

## ONE CHIP TV MPX DEMODULATOR (KOREA TWO CARRIER SYSTEM)

The KA22682 is a silicon monolithic integrated circuit designed for demodulating Korea two-carrier TV-MPX broadcasts. The use of PLL makes reed filters unnecessary.

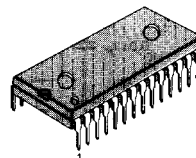
### FUNCTIONS

- 1st Sound IF Amp & Det.
- 2nd Sound IF Amp & Det.
- Matrix for Stereo
- Pilot Amp and Detector
- Pilot Decoder
- Mode Change Switch
- LED Drivers (Stereo, Bilingual)

### FEATURES

- One input mode change switch
- Auto pilot decoding by phase detector
- Minimum number of external parts required

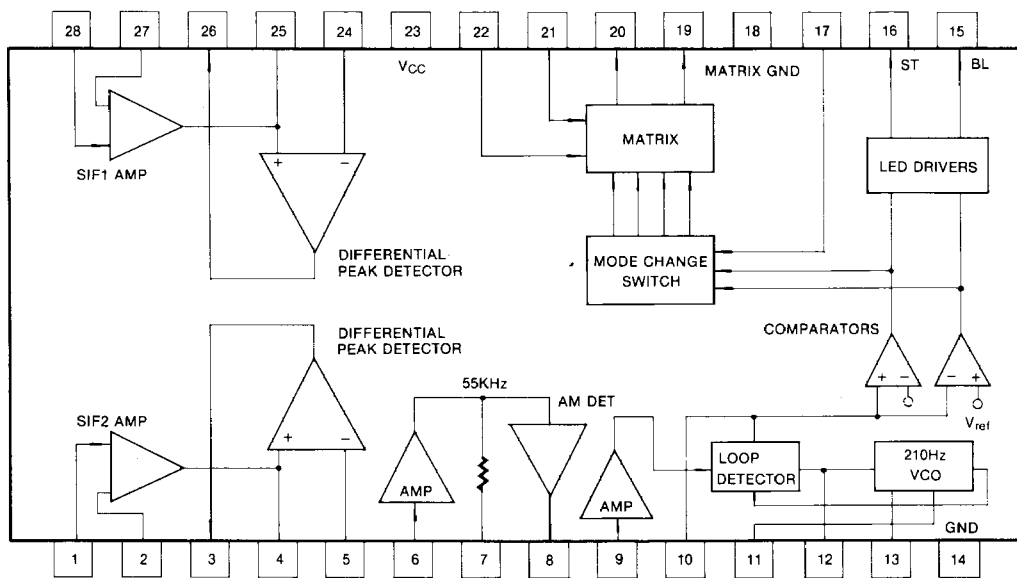
28 DIP



### ORDERING INFORMATION

Device	Package	Operating Temperature
KA22682	28 DIP	-20 ~ +70°C

### BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristics	Symbol	Condition	Value	Unit
Maximum Supply Voltage	$V_{CC\ max}$	$V_i = 0$	15	V
Pin 15 Output Current	$I_{15}$		30	mA
Pin 16 Output Current	$I_{16}$		30	mA
Maximum Mode SW Voltage	$V_{17}$		$-0.3 \sim V_{CC}$	V
Power Dissipation	$P_D$		1.5	W
Operating Temperature	$T_{opr}$		$-20 \sim +70$	°C
Storage Temperature	$T_{stg}$		$-40 \sim +125$	°C

## RECOMMENDED OPERATING CONDITIONS

Characteristics	Symbol	Min	Typ	Max	Unit
Operating Voltage	$V_{opr}$	9	12	15	V

## ELECTRICAL CHARACTERISTICS

SIF SECTION ( $V_{CC} = 12V$ ,  $f_m = 400Hz$ ,  $V_i = 100dB\mu$ ,  $T_a = 25^\circ C$ ,  $\Delta f = \pm 25KHz$ , unless otherwise specified)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Total Circuit Current	$I_{CC}$	$V_i = 0$		40	60	mA
Input Limiting Sens Voltage 1	$V_{lim1}$	$f_0 = 4.5MHz$	—	52		$dB\mu$
		$V_o = -3dB$				
Input Limiting Sens Voltage 2	$V_{lim2}$	$f_0 = 4.7MHz$	—	52		$dB\mu$
		$V_o = -3dB$				
Detector Output Voltage 1	$V_{o1}$	$f_0 = 4.5MHz$	0.7	0.9	1.2	$V_{rms}$
Detector Output Voltage 2	$V_{o2}$	$f_0 = 4.7MHz$	0.7	0.9	1.2	$V_{rms}$
T.H.D. 1	THD1	$f_0 = 4.5MHz$	—	0.5	1	%
T.H.D. 2	THD2	$f_0 = 4.7MHz$	—	0.5	1	%
AM Rejection Ratio 1	AMR1	$f_0 = 4.5MHz$ , AM = 30%	35	45	—	dB
AM Rejection Ratio 2	AMR2	$f_0 = 4.7MHz$ , AM = 30%	35	45	—	dB
Input Impedance of Pin 28	$Z_{in28}$	$f = 4.5MHz$	—	40	—	Kohm
Input Impedance of Pin 1	$Z_{in1}$	$f = 4.7MHz$	—	40	—	Kohm
Output Resistance of Det Output	$Z_{o26}$		—	1.2	—	Kohm
Output Resistance of Det Output	$Z_{o3}$		—	1.2	—	Kohm

**ELECTRICAL CHARACTERISTICS** (Continued)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Cross Talk (SIF1→SIF2)	CT1	SIF1 $f_0 = 4.5\text{MHz}$ $f_m = 400\text{-}5\text{K}$	50	55	—	dB
		SIF2 $f_0 = 4.7\text{MHz}$ $\Delta f = 0$				
Cross Talk (SIF2→SIF1)	CT2	SIF1 $f_0 = 4.5\text{MHz}$ $\Delta f = 0$	50	55	—	dB
		SIF2 $f_0 = 4.7\text{MHz}$ $f_m = 400\text{-}5\text{K}$				
Frequency Response of Detector	$F_1$	$f_0 = 4.5\text{MHz}$ $f_m = 40\text{Hz}\text{-}55\text{KHz}$	-3	0	1.5	dB
Frequency Response of Detector	$F_2$	$f_0 = 4.7\text{MHz}$ $f_m = 40\text{Hz}\text{-}55\text{KHz}$	-3	0	1.5	dB
Detector Output Balance	C.B.	SIF1 = 4.5MHz SIF2 = 4.7MHz	-2	0	2	dB

**PILOT AMP AND DETECTOR**

( $V_{CC} = 12\text{V}$ ,  $f_c = 55.125\text{KHz}$ ,  $f_m = 150$  or  $276\text{Hz}$ , AM = 50%, unless otherwise specified)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Input Resistance of Pin 6	$Z_{i6}$		—	30	—	Kohm
Maximum Pilot Input Voltage	$V_{in(max)}$	$V_o = -3\text{dB}$ , $0\text{dB}$ : $V_i = 10\text{mV}$		100	—	mV
Detector Gain	$A_{VD}$		30	36		dB
Detector Output Voltage	$V_{OD}$	$V_{in} = 10\text{mV}$		270		mV
Output Resistance of Pin 8	$Z_{out}$		—	700	—	ohm

**PILOT DECODER** ( $V_{CC} = 12\text{V}$ ,  $f = 150$  or  $276\text{Hz}$ , unless otherwise specified)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Input Sensitivity	$V_{sens}$	$f = 150$ or $276\text{Hz}$		10	20	mV
Input Resistance of Pin 9	$Z_{i9}$		—	47	—	Kohm
Capture Range	$f_c$	$V_i = 50\text{mV}$		$\pm 5$		Hz
Lock Range	$f_L$	$V_i = 50\text{mV}$		$\pm 10$		Hz
Stereo Range	$f_{ST}$	$V_i = 100\text{mV}$		$150 \pm 10$		Hz
Bilingual Range	$f_{BL}$	$V_i = 100\text{mV}$		$276 \pm 10$		Hz

**INDICATOR** ( $V_{CC} = 12V$ , unless otherwise specified)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Saturation Voltage of Pin 15 & 16	$V_{sat}$	$I_{15}, I_{16} = 30mA$		0.7		V
LED On Time	$t_{ON}$	$f = 150, 276Hz$ $V_i = 0mV \rightarrow 50mV$	—	100	200	mS
LED Off Time	$t_{OFF}$	$f = 150, 276Hz$ $V_i = 50mV \rightarrow 0mV$	—	100	200	mS

**MODE SWITCH SECTION**

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Main/Main Resistance	$R$ (m/m)	$SW = 2$	3.1	4.7	7.0	Kohm
Forced Mono Voltage	$V_{mono}$	$SW = 1$		0	1.0	V
Main/Sub Supply Current	$I_{m/s}$	$SW = 3$	-0.2	0	0.2	mA
Sub/Sub Supply Voltage	$V_{s/s}$	$SW = 4$	11	12		V

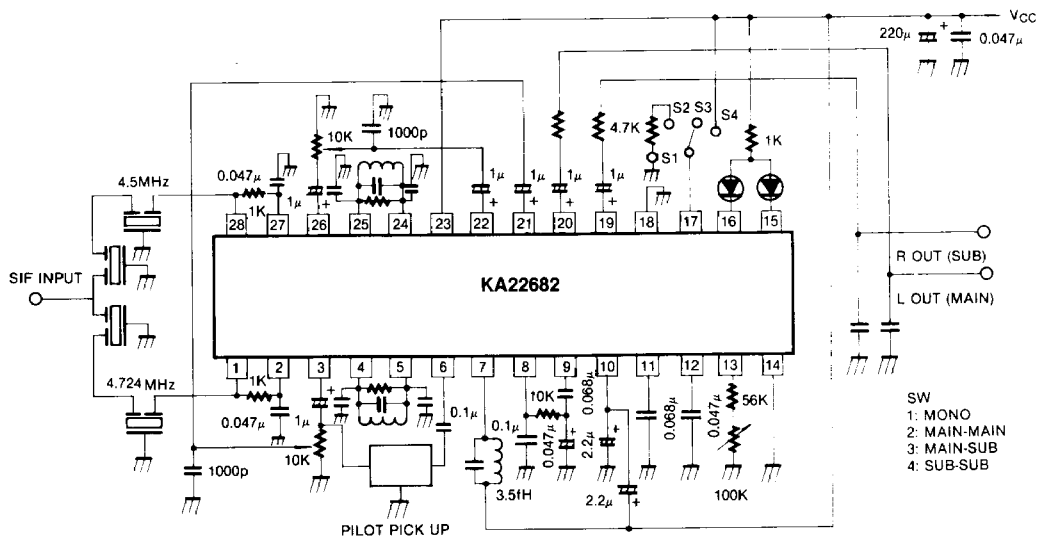
**MATRIX SECTION**

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
T.H.D. In Main Mode	$THD_M$	$V_i = 50mV$	—	0.3	1.0	%
T.H.D. In Sub Mode	$THD_S$	$V_i = 50mV$	—	0.3	1.0	%
T.H.D. In Stereo Mode	$THD_{ST}$	$V_i = 50mV$	—	0.3	1.0	%
Cross Talk (M/M $\rightarrow$ S/S)	$CT_{MM \rightarrow SS}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (S/S $\rightarrow$ M/M)	$CT_{SS \rightarrow MM}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (M $\rightarrow$ S)	$CT_{M \rightarrow S}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (S $\rightarrow$ M)	$CT_{S \rightarrow M}$	$V_i = 50mV$	50	55	—	dB
Separation (L $\rightarrow$ R)	$SEP_{L \rightarrow R}$	$V_i = 50mV$	40	50	—	dB
Separation (R $\rightarrow$ L)	$SEP_{R \rightarrow L}$	$V_i = 50mV$	40	50	—	dB
Voltage Gain of Matrix	$A_V$	$V_i = 50mV$	10	12	16	dB
Output Impedance	$Z_D$ (M)			600		ohm

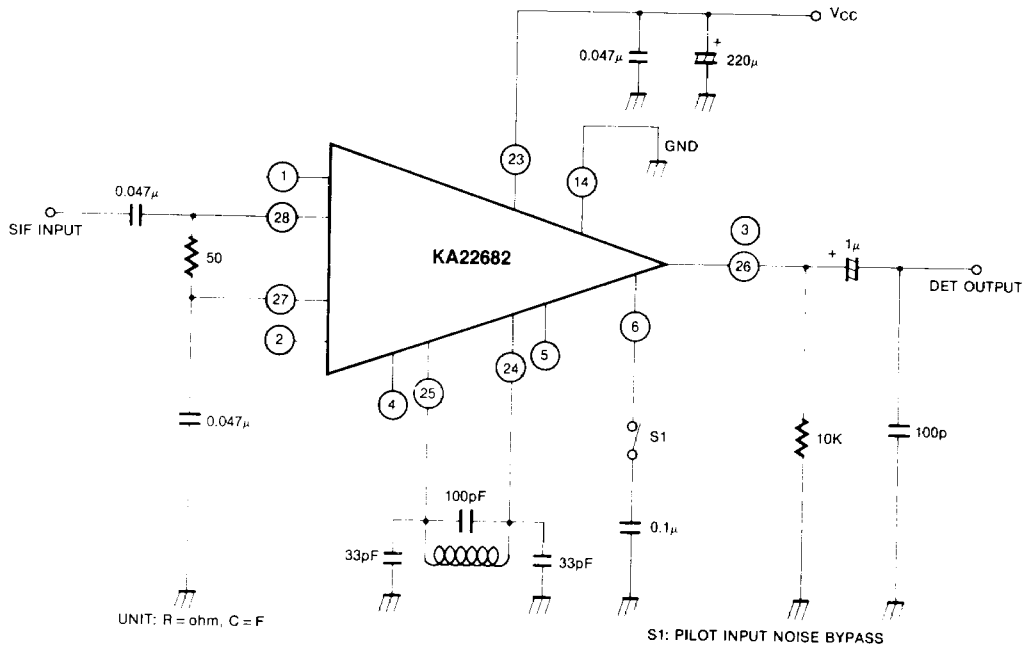
PIN CONFIGURATION

Pin No	Description	Pin No	Description
1	SIF2 Input	15	Indicator (Bilingual)
2	SIF2 Bias	16	Indicator (Stereo)
3	SIF2 Det Output	17	Mode Change Switch
4	SIF2 Coil	18	Matrix GND
5	SIF2 Coil	19	R (Sub) Output
6	Pilot Input	20	L (Main) Output
7	3.5H Coil	21	Sub Input
8	Pilot Det Output	22	Main Input
9	PLL Input	23	V <sub>CC</sub>
10	Phase Det Filter	24	SIF1 Det Coil
11	Loop Filter	25	SIF1 Coil
12	C-Time	26	SIF1 Det Output
13	R-Time	27	SIF1 Bias
14	GND	28	SIF1 Input

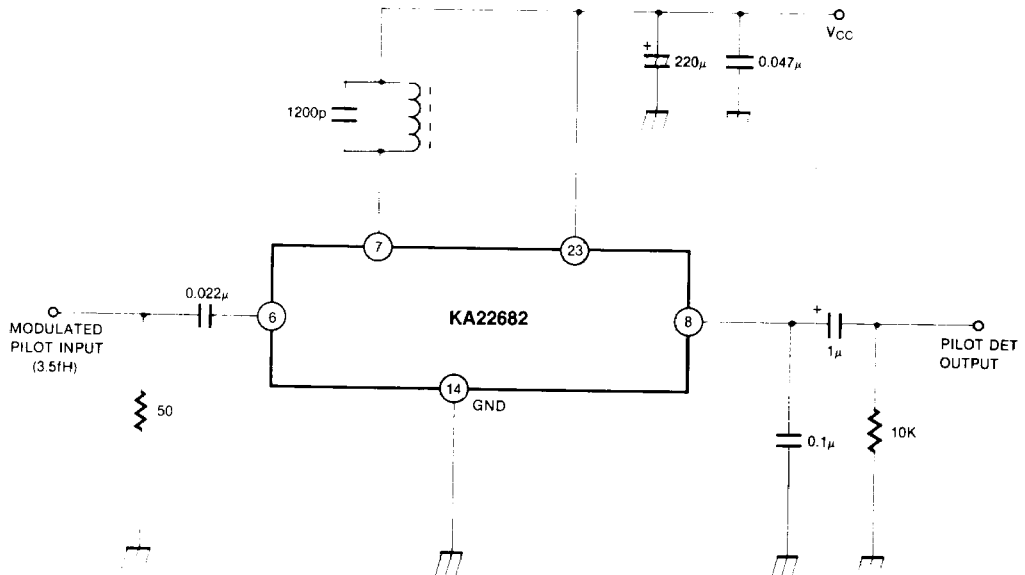
TYPICAL APPLICATION CIRCUIT



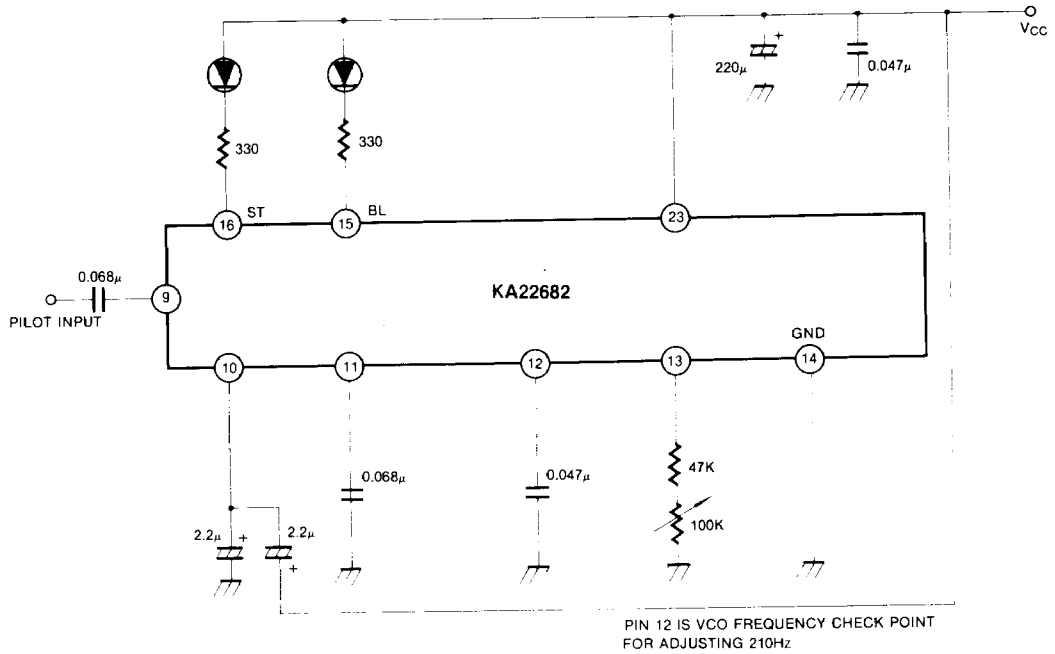
TEST CIRCUIT 1 SIF SECTION



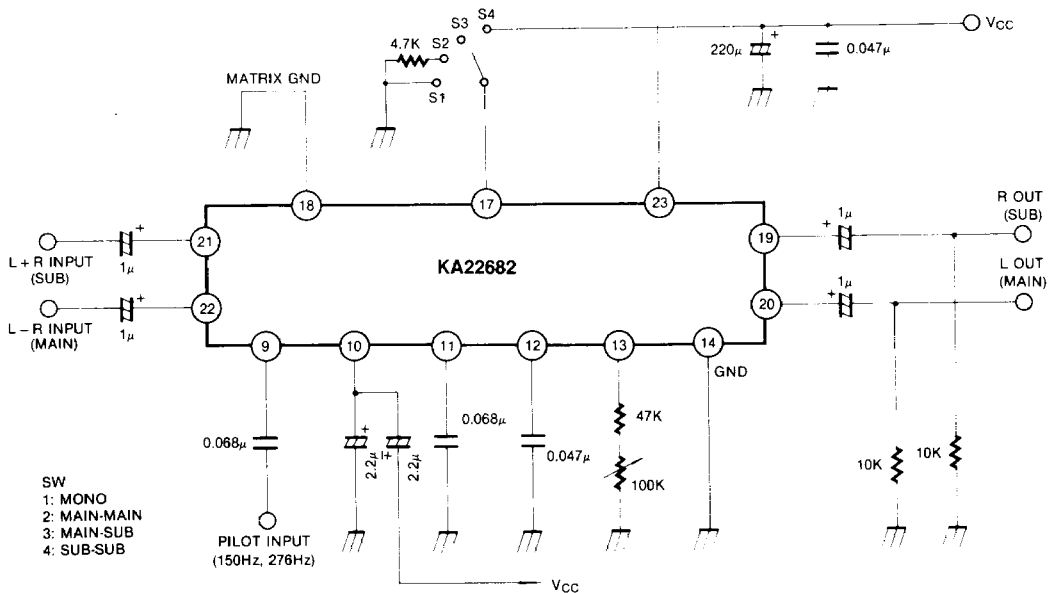
TEST CIRCUIT 2 PILOT AMP/DET SECTION



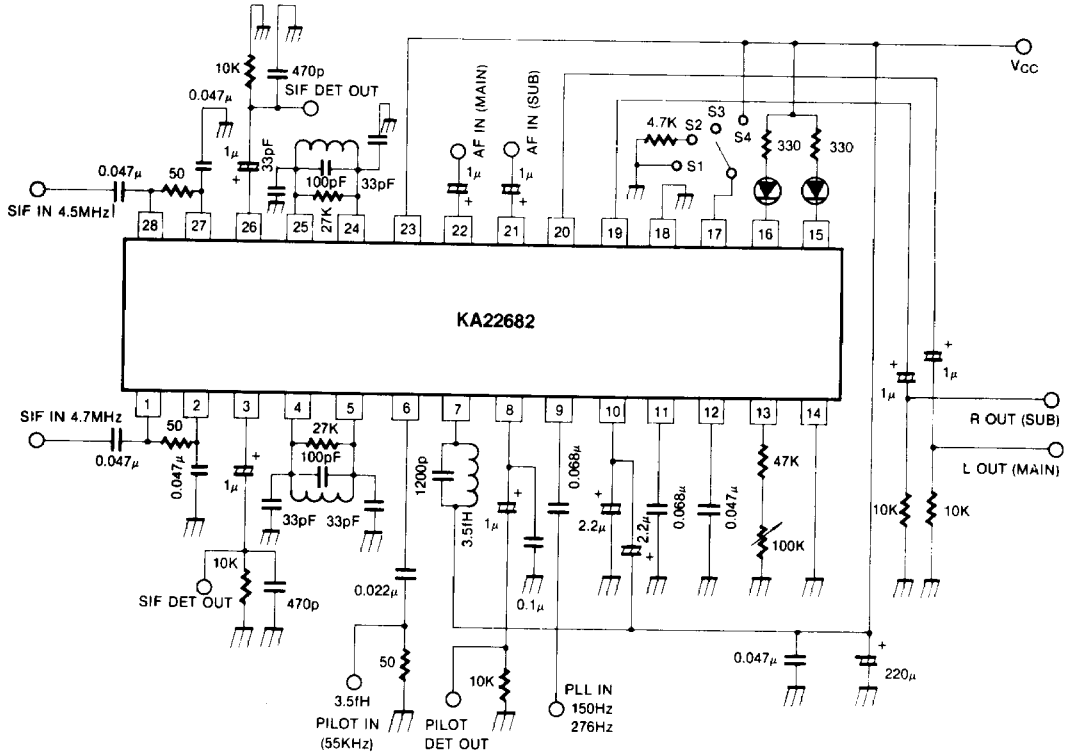
TEST CIRCUIT 3 PILOT PLL/INDICATOR SECTION



TEST CIRCUIT 4 MATRIX MODE SECTION



TEST CIRCUIT 5



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