

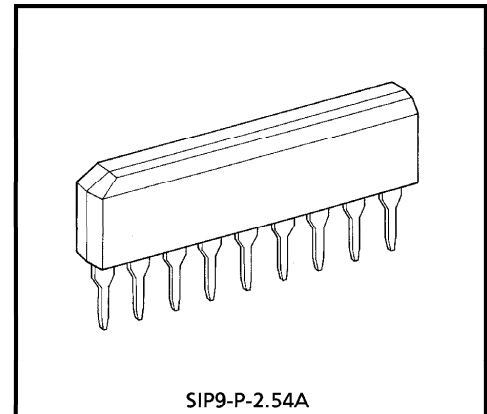
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

**TA7343AP****FM PLL MPX**

The TA7343AP is PLL FM stereo multiplex IC.  
It is suitable for automotive applications and portable radio applications because of space merit by the package and wide supply voltage range.

**FEATURES**

- Excellent stereo LED sensitivity  
:  $V_L(\text{ON}) = 9\text{mV}_{\text{rms}}$  (Typ.)
- Suitable for LED driving :  $I_{\text{LED}} = 20\text{mA}$  (Max.)
- Recommendable input voltage range  
:  $V_{\text{in}} = 200\sim 700\text{mV}_{\text{rms}}$
- Operating supply voltage range :  $V_{\text{CC}} = 3.5\sim 12\text{V}$
- Excellent channel separation through  
entire audio frequency range :  $\text{Sep} = 45\text{dB}$  (Typ.)
- Low distortion :  $\text{THD} = 0.08\%$  (Typ.) at  $V_{\text{in}} = 200\text{mV}_{\text{rms}}$  (Stereo)
- Built-in compulsive monaural function. (The VCO is stopped when the pin⑦ is connected with the power supply line, and then the stereo indicator is turn off.)
- Easy adjustment (The monitored free running frequency of VCO is 38kHz at pin⑥.)

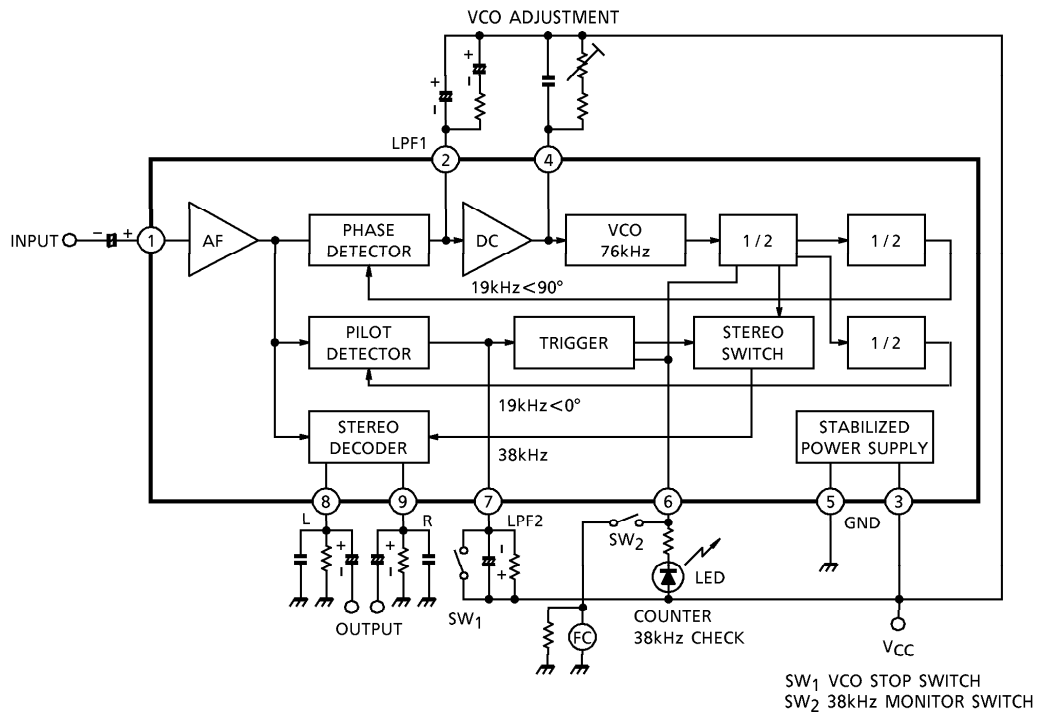


SIP9-P-2.54A  
Weight : 0.92g (Typ.)

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**BLOCK DIAGRAM**



**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	12	V
LED Voltage	V <sub>LED</sub>	16	V
LED Current	I <sub>LED</sub>	20	mA
Power Dissipation	P <sub>D</sub> (Note)	500	mW
Operating Temperature	T <sub>opr</sub>	-30~75	°C
Storage Temperature	T <sub>stg</sub>	-55~155	°C

(Note) Derated above Ta = 25°C in the proportion of 4mW/°C.

**ELECTRICAL CHARACTERISTICS**

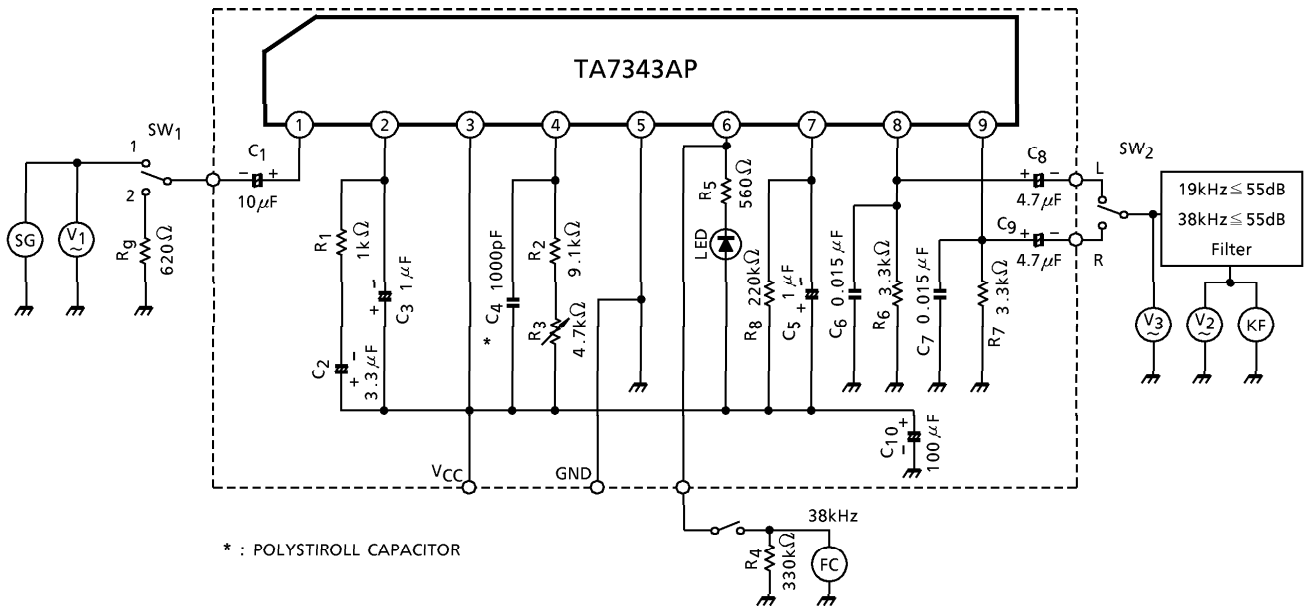
1. DC characteristics (Ta = 25°C, V<sub>CC</sub> = 8V, terminal voltage at no signal)

PIN No.	CHARACTERISTIC	SYMBOL	TYP.	UNIT
Pin①	INPUT	V1	3.5	V
Pin②	LPF 1	V2	6.6	V
Pin③	V <sub>CC</sub>	V3	8.0	V
Pin④	VCO	V4	7.1	V
Pin⑤	GND	V5	0	V
Pin⑥	ST LED	V6	—	V
Pin⑦	LPF 2	V7	7.4	V
Pin⑧	L-ch OUTPUT	V8	4.0	V
Pin⑨	R-ch OUTPUT	V9	4.0	V

2. AC characteristics (Unless otherwise specified,  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 8\text{V}$ ,  $f = 1\text{kHz}$ )

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Current		$I_{CC}$	—	at LED off	—	11	18	mA	
Input Resistance		$R_{IN}$	—		—	33	—	$k\Omega$	
Max. Composite Signal Input Voltage		$V_{in}$ MAX (STEREO)	—	L + R = 90%, P = 10% THD = 1%	—	900	—	$mV_{rms}$	
Separation		Sep	—	L + R = 180 $mV_{rms}$ P = 20 $mV_{rms}$	36	45	—	dB	
Total Harmonic Distortion	Monaural	THD (MONAURAL)	—	$V_{in} = 200mV_{rms}$	—	0.08	0.3	%	
	Stereo	THD (STEREO)	—	L + R = 180 $mV_{rms}$ P = 20 $mV_{rms}$	—	0.08	—		
Voltage Gain		$G_V$	—	$V_{in} = 200mV_{rms}$	-2.0	0	2.0	dB	
Channel Balance		CB	—	$V_{in} = 200mV_{rms}$	—	0	1.5	dB	
Stereo LED Sensitivity	ON	$V_L$ (ON)	—	Pilot Input	—	9	15	$mV_{rms}$	
	OFF	$V_L$ (OFF)	—		2	6	—		
Stereo LED Hysteresis		$V_H$	—	to turn off from LED turn on	—	3	—	$mV_{rms}$	
Capture Range		CR	—	P = 20 $mV_{rms}$	—	$\pm 3$	—	%	
Carrier Leak	19kHz	CL	—	P = 20 $mV_{rms}$ L + R = 180 $mV_{rms}$	—	34	—	dB	
	38kHz				—	42	—		
SCA Rejection Ratio		SCA Rej	—	P = 20 $mV_{rms}$ L + R = 160 $mV_{rms}$ SCA = 20 $mV_{rms}$ $f_{SCA} = 67\text{kHz}$	—	70	—	dB	
Signal to Noise Ratio		S / N	—	$V_{in} = 200mV_{rms}$ $f = 1\text{kHz}$ , $R_g = 620\Omega$	—	74	—	dB	
Output Current (Pin $\text{\textcircled{8}}$ , Pin $\text{\textcircled{9}}$ )		$I_{OUT}$	—	$R_L = 3.3k\Omega$	$V_{CC} = 3.5\text{V}$	—	0.3	0.6	mA
					$V_{CC} = 8.0\text{V}$	—	1.2	1.8	
					$V_{CC} = 12\text{V}$	—	1.4	2.1	

TEST CIRCUIT

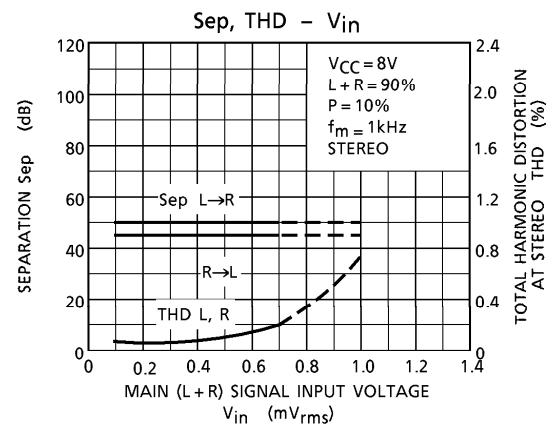
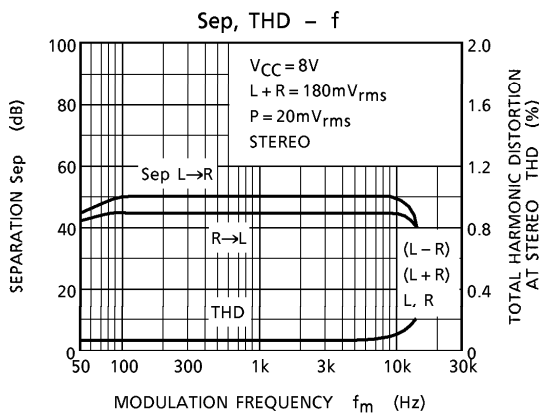
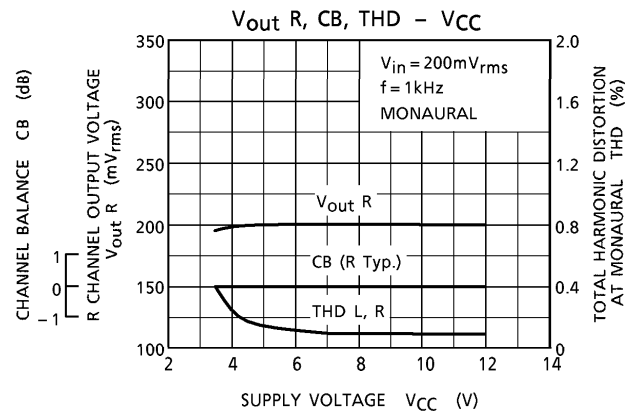
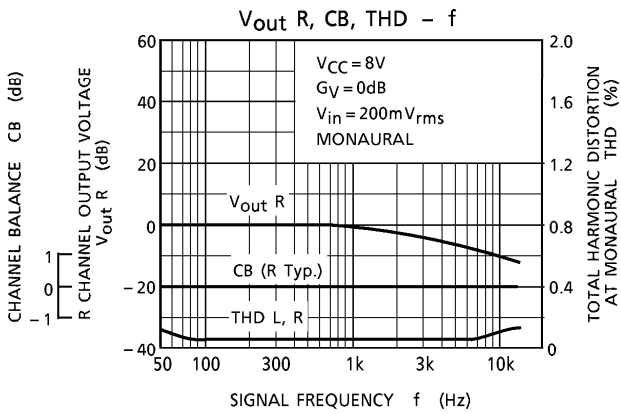
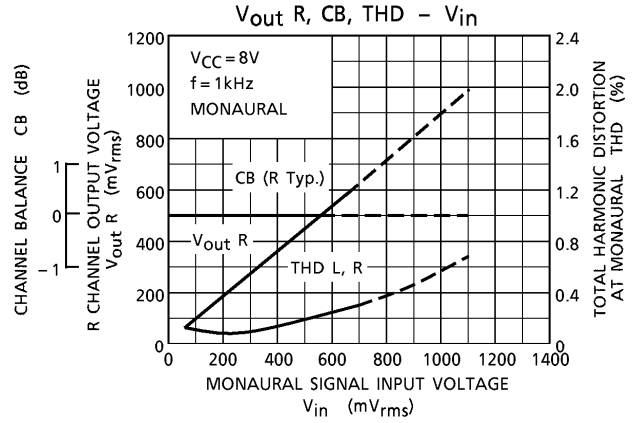
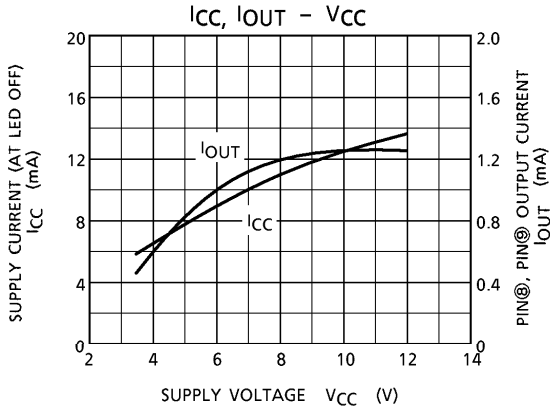


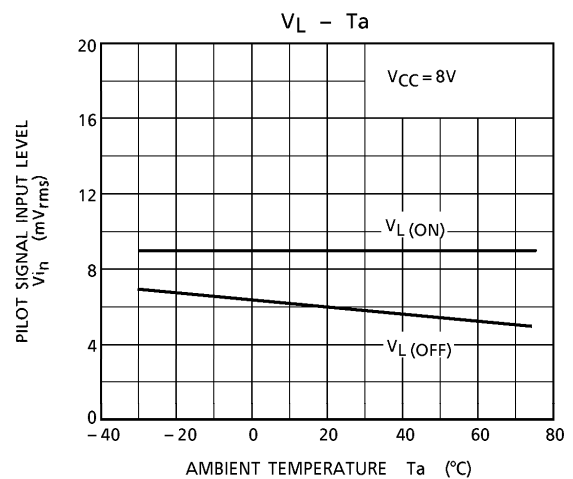
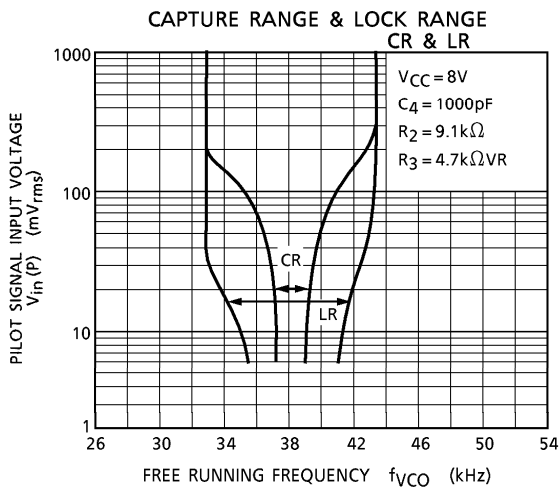
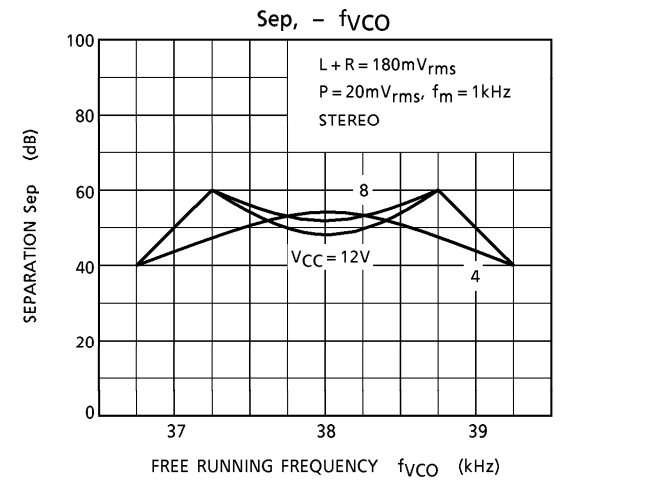
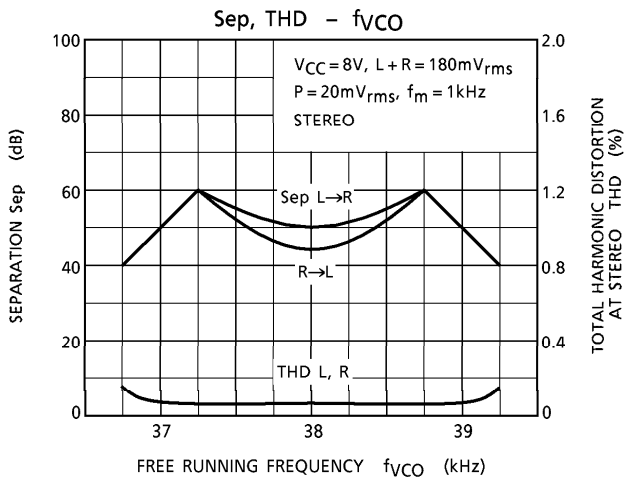
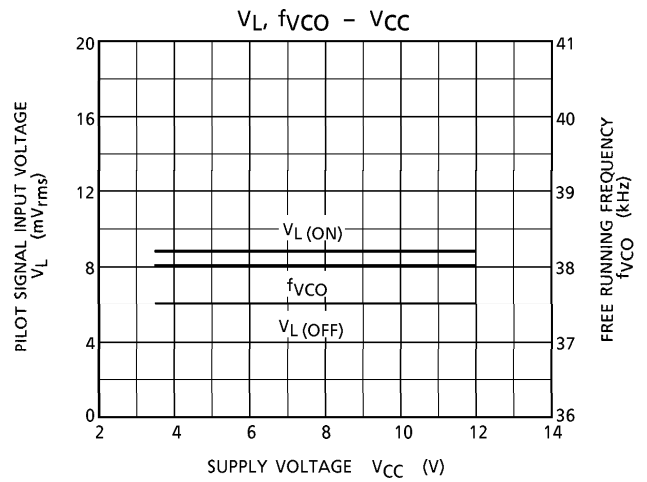
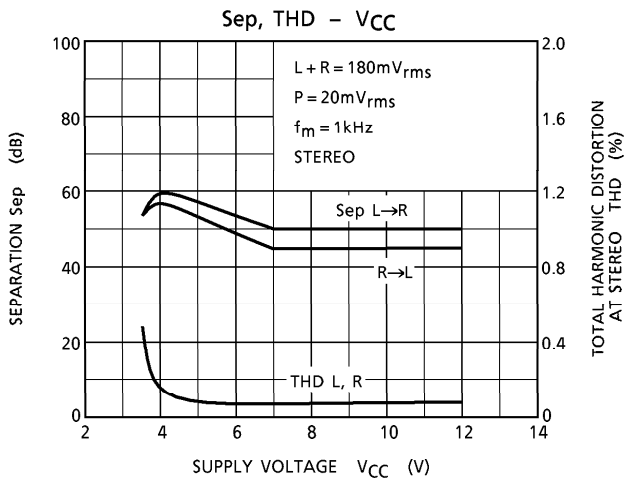
\* : POLYSTIROLL CAPACITOR

- SG : STEREO SIGNAL GENERATOR
- FC : FREQUENCY COUNTER
- V<sub>1</sub>, V<sub>2</sub>, V<sub>3</sub> : AC VOLTMETER
- KF : DISTORTION METER

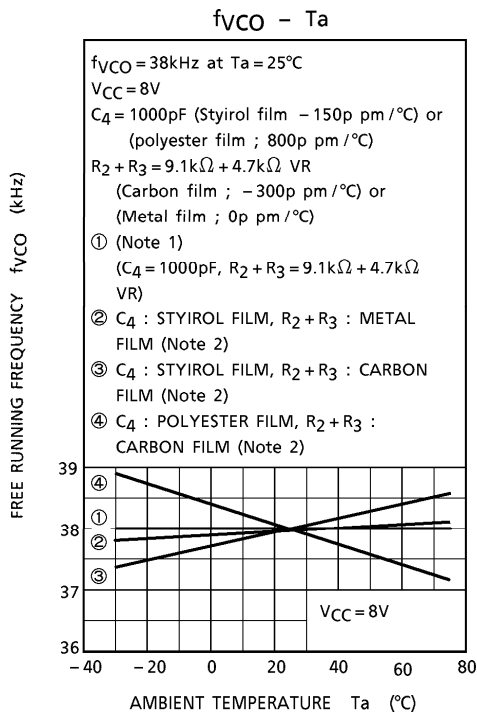
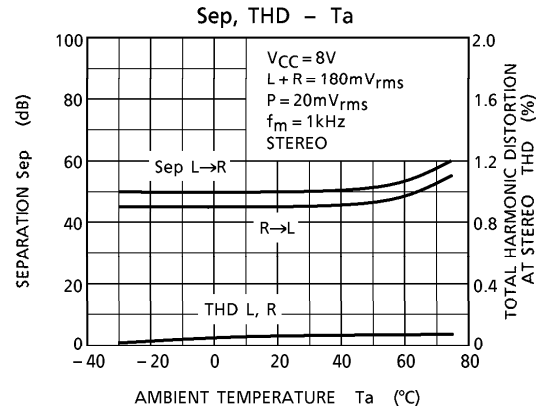
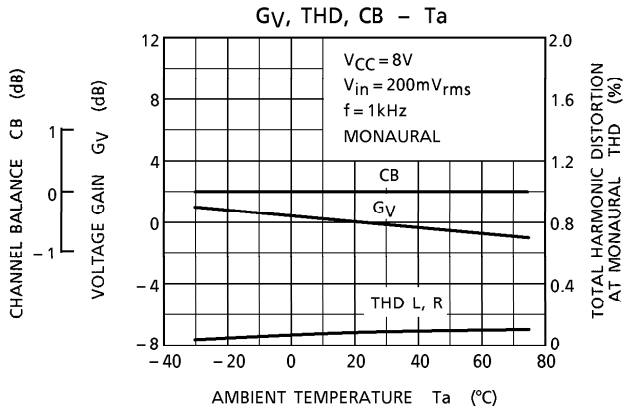
EXTERNAL PARTS TABLE

PARTS No.	TYPICAL	PURPOSE	INFLUENCE		NOTE
			SMALLER THAN TYP.	GREATER THAN TYP.	
C <sub>1</sub>	10 $\mu$ F	Coupling	Separation is bad at 50~300Hz	"POP" noise is high	Input
C <sub>2</sub>	3.3 $\mu$ F	LPF at PLL	THD is bad at 5~10kHz (stereo)	Narrow capture range	—
C <sub>3</sub>	1 $\mu$ F				
R <sub>1</sub>	1k $\Omega$				
C <sub>4</sub>	1000pF	VCO Free Running	C <sub>4</sub> : Small→Wide capture range and large glitter C <sub>4</sub> : Large→Narrow capture range	—	—
R <sub>2</sub>	9.1k $\Omega$	Frequency adjustment			
R <sub>3</sub>	4.7k $\Omega$ VR				
R <sub>4</sub>	330k $\Omega$	Monitor Load	—	—	—
R <sub>5</sub>	560 $\Omega$	Rush Current Limiter	IC is damaged by the rush current	LED is dark	I <sub>LED</sub> $\leq$ 20mA
LED	—	Stereo Indicator	Usable for LED		
C <sub>6</sub>	0.015 $\mu$ F	Load and Diemphasis	Diemphasis (50 $\mu$ s)		C <sub>6</sub> = 0.022 $\mu$ F for 75 $\mu$ s
R <sub>6</sub>	3.3k $\Omega$		Output voltage is small	THD is bad for low V <sub>CC</sub>	
C <sub>7</sub>	0.015 $\mu$ F	Load and Diemphasis	Diemphasis (50 $\mu$ s)		C <sub>7</sub> = 0.022 $\mu$ F for 75 $\mu$ s
R <sub>7</sub>	3.3k $\Omega$		Output voltage is small	THD is bad for low V <sub>CC</sub>	
C <sub>8</sub>	4.7 $\mu$ F	Output Coupling	Frequency response is bad	"POP" noise is large	L-ch
C <sub>9</sub>	4.7 $\mu$ F	Output Coupling			R-ch
R <sub>8</sub>	220k $\Omega$	LED Sensitivity Adjustment	V <sub>L</sub> (ON) is large	V <sub>L</sub> (ON) is small	—
C <sub>5</sub>	1 $\mu$ F	LPF at LED	THD is bad at 50~300Hz	Slow LED response	—







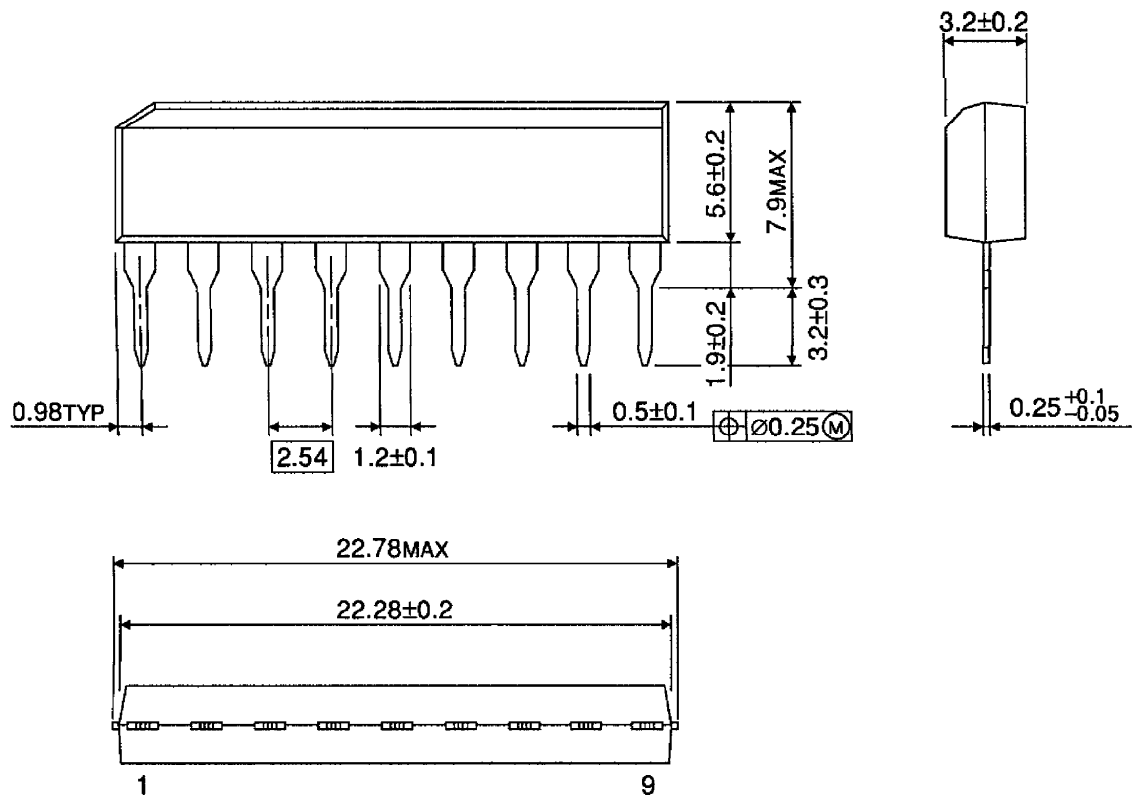


(Note 1) ① : With IC only put into a temperature test chamber

(Note 2) ②③④ : With IC, resistors and capacitors put into a temperature test chamber

**OUTLINE DRAWING**  
SIP9-P-2.54A

Unit : mm



Weight : 0.92g (Typ.)