , 30% mod	10	mV
	V _{O(2)}	V _i = 70dB _μ , 30% mod	100	mV
Signal to Noise Ratio	S/N	V _i = 70dB _μ , 30% mod	47	dB

[FM : f_C = 90MHz, fm = 400Hz]

Current Dissipation	I _{cco}	Quiescent	5.6	mA
Input Limiting Sensitivity	-3dBLS.	3dB down, 30% mod	16	dB _μ
Demodulation Output	V _O	V _i = 80dB _μ , 30% mod	90	mV
Total Harmonic Distortion	THD	V _i = 80dB _μ , 30% mod	0.8	%
Signal to Noise Ratio	S/N	V _i = 80dB _μ	59	dB

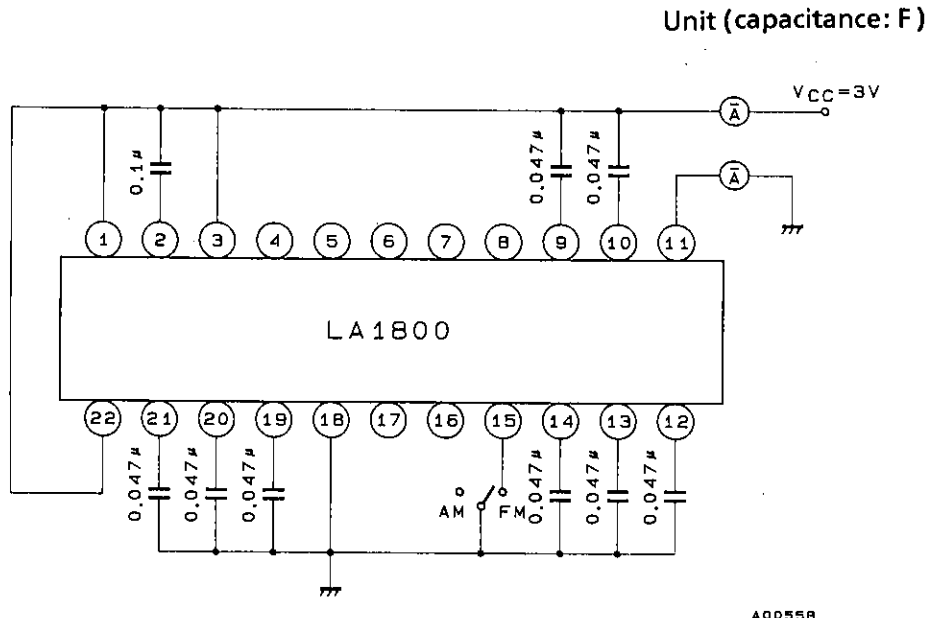
[AF : fm = 400Hz]

Voltage Gain	VG	V _O = 50mV	24	dB
Total Harmonic Distortion	THD	V _O = 50mV	0.3	%

Note1 : Current dissipation for FM, AM includes current of AF driver stage.

Note2 : When handling the IC, be careful not to cause dielectric breakdown.

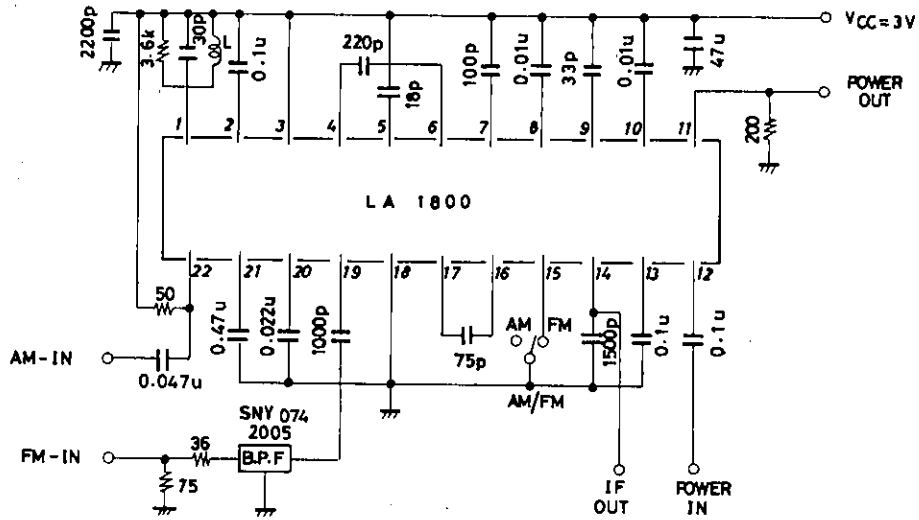
DC Test Circuit



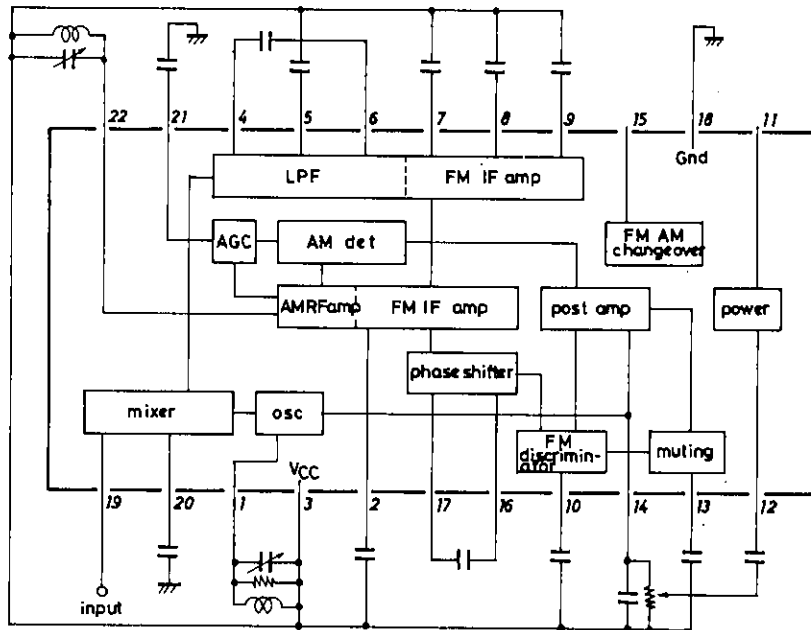
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AC Test Circuit

Unit (resistance: Ω , capacitance: F)

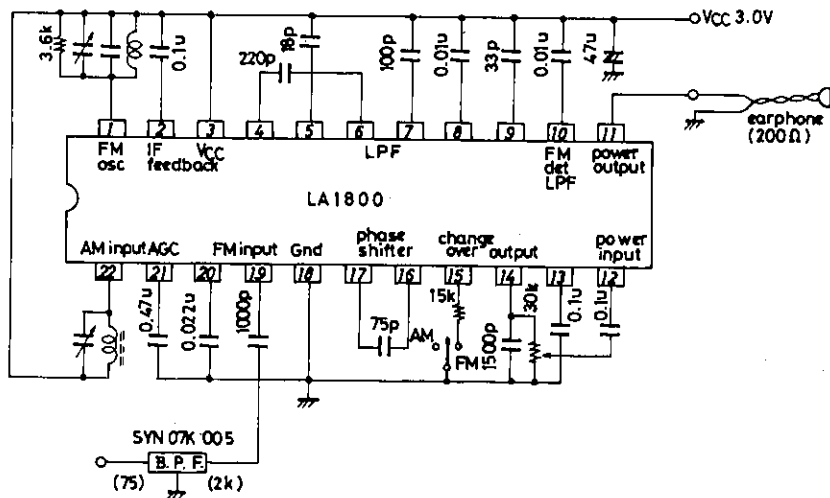


Equivalent Circuit Block Diagram



Sample Application Circuit

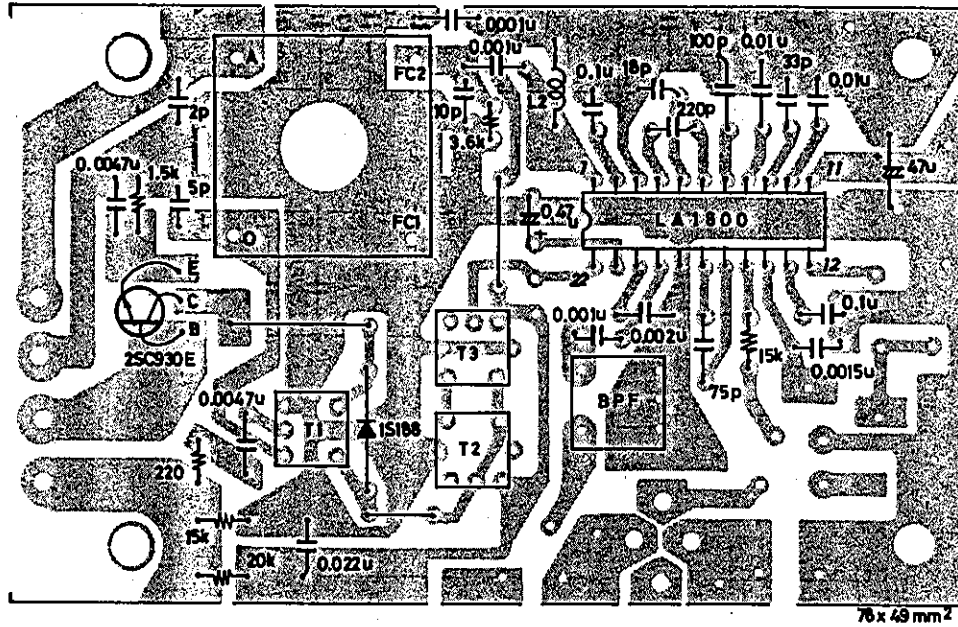
Unit (resistance: Ω , capacitance: F)



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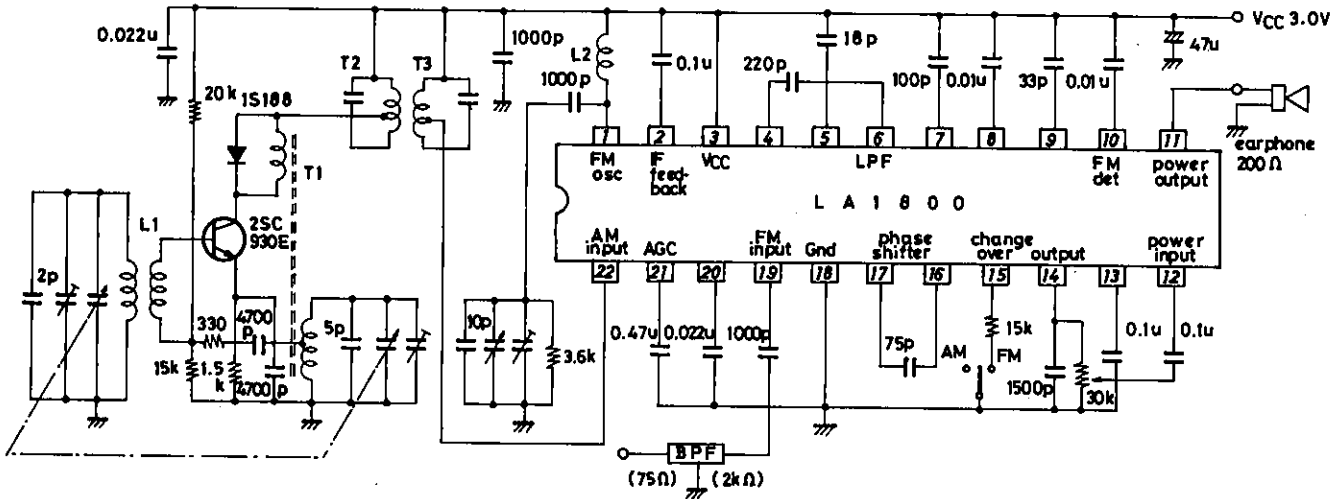
Sample Printed Circuit Pattern (Cu-foiled side)

Unit (resistance: Ω , capacitance: F)



MW Superheterodyne Use

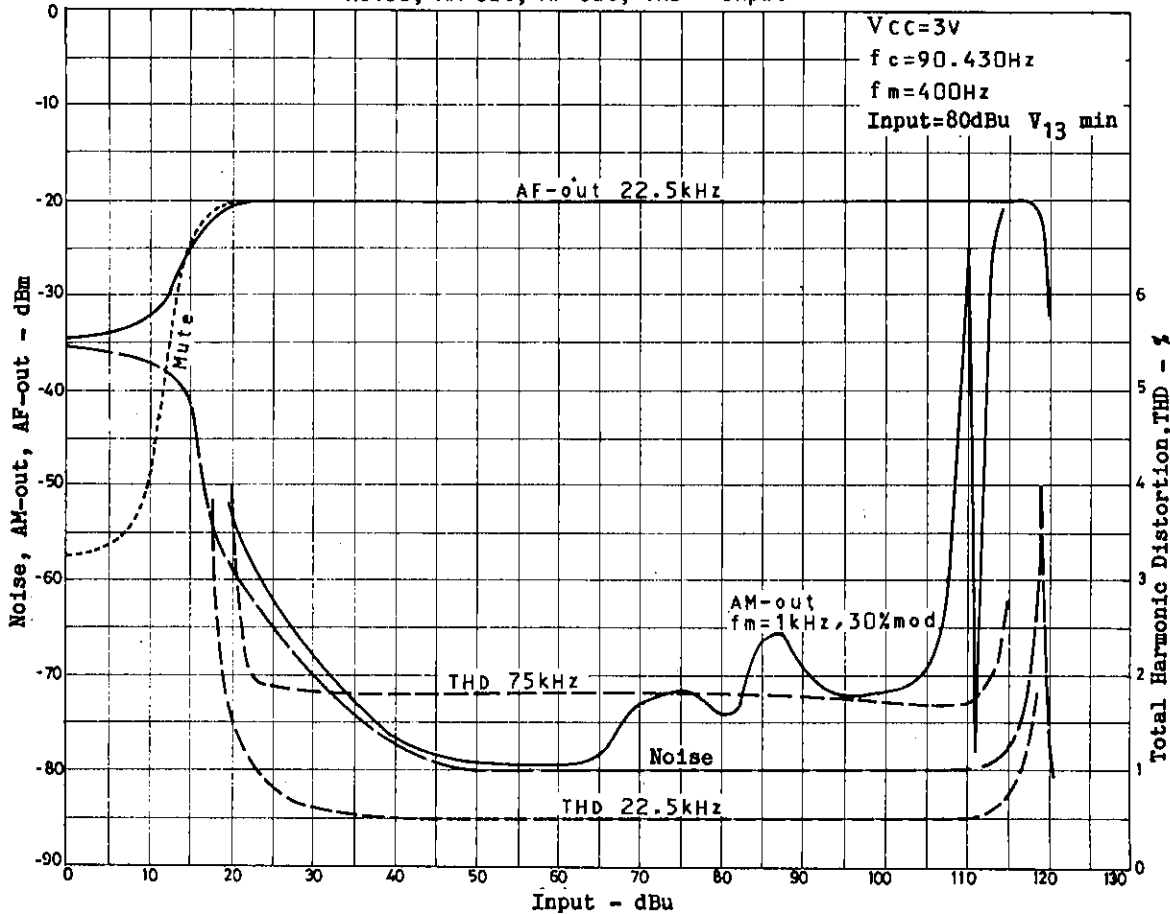
Unit (resistance: Ω , capacitance: F)



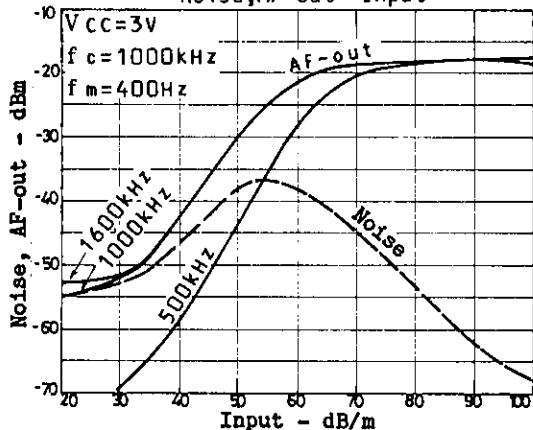
- Variable capacitor 2LXT-L Mitsumi
 L1 HH-40947 Mitsumi
 T1 HW-40217 Mitsumi
 T2 HW-40194 Mitsumi
 T3 HW-50005 Mitsumi
 B.P.F SNY-074-2005 Sumida

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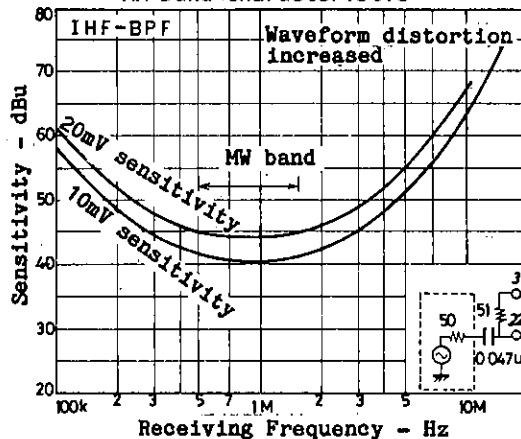
Noise, AM-out, AF-out, THD - Input



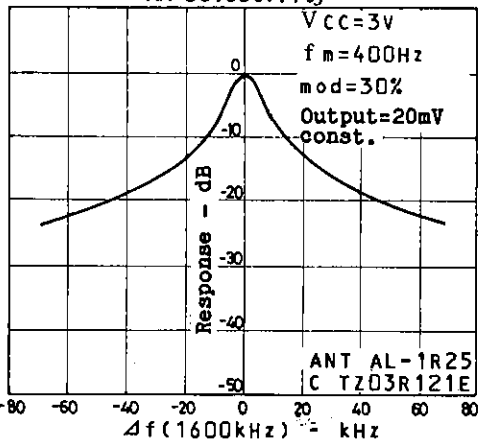
Noise, AF-out - Input



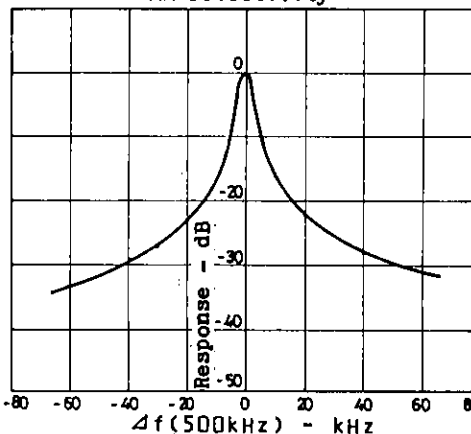
AM Band Characteristic

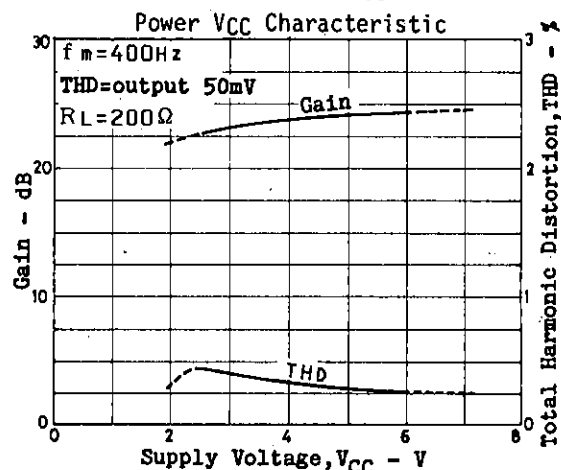
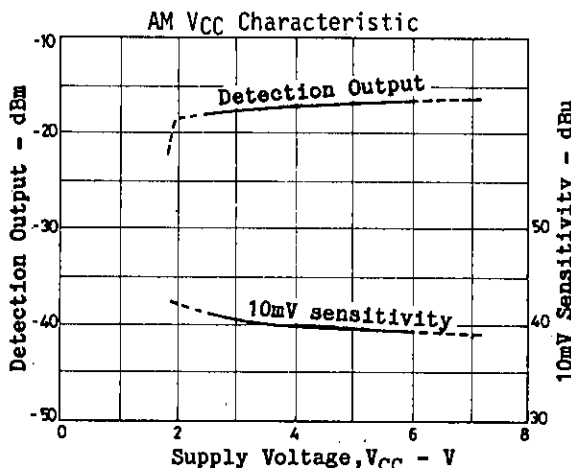
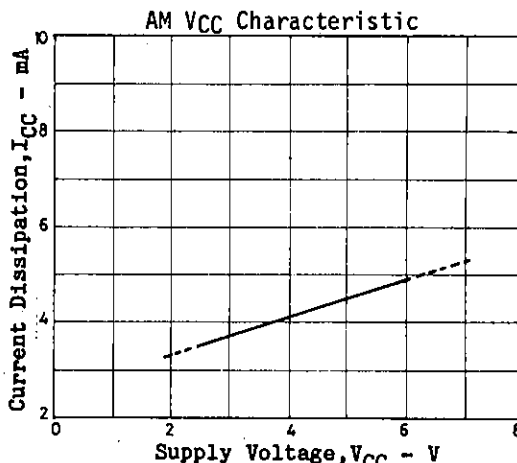
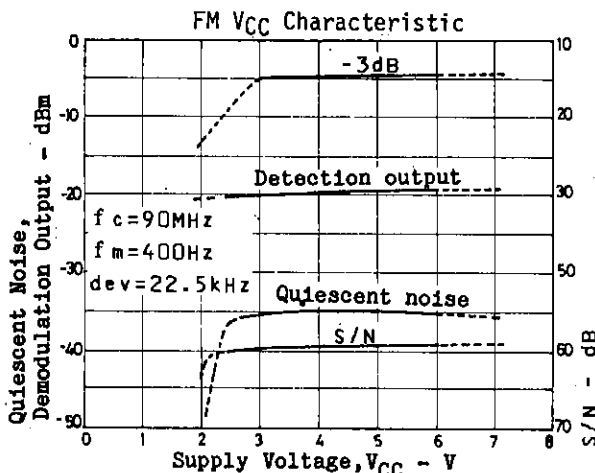
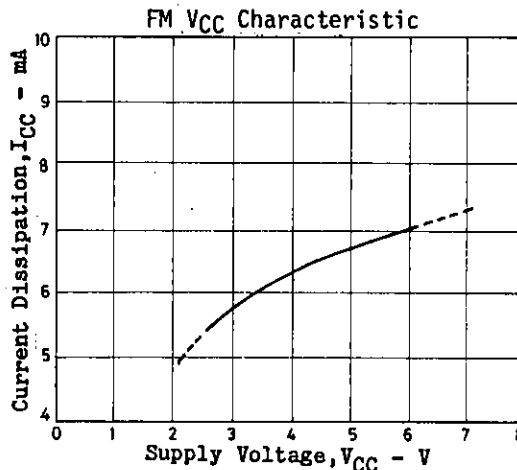
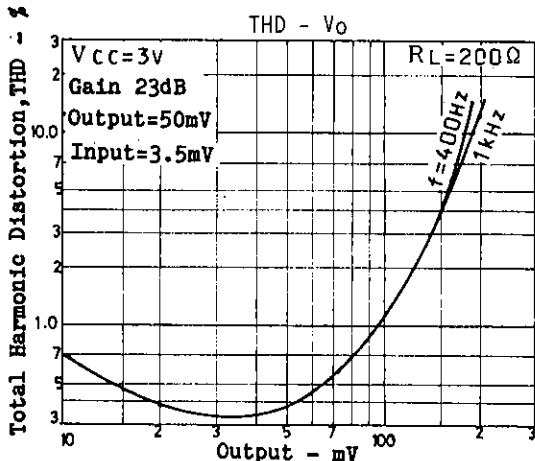


AM Selectivity

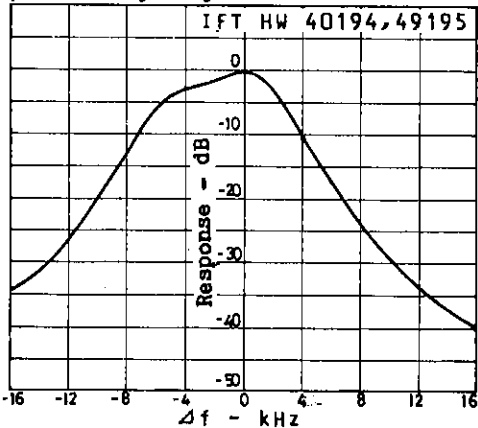


AM Selectivity

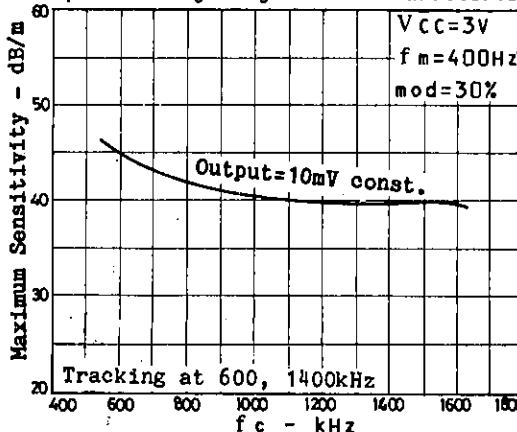




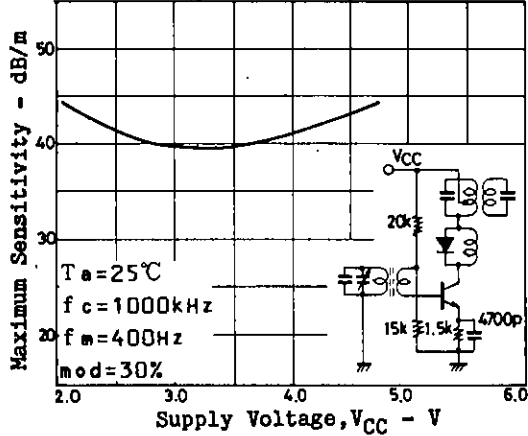
Superheterodyne System AM Characteristic



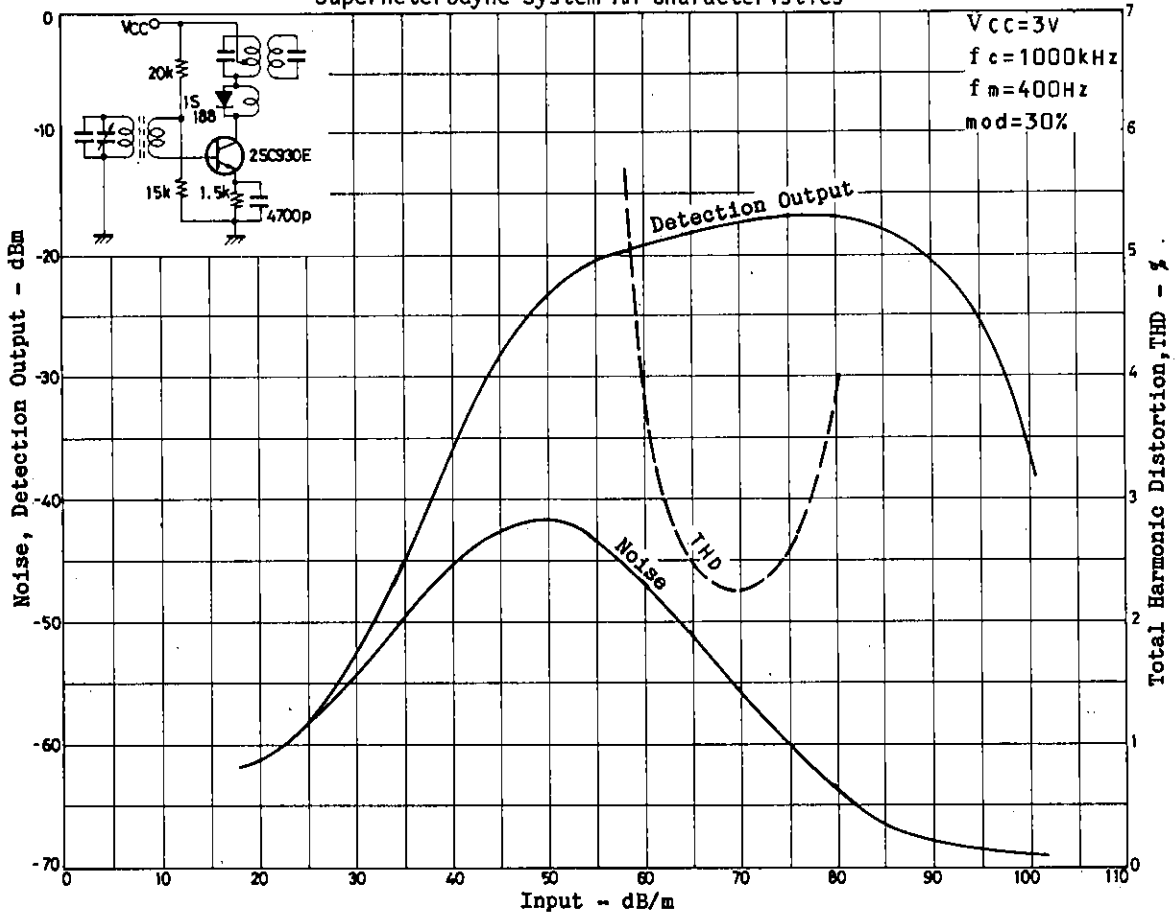
Superheterodyne System AM Characteristic



Superheterodyne System AM Characteristic



Superheterodyne System AM Characteristics



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