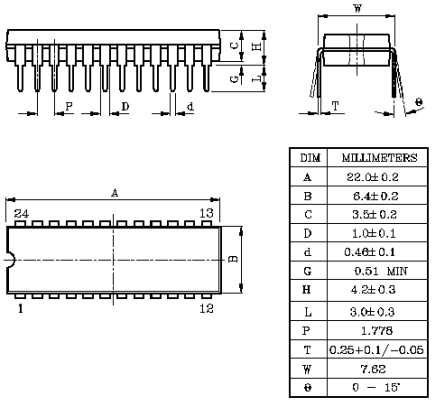
3V AM/FM STEREO TUNER IC's

KIA8122AN/AF are the AM/FM 1chip tuner IC's, which are designed for portable radio and 3V headphone radios.

FEATURES

- Built-in FM F/E, AM/FM IF and FM MPX.
- AM detector coil, FM IFT and IF coupling condenser are not needed.
- For adopting ceramic discriminator and ceramic resonator, it is not necessary to adjust the FM quad detector circuit and MPX VCO circuit.
- S-curve characteristics of FM detection output is reverse characteristic.
- Operating supply voltage range.
  : V_{CC}=1.8~7.0V (Ta=25℃)



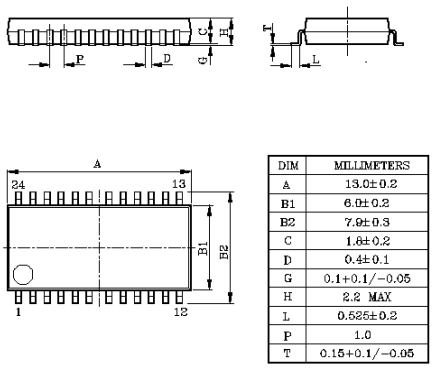
DIM	MILLIMETERS
A	22.0±0.2
B	6.4±0.2
C	3.5±0.2
D	1.0±0.1
d	0.46±0.1
G	0.51 MIN
H	4.2±0.3
L	3.0±0.3
P	1.778
T	0.25+0.1/−0.05
W	7.62
θ	0 ~ 15°

NDIP-24

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	8	V
LED Current		I_{LED}	10	mA
LED Voltage		I_{LED}	8	V
Power Dissipation	KIA8122AN	P_D (Note)	1200	mW
	KIA8122AF		400	
Operating Temperature		T_{opr}	-25~75	℃
Storage Temperature		T_{stg}	-55~150	℃

Note : Derated above Ta=25℃ in the proportion of 9.6mW/℃ for KIA8122AN and of 3.2mW/℃ for KIA8122AF



DIM	MILLIMETERS
A	13.0±0.2
B1	6.0±0.2
B2	7.9±0.3
C	1.6±0.2
D	0.4±0.1
G	0.1+0.1/−0.05
H	2.2 MAX
L	0.525±0.2
P	1.0
T	0.15+0.1/−0.05

MFP-24

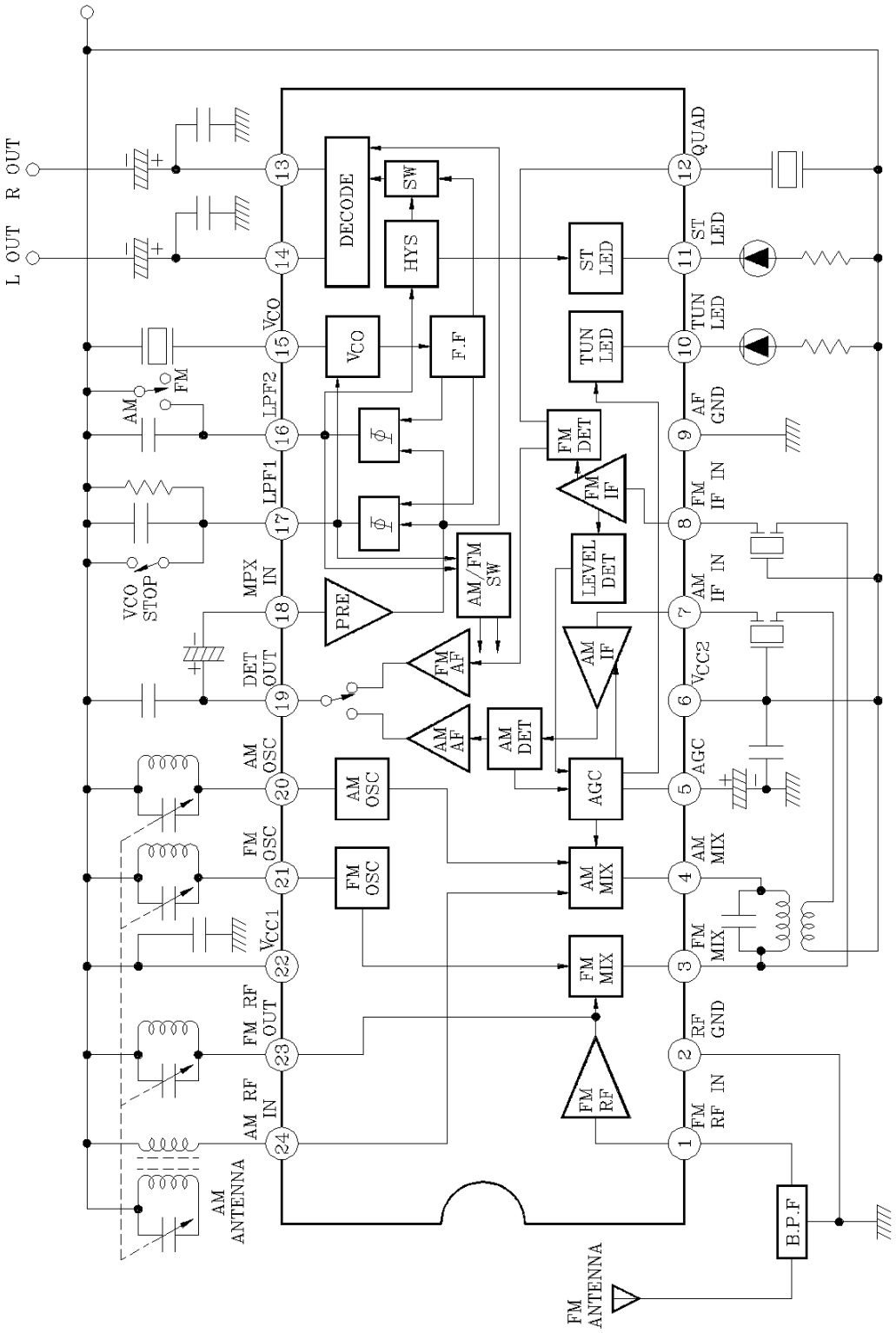
ELECTRICAL CHARACTERISTICS

Unless otherwise specified, Ta=25℃, V_{CC}=3V, F/E: f=98MHz, fm=1kHz
FM IF: f=10.7MHz, ⊿f=±22.5kHz, fm=1kHz
AM: f=1MHz, Mod=30%, fm=1kHz, MPX: fm=1kHz

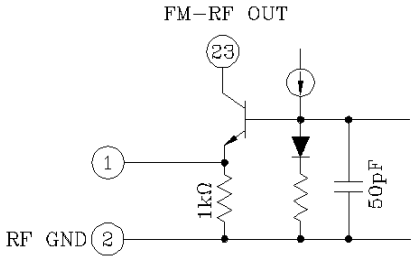
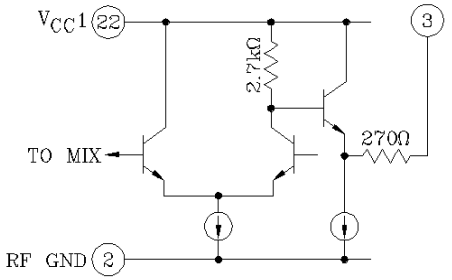
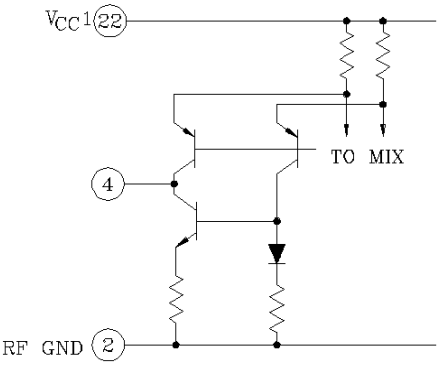
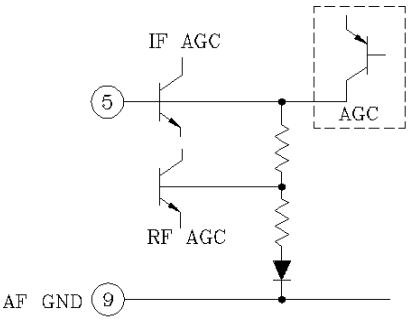
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}(FM)	1	V_{IN}=0, FM Mode	-	14.0	18.5	mA
		I_{CC}(AM)	1	V_{IN}=0, AM Mode	-	6.0	8.3	
F/E	Input Limiting Voltage	$V_{IN(lim)}$	1	-3dB Limiting	-	14.0	-	dBμ
	Local OSC Voltage	V_{OSC}	2	fosc=72.3MHz	70	105	140	mV_{rms}
FM IF	Input Limiting Voltage	$V_{IN(lim)}$	1	-3dB Limiting	39	44	49	dBμ
	Recovered Output Voltage	V_{OD}	1	V_{IN}=80dBμ	55	80	110	mV_{rms}
	Signal to Noise Ratio	S/N	1	V_{IN}=80dBμ	-	70	-	dB
	Total Harmonic Distortion	THD	1	V_{IN}=80dBμ	-	0.4	-	%
	AM Rejection Ratio	AMR	1	V_{IN}=80dBμ	-	50	-	dB
	Lamp ON Sensitivity	V_L	1	I_L=1mA	43	48	53	dBμ
AM	Gain	G_V	1	V_{IN}=26dBμ	20	40	80	mV_{rms}
	Recovered Output Voltage	V_{OD}	1	V_{IN}=60dBμ	50	60	100	mV_{rms}
	Signal to Noise Ratio	S/N	1	V_{IN}=60dBμ	-	44	-	dB
	Total Harmonic Distortion	THD	1	V_{IN}=60dBμ	-	1.0	-	%
	Lamp ON Sensitivity	V_L	1	I_L=1mA	19	24	29	dBμ
Pin 19 Output Resistance		R_{19}	1	FM Mode	-	0.75	-	kΩ
				AM Mode	-	12.5	-	

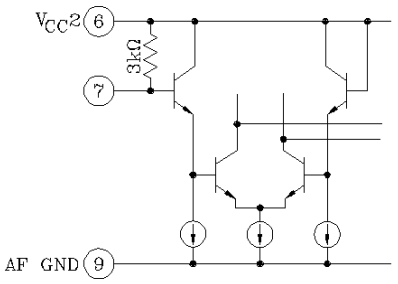
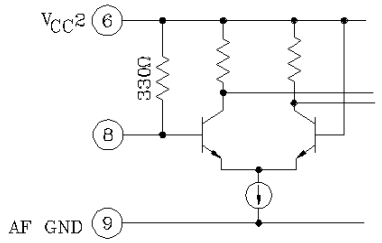
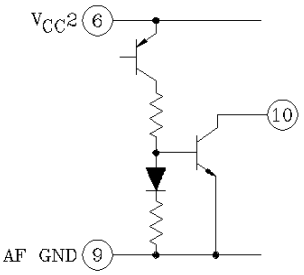
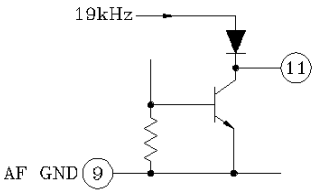
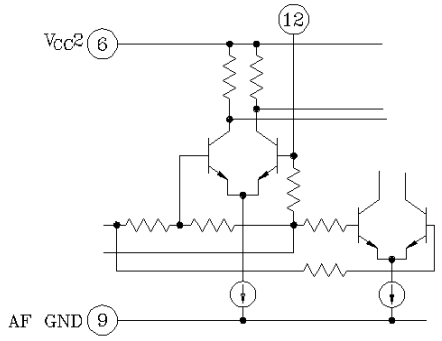
CHARACTERISTIC			SYMBOL	TEST CIRCUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
MPX	Input Resistance		R_{IN}	1			-	24	-	kΩ
	Output Resistance		R_{OUT}	2			-	5	-	kΩ
	Max. Composite Signal Input Voltage		V_{IN}(MAX) STEREO	1	L+R=90%, P=10% fm=1kHz, THD=3%		-	350	-	mV_{rms}
	Separation		Sep	1	L+R= $135mV_{rms}$ P=$15mV_{rms}$	fm=100Hz	-	42	-	dB
						fm=1kHz	35	42	-	
						fm=10kHz	-	42	-	
	Total Harmonic Distortion	Monaural	THD (MONAURAL)	1	V_{IN}=$150mV_{rms}$		-	0.2	-	%
		Stereo	THD (STEREO)		L+R=$135mV_{rms}$, P=$15mV_{rms}$		-	0.2	-	
	Voltage Gain		G_V(MPX)	1	V_{IN}=$150mV_{rms}$		-5	-3	-1	dB
	Channel Balance		C.B.	1	V_{IN}=$150mV_{rms}$		-2	0	2	dB
	Stereo Lamp Sensitivity	ON	V_L(ON)	1	Pilot Input		-	8	15	mV_{rms}
		OFF	V_L(OFF)				2	6	-	
	Stereo Lamp Hysteresis		V_H	1			-	2	-	mV_{rms}
	Capture Range		C.R.	1	P=$15mV_{rms}$		-	1.3	-	%
	Signal to Noise Ratio		S/N	1			-	70	-	dB

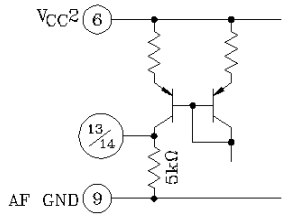
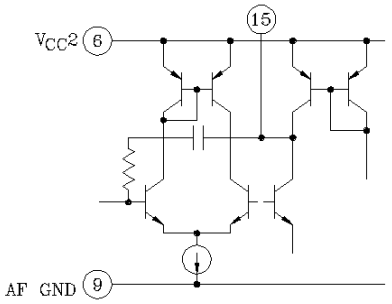
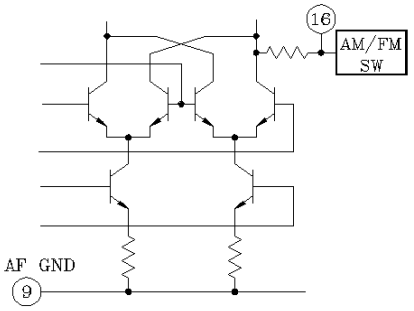
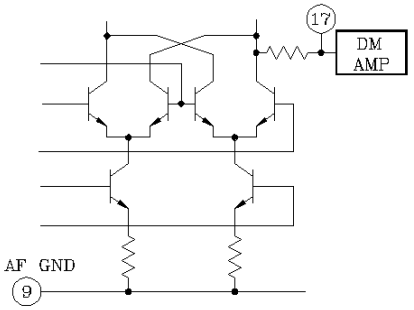
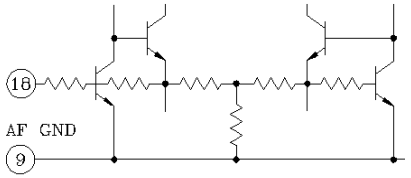
BLOCK DIAGRAM

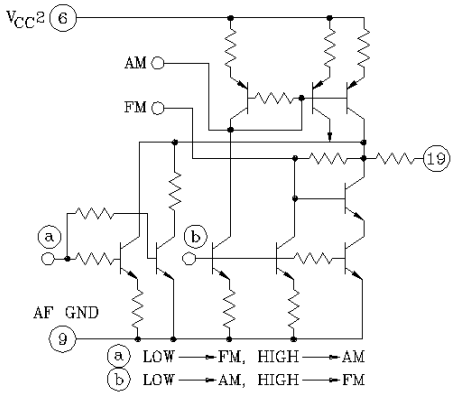
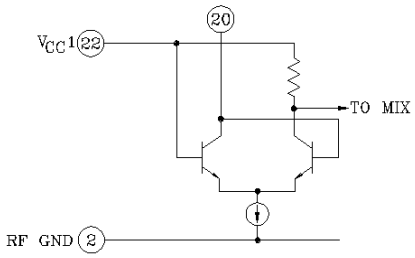
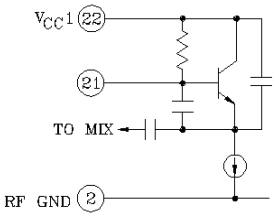
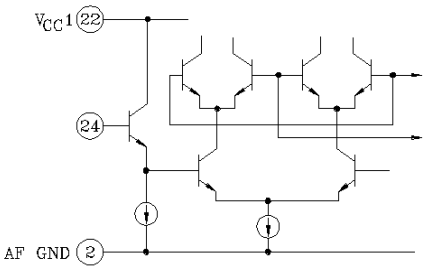


EXPLANATION OF TERMINALS

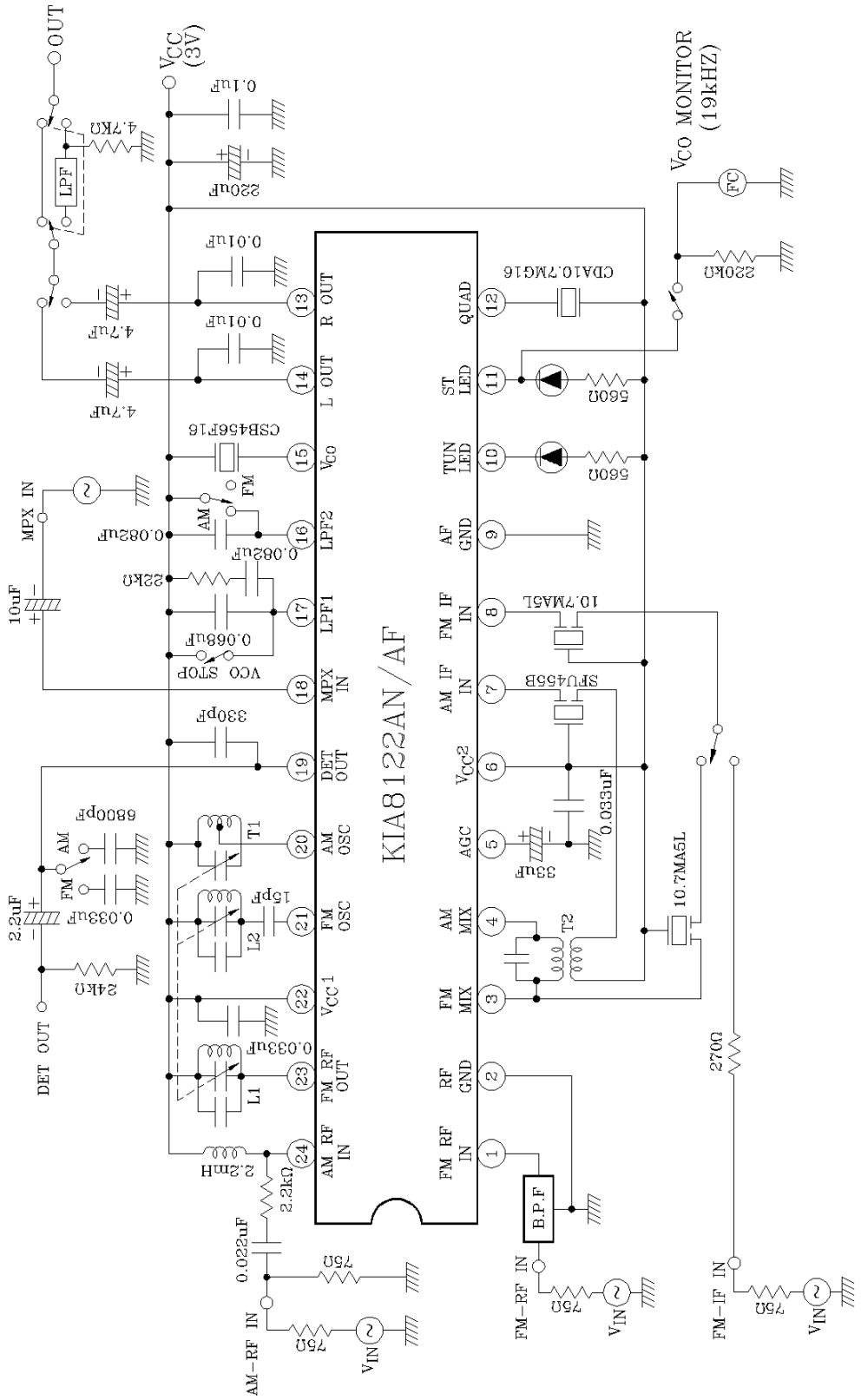
Pin NO.	ITEM	INTERNAL CIRCUIT	DC VOLTAGE(V) (at no signal)	
			AM	FM
1	FM-RF IN		0	0.7
2	GND1 (GND for Rf Stage)		0	0
3	FM MIX		2.3	1.8
4	AM MIX		2.3	1.8
5	AGC (AM AGC)		0	0
6	V_{CC2} (V_{CC} for IF/MPX Stage)		3.0	3.0

Pin NO.	ITEM	INTERNAL CIRCUIT	DC VOLTAGE(V) (at no signal)	
			AM	FM
7	AM IF IN		3.0	3.0
8	FM IF IN		3.0	3.0
9	GND2 (GND for IF/MPX Stage)		0	0
10	TUN LED (Tuning LED)		-	-
11	ST LED (Stereo LED)		-	-
12	QUAD (FM QUAD, Detector)		2.4	2.1

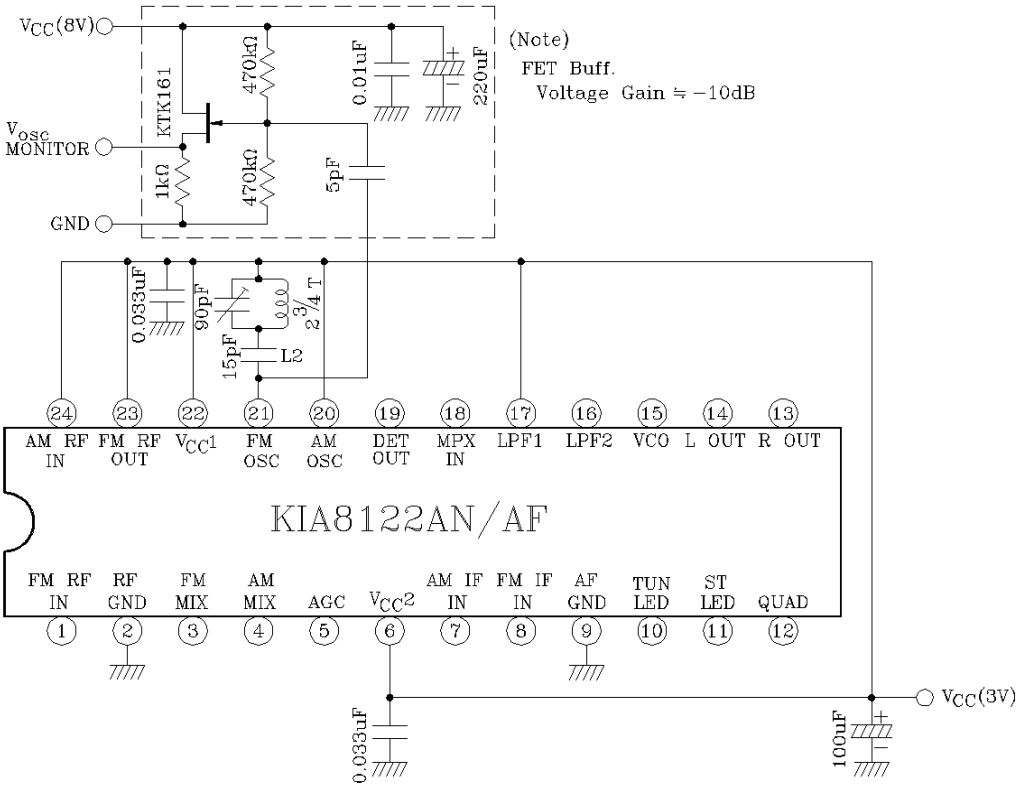
Pin NO.	ITEM	INTERNAL CIRCUIT	DC VOLTAGE(V) (at no signal)	
			AM	FM
13 14	R-OUT(R-ch Output) L-OUT(L-ch Output)		1.0	1.0
15	VCO		2.5	2.5 (VCO STOP MODE)
16	LPF2 ·LPF Terminal for Synchronous Detector ·Bias Terminal for AM/AM SW Circuit V_{16}=V_{CC} → AM V_{16}=Open → FM		3.0	2.2 (VCO STOP MODE 2.7)
17	LPF1 ·LPF Terminal for Phase Detector V_{CO} Stop Terminal V_{17}=V_{CC} →VCO Stop		2.7	2.2
18	MPX IN		0.7	0.7

Pin NO.	ITEM	INTERNAL CIRCUIT	DC VOLTAGE(V) (at no signal)	
			AM	FM
19	DET OUT		1.5	1.2
20	AM OSC		3.0	3.0
21	FM OSC		3.0	3.0
22	$V_{CC}1$ (V_{CC} for RF Stage)		3.0	3.0
23	FM RF OUT		3.0	3.0
24	AM RF IN		3.0	3.0

TEST CIRCUIT 1



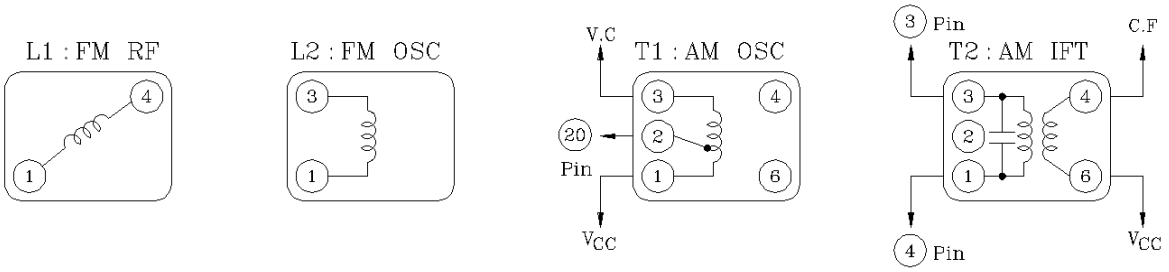
TEST CIRCUIT 2



COIL DATA

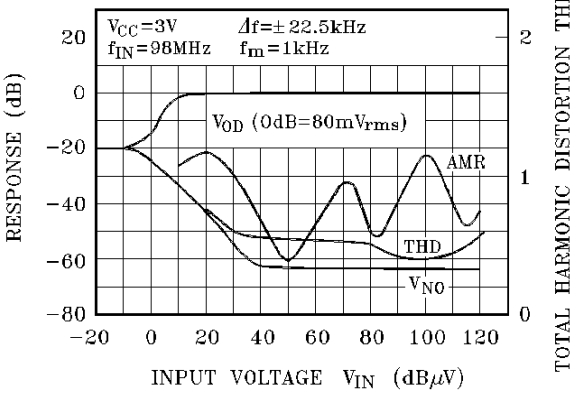
COIL NO.	TEST FREQ.	L (μH)	Co (pF)	Qo	TURNS					WIRE (mmϕ)	REFERENCE
					1-2	2-3	1-3	1-4	4-6		
L_1 FM RF	100MHz			100				$2\frac{1}{2}$		0.5 UEW	
L_2 FM OSC	100MHz			100			$2\frac{3}{4}$			0.5 UEW	
T_1 AM OSC	796kHz	288		115	13	73				0.08 UEW	ⓢ 4147-1356-038 ⓚ KSA0406
T_2 AM IFT	455kHz		180	120			180		15	0.08 UEW	ⓢ 2150-2162-165 ⓚ KSAM307

ⓢ : SUMIDA ELECTRIC CO., LTD.
ⓚ : KWANG SUNG ELECTRONICS CO., LTD (Tel : 02)716-0034)



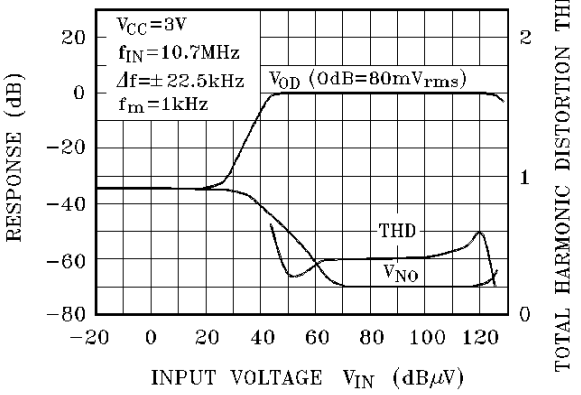
FM(F/E+IF)

V_{OD}, V_{NO}, THD, AMR – V_{IN}



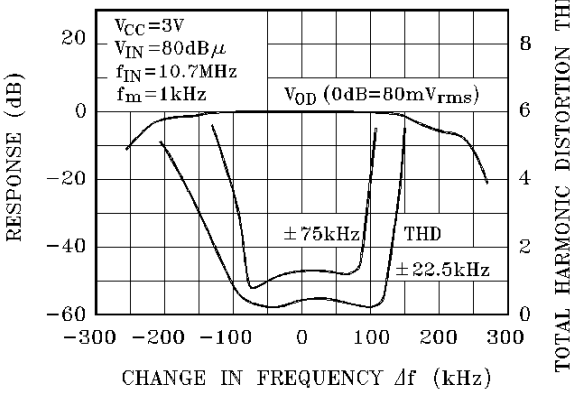
FM(IF)

V_{OD}, V_{NO}, THD, AMR – V_{IN}



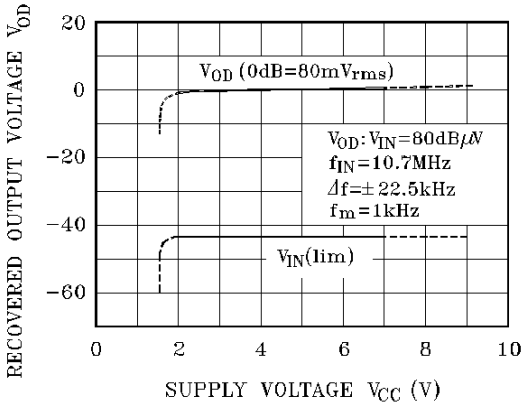
FM(IF)

V_{OD} , THD – Δf



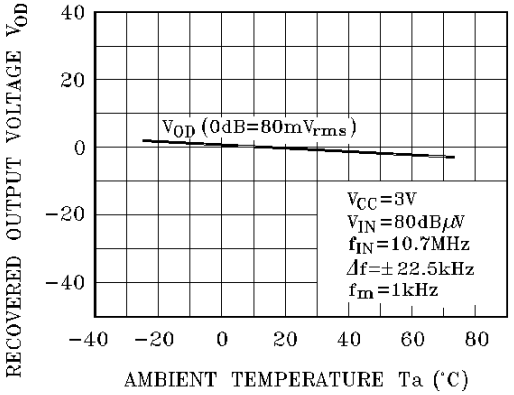
FM(IF)

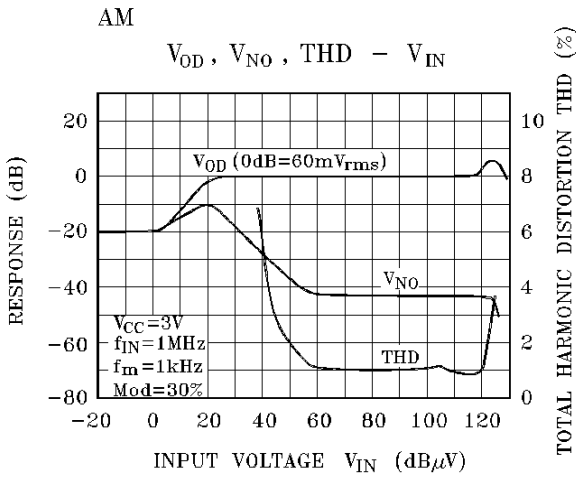
V_{OD} , $V_{IN(lim)}$ – V_{CC}

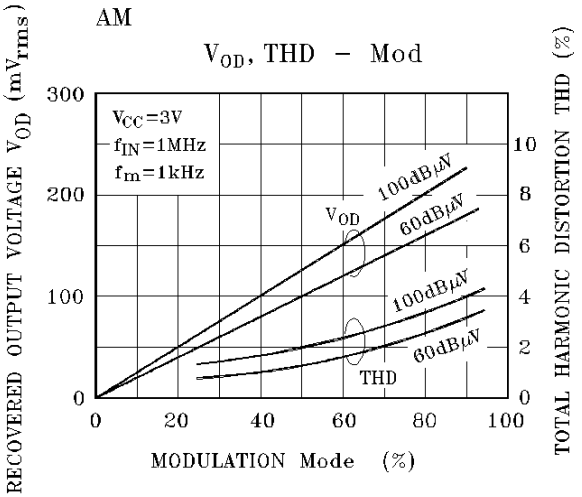


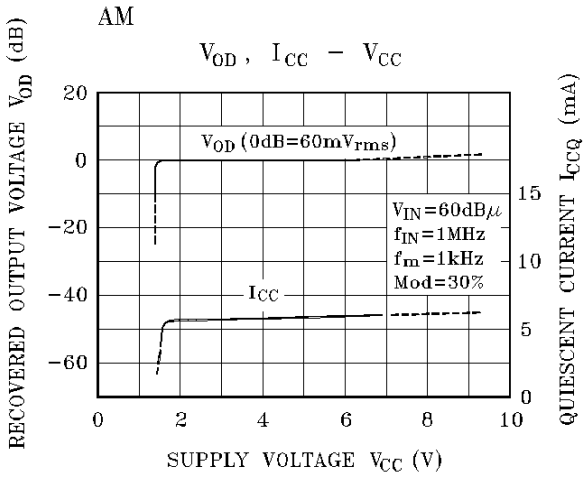
FM(IF)

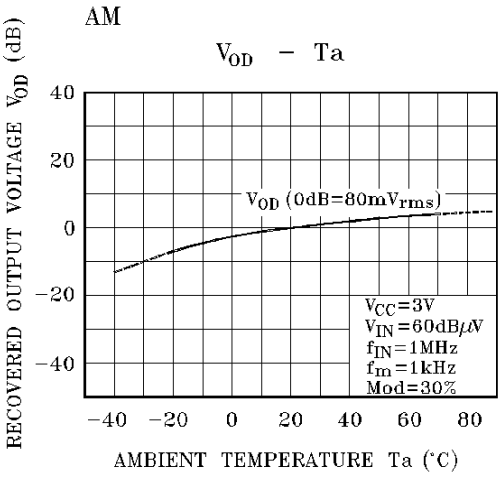
V_{OD} – Ta




AM
V_{OD}, V_{NO}, THD – V_{IN}
RESPONSE (dB)
TOTAL HARMONIC DISTORTION THD (%)
V_{OD} (0dB=60mV$_{rms}$)
V_{NO}
THD
V_{CC}=3V
f_{IN}=1MHz
f_m=1kHz
Mod=30%
INPUT VOLTAGE V_{IN} (dBμV)

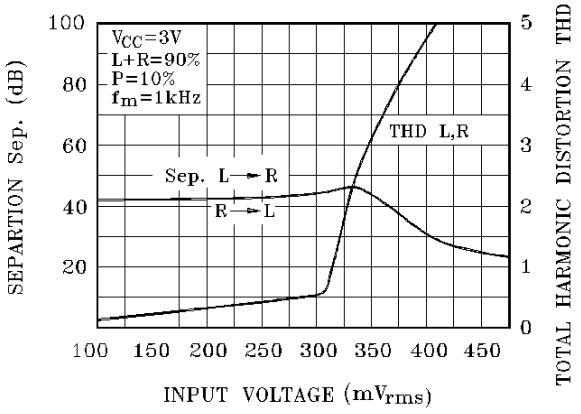

AM
V_{OD}, THD – Mod
RECOVERED OUTPUT VOLTAGE V_{OD} (mV$_{rms}$)
TOTAL HARMONIC DISTORTION THD (%)
V_{CC}=3V
f_{IN}=1MHz
f_m=1kHz
V_{OD}
100dBμV
60dBμV
THD
MODULATION Mode (%)


AM
V_{OD}, I_{CC} – V_{CC}
RECOVERED OUTPUT VOLTAGE V_{OD} (dB)
QUIESCENT CURRENT I_{CCQ} (mA)
V_{OD} (0dB=60mV$_{rms}$)
I_{CC}
V_{IN}=60dBμ
f_{IN}=1MHz
f_m=1kHz
Mod=30%
SUPPLY VOLTAGE V_{CC} (V)


AM
V_{OD} – Ta
RECOVERED OUTPUT VOLTAGE V_{OD} (dB)
V_{OD} (0dB=80mV$_{rms}$)
V_{CC}=3V
V_{IN}=60dBμV
f_{IN}=1MHz
f_m=1kHz
Mod=30%
AMBIENT TEMPERATURE Ta (°C)

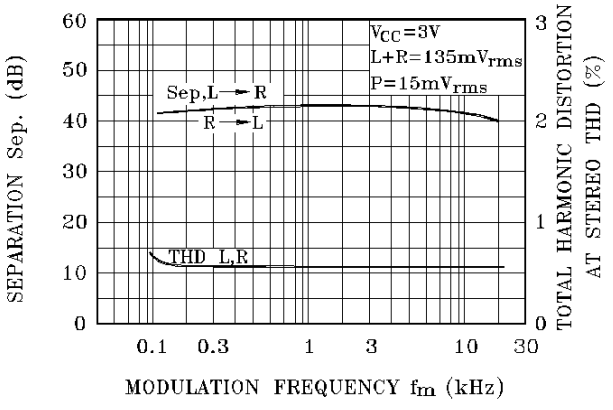
MPX

Sep. THD – V_{IN}



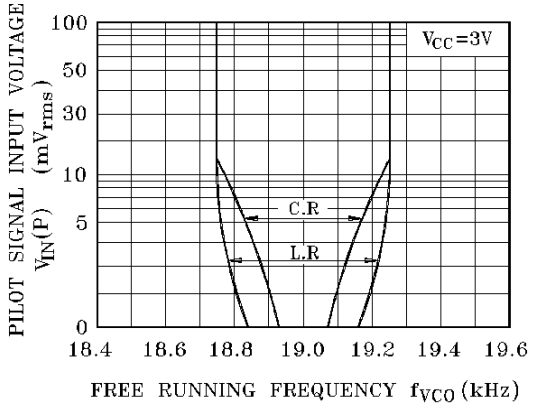
MPX

Sep. THD – f_m



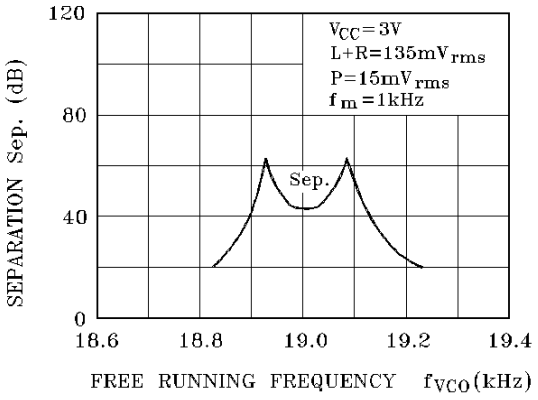
MPX

CAPTURE RANGE & LOCK RANGE



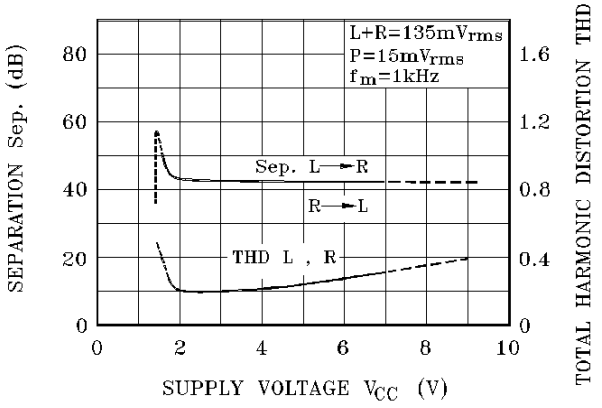
MPX

Sep. – f_{VCO}



MPX

Sep, THD – V_{CC}



MPX

$V_{L(ON)}$, $V_{L(OFF)}$, f_{VCO} – V_{CC}

