

# AN5817K

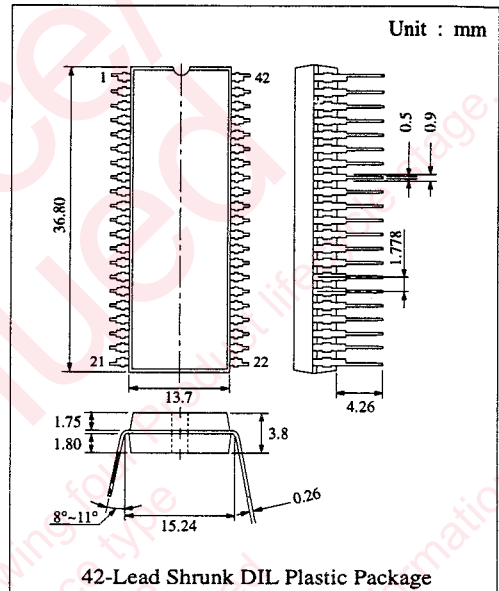
## U.S. TV Multiplex Sound System Demodulation

### ■ Description

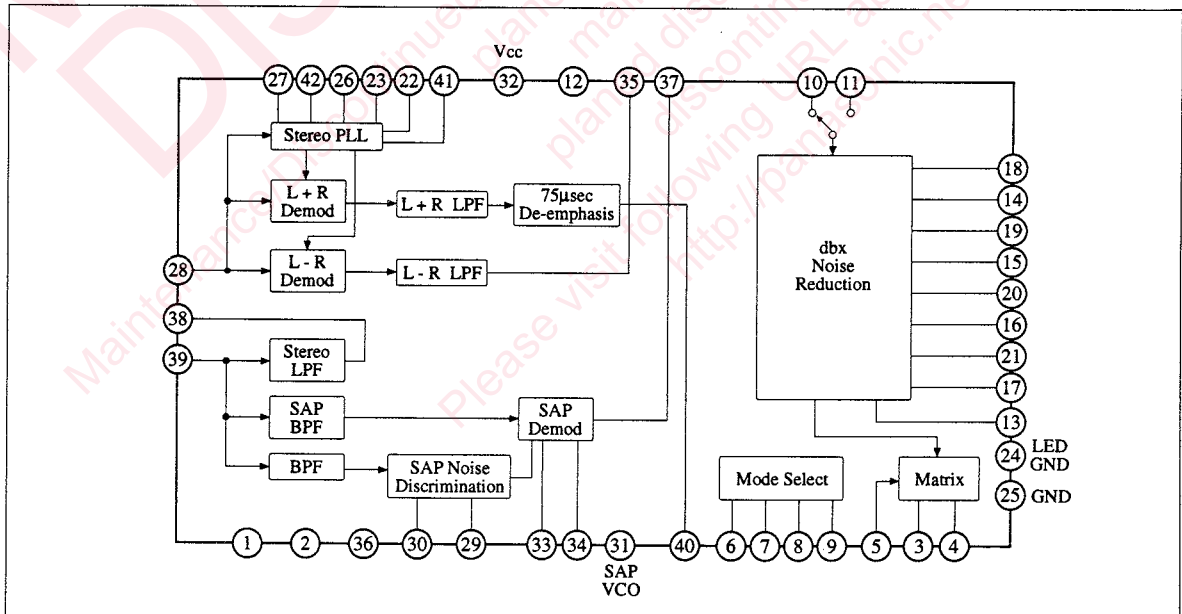
The AN5817K is an integrated circuit consisting of a Multiplex Sound Decoder and dbx Noise Reduction for use in Sound Processing of TV signal.

### ■ Features

- Audio multiplex TV demodulation and dbx Noise Reduction circuits are configured on One Chip
- Operating supply voltage correspondent to TV, VTR (8V ~ 10V)
- Built-in SAP multifunction recognition circuit
- Pilot cancel circuit using new-quasi/SIN waveform generation circuit



### ■ Block Diagram



## ■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	11.0	V
Supply Current	I <sub>CC</sub>	50	mA
Power Dissipation (Ta=75°C)	P <sub>D</sub>	760	mW
Operating Ambient Temperature	T <sub>opr</sub>	-20 ~ +75	°C
Storage Temperature	T <sub>stg</sub>	-55 ~ +150	°C

## ■ Recommended Operating Range (Ta=25°C)

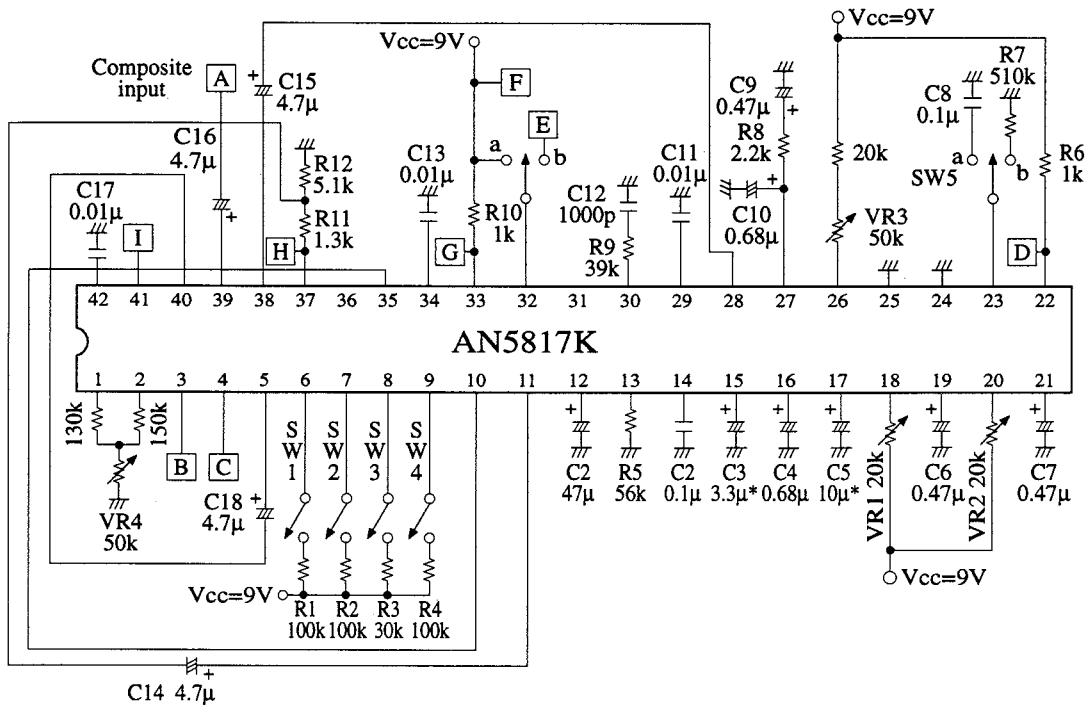
Item	Symbol	Range
Operating Supply Voltage Range	V <sub>CC</sub>	8.0V ~ 10.0V

## ■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Test cct	Condition	min.	typ.	max.	Unit
Total circuit current	I <sub>CC</sub>	1	No signal	22	30	38	mA
Mono output level	V <sub>O(MONO)</sub>	1	f=1kHz (Mono) 100% mod	450	500	550	mVrms
Mono frequency characteristic-1	V <sub>I(MONO)</sub>	1	f=300Hz (Mono) 30% mod	-0.5	0	+0.5	dB
Mono frequency characteristic-2	V <sub>2(MONO)</sub>	1	f=8kHz (Mono) 30% mod	-0.7	0	+0.7	dB
Mono distortion rate	THD <sub>(MONO)</sub>	1	f=1kHz (Mono) 100% mod			0.7	%
Mono noise level	V <sub>n(MONO)</sub>	1	Input short BPF (A curve)			-65	dBV
(L), (R) output voltage difference	V <sub>LR(MONO)</sub>	1	f=300Hz (Mono) 100% mod	-0.5	0	+0.5	dB
Stereo output level	V <sub>O(st)</sub>	1	f=1kHz, [L(R)-only] 100% mod	400	500	600	mVrms
Stereo freq. characteristic-1	V <sub>I(st)</sub>	1	f=300Hz, [L(R)-only] 30% mod	-0.7	0	+0.7	dB
Stereo distortion rate	THD <sub>(st)</sub>	1	f=1kHz, [L(R)-only] 100% mod			1.0	%
Stereo noise level	V <sub>n(st)</sub>	1	f=15.73kHz (fH), v=0.084Vpp, BPF (A curve)			-65	dBV
Stereo discrimination level	V <sub>TH(st)</sub>	1	f=15.73kHz(fH)	8	15	22	mVrms
Stereo discrimination hysteresis	V <sub>HY(st)</sub>	1	f=15.73kHz(fH)	-14		-3	dB
SAP output level	V <sub>O(SAP)</sub>	1	f=1kHz, (SAP) 100% mod	400	500	600	mVrms
SAP frequency characteristic-1	V <sub>I(SAP)</sub>	1	f=300Hz, (SAP) 30% mod	-1.0	0	+1.0	dB
SAP distortion rate	THD <sub>(SAP)</sub>	1	f=1kHz, (SAP) 100%			1.5	%
SAP noise level	V <sub>n(SAP)</sub>	1	f=78.7kHz (5fH), v=0.42Vpp, BPF (A curve)			-75	dBV
SAP discrimination level	V <sub>TH(SAP)</sub>	1	f=78.7kHz(5fH)	20		60	mVrms
SAP discrimination hysteresis	V <sub>HY(SAP)</sub>	1	f=78.7kHz(5fH)	-4.0		-1.0	dB
SAP-OUT output level	V <sub>O(SAPO)</sub>	1	f=1kHz, (SAP, dbx-OFF) 100% mod	400	500	600	mVrms
SAP-OUT freq. characteristic-1	V <sub>I(SAPO)</sub>	1	f=300Hz, (SAP, dbx-OFF) 30% mod	-0.5	0	+0.5	dB
SAP-OUT distortion rate	THD <sub>(SAPO)</sub>	1	f=1kHz, (SAP, dbx-OFF) 100% mod			2.0	%
SAP-OUT noise level	V <sub>n(SAPO)</sub>	1	f=78.7kHz (5fH), v=0.42Vpp, BPF (A curve)			-46	dBV
SAP→Stereo crosstalk	CT <sub>1</sub>	1	(SAP) 1kHz, 100% mod (Stereo) pilot-signal			-50	dB
Mute	Mute	1	(Mono) 1kHz, 100% mod			-56	dB

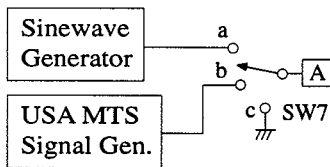
Note : V<sub>CC</sub>=9V, Input Level : L+R = 0.424Vpp, L-R = 0.848Vpp, Pilot = 0.084Vpp, SAP = 0.254Vpp

Test Circuit 1

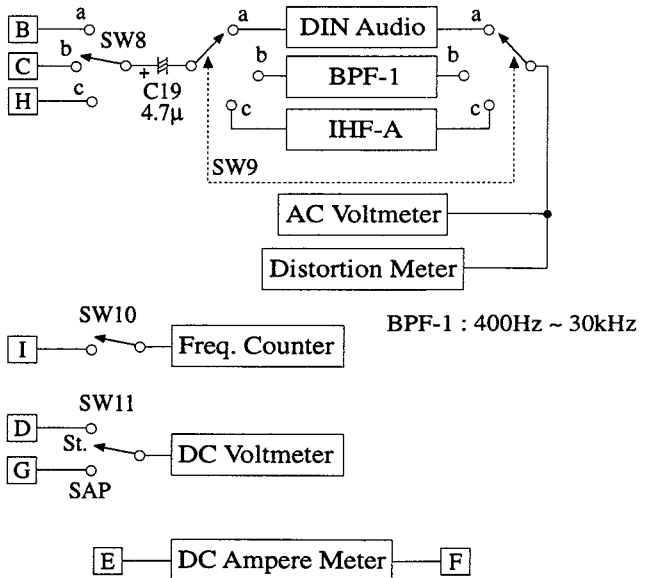


Note : \* Tantalum capacitor

Signal Source



Measurement



## ■ Description of test circuit and test method

No	Item	Symbol	SW											Input Conditions	Measurement
			1	2	3	4	5	6	7	8	9	10	11		
1	Total circuit current	$I_{CC}$	OFF	OFF	ON	OFF	a	b	c	a	a	OFF	a	No signal	Value of DC Ampere Meter
2	Mono output level	$V_{O(MONO)}$						a	b	a/b				f=1kHz (Mono) 100% mod	Value of AC Volt Meter
3	Mono frequency characteristic-1	$V_{1(MONO)}$												f=300Hz (Mono) 30% mod	Level ratio $V_{300Hz}/V_{1kHz}$
4	Mono frequency characteristic-2	$V_{2(MONO)}$											▼	f=8kHz (Mono) 30% mod	Level ratio $V_{8kHz}/V_{1kHz}$
5	Mono distortion rate	$THD_{(MONO)}$								▼				f=1kHz (Mono) 100% mod	Value of Dist-ortion Meter
6	Mono noise level	$V_{n(MONO)}$							c					No signal	Value of AC Volt Meter
7	(L), (R) output voltage difference	$V_{LR(MONO)}$							b					f=1kHz (Mono) 100% mod	Level ratio $V_{(R)}/V_{(L)}$
8	Stereo output level	$V_{O(st)}$												f=1kHz (L(R)-only) 100% mod	Value of AC Volt Meter
9	Stereo frequency characteristic-1	$V_{1(st)}$											▼	f=300Hz (1kHz) (L(R)-only) 30% mod	Level ratio $V_{300Hz}/V_{1kHz}$
10	Stereo distortion rate	$THD_{(st)}$												f=1kHz (L(R)-only) 30% mod	Value of Dist-ortion Meter
11	Stereo noise level	$V_{n(st)}$							▼					Stereo pilot signal	Value of AC Volt Meter
12	Stereo discrimination level	$V_{TH(st)}$							a					Increase the level from f=15.734kHz, 5mVrms	Input level at which DC voltmeter value < 0.5V
13	Stereo discrimination hysteresis	$V_{HY(st)}$							a				▼	Decrease the above input signal level	Input level at which DC voltmeter value > 2.0V
14	SAP output level	$V_{O(SAP)}$							b					f=1kHz (SAP) 100% mod	Value of AC Volt Meter
15	SAP frequency characteristic-1	$V_{1(SAP)}$												f=300Hz (1kHz) SAP 30% mod	Level ratio $V_{300Hz}/V_{1kHz}$
16	SAP distortion rate	$THD_{(SAP)}$												f=1kHz SAP 100% mod	Value of Dist-ortion Meter
17	SAP noise level	$V_{n(SAP)}$							▼					SAP carrier (0% mod)	Value of AC Volt Meter
18	SAP discrimination level	$V_{TH(SAP)}$							a					Increase the level from f=78.7kHz, 10mVrms	Input level at which DC voltmeter value < 0.5V
19	SAP discrimination hysteresis	$V_{HY(SAP)}$							a	▼				Decrease the above input signal level	Input level at which DC voltmeter value > 2.0V
20	SAP-OUT output level	$V_{O(SAPO)}$							b	c	a			f=1kHz, (SAP, dbx-OFF) 100% mod	Value of AC Volt Meter
21	SAP-OUT frequency characteristic-1	$V_{1(SAPO)}$												f=300Hz, (SAP, dbx-OFF) 30% mod	Level ratio $V_{300Hz}/V_{1kHz}$
22	SAP-OUT distortion rate	$THD_{(SAPO)}$								▼				f=1kHz, (SAP, dbx-OFF) 100% mod	Value of Dist-ortion Meter
23	SAP-OUT noise level	$V_{n(SAPO)}$		▼						a/b	c			SAP carrier (0% mod)	Value of AC Volt Meter
24	SAP→Stereo crosstalk	$CT_1$		ON/OFF		▼				a/b	a			f=1kHz, (SAP) 100% mod + pilot signal	Level ratio $V_{SW1 OFF}/V_{SW1 ON}$
25	Mute	Mute	▼	OFF	▼	ON/OFF	▼	▼	▼	a/b	a	▼	▼	f=1kHz (Mono) 100% mod	Level ratio $V_{SW4 ON}/V_{SW4 OFF}$

## ■ Pin Descriptions

Pin No.	Pin Name	Pin Description	Pin Voltage	Equivalent Circuit
1	dbx Filter Adjustment	Adjustment of dbx filter control current	1.2V	
2	SAP/Stereo Filter Adjustment	Adjustment of SAP/Stereo filter control current	1.2V	
3	L Output	(L) Line OUT output	4.7V	
4	R Output	(R) Line OUT output	4.7V	
5	Matrix (L + R) Input	Input of matrix circuit (L + R) signal	4.0V	
6	SAP mode Change-over	In the state of SAP output Lout Rout H (L+R) (SAP) L (SAP) (SAP)	0V	
7	Stereo/SAP Change-over	H : Stereo output mode L : SAP output mode	0V	
8	Forced monaural Change-over	H : (4.0 ~) Stereo output mode M : (1.7 ~ 2.8V) Forced monaural mode LED OFF L : (<0.8V) Forced monaural mode LED ON	0V	
9	Mute Change-over	H : Mute mode Output mute LED OFF	0V	
10	L-R dbx IN	dbx NR input of L-R signal	4.7V	

## ■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Pin Voltage	Equivalent Circuit
11	SAP dbx IN	dbx input of SAP signal	4.7V	
12	Reference	Stabilization of reference power supply	4.5V	
13	dbx Timing Current	Timing current setting of dbx r.m.s value detection	1.2V	
14	Spectral Level Sensor Input	Input pin of variable emphasis r.m.s value detection circuit	4.7V	
15	Spectral Timing	Recovery time setting of variable emphasis r.m.s value detection	0.2V	
16	Wideband Level Sensor Input	Input pin of wideband expander r.m.s value detection circuit	4.7V	
17	Wideband Timing	Recovery time setting of wideband expander r.m.s value detection	0.2V	
18	Spectral Level adjustment	Level adjustment of variable emphasis	8.0V	
19	Spectral CCA offset absorption	DC offset absorption of variable emphasis CCA	4.7V	
20	Wideband Level adjustment	Level adjustment of wideband expander	8.0V	

## ■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Pin Voltage	Equivalent Circuit
21	Wideband CCA Offset Absorption	DC offset absorption of wideband expander CCA	4.7V	
22	Stereo LED	GND of stereo LED		
23	Pilot Signal Detection	Detection of stereo pilot signal	6.8V	
24	LED GND	GND of LED indication circuit	0V	
25	GND	GND	0V	
26	Stereo VCO Adjustment	Oscillation frequency adjustment of stereo PLL-VCO	7.8V	
27	Stereo PLL Filter	Connection with stereo PLL low-pass-filter	4.7V	
28	Stereo Demodulation Input	Input pin of stereo demodulation circuit	4.7V	
29	SAP Noise Setting	Noise detection of protection circuit against SAP operation error (SAP at noise detection) (Mute stereo demodulation)	3V	
30	SAP Noise Level Setting	Noise level setting of protection circuit against SAP operation error	3V	
31	SAP VCO Adjustment	Micro-adjustment of SAP VCO oscillation frequency (Normally not used)	0.1V	

## ■ Pin Descriptions (Continue)

Pin No.	Pin Name	Pin Description	Pin Voltage	Equivalent Circuit
32	Vcc	Vcc	9V	
33	SAP LED	Connection with SAP LED		
34	SAP Carrier Detection	Carrier level detection of SAP signal	2V	
35	(L-R) Demodulation Signal Output	(L-R) demodulation signal output	4.7V	
36	SAP Output Detection	Output H(9V) when SAP is output to line out	0V (9V at SAP ON)	
37	SAP Demodulation Output	SAP demodulation signal output	3.5V	
38	Stereo Filter Output Pin	Stereo filter output	4.0V	
39	Composite Input	Composite Signal Input	4.7V	
40	(L+R) Demodulation Output	(L+R) demodulation signal output	4.0V	
41	fH Monitor Output	Stereo PLL VCO oscillation monitor	(Stereo LED ON) 4.3V  2.3V	
42	False Sinewave Filter	Connection with the low-pass-filter of dummy sinewave circuit	4.7V	



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