



BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1356C2

COMPLETE PICTURE IF IC FOR COLOR TV

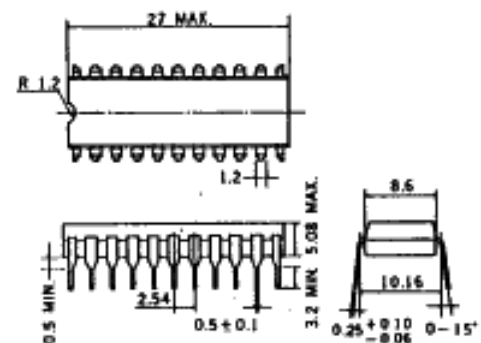
SILICON BIPOLAR MONOLITHIC INTEGRATED CIRCUIT

The μ PC1356C2 is a silicon monolithic integrated circuit for PIF section in Color Television receivers. As it contains picture detector and sound IF detector separately, it can offer excellent low buzz characteristics. This IC has all functions including picture IF amplifier (4th), picture low-level detector, sound IF detector, AFC detector, IF AGC, RF AGC and picture amplifier.

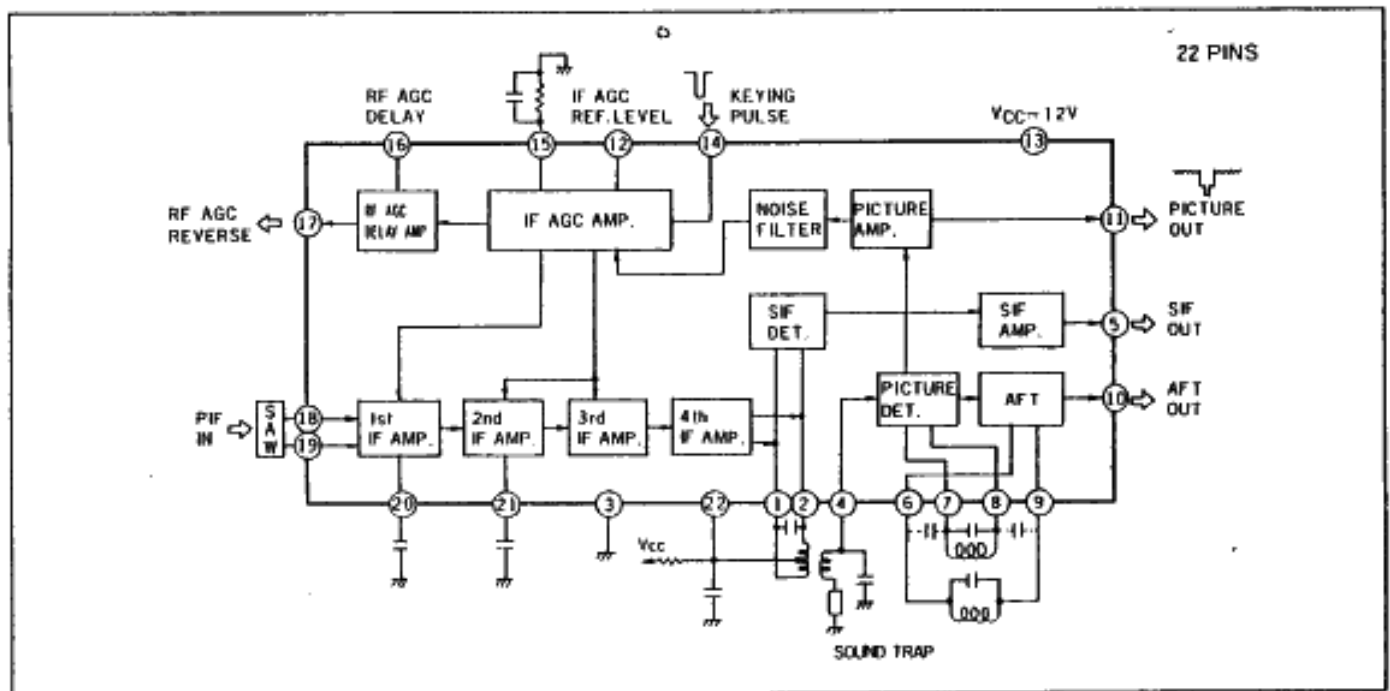
FEATURES

- As it contains picture detector and sound IF detector separately, it can offer excellent low buzz characteristics for Audio Multiplex TV.
- High input sensitivity; TYP. 32 dB μ
- The AGC control range is wide; TYP. 70 dB
- As input is differential mode, it can be used with SAW filter.

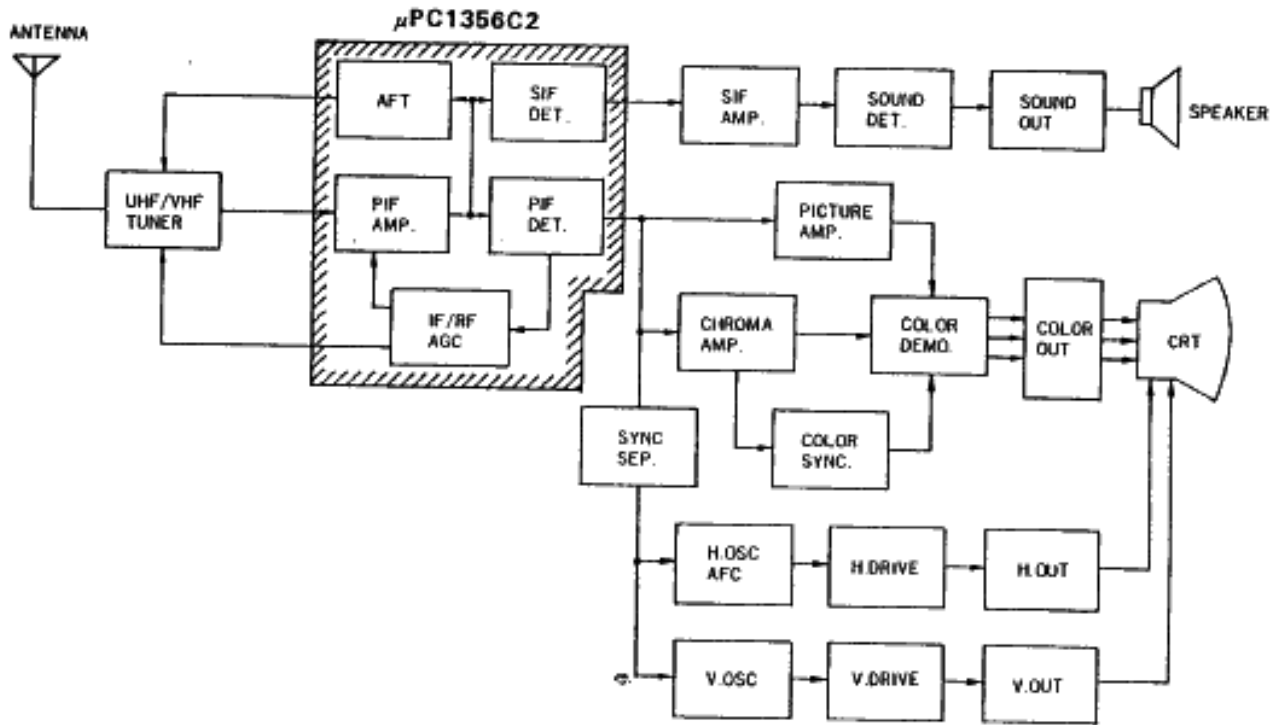
PACKAGE DIMENSIONS (Unit: mm)



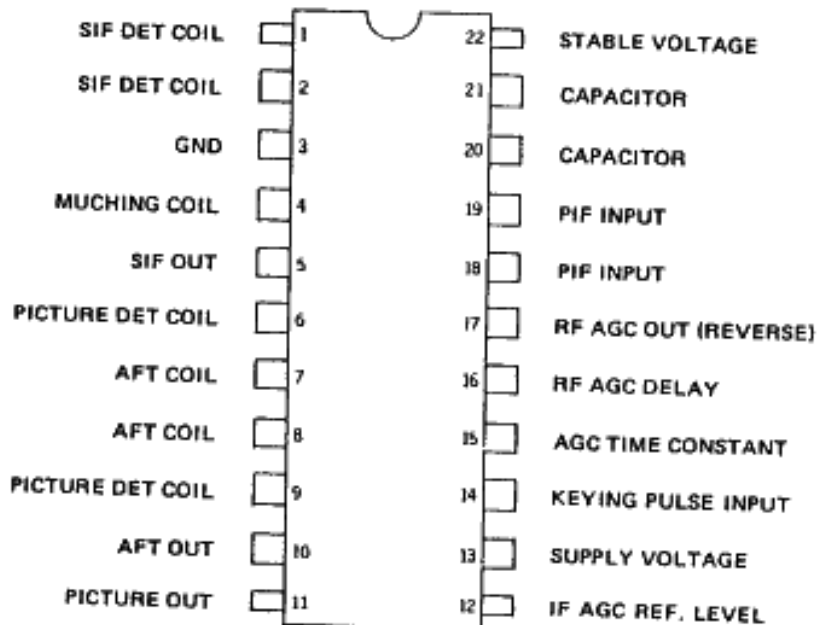
BLOCK DIAGRAM



TV BLOCK DIAGRAM



CONNECTION DIAGRAM (Top View)



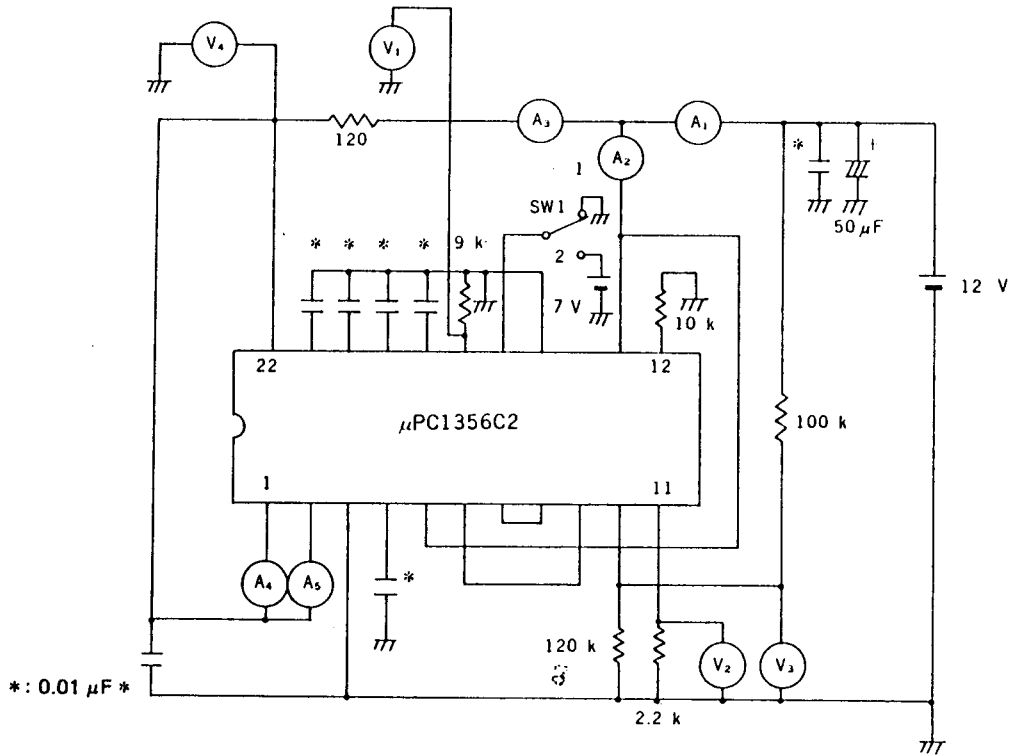
ABSOLUTE MAXIMUM RATINGS (Ta = 25 ±3 °C)

Supply Voltage Pin-13	V _{13MAX.}	15	V
Terminal 22 Current	I _{22MAX.}	100	mA
Terminal 14 Current	I _{14MAX.}	±3	mA
Power Dissipation	P _d	900 (Ta ≤ 65 °C)	mW
Operating Temperature	T _{opt}	-15 to +65	°C
Storage Temperature	T _{stg}	-40 to +125	°C

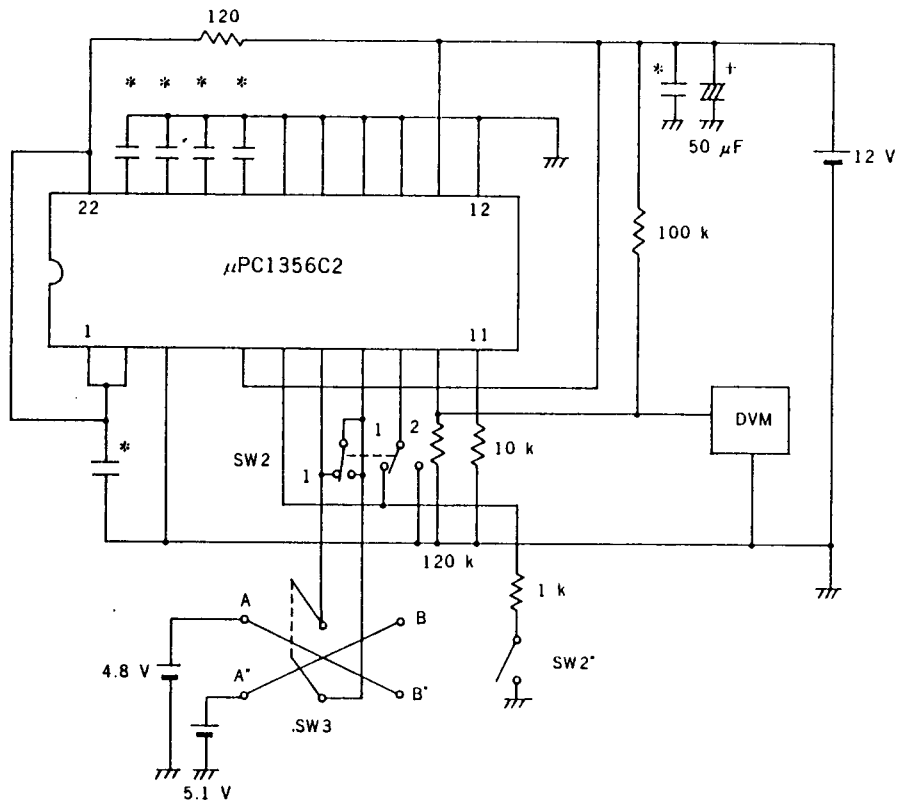
ELECTRICAL CHARACTERISTICS (Ta = 25 °C, V_{CC} = 12 V, R_A = 120 Ω, f_p = 58.75 MHz)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Total Supply Current	I _{CC}	1	55	70	90	mA	Zero Carrier
Terminal 13 Current	I ₁₃	1	20	30	40	mA	Zero Carrier
Terminal 22 Current	I ₂₂	1	35	40	50	mA	Zero Carrier
Terminal 22 Voltage	V ₂₂	1	6.6	7.2	7.6	V	
Maximum RF AGC Voltage	V _{17H}	1	9.0	9.2	10.0	V	V ₁₆ = 7 V
Minimum RF AGC Voltage	V _{17L}	1		0	0.5	V	V ₁₆ = 0 V
Terminal 11 Voltage	V ₁₁	1	3.7	4.1	4.7	V	
Terminal 10 Voltage	V ₁₀	2	5.0	6.5	7.7	V	
Maximum AFT Out Voltage	V _{10H}	2	11.0			V	V ₇ = 4.8 V V ₈ = 5.1 V
Minimum AFT Out Voltage	V _{10L}	2			1.0	V	V ₇ = 5.1 V V ₈ = 4.8 V
Input Sensitivity	V _{i(lim)}	3	25	32	41	dBμ	fm = 400 Hz m = 40 % U _o = 0.8 Vp-p
AGC Range	G.R	3	60	80		dB	fm = 10 kHz m = 40 % U _o = 0.8 Vp-p
Maximum Input Voltage	V _{i(MAX)}	3	100	55		mVr.m.s.	fm = 10 kHz m = 40 % U _o = 0.8 Vp-p
Signal To Noise Ratio	S/N	3	50			dB	fm = 15.75 kHz m = 80 % U _o = 1.5 Vp-p U _i = 10 mVr.m.s.
SIF Output Voltage	U _{o(SIF)}	3	12	25	50	mVrms	fm = 400 Hz m = 40 % U _{i(P)} = 3 mVr.m.s. fs = 54.25 MHz U _{i(S)} = 300 μVr.m.s.
Carrier Leak	CL(DET)	3		5	50	mVr.m.s.	U _i = 20 mVr.m.s.
Picture Frequency Response	f _C	3	5	13		MHz	m = 40 % U _i = 20 mVr.m.s.
Differential Gain	DG	3		5		%	f _p = 58.75 MHz Stair Step fm = 3.58 MHz m = 85 %
Differential Phase	DP	3		5		deg	14 % Modulated White To Sync Level U _{o(DET)} = 1.4 Vp-p
AFT Control Sensitivity	S _f	3	50	150		mV/kHz	fm = 400 Hz m = 40 % U _o = 0.8 Vp-p
AFT Band Width	BW	3	0.2	1.1	2.1	MHz	fm = 400 Hz m = 40 % U _o = 0.8 Vp-p
PIF Input Resistance	R _i	4		1.5		kΩ	
PIF Input Capacitance	C _i	4		3.5		pF	

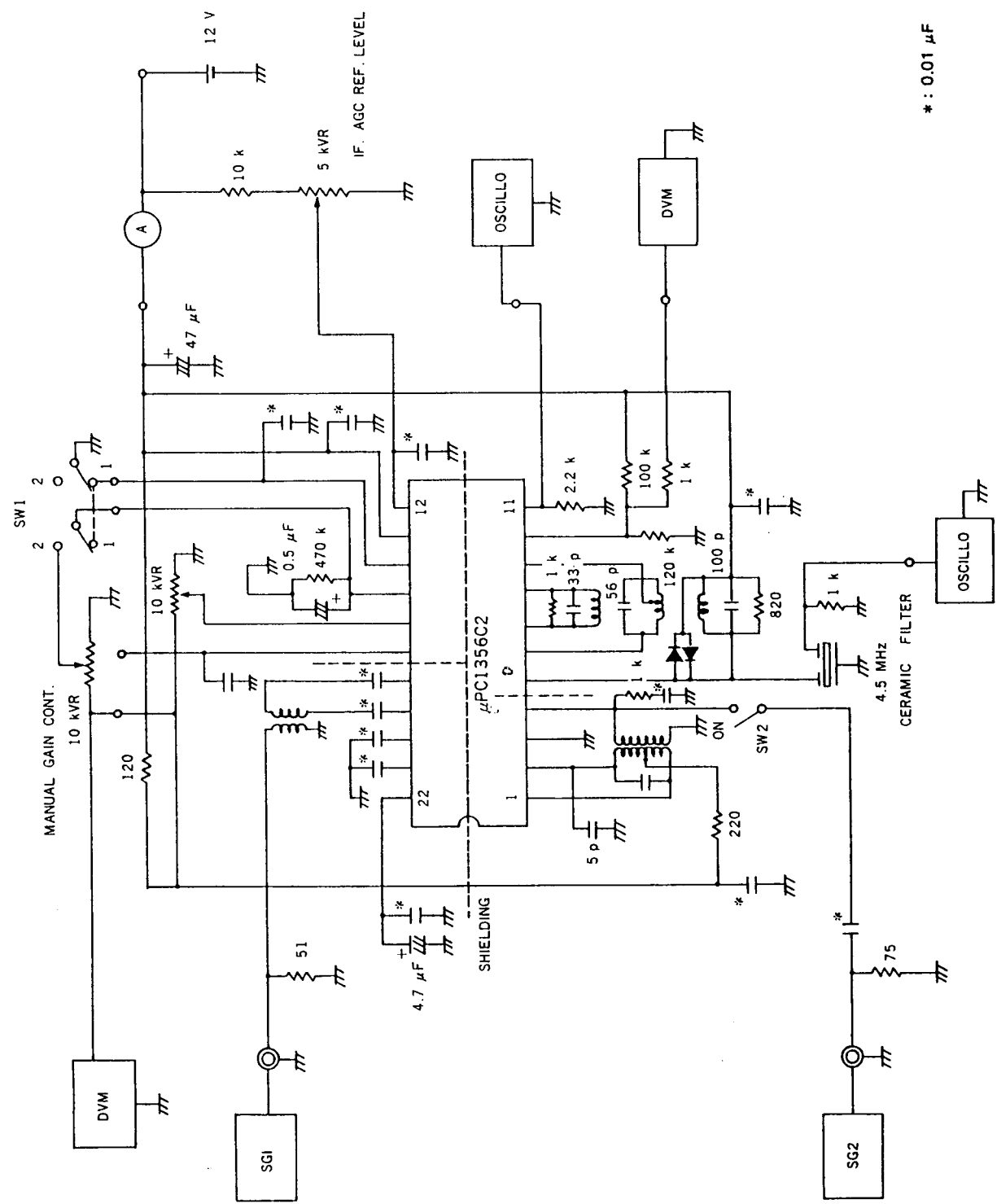
TEST CIRCUIT 1



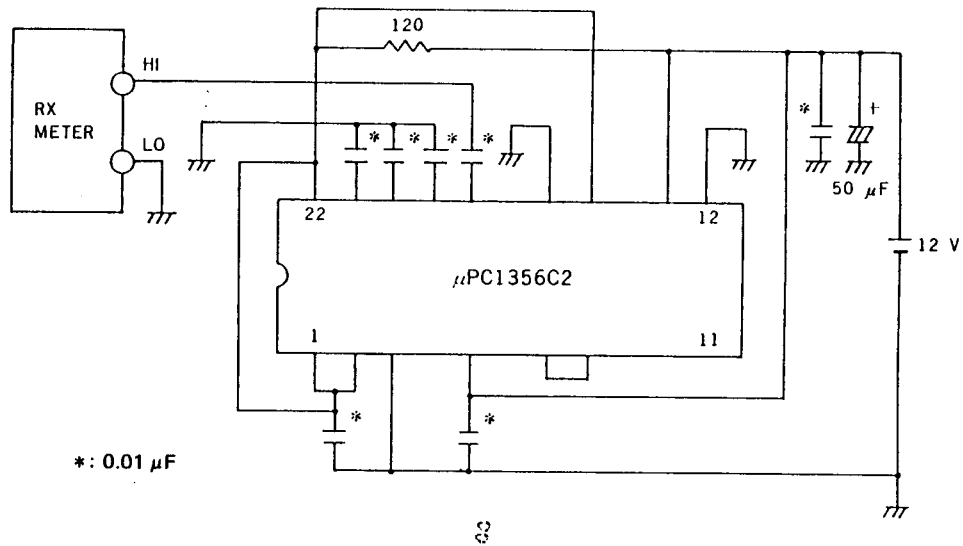
TEST CIRCUIT 2



TEST CIRCUIT 3



TEST CIRCUIT 4



SWITCH TABLE

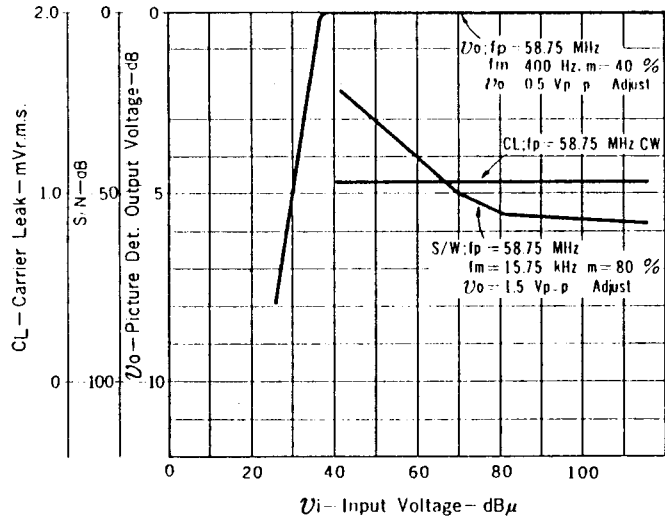
ITEM	I _{CC}	I ₁₃	I ₂₂	V ₂₂	I _{1,12}	ΔI	V _{17H}	V _{17L}	V ₁₁	V ₁₀	V _{10H}	V _{10L}
TEST CIRCUIT	1	1	1	1	1	1	1	1	1	2	2	2
SW1	1	1	1	1	1	1	2	1	1	-	-	-
SW2	-	-	-	-	-	-	-	-	-	1 SW2 OFF	2	2
SW3	-	-	-	-	-	-	-	-	-	OFF	AA'	BB'
METER	A ₁	A ₂	A ₃	A ₄	A _{4A5}	A _{4A5}	V ₁	V ₁	V ₂	V ₃	V ₃	V ₃

ITEM	V _{i(Jm)}	G.R.	V _{iMAX}	S/N	V _{o(SIF)}	CL(DET)	f _c	D.G.	D.P.	S _f	B	R _i	C _i
TEST CIRCUIT	3	3	3	3	3	3	3	3	3	3	3	4	4
SW1	1	1	1	2	1	2	2	2	2	2	2	-	-
SW2	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	-	-
MGCVR				VARIABLE		MGC GAIN MIN	MGC GAIN MIN	MGC GAIN MIN	MGC GAIN MIN	MGC GAIN MIN	MGC GAIN MIN		
SG	SG ₁	SG ₁	SG ₁	SG ₁	SG ₁	SG ₂	SG ₂	SG ₂	SG ₂	SG ₂	SG ₂	-	-
METER	OSCILLO	OSCILLO	OSCILLO	NOISE METER	OSCILLO	VTVM	OSCILLO	DG/DP METER	DG/DP METER	DIGIT VOLT METER	DIGIT VOLT METER	RX METER	RX METER

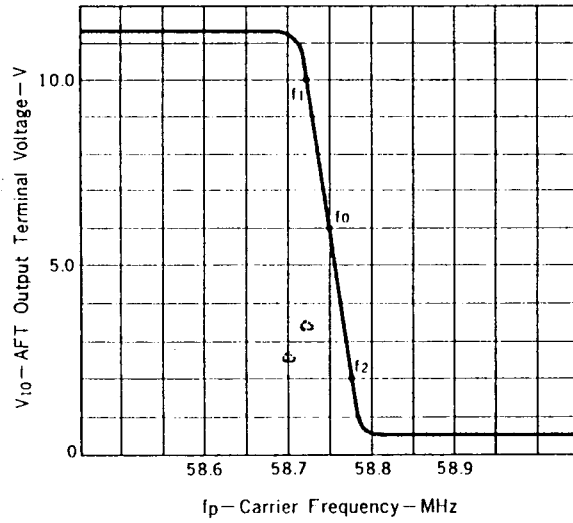
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TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

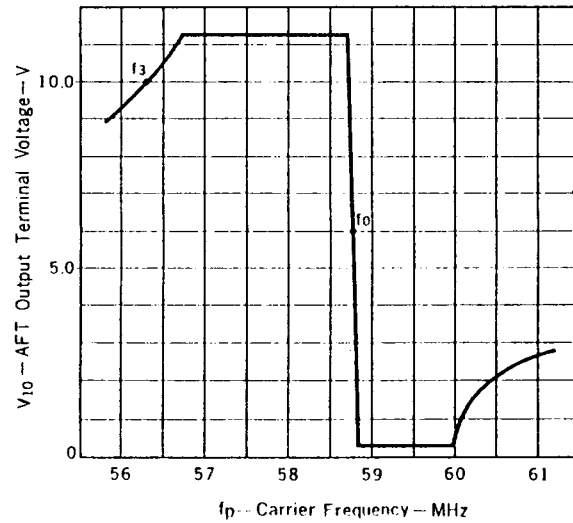
PICTURE DET. OUTPUT VOLTAGE, S/N, CARRIER LEAK vs. INPUT VOLTAGE



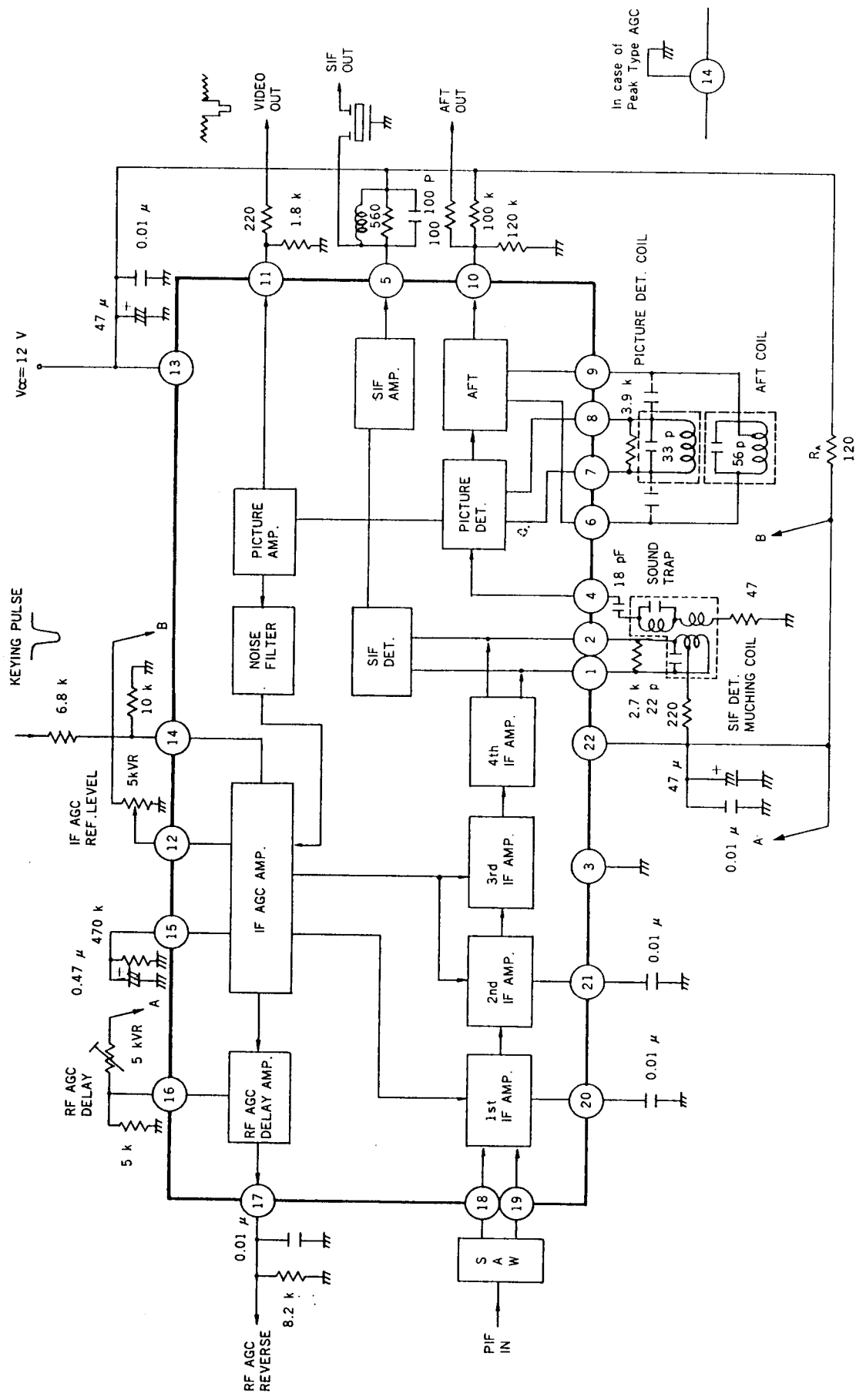
AFT OUTPUT TERMINAL VOLTAGE vs. CARRIER FREQUENCY - 1



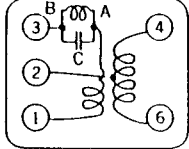
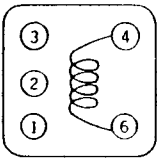
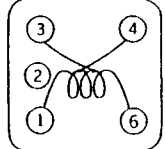
AFT OUTPUT TERMINAL VOLTAGE vs. CARRIER FREQUENCY - 2



STANDARD APPLICATION CIRCUIT



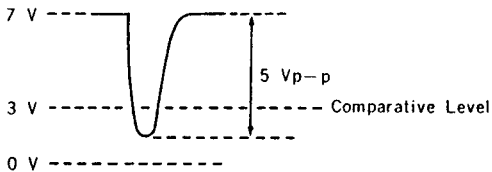
COIL SPEC. (COIL MAKER; TOKO, INC.)

COIL DRAWING (BOTTOM VIEW)	ITEM	$f_p = 57 \text{ MHz SPEC.}$	$f_p = 45 \text{ MHz SPEC.}$	
SIF DET. MUCHING COIL 	TYPE No.	13 TD		
	COIL No.	TV4BVC - 21132AFQ		
	TURN	4-6	5½ T	7½ T
		6-2	2½ T	3½ T
		2-4	3 T	4 T
1-A		4½ T	5½ T	
	A-B	3 T	5 T	
	C	100 pF	100 pF	
WIRE	0.2 φ 2 UEW A-B 1.0 φ TINNED WIRE		0.2 φ 2 UEW A-B 1.0 φ TINNED WIRE	
PICTURE DET. COIL 	TYPE No.	10 KN		
	COIL No.	180PNA - 10212BS		
	MUCHING C.	33 pF		
	NO LOAD Q.	96 ± 20 %		
	TURN	4-6	6 T	6½ T
	WIRE	0.16 φ 2 UEW		0.16 φ 2 UEW
AFT COIL 	TYPE No.	10KN		
	COIL No.	180PNAS - 10232ALR		
	MUCHING C.	33 pF		
	NO LOAD Q.	93 ± 20 %		
	TURN	6-1	5 T	7 T
		6-3	1½ T	2½ T
6-4		3½ T	4 T	
WIRE	0.23 φ 2 UEW		0.23 φ 2 UEW	

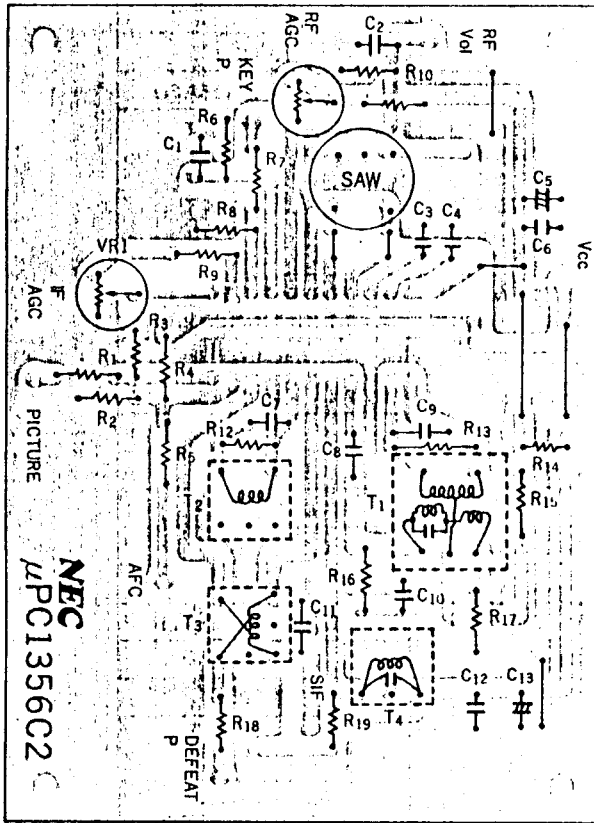
STANDARD USING CONDITION ($T_a = 25 \text{ }^\circ\text{C}$)

Supply Voltage	V_{CC}	12	V
PIF Input Voltage	v_i	10	mVr.m.s.
Keying Pulse		*5	V_{p-p}
RF AGC Voltage	V_6	2~5	V

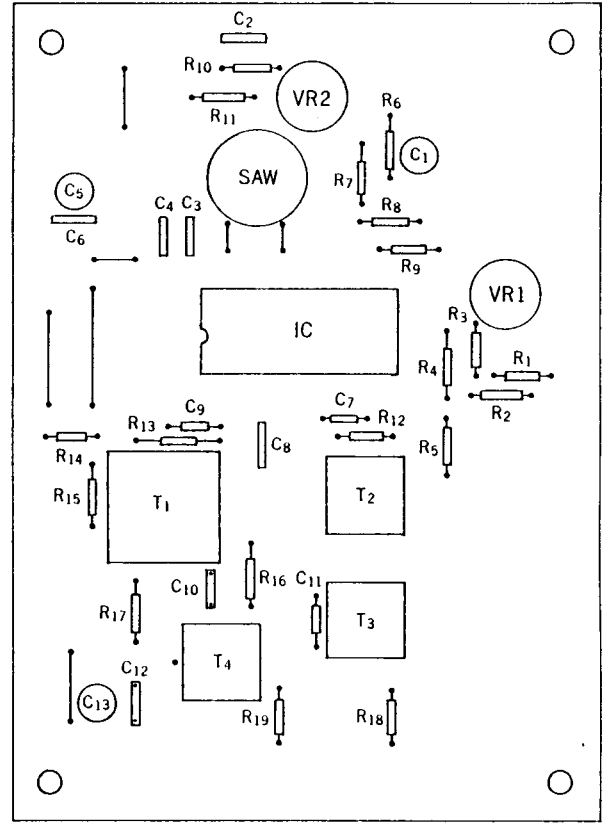
*Keying Pulse



• P.C. BOARD PATTERN



COMPONENTS LAYOUT



COMPONENTS (For $f_p = 57 \text{ MHz}$)

SYMBOL	SPEC.	SYMBOL	SPEC.
R ₁	220 Ω	C ₁	0.47 μF 10V
R ₂	120 kΩ	C ₂	0.01 μF
R ₃	1.8 kΩ	C ₃	0.01 μF
R ₄	100 kΩ	C ₄	0.01 μF
R ₅	100 Ω	C ₅	47 μF 16V
R ₆	470 kΩ	C ₆	0.01 μF
R ₇	6.8 kΩ	C ₇	20 pF
R ₈	10 kΩ	C ₈	20 pF
R ₉	10 kΩ	C ₉	20 pF
R ₁₀	8.2 kΩ	C ₁₀	0.01 μF
R ₁₁	5 kΩ	C ₁₁	33 pF
R ₁₂	3.9 kΩ	C ₁₂	0.01 μF
R ₁₃	2.7 kΩ	C ₁₃	47 μF 10V
R ₁₄	120 Ω	VR ₁	5 kΩ-B
R ₁₅	220 Ω	VR ₂	5 kΩ-B
R ₁₆	1 kΩ	T ₁	TO-KO TV4BVC-21132AFQ
R ₁₇	47 Ω	T ₂	TO-KO 180PNA-10212BS
R ₁₈	200 Ω	T ₃	TO-KO 180PNAS-10232ALR
R ₁₉	560 Ω	T ₄	TO-KO MTKAC-19951Z

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