

ONE-CHIP TV SOUND MPX (KOREA TWO-CARRIER SYSTEM)

The KA2268N is a silicon monolithic integrated circuit designed for demodulating Korea two-carrier TV-MPX broadcasts. The use of PLL makes reed filters unnecessary.

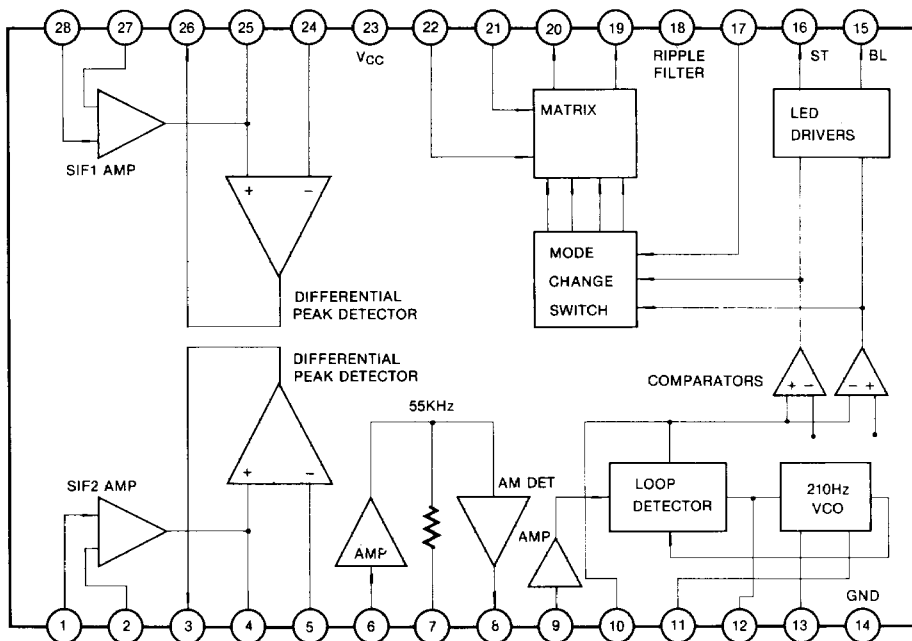
FUNCTIONS

- 1st Sound IF
- 2nd Sound IF
- Matrix for Stereo
- Pilot Amp and Detector
- Pilot Decoder
- Mode Change Switch
- Indicators (Stereo, Bilingual)

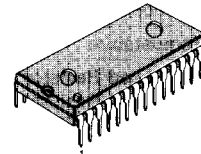
FEATURES

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

BLOCK DIAGRAM



28 DIP



ORDERING INFORMATION

Device	Package	Operating Temperature
KA2268	28 DIP	-20 ~ +70°C

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 ($V_{CC} = 12V$, $f_m = 400Hz$, $V_i = 100dB\mu$, $T_a = 25^\circ C$, $\Delta f = \pm 30KHz$, unless otherwise specified)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Total Circuit Current	I_{CC}	$V_i = 0$		40	60	mA
Input Limiting Voltage 1	V_{lim1}	$f_0 = 4.5MHz$, $V_o = -3dB$			52	$dB\mu$
Input Limiting Voltage 2	V_{lim2}	$f_0 = 4.72MHz$, $V_o = -3dB$			52	$dB\mu$
Detector Output 1	V_{o1}	$f_0 = 4.5MHz$	0.7	0.9	1.3	V_{rms}
Detector Output 2	V_{o2}	$f_0 = 4.72MHz$	0.7	0.9	1.3	V_{rms}
T.H.D. 1	THD1	$f_0 = 4.5MHz$	—	0.5	2	%
T.H.D. 2	THD2	$f_0 = 4.72MHz$	—	0.5	2	%
AM Rejection Ratio 1	AMR1	$f_0 = 4.5MHz$, $AM = 30\%$	35	45	—	dB
AM Rejection Ratio 2	AMR2	$f_0 = 4.72MHz$, $AM = 30\%$	35	45	—	dB
Input Impedance of Pin 28	Z_{in28}	$f = 4.5MHz$		40		Kohm
Input Impedance of Pin 1	Z_{in1}	$f = 4.72MHz$		40		Kohm
Output Resistance of DET Output	Z26			1.2		Kohm
Output Resistance of DET Output	Z3			1.2		Kohm
Cross Talk (SIF1→SIF2)	CT1	SIF1 $f_0 = 4.5MHz$, $f_m = 400Hz-5KHz$	50	55	—	dB
		SIF2 $f_0 = 4.72MHz$ $\Delta f = 0$				

ELECTRICAL CHARACTERISTICS (Continued)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Cross Talk (SIF1→SIF2)	CT1	SIF1 $f_0 = 4.5\text{MHz}$, $f_m = 400\text{Hz-5KHz}$	50	55	—	dB
		SIF2 $f_0 = 4.72\text{MHz}$ $\Delta f = 0$				
Cross Talk (SIF2→SIF1)	CT2	SIF1 $f_0 = 4.5\text{MHz}$ SIF2 $f_0 = 4.72\text{MHz}$ $f_m = 400\text{Hz-5KHz}$	50	55	—	dB
Frequency Response of Detector	F_1	$f_0 = 4.5\text{MHz}$ $f_m = 40\text{Hz-55KHz}$	-3	0	1.5	dB
Frequency Response of Detector	F_2	$f_0 = 4.724\text{MHz}$ $f_m = 40\text{Hz-55KHz}$	-3	0	1.5	dB
Detector Output Balance	C.B.	SIF1 = 4.5MHz SIF2 = 4.724MHz	-2	0	2	dB

PILOT AMP AND DETECTOR

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

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Input Resistance of Pin 6	Z_{in6}		—	30	—	Kohm
Maximum Pilot Input	V_{in}, P_{max}	$V_o = -3\text{dB}$, 0dB: $V_i = 10\text{mV}$		100	—	mV
Detector Gain	A_{VD}		30	36		dB
Detector Output	V_{OD}	$V_{in} = 10\text{mV}$		270		mV
Output Resistance of Pin 8	Z_{out8}		—	700	—	ohm

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

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Input Sensitivity	V_{sens}	$f = 150$ or 276Hz		10	20	mV_{rms}
Input Resistance of Pin 9	Z_{in9}		—	47	—	Kohm
Capture Range	f_c	$V_i = 50\text{mV}$		± 5		Hz
Lock Range	f_L	$V_i = 50\text{mV}$		± 10		Hz
Stereo Range	f_{ST}	$V_i = 100\text{mV}$		150 ± 10		Hz
Bilingual Range	f_{BL}	$V_i = 100\text{mV}$		276 ± 10		Hz

INDICATOR ($V_{CC} = 12V$)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Saturation Voltage	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

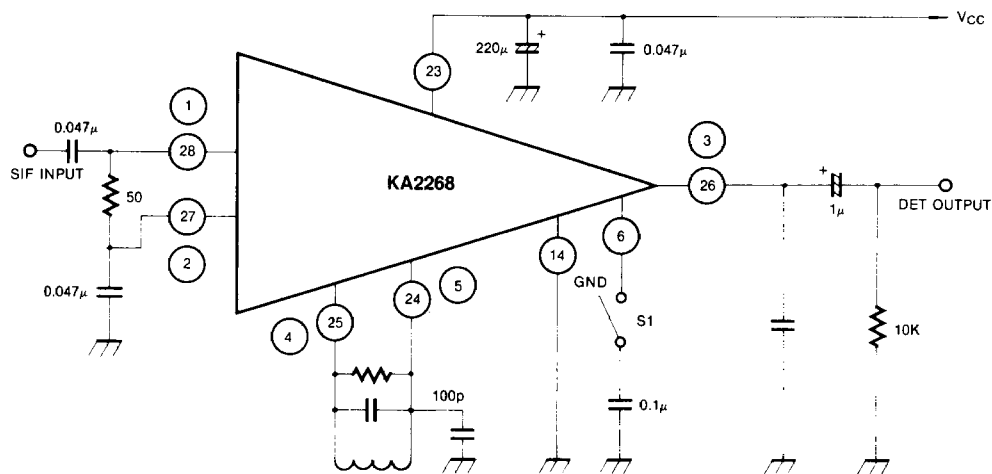
MODE CHANGE SWITCH CIRCUIT

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 CIRCUIT

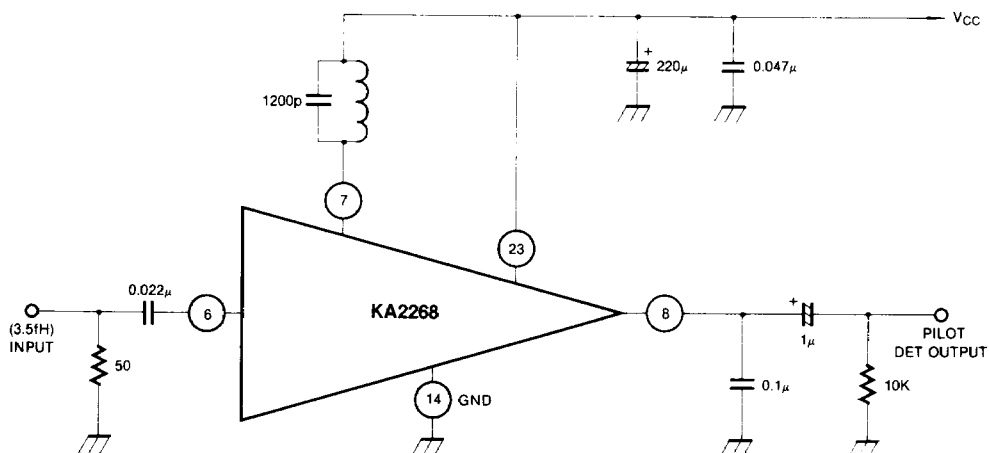
Characteristics	Symbol	Condition	Min	Typ	Max	Unit
T.H.D. In Main Mode	THD_M	$V_i = 50mV$	—	0.3	1.0	%
T.H.D. In Sub Mode	THD_S	$V_i = 50mV$	—	0.3	1.0	%
T.H.D. In Stereo Mode	THD_{ST}	$V_i = 50mV$	—	0.3	1.0	%
Cross Talk (M/M $\rightarrow$ S/S)	$CT_{MM \rightarrow SS}$	$V_i = 50mV$	50	55	—	dB
Cross Talk (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)	$SEP_{L \rightarrow R}$	$V_i = 50mV$	30	35	—	dB
Separation (R $\rightarrow$ L)	$SEP_{R \rightarrow L}$	$V_i = 50mV$	30	35	—	dB
Voltage Gain of Matrix	A_V	$V_i = 50mV$	8	10	12	dB

TEST CIRCUIT 1 SIF SECTION

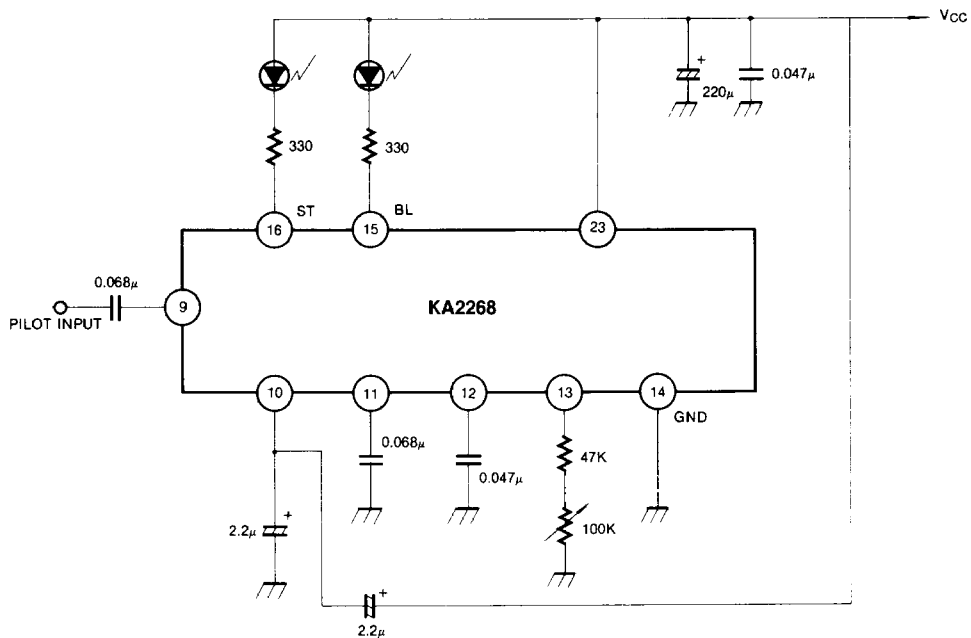


S1: PILOT INPUT NOISE BYPASS

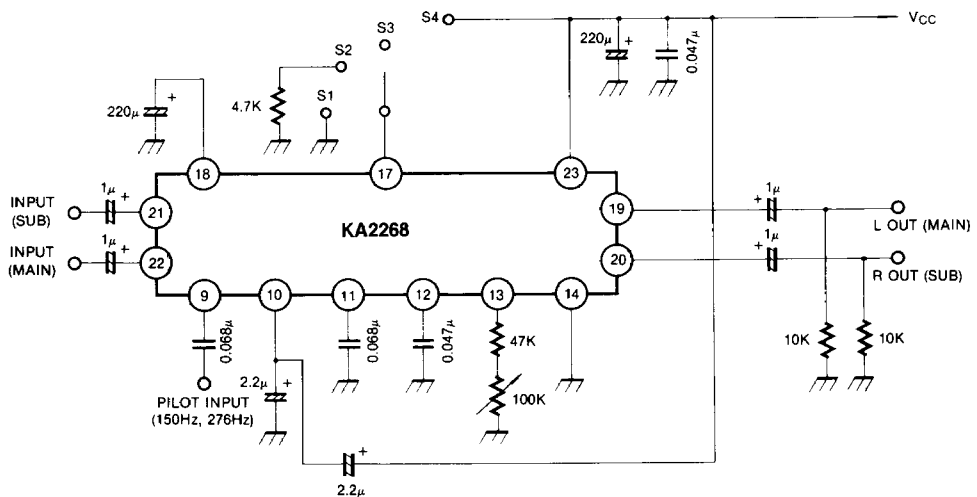
TEST CIRCUIT 2 PILOT AMP/DET SECTION



TEST CIRCUIT 3 PILOT PLL/INDICATOR SECTION



TEST CIRCUIT 4 MATRIX MODE SECTION



TEST CIRCUIT 5

