

TOSHIBA

TA8721ASN

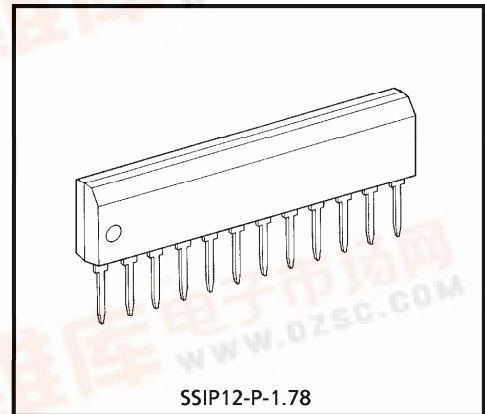
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA8721ASN

DUAL SIF SYSTEM FOR TV

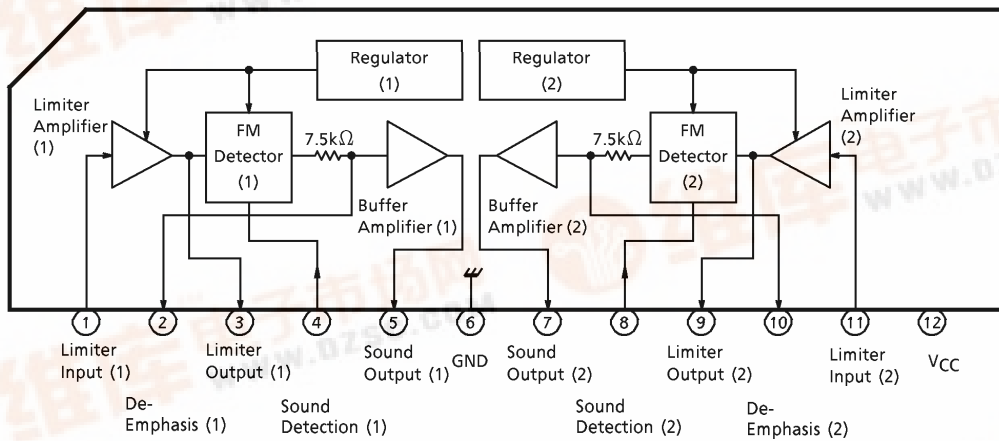
FEATURES

- 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



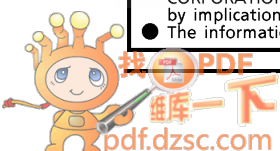
Weight : 0.71g (Typ.)

BLOCK DIAGRAM



961001EBA2

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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.	
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.	
3 4	Limiter Output (1) Sound Detection (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.	
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.	
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.	
11	Limiter Input (2)	A sound carrier is input from the SAW filter.	
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	V

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
Terminal Voltage	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	
	V ₅		—	3.5	4.5	5.5	
	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, $V_{CC} = 9V$, $T_a = 25^\circ C$)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Audio Frequency Output Level (Note 1)	V_{OD1}	2	$f_o = 4.5MHz, V_i = 100dB_{\mu V}$	350	500	700	mV_{rms}
	V_{OD2}		$f_o = 4.724MHz, V_i = 100dB_{\mu V}$	350	500	700	
Audio Frequency Distortion Rate (Note 2)	THD1	2	$f_o = 4.5MHz$	—	0.2	1.0	%
	THD2		$f_o = 4.724MHz$	—	0.2	1.0	
Limiting Sensitivity (Note 3)	V_{LIM1}	2	When output V_{OD1} is $-3dB$.	—	—	50	$dB_{\mu V}$
	V_{LIM2}		When output V_{OD2} is $-3dB$.	—	—	50	
AMR (Note 4)	AMR1	2	$f_o = 4.5MHz, AM = 30%$	40	50	—	dB
	AMR2		$f_o = 4.724MHz, AM = 30%$	40	50	—	
Audio Frequency Bandwidth (Note 5)	AFBW1	2	$-3dB$ bandwidth	± 70	—	—	kHz
	AFBW2		$-3dB$ bandwidth	± 70	—	—	
S/N Ratio (Note 6)	S/N1	2	$f_o = 4.5MHz,$ CW against FM 25kHz / dev	60	—	—	dB
	S/N2		$f_o = 4.724MHz,$ CW against FM 25kHz / dev	60	—	—	
Crosstalk Between Sound Outputs (Note 7)	CR1	2	SIF1 $f_o = 4.5MHz, f_m = 400Hz$ SIF2 $f_o = 4.724MHz, CW$	60	—	—	dB
	CR2		SIF1 $f_o = 4.5MHz, CW$ SIF2 $f_o = 4.724MHz, f_m = 400Hz$	60	—	—	
Limiter Input Resistance (Note 8)	Ri1, Ri2	2	—	0.75	1.0	1.25	$k\Omega$

TEST CONDITION

(Note 1) Audio Frequency Output Level

Limiter input

 V_{OD1} : $f_o = 4.5MHz, 100dB_{\mu V}, f_m = 400Hz, 100%$ (25kHz / dev) FM modulation V_{OD2} : $f_o = 4.724MHz, 100dB_{\mu V}, f_m = 400Hz, 100%$ (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

 V_{LIM1} : $f_o = 4.5MHz, \text{variable level}, f_m = 400Hz, 100%$ (25kHz / dev) FM modulation V_{LIM2} : $f_o = 4.724MHz, \text{variable level}, f_m = 400Hz, 100%$ (25kHz / dev) FM modulationAfter 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 : $f_o = 4.5\text{MHz}$, $100\text{dB}\mu\text{V}$, $f_m = 400\text{Hz}$, 30% AM modulation

AMR2 : $f_o = 4.724\text{MHz}$, $100\text{dB}\mu\text{V}$, $f_m = 400\text{Hz}$, 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.

$$\text{AMR} = 20\log \frac{\text{AMout}}{V_{OD}}$$

(Note 5) Audio Frequency Bandwidth

Limiter input

AFBW1 : f_o variable (center 4.5MHz), $100\text{dB}\mu\text{V}$, $f_m = 400\text{Hz}$, 100% (25kHz/dev) FM modulation

AFBW2 : f_o variable (center 4.724MHz), $100\text{dB}\mu\text{V}$, $f_m = 400\text{Hz}$, 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 f_o frequency high and low.

(Note 6) S/N Ratio

Limiter input

S/N (1) : $f_o = 4.5\text{MHz}$, $100\text{dB}\mu\text{V}$ CW

S/N (2) : $f_o = 4.724\text{MHz}$, $100\text{dB}\mu\text{V}$ 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.

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

(Note 7) Cross Talk between sound outputs

Limiter input

CR1 : $\left[\begin{array}{l} \text{SIF1 } f_o = 4.5\text{MHz}, 100\text{dB}\mu\text{V}, f_m = 400\text{Hz} \\ \text{SIF2 } f_o = 4.724\text{MHz}, 100\text{dB}\mu\text{V}, \text{CW} \end{array} \right.$

CR2 : $\left[\begin{array}{l} \text{SIF1 } f_o = 4.5\text{MHz}, 100\text{dB}\mu\text{V}, \text{CW} \\ \text{SIF2 } f_o = 4.724\text{MHz}, 100\text{dB}\mu\text{V}, f_m = 400\text{Hz} \end{array} \right.$

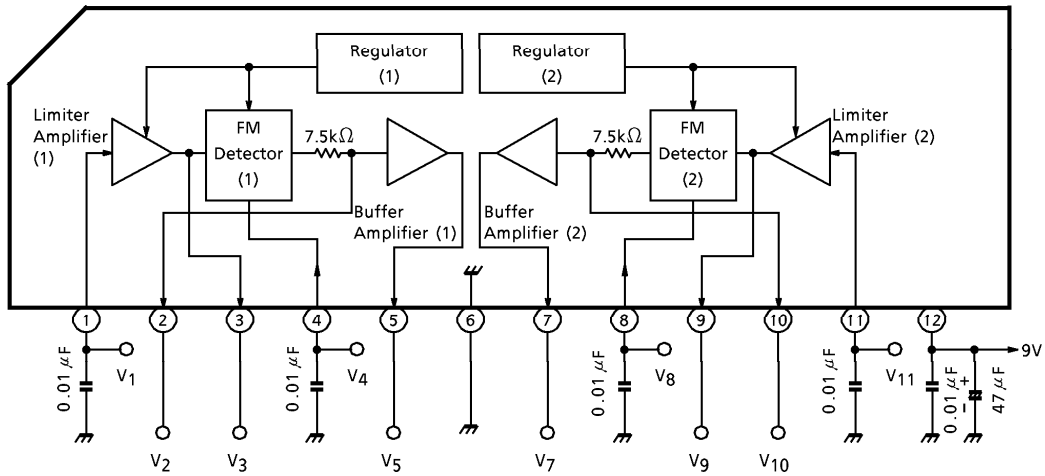
After the above input, measure the output leakage level of sound output.

$$\text{CR1 (2)} = 20\log \frac{\text{SIF 1 (2)}}{\text{SIF 2 (1)}}$$

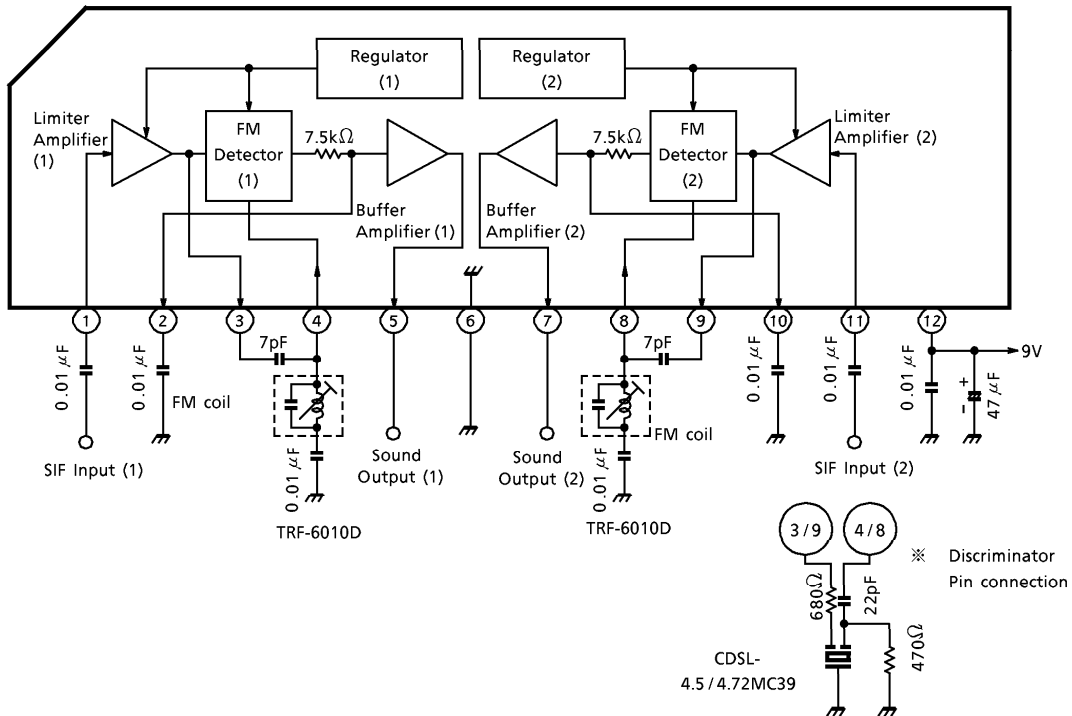
(Note 8) Limiter input resistance

Measure the resistance of limiter input terminal by impedance analyzer.

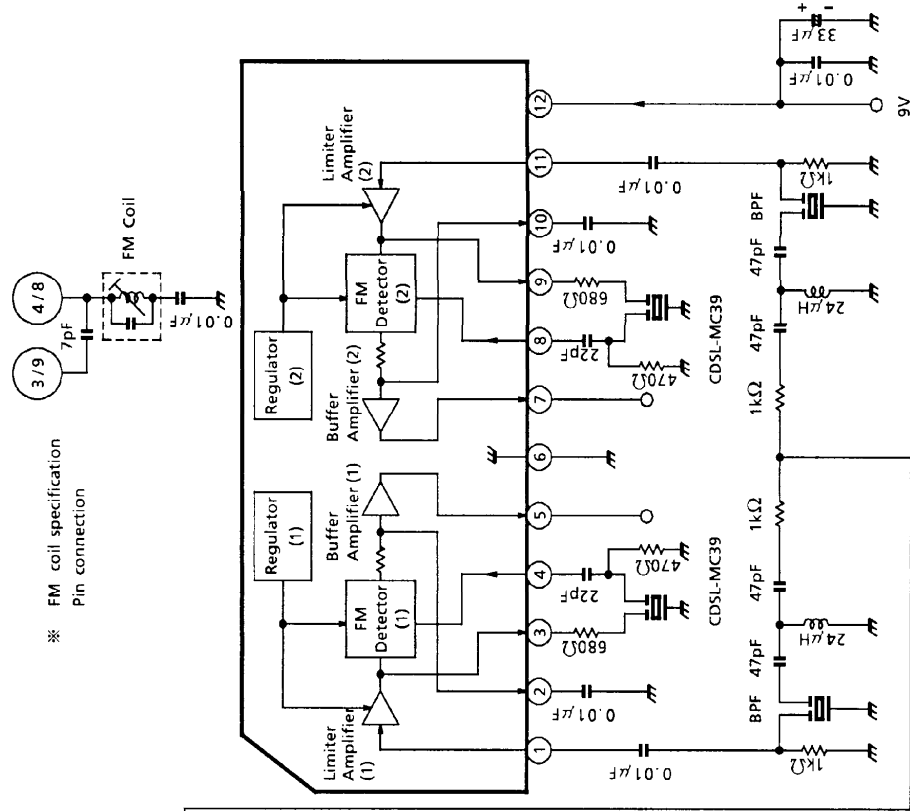
TEST CIRCUIT 1
DC characteristics



TEST CIRCUIT 2
AC characteristics

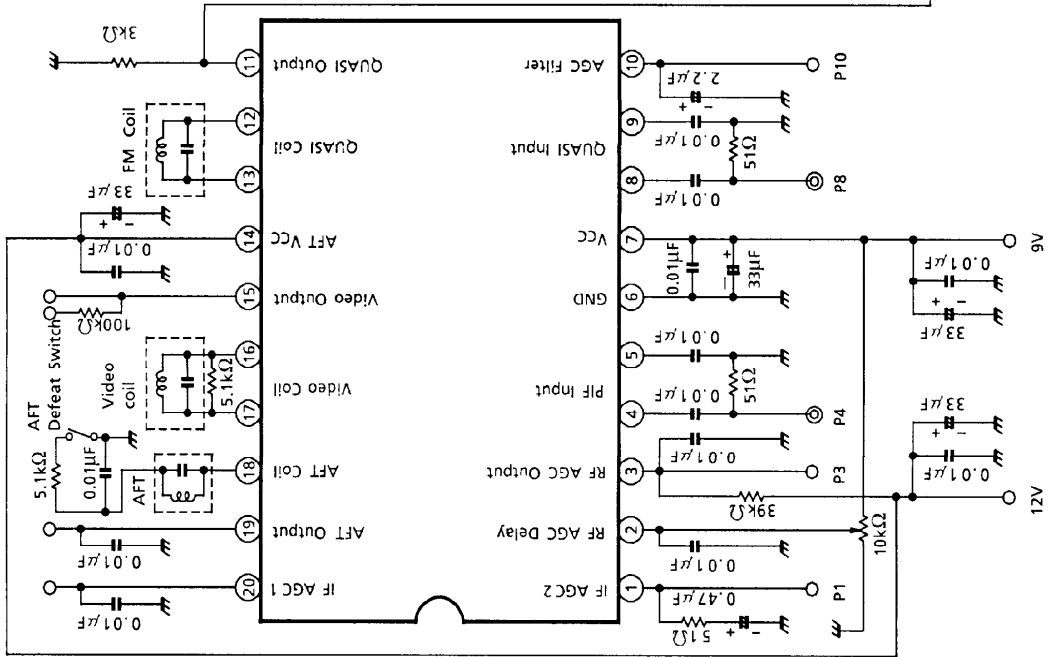


TA8721ASN



APPLICATION CIRCUIT

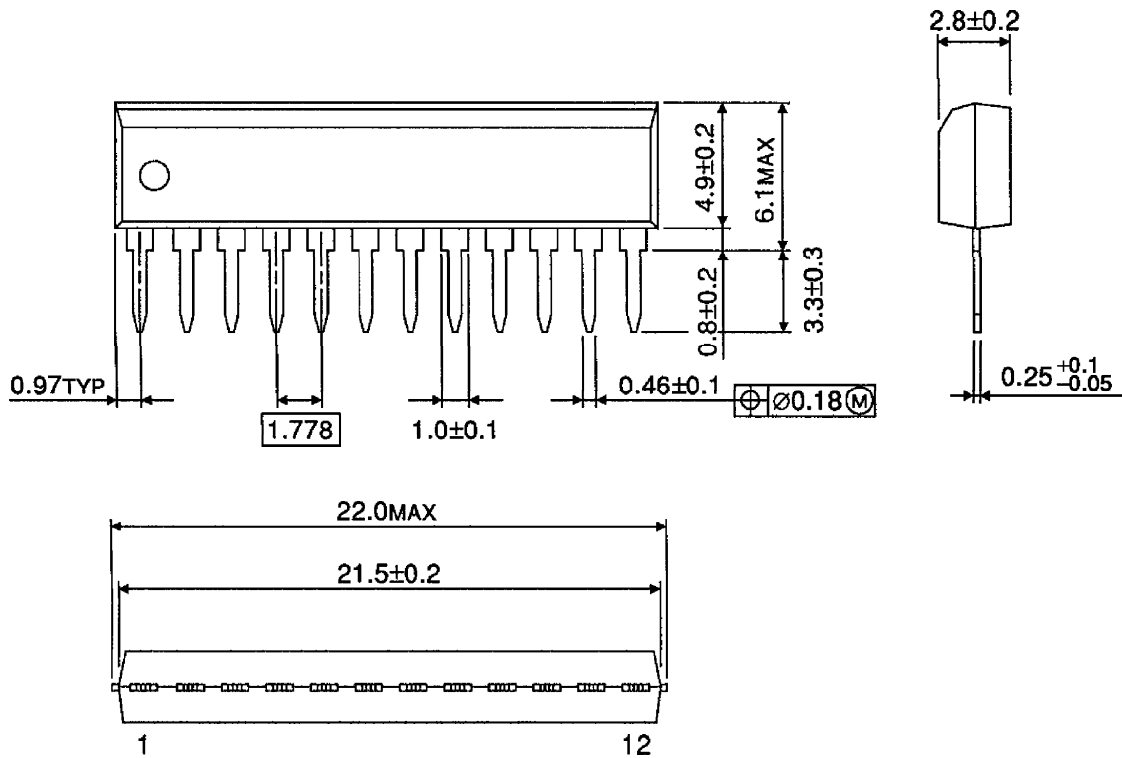
TA8712N/TA8796N



TA8721ASN-8(B4)

OUTLINE DRAWING
SSIP12-P-1.78

Unit : mm



Weight : 0.71g (Typ.)