

# KA22682

# LINEAR INTEGRATED CIRCUIT

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

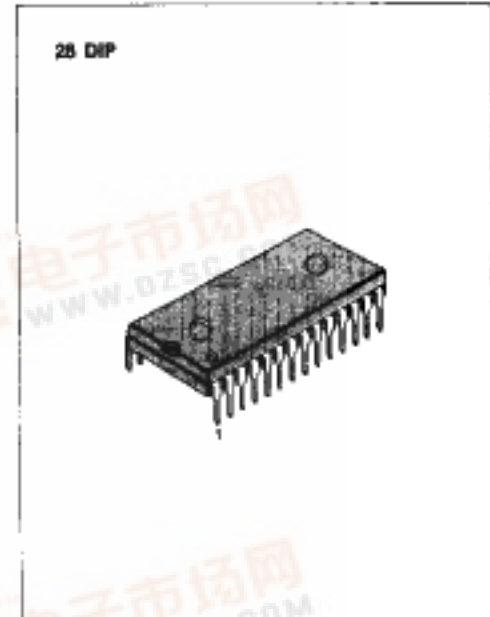
The KA22682 is a silicon monolithic integrated circuit designed for demodulating Korea two-carrier TV-MPX broadcasts. The use of PLL makes reed filters unnecessary.

### 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

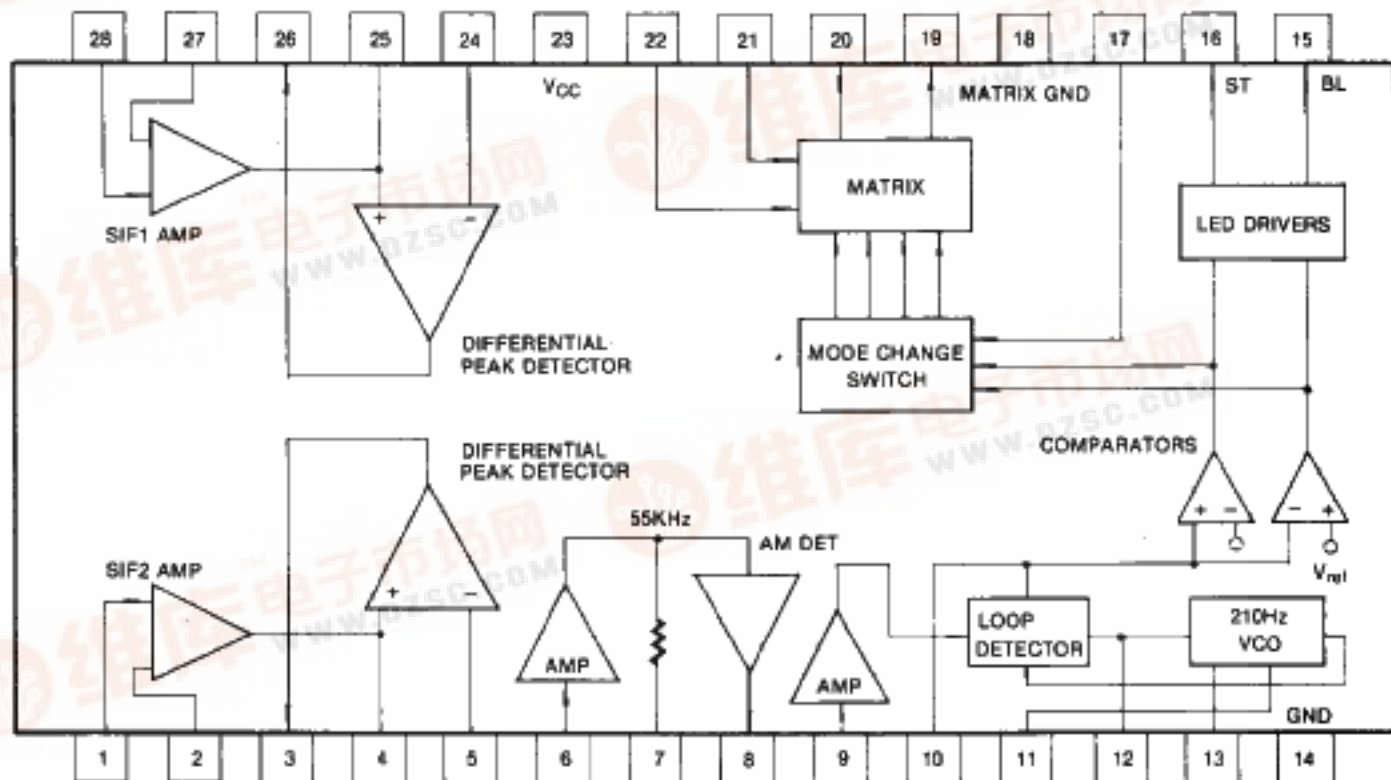
- One input mode change switch
- Auto pilot decoding by phase detector
- Minimum number of external parts required



### ORDERING INFORMATION

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

### BLOCK DIAGRAM



KA22682

LINEAR INTEGRATED CIRCUIT

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristics	Symbol	Condition	Value	Unit
Maximum Supply Voltage	V <sub>CC</sub> max	V <sub>i</sub> = 0	15	V
Pin 15 Output Current	I <sub>15</sub>		30	mA
Pin 16 Output Current	I <sub>16</sub>		30	mA
Maximum Mode SW Voltage	V <sub>17</sub>		- 0.3 ~ V <sub>CC</sub>	V
Power Dissipation	P <sub>D</sub>		1.5	W
Operating Temperature	T <sub>opr</sub>		- 20 ~ + 70	°C
Storage Temperature	T <sub>stg</sub>		- 40 ~ + 125	°C

3

RECOMMENDED OPERATING CONDITIONS

Characteristics	Symbol	Min	Typ	Max	Unit
Operating Voltage	V <sub>opr</sub>	9	12	15	V

ELECTRICAL CHARACTERISTICS

SIF SECTION (V<sub>CC</sub> = 12V, f<sub>m</sub> = 400Hz, V<sub>i</sub> = 100dB<sub>μ</sub>, Ta = 25°C Δf = ± 25KHz, unless otherwise specified)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Total Circuit Current	I <sub>CC</sub>	V <sub>i</sub> = 0		40	60	mA
Input Limiting Sens Voltage 1	V <sub>lim1</sub>	f <sub>0</sub> = 4.5MHz	—	52		dB <sub>μ</sub>
		V <sub>o</sub> = - 3dB				
Input Limiting Sens Voltage 2	V <sub>lim2</sub>	f <sub>0</sub> = 4.7MHz	—	52		dB <sub>μ</sub>
		V <sub>o</sub> = - 3dB				
Detector Output Voltage 1	V <sub>o1</sub>	f <sub>0</sub> = 4.5MHz	0.7	0.9	1.2	V <sub>rms</sub>
Detector Output Voltage 2	V <sub>o2</sub>	f <sub>0</sub> = 4.7MHz	0.7	0.9	1.2	V <sub>rms</sub>
T.H.D. 1	THD1	f <sub>0</sub> = 4.5MHz	—	0.5	1	%
T.H.D. 2	THD2	f <sub>0</sub> = 4.7MHz	—	0.5	1	%
AM Rejection Ratio 1	AMR1	f <sub>0</sub> = 4.5MHz, AM = 30%	35	45	—	dB
AM Rejection Ratio 2	AMR2	f <sub>0</sub> = 4.7MHz, AM = 30%	35	45	—	dB
Input Impedance of Pin 28	Z <sub>in28</sub>	f = 4.5MHz	—	40	—	Kohm
Input Impedance of Pin 1	Z <sub>in1</sub>	f = 4.7MHz	—	40	—	Kohm
Output Resistance of Det Output	Z <sub>o26</sub>		—	1.2	—	Kohm
Output Resistance of Det Output	Z <sub>o3</sub>		—	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	$Z_{in6}$		—	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	$Z_{in9}$		—	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

3

**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)	$CT_{MM-SS}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (S/S $\rightarrow$ M/M)	$CT_{SS-MM}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (M $\rightarrow$ S)	$CT_{M-S}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (S $\rightarrow$ M)	$CT_{S-M}$	$V_i = 50mV$	50	55	—	dB
Separation (L $\rightarrow$ R)	$SEP_{L-R}$	$V_i = 50mV$	40	50	—	dB
Separation (R $\rightarrow$ L)	$SEP_{R-L}$	$V_i = 50mV$	40	50	—	dB
Voltage Gain of Matrix	$A_V$	$V_i = 50mV$	10	12	16	dB
Output Impedance	$Z_D$ (M)			600		ohm

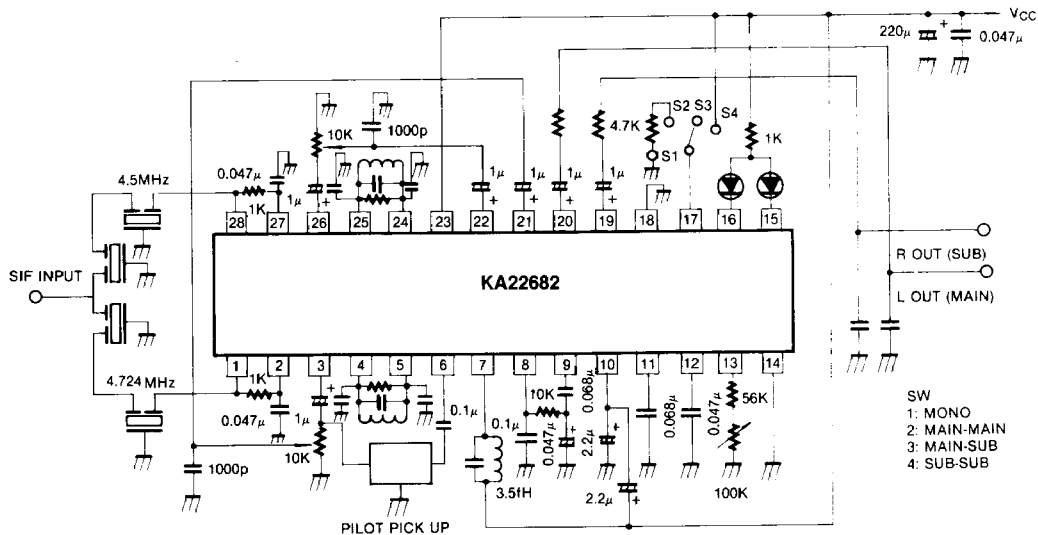
# KA22682

# LINEAR INTEGRATED CIRCUIT

## 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	3.5fH 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

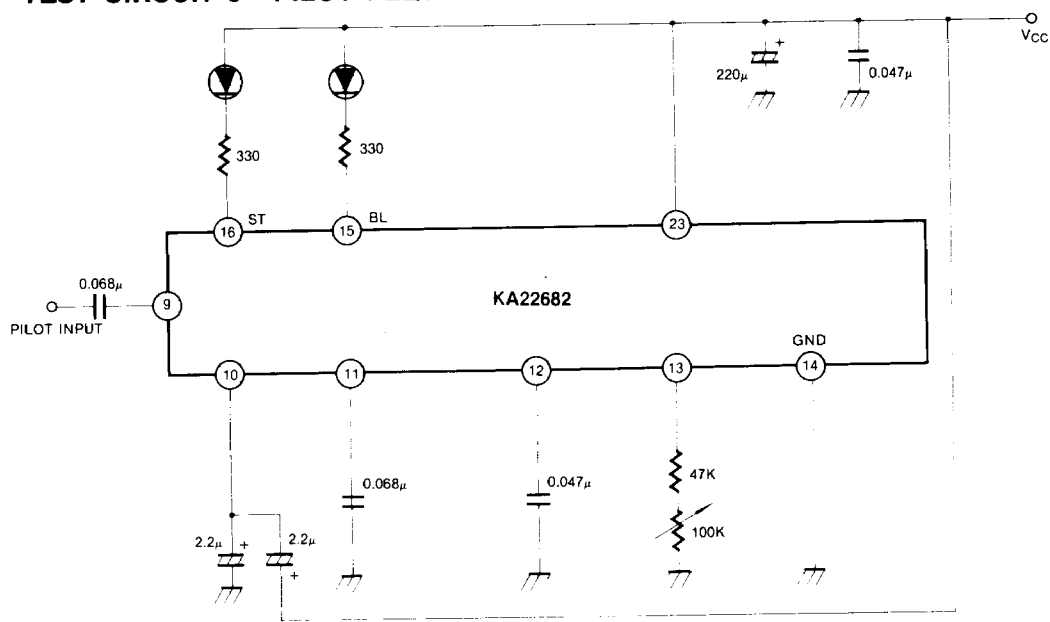




# KA22682

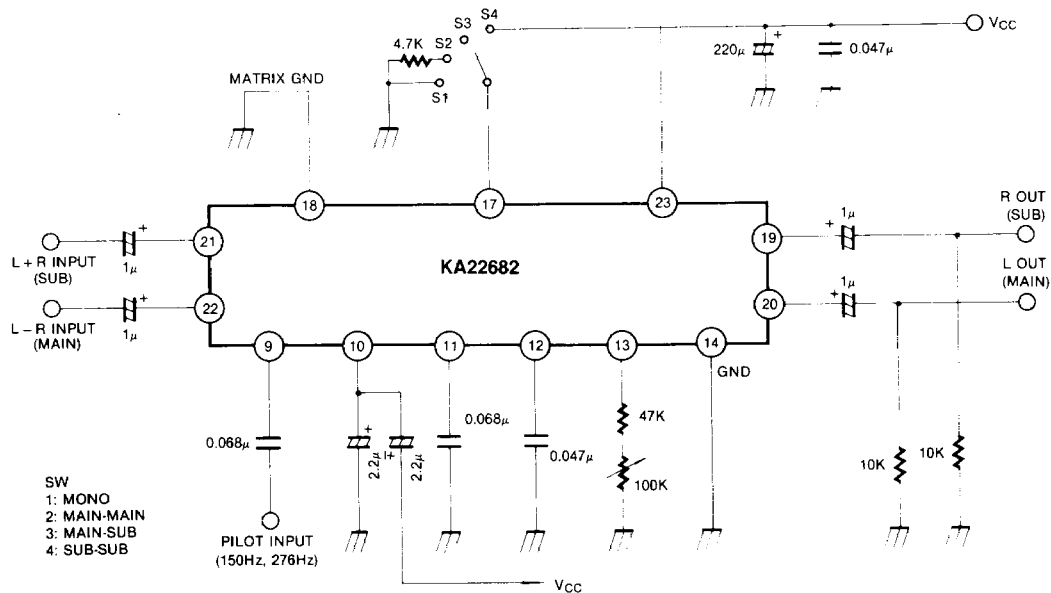
# LINEAR INTEGRATED CIRCUIT

## TEST CIRCUIT 3 PILOT PLL/INDICATOR SECTION



PIN 12 IS VCO FREQUENCY CHECK POINT FOR ADJUSTING 210HZ

## TEST CIRCUIT 4 MATRIX MODE SECTION



- SW
- 1: MONO
- 2: MAIN-MAIN
- 3: MAIN-SUB
- 4: SUB-SUB

