AN3925K

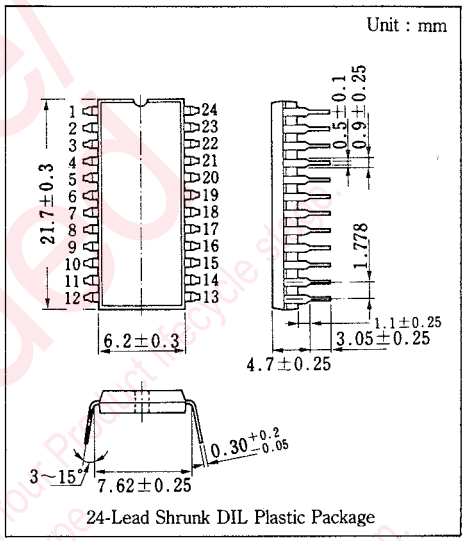
Hi-Fi VTR Input Select and AGC Circuit

■ Outline

The AN3925K is an integrated circuit designed for a Hi−Fi VTR audio input circuit.

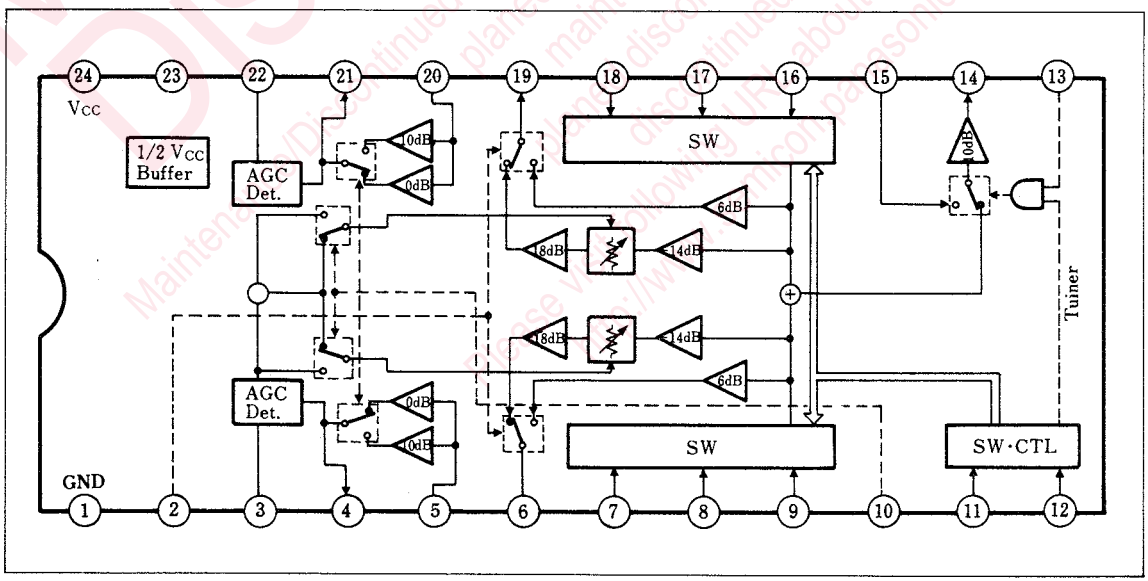
■ Features

- The functions consist of:
  Audio signal input select circuit
  (stereo each 3ch+sub audio)
  Automatic gain control
- Supply voltage: 5V



24-Lead Shrunk DIL Plastic Package

■ Block Diagram



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	GND	13	NORMAL CTL
2	AGC/MAN. CTL	14	NORMAL Output
3	AGC Capacitor	15	EXT. Input
4	L-ch. Output	16	R-ch. TUNER Input
5	L-ch. 2nd Amp. Input	17	R-ch. MIC Input
6	L-ch. 2nd Amp. Output	18	R-ch. LINE Input
7	L-ch. LINE Input	19	R-ch. 1st Amp. Output
8	L-ch. MIC Input	20	R-ch. 2nd Amp. Input
9	L-ch. TUNER Input	21	R-ch. Output
10	ST/BIL CTL	22	AGC Capacitor
11	Switch A	23	$1/2V_{cc}$
12	Switch B	24	V_{cc}

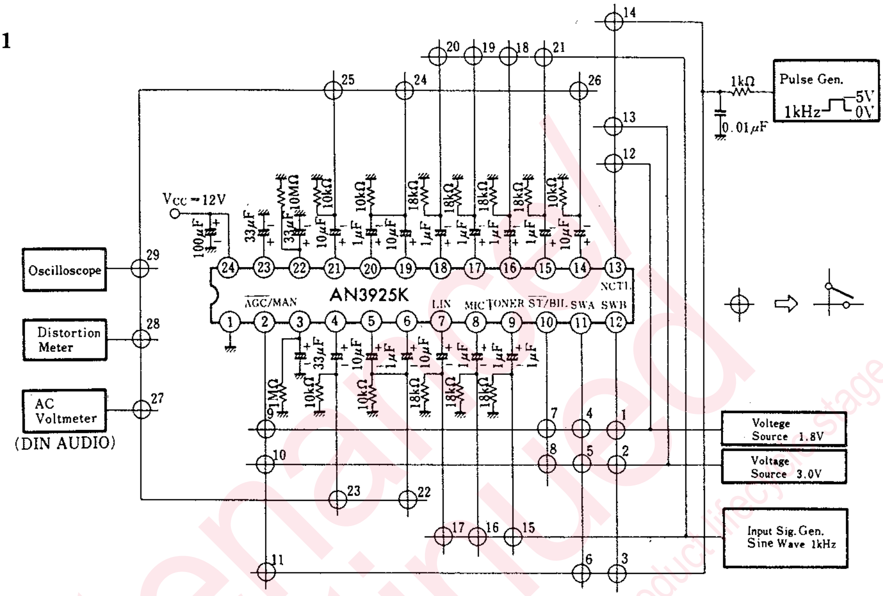
■ Absolute Maximum Ratings (Ta=25℃)

Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	14.4	V
Power Dissipation	P_D	420	mW
Operating Ambient Temperature	T_{opr}	−20~+75	℃
Storage Temperature	T_{stg}	−55~+150	℃

■ Electrical Characteristics (V_{cc}=12V, Ta=25℃)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Static Circuit Current	I_{CQ}			2	6	13	mA
Normal Output Gain (MIX)	G_{NMX}	1	v_{in}=−20dBV	8.5	10	11.5	dB
Normal Output Gain (EXT)	G_{NEX}	1	v_{in}=−20dBV	8.5	10	11.5	dB
Normal Output Distortion Rate	T_N	1	v_{in}=−20dBV	0	0.02	0.05	%
AGC Output Level	V_{AGC}	1	v_{in}=−17dBV	−17.5	−16	−14.5	dBV
AGC Output Distortion Rate	T_{AGC}	1	v_{in}=−17dBV	0	0.07	0.15	%
AGC Output Level Difference(1)	V_{DEF1}	1	R Output−L Output	−0.8	0	0.8	dB
AGC Output Level Difference(2)	V_{DEF2}	1	v_{in}=−17dBV, 0dBV	−1.0	−0.3	0.3	dB
AGC Output Level Difference(3)	V_{DEF3}	1	ST Mode−BIL Mode	−0.8	0	0.8	dB
Manual Output Gain	G_{MAN}	1	v_{in}=−20dBV	13.7	16	17.7	dB
Manual Output Distortion Rate	T_{MAN}	1	v_{in}=−20dBV	0	0.02	0.05	%
Manual Maximum Output Voltage	V_{MAN}	1	THD=0.3%	2.9	3.2		V
AGC Output Noise	V_{NAGC}	1	Input 18kΩ Trailing End	0	22	30	μV
Manual Output Noise	V_{NMAN}	1	Input 18kΩ Trailing End	0	23	31	μV
Crosstalk between Channels	Vch	1	v_{in}=−20dBV		−75	−70	dBV
L/R Crosstalk	V_{LR}	1	v_{in}=−20dBV		−80	−75	dBV
Normal Output Crosstalk	V_{NC}	1	v_{in}=−20dBV		−80	−75	dBV
Control Input High	V_{IN}			3		12	V
Control Low	V_{IL}			0		1.8	V

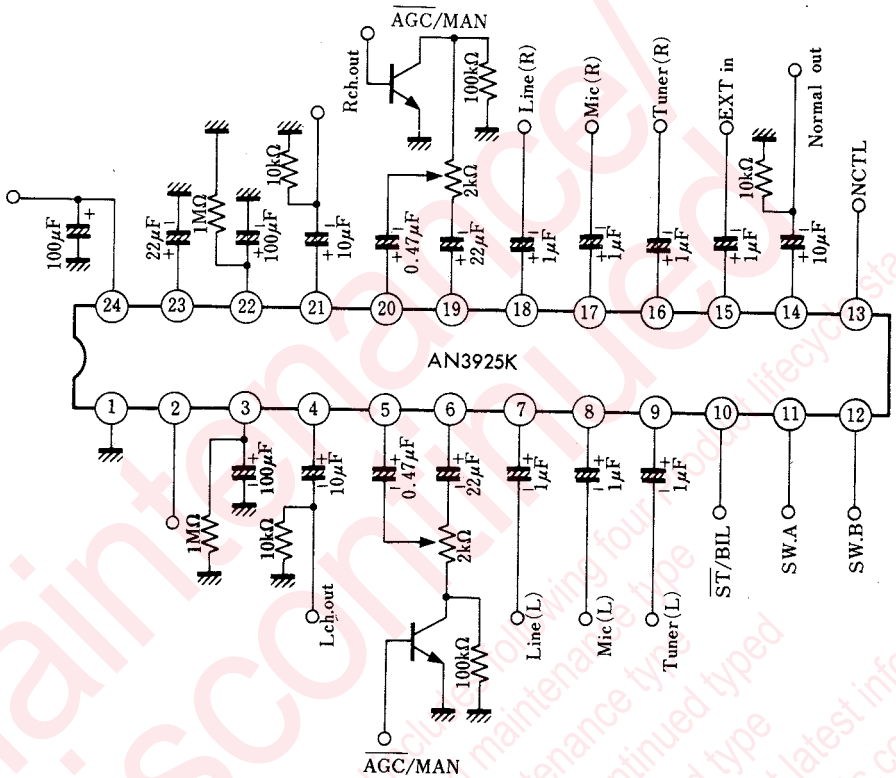
Test Circuit 1



■ Measuring Conditions List

Item	Input Signal	Switching Conditions (ON) Control	Input	Output	Measurement	Reference
G_{NMX}	100mV	1,4,7,10,12	17,20	26	28	
G_{NEX}	100mV	1,5,7,10,13	21	26	28	
T_N	100mV	1,5,8,10,13	21	26	28	
V_{AGC}	140mV	2,4,8,9,13	19	25	28	R-ch
	140mV	2,4,8,9,13	16	23	28	L-ch
T_{AGC}	140mV	1,5,8,9,13	18	25	28	R-ch
	140mV	1,5,8,9,13	15	23	28	L-ch
V_{DEF1}	140mV	2,5,7,9,13	19	25	28	AGC Output Level Difference(1)
	140mV	2,5,7,9,13	16	23	28	=(7-1)/(7-2)
V_{DEF2}	1V	1,4,8,9,13	20	25	28	AGC Output R-ch=(5-1)/(8-1)
	1V	1,4,8,9,13	17	23	28	Level Difference(2) L-ch=(5-2)/(8-2)
V_{DEF3}	No Measurement					AGC Output R-ch=(5-1)/(7-1) Level Difference(3) L-ch=(5-2)/(7-2)
G_{MAN}	100mV	1,4,8,10,13	20	25	28	R-ch
	100mV	1,4,8,10,13	17	23	28	L-ch
T_{MAN}	100mV	2,4,8,10,13	19	25	28	R-ch
	100mV	2,4,8,10,13	16	23	28	L-ch
V_{MAN}	1.6V	1,5,8,10,13	18	24	28	R-ch } Distortion Rate…0.3% or Less
	1.6V	1,5,8,10,13	15	22	28	L-ch }
V_{NAGC}	(Rs=18kΩ)	1,4,7,9,13	—	25	27	R-ch. LINE Input
	(Rs=18kΩ)	1,4,7,9,13	—	23	27	L-ch. LINE Input
V_{NMAN}	(Rs=18kΩ)	2,4,7,10,13	—	25	27	R-ch. MIC Input
	(Rs=18kΩ)	1,5,7,10,13	—	25	27	R-ch. TUNER Input
	(Rs=18kΩ)	2,4,7,10,13	—	23	27	L-ch. MIC Input
	(Rs=18kΩ)	1,5,7,10,13	—	23	27	L-ch. TUNER Input
V_{ch}	100mV	1,4,7,10,12	15,16 18,19	26	27	When LINE is Selected
	100mV	2,4,7,10,12	15,17 18,20	26	27	When MIC is Selected
	100mV	1,5,7,10,12	16,17 19,20	26	27	When TUNER is Selected
V_{LR}	100mV	2,5,7,10,13	16	25	27	L→R
	100mV	2,5,7,10,13	19	23	27	R→L
V_{NC}	100mV	1,5,8,10,13	20	26	27	When EXT IN is Selected
	100mV	1,5,7,10,12	21	26	27	When TUNER is Selected

■ Application Circuit



SW	A	B
LINE	L	L
TUNER	H	L
MIC	–	H

NOUT	TUNER	NCTL
EXT. IN	H	H
L+R	L	–
	–	L

Request for your special attention and precautions in using the technical information and semiconductors described in this book

(1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.

(2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.

(3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.

20080805