

KA2268N

LINEAR INTEGRATED CIRCUIT

ONE CHIP TV SOUND MPX (KOREA TWO CARRIER SYSTEM)

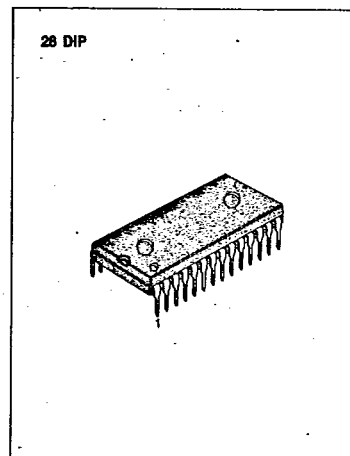
The KA2268N is a silicon monolithic integrated circuit designed for demodulating Korea two carrier TV-MPX broadcasts. The use of PLL makes reed filters unnecessary.

FUNCTIONS

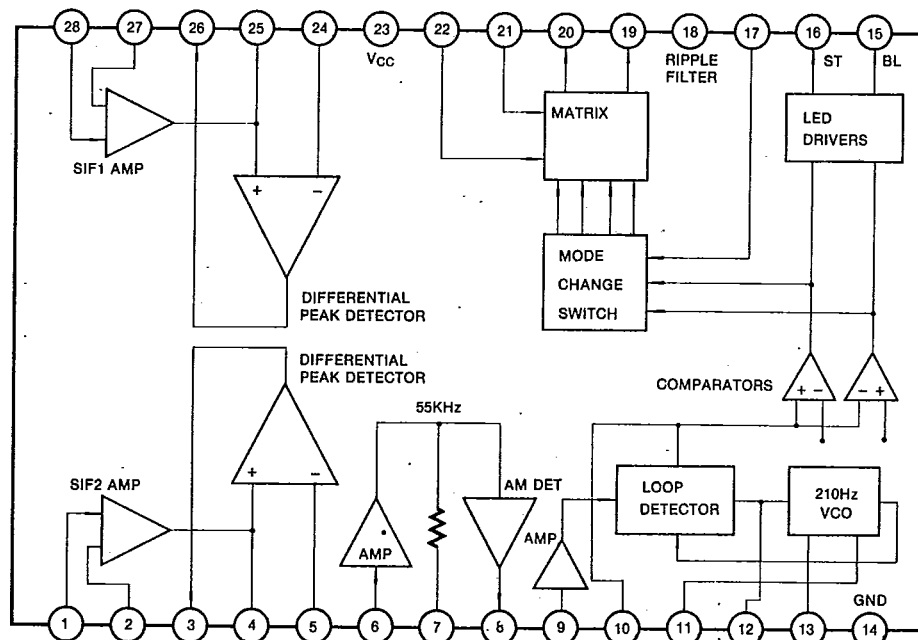
- 1st Sound IF
- 2nd Sound IF
- Matrix for Stereo
- Pilot Amp and Detector
- Pilot Decoder
- Mode Change Switch
- Indicators (Stereo, Bilingual)

FEATURES

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



BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Condition	Value	Unit
Maximum Supply Voltage	$V_{CC \text{ max}}$	$V_i = 0$	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}		$-20 \sim +75$	$^\circ\text{C}$
Storage Temperature	T_{stg}		$-40 \sim +125$	$^\circ\text{C}$

RECOMMENDED OPERATING CONDITIONS

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

ELECTRICAL CHARACTERISTIC

SIF SECTION ($V_{CC} = 12\text{V}$, $f_m = 400\text{Hz}$, $V_i = 100\text{dB}\mu$, $T_a = 25^\circ\text{C}$, $\Delta f = \pm 30\text{KHz}$, 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}	$f_0 = 4.5\text{MHz}$, $V_o = -3\text{dB}$			52	$\text{dB}\mu$
Input Limiting Voltage 2	V_{lim2}	$f_0 = 4.72\text{MHz}$, $V_o = -3\text{dB}$			52	$\text{dB}\mu$
Detector Output 1	V_{o1}	$f_0 = 4.5\text{MHz}$	0.7	0.9	1.3	V_{rms}
Detector Output 2	V_{o2}	$f_0 = 4.72\text{MHz}$	0.7	0.9	1.3	V_{rms}
T.H.D. 1	THD1	$f_0 = 4.5\text{MHz}$	—	0.5	2	%
T.H.D. 2	THD2	$f_0 = 4.72\text{MHz}$	—	0.5	2	%
AM Rejection Ratio 1	AMR1	$f_0 = 4.5\text{MHz}$, $\text{AM} = 30\%$	35	45	—	dB
AM Rejection Ratio 2	AMR2	$f_0 = 4.72\text{MHz}$, $\text{AM} = 30\%$	35	45	—	dB
Input Impedance of Pin 28	Z_{in28}	$f = 4.5\text{MHz}$		40		Kohm
Input Impedance of Pin 1	Z_{in1}	$f = 4.72\text{MHz}$		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 $f_0 = 4.5\text{MHz}$, $f_m = 400\text{Hz}$ -5KHz	50	55	—	dB
		SIF2 $f_0 = 4.72\text{MHz}$ $\Delta f = 0$				

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ELECTRICAL CHARACTERISTIC (Continued)

Characteristics	Symbol	Condition	Min	Typ	Max	Unit
Cross Talk (SIF1→SIF2)	CT1	SIF1 $f_0 = 4.5\text{MHz}$, $f_m = 400\text{Hz}-5\text{KHz}$	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 $f_0 = 4.72\text{MHz}$ $f_m = 400\text{Hz}-5\text{KHz}$	50	55	—	dB
Frequency Response of Detector	F ₁	$f_0 = 4.5\text{MHz}$ $f_m = 40\text{Hz}-55\text{KHz}$	-3	0	1.5	dB
Frequency Response of Detector	F ₂	$f_0 = 4.724\text{MHz}$ $f_m = 40\text{Hz}-55\text{KHz}$	-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 = -3dB, 0dB: V _i = 10mV		100	—	mV
Detector Gain	A _{VD}		30	36		dB
Detector Output	V _{OD}	V _{in} = 10mV		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 = 50mV		± 5		Hz
Lock Range	f _L	V _i = 50mV		± 10		Hz
Stereo Range	f _{ST}	V _i = 100mV		150 ± 10		Hz
Bilingual Range	f _{BL}	V _i = 100mV		276 ± 10		Hz

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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



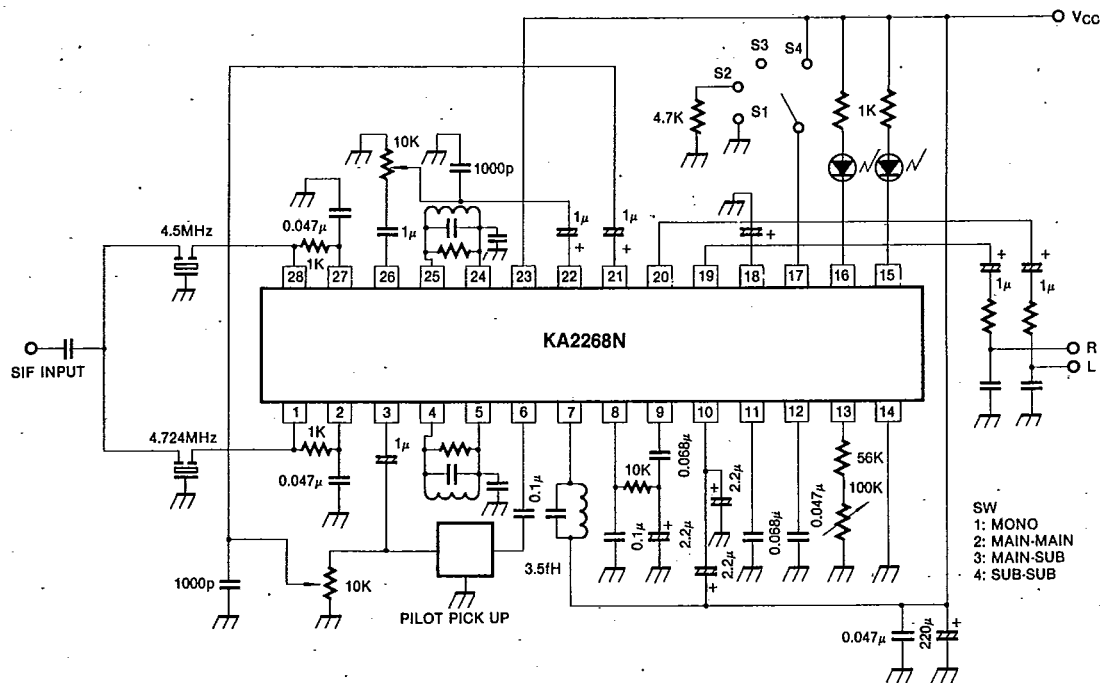
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PIN CONFIGURATION

Pin No	Description	Pin No	Description
1	SIF2 Input	15	Indicator (Bilingual)
2	SIF2 Bias	16	Indicator (Stereo)
3	SIF2 DET Output	17	Mode Switch
4	SIF2 Coil	18	Ripple Filter
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 _{CC}
10	Phase DET Filter	24	SIF1 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

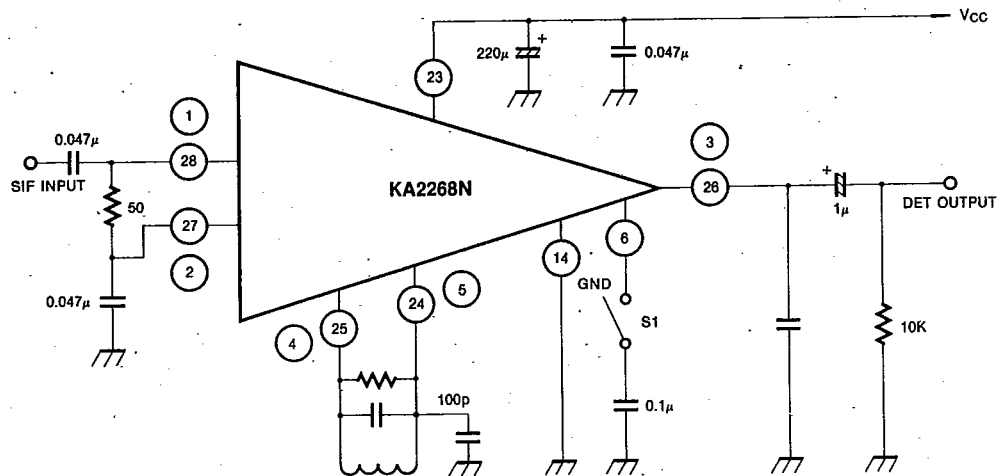
TYPICAL APPLICATION CIRCUIT



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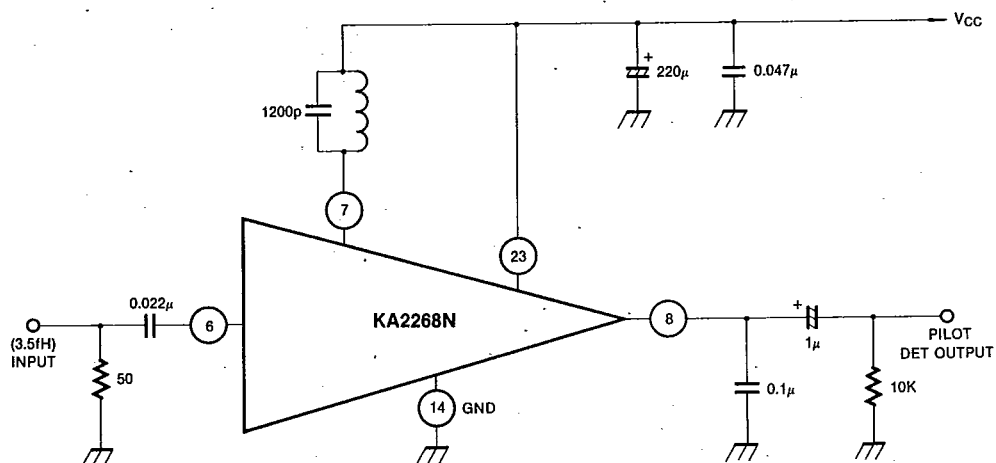
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TEST CIRCUIT 1 SIF SECTION



S1: PILOT INPUT NOISE BYPASS

TEST CIRCUIT 2 PILOT AMP/DET SECTION

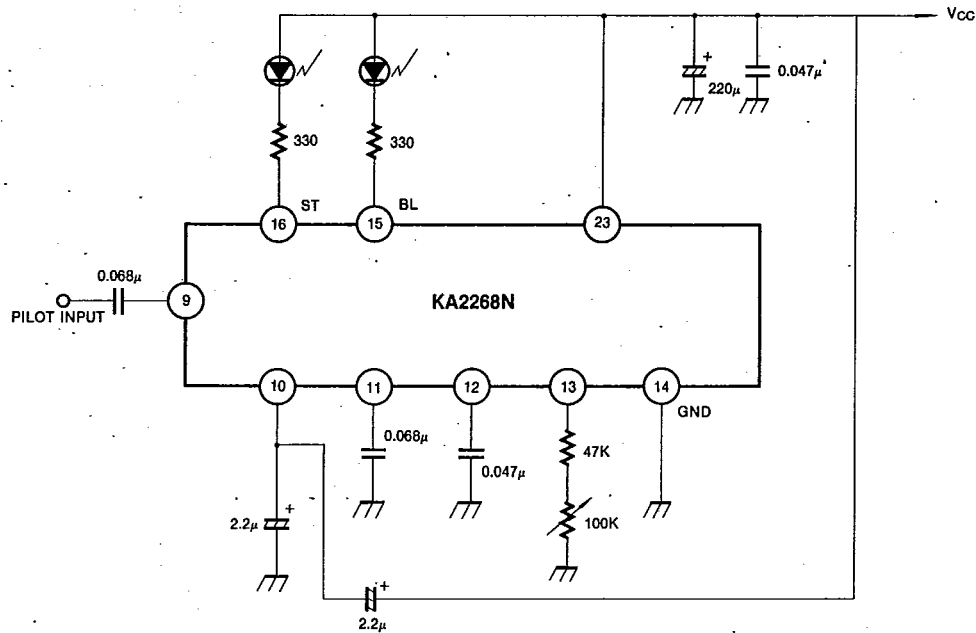


SAMSUNG SEMICONDUCTOR

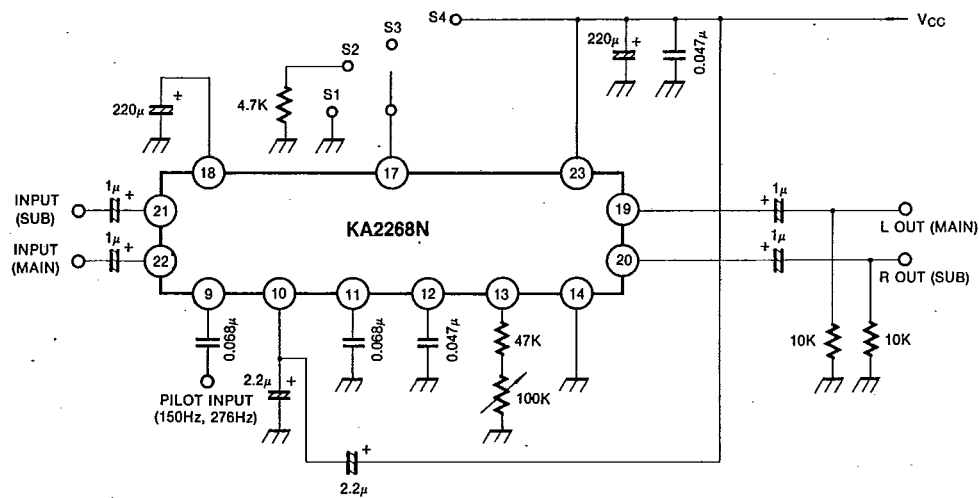
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TEST CIRCUIT 3 PILOT PLL/INDICATOR SECTION



TEST CIRCUIT 4 MATRIX MODE SECTION



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TEST CIRCUIT 5

