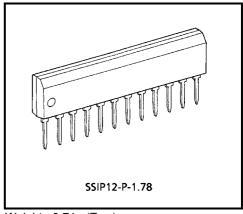
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8721ASN

DUAL SIF SYSTEM FOR TV

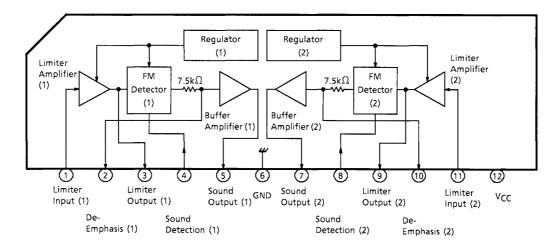
FEATURES

- Two channel SIF circuit (The 2ch demodulation circuit can be configured in combination with the TA8712N or TA8796N.)
- Three stage limiter amplifier
- Quadrature type detection circuit
- No-adjustment type FM detector circuit by ceramic discriminator



Weight: 0.71g (Typ.)

BLOCK DIAGRAM



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TERMINAL FUNCTION

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
1	Limiter Input (1)	A sound carrier is input from SAW filter.	23kΩ 3v Ωyır Ωyır Ωyır Ωyır Ωyır Ωyır Ωyır Ωyır
2 5	De-Emphasis (1) Sound Output (1)	The De-Emphasis time constant is defined by external capacitor. This is an FM detector circuit output terminal.	7.5kΩ 7.5kΩ Φ Ε
3 4	Limiter Output (1) SoundDetection(1)	This is a connection terminal of sound detection coil. This will be of no-adjustment type by using ceramic discriminator. A sound muting will be performed by connecting pin 4 to GND.	3 FM Detection $4k\Omega$ $4k\Omega$ $Mute$ FM Detection $Mute$
6	SIF GND	Connect a bypass capacitor between this pin and SIF V _{CC} of pin 12.	_

PIN No.	PIN NAME	FUNCTION	INTERFACE CIRCUIT
7 10	Sound Output (2) De-Emphasis (2)	This is an FM detector circuit output terminal. The De-Emphasis time constant is defined by external capacitor.	7.5kΩ Του του του του του του του του του του τ
8 9	Sound Detection (2) Limiter Output (2)	This is a connection terminal of sound detection coil. This will be of no-adjustment type by means of ceramic discriminator. A sound muting will be performed by connecting pin 8 to GND.	4kΩ 4kΩ Sound Mute FM Detection FM detection
11	Limiter Input (2)	A sound carrier is input from the SAW filter.	23kΩ 23kΩ 3v 0.4mA
12	SIF V _{CC}	Connect a bypass capacitor between this pin and SIF GND of pin 6.	_



MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	15	V
Power Dissipation	P _D (Note) 890		mW
Operating Temperature	T _{opr}	-20~75	°C
Storage Temperature	T _{stg}	-55~150	°C

Note: When using the device at above Ta=25°C, decrease the power dissipation by 7.14mW for each increase of 1°C.

RECOMMENDED SUPPLY VOLTAGE

PIN No.	PIN NAME	MIN.	TYP.	MAX.	UNIT
12	V _{CC}	8.1	9.0	9.9	٧

ELECTRICAL CHARACTERISTICS DC CHARACTERISTICS (Unless otherwise specified V_{CC}=9V, Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	I _{CC}	1	_	13	18	23	mA
	V_1	1		2.7	3.0	3.3	V
	V ₂			4.1	5.1	6.1	
	V ₃			2.7	3.7	4.7	
	V_4			2.3	2.9	3.6	
Tarminal \/altaga	V ₅			3.5	4.5	5.5	
Terminal Voltage	V ₇			3.5	4.5	5.5	
	V ₈			2.3	2.9	3.6	
	V ₉			2.7	3.7	4.7	
	V ₁₀			4.1	5.1	6.1	
	V ₁₁			2.7	3.0	3.3	



AC CHARACTERISTICS

(When using the specified coil unless otherwise specified, V_{CC}=9V, Ta=25°C)

CHARACTEF	RISTIC	SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Audio Frequency C	Output	V _{OD1}	2	f ₀ =4.5MHz, V _i =100dBμV	350	500	700	m\/
Level	(Note 1)	V _{OD2}	2	f ₀ =4.724MHz, V _i =100dBμV	350	500	700	mV _{rms}
Audio Frequency		THD1	2	f _o =4.5MHz	_	0.2	1.0	%
Distortion Rate	(Note 2)	THD2		f ₀ =4.724MHz	_	0.2	1.0	70
Limiting Sensitivity		V _{LIM1}	2	When output V _{OD1} is −3dB.	_	_	50	dΒμV
	(Note 3)	V _{LIM2}		When output V _{OD2} is −3dB.	_	_	50	
AMR	(Note 4)	AMR1	2	f ₀ =4.5MHz, AM=30%	40	50	_	dB
AWIN		AMR2	2	f ₀ =4.724MHz, AM=30%	40	50	_	
Audio Frequency		AF _{BW1}	2	−3dB bandwidth	±70	_	_	kHz
Bandwidth	(Note 5)	AF _{BW2}	2	−3dB bandwidth	±70	_	_	KIIZ
C / N Datio	(Note 6)	S / N1	2	f _o =4.5MHz, CW against FM 25kHz / dev	60	ı	ı	40
S / N Ratio		S / N2	2	f _o =4.724MHz, CW against FM 25kHz / dev	60	ı	ı	dB
Crosstalk Between Sound		CR1		SIF1 f _o =4.5MHz, f _m =400Hz SIF2 f _o =4.724MHz, CW	60	-	-	j
Outputs	(Note 7)	CR2	2	SIF1 f ₀ =4.5MHz, CW SIF2 f ₀ =4.724MHz, fm=400Hz	60	_	_	dB
Limiter Input Resis	tance (Note 8)	Ri1, Ri2	2	_	0.75	1.0	1.25	kΩ

TEST CONDITION

Note 1: Audio Frequency Output Level

Limiter input

 $VOD1: f_0{=}4.5MHz, \ 100dB\mu V, f_m{=}400Hz, \ 100\% \ (25kHz \ / \ dev) \ FM \ modulation \\ VOD2: f_0{=}4.724MHz, \ 100dB\mu V, f_m{=}400Hz, \ 100\% \ (25kHz \ / \ dev) \ FM \ modulation$

After the above input, measure the output level of sound output.

Note 2: Audio Frequency Distortion Rate

Measure the distortion rate of sound output by distortion meter under the condition of Note 1.

Note 3: Limiting Sensitivity

Limiter input

 $\label{eq:VLIM1} $$V_{LIM1}: f_0=4.5 MHz$, variable level, $f_m=400 Hz$, $100\% (25 kHz / dev) FM modulation $$V_{LIM2}: f_0=4.724 MHz$, variable level, $f_m=400 Hz$, $100\% (25 kHz / dev) FM modulation $$$V_{LIM2}: f_0=4.724 MHz$, variable level, $f_m=400 Hz$, $100\% (25 kHz / dev) FM modulation $$$$$$$

After the above input, measure the output level of sound output. Measure the input level of Note 1

output level at -3dB.



Note 4: **AMR**

Limiter input

AMR1: f_0 =4.5MHz, 100dB μ V, f_m =400Hz, 30% AM modulation

AMR2 : f_0 =4.724MHz, 100dB μ V, f_m =400Hz, 30% AM modulation After the above input, measure the output level of sound output. (AMout)

Calculate the ratio of the output level of Note 1.

$$AMR = 20 \lambda og \frac{AMout}{V_{OD}}$$

Note 5: Audio Frequency Bandwidth

Limiter input

AF_{BW1} : f₀ variable (center 4.5MHz), 100dBμV, f_m=400Hz, 100% (25kHz / dev) FM modulation

AF_{BW2} : f_0 variable (center 4.724MHz), $100dB\mu V$, $f_m=400Hz$,

100% (25kHz / dev) FM modulation

After the above input, measure the output level of sound output. Calculate the frequency width when the output level of Note 1 becomes -3dB by changing the fo frequency high and low.

Note 6: S / N Ratio

Limiter input

 $S / N (1) : f_0 = 4.5 MHz, 100 dB \mu V CW$ $S / N (2) : f_0 = 4.724 MHz, 100 dBuV CW$

After the above input, measure the output level of sound output (S / N out). Calculate the ratio of the output level of Note 1.

$$S/N = 20 \log \frac{V_{OD}}{S/N \text{ out}}$$

Note 7: Cross Talk between sound outputs

Limiter input

 $CR1: \ \ \, \begin{array}{l} CR1: \ \ \, \prod \ \, SIF1 \ f_0 \!\!=\!\! 4.5 MHz, \ 100 dB\mu V, \ f_m \!\!=\!\! 400 Hz \\ SIF2 \ f_0 \!\!=\!\! 4.724 MHz, \ 100 dB\mu V, \ CW \end{array}$

CR2: $\[\]$ SIF1 f₀=4.5MHz, 100dB $_{\mu}$ V, CW SIF2 f₀=4.724MHz, 100dB $_{\mu}$ V, f_m=400Hz

After the above input, measure the output leakage level of sound output.

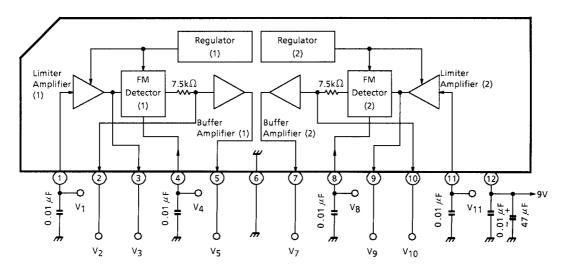
$$CR1(2) = 20\lambda og \frac{SIF \ 1(2)}{SIF \ 2(1)}$$

Note 8 Limiter input resitance

Measure the resistance of limiter input terminal by impedance analyzer.

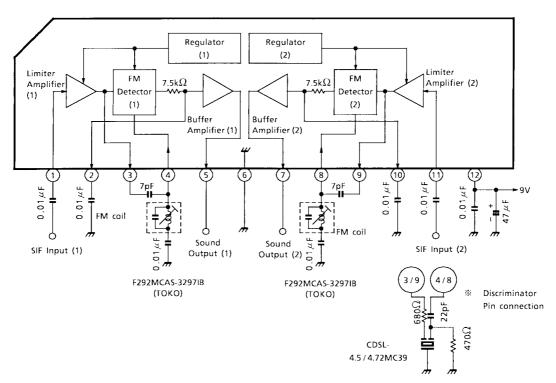
TEST CIRCUIT 1

DC characteristics



TEST CIRCUIT 2

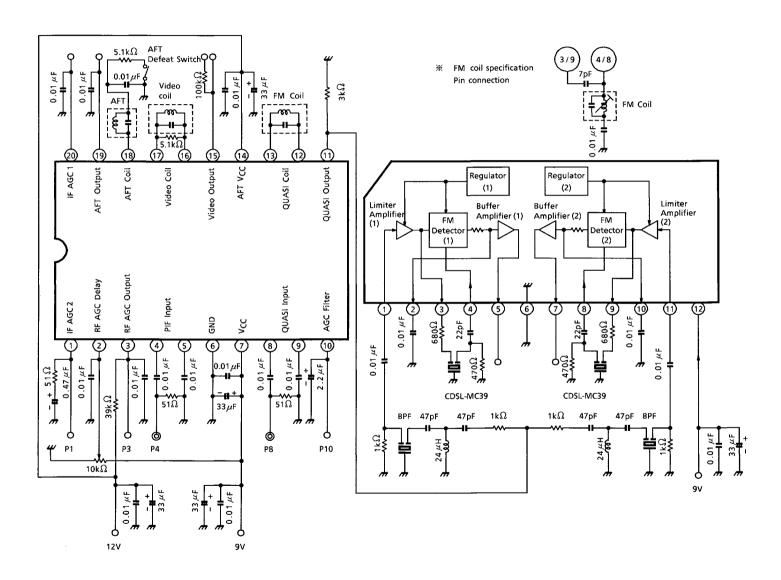
AC characteristics



APPLICATION CIRCUIT

TA8712N /TA8796N

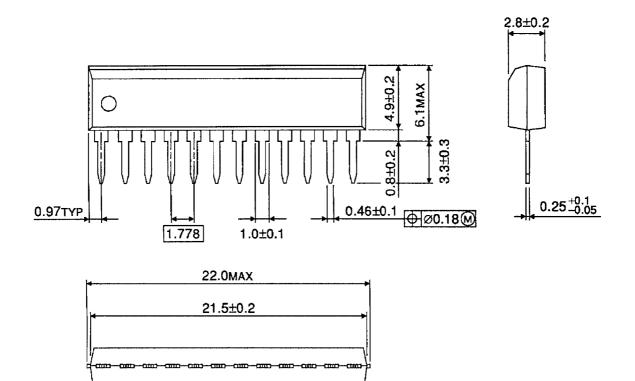
TA8721ASN





PACKAGE DIMENSIONS

SSIP12-P-1.78 Unit: mm



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Weight: 0.71g (Typ.)