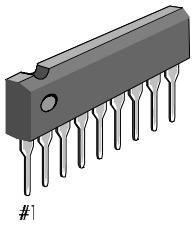
INTRODUCTION

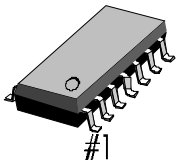
The KA22497 is a monolithic integrated circuit designed for the FM front end of portable radio cassettes or music centers.
It consists of RF AMP, local OSC buffer and mixer.
Compared with conventional types, it is improved in the following characteristics:

— Low supply voltage
— Strong input
— Spurious radiation

9-SIP



14-SOP



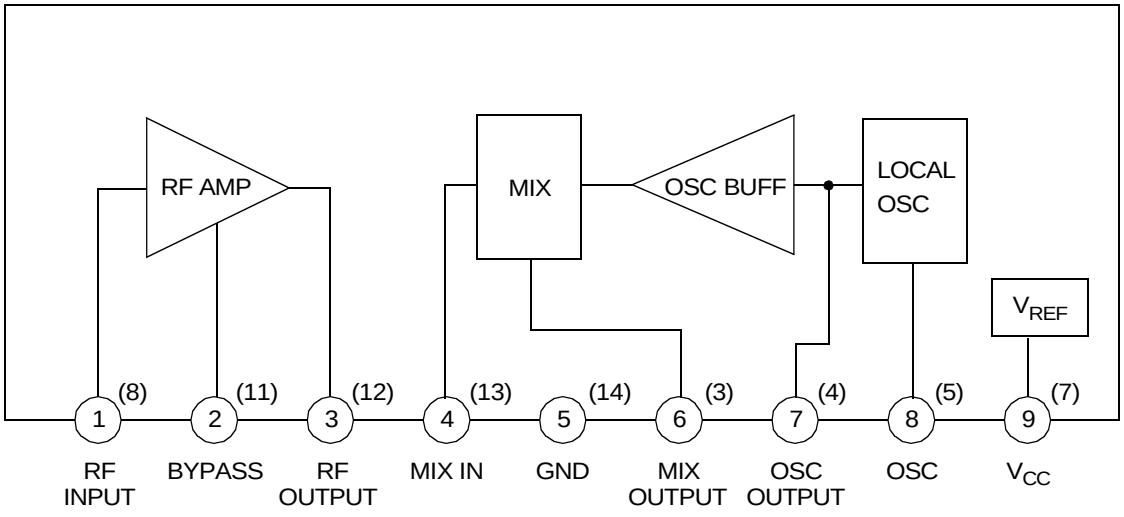
FEATURES

- Wide supply voltage range: V_{CC} = 1.6 V ~ 6.0 V
- Low local oscillation stop voltage: V_{STOP} = 0.9 V(Typ)
- Improved inter-modulation characteristics by double balanced type mixer circuit
- Low spurious radiation
- Built-in clamping diode in the mixer output stage

ORDERING INFORMATION

Device	Package	Operating Temperature
KA22497	9-SIP	-25°C ~+75°C
KA22497D	14-SOP	

BLOCK DIAGRAM



NOTE: ( ) means KA22497D

Figure 1.

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

Characteristic	Symbol		Value	Unit
Supply Voltage	V_{CC}		8	V
Power Dissipation	P_D	KA22497	600	mW
		KA22497D	300	
Operating Temperature	T_{OPR}		– 25 ~ +75	°C
Storage Temperature	T_{STG}		– 55 ~ +150	°C

NOTE: Derated above Ta = 25 °C in the proportion of 4mW/°C

ELECTRICAL CHARACTERISTICS

(Ta = 25 °C, V_{CC} = 5 V, f = 98MHz, fm = 1KHz, $\Delta f = \pm 22.5$KHz, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Circuit Current	I_{CCQ}	V_L = 0	–	5.0	8.0	mA
-3dB Limiting Sensitivity	$V_{I(LIM)}$	VD (VI = 60 dBμ)-3dB Down	–	3.0	7.0	dBμ
Conversion Gain	G_V	V_I = 60 dBμ	25	31	–	dB
Usable Sensitivity	S_{USA}	S/N = 30dB	–	11	–	dBμ
Oscillation Voltage	V_{OSC}	f_{OSC} = 108MHz	90	165	250	mV
Oscillation Stop Voltage	V_{STOP}	–	–	0.9	1.3	V

TEST CIRCUIT

(I_{CCQ}, $V_{I(LIM)}$, S_{USA}, G_V, V_{OSC}, V_{STOP})

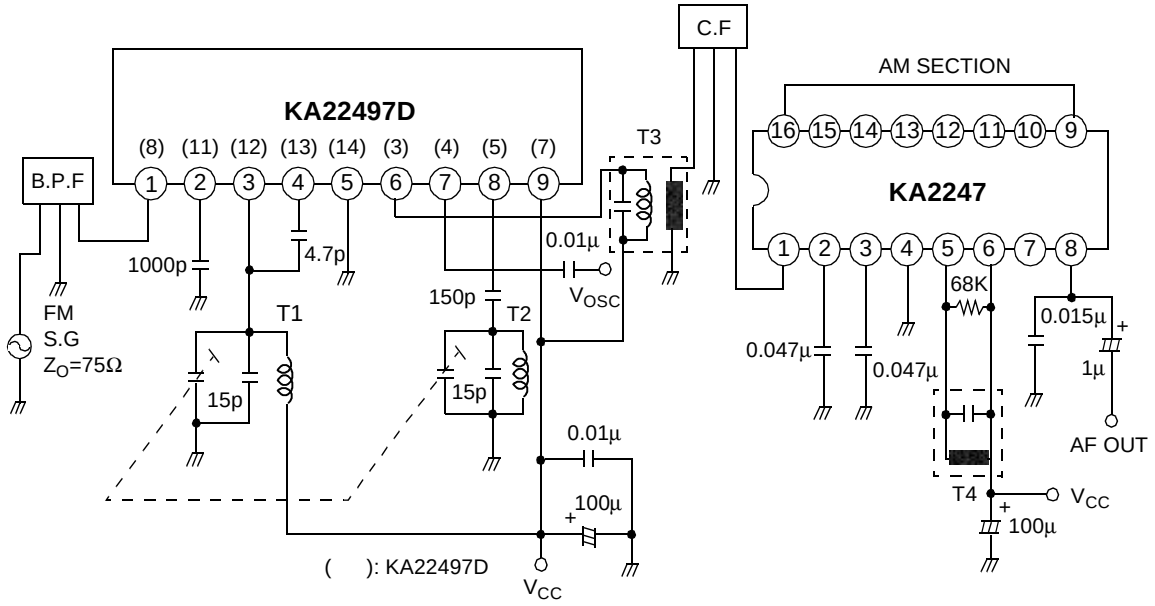


Figure 2.

When using the KA22471 for the IF stage.

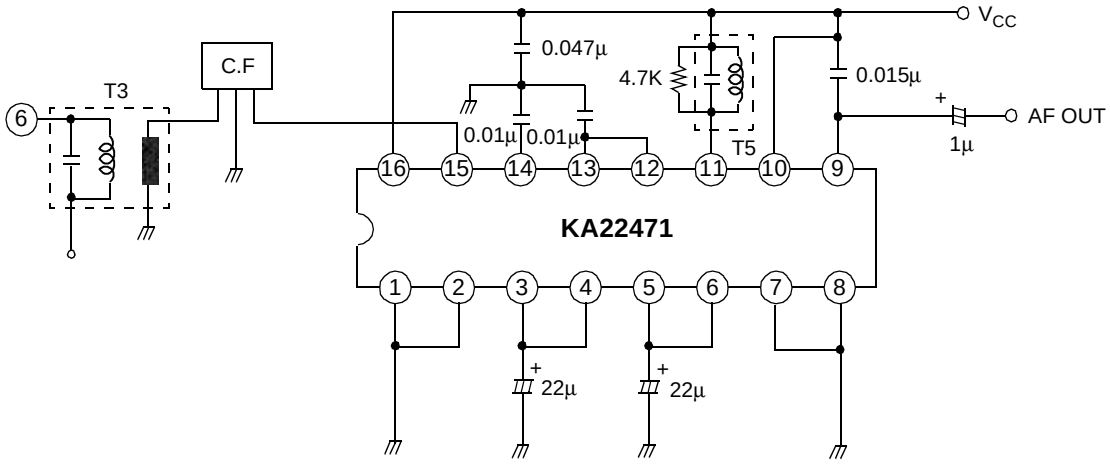
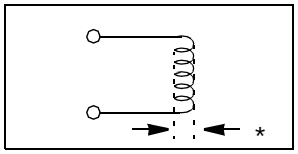


Figure 3.

COIL SPECIFICATIONS (BOTTOM VIEW)

T1 FM RF

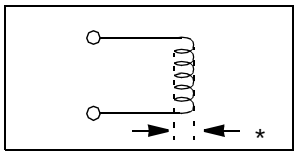


f (MHz)	Q_O	Turns
98	100	4

* In a Diameter of 5.5 mm

0.8 mm ϕ UEW

T2 FM OSC

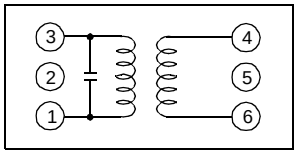


f (MHz)	Q_O	Turns
98	100	3

* In a Diameter of 5.5 mm

0.8 mm ϕ UEW

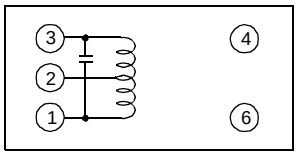
T3 FM IFT



CO (pF)	*f* (MHz)	Q_O	Turns	
1 - 3		1 - 3	1 - 3	4 - 6
75	10.7	115	12	1

KOREA TOKO
0.12 mm ϕ UEW

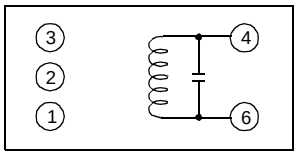
T4 FM IFT (DET)



CO (pF)	*f* (MHz)	Q_O	Turns
1 - 3		1 - 3	1 - 3
56	10.7	95	12

KOREA TOKO
0.12 mm ϕ UEW

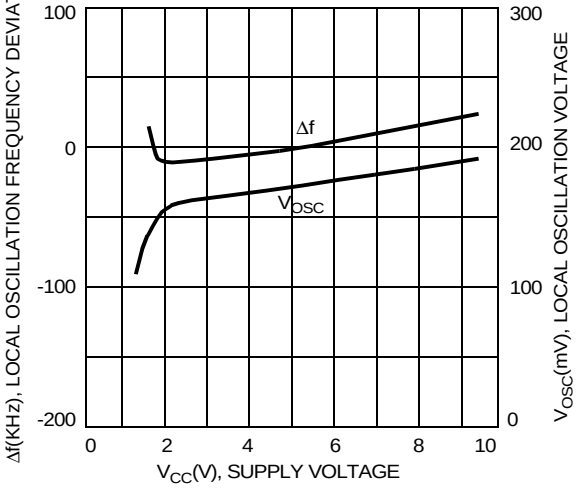
T5 FM IFT (DET)



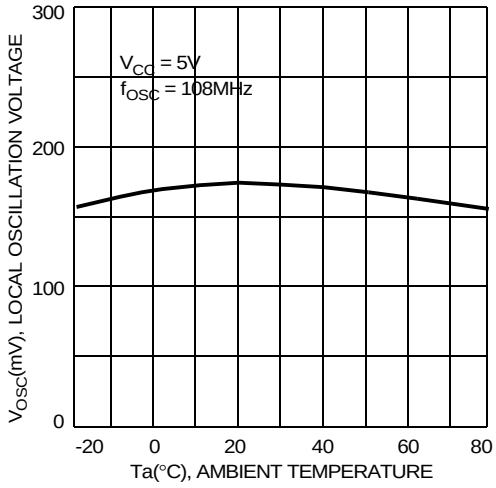
CO (pF)	*f* (MHz)	Q_O	Turns
4 - 6		4 - 6	4 - 6
47	10.7	115	14

KOREA TOKO
0.12 mm ϕ UEW

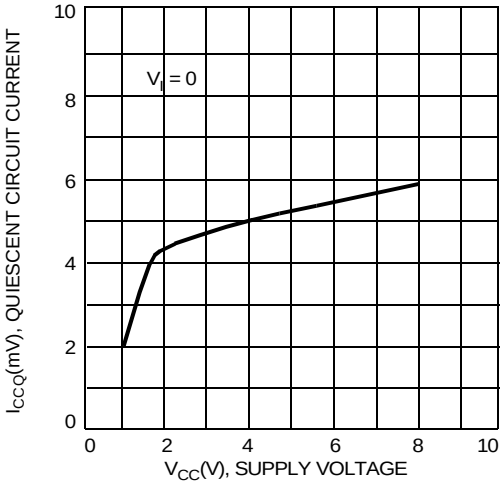
LOCAL OSCILLATION FREQUENCY DEVIATION,
LOCAL OSCILLATION VOLTAGE.SUPLY VOLTAGE



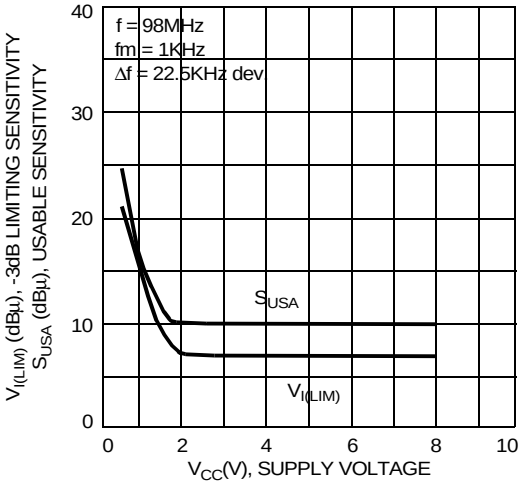
LOCAL OSCILLATION VOLTAGE
AMBIENT TEMPERATURE



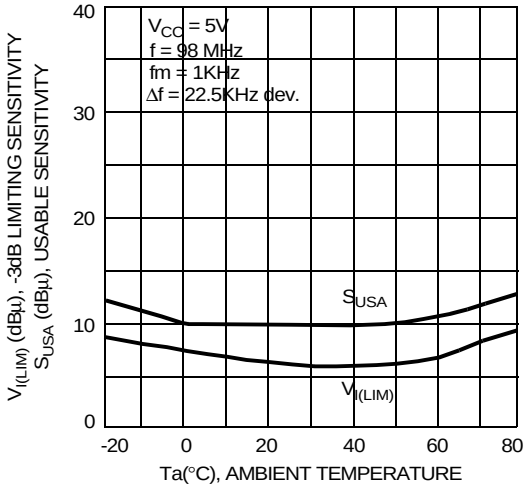
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



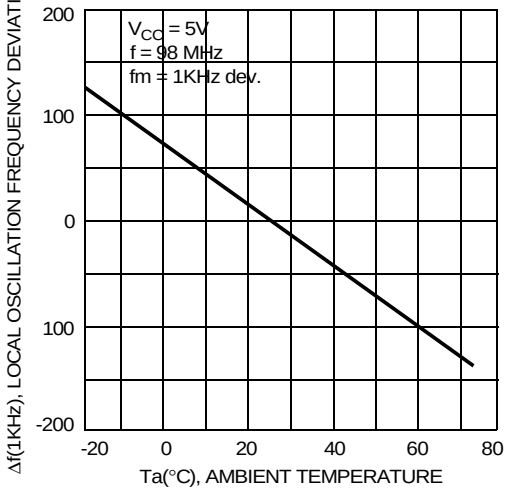
SENSITIVITY-SUPPLY VOLTAGE



SENSITIVITY-AMBIENT TEMPERATURE



LOCAL OSCILLATION FREQUENCY DEVIATION
AMBIENT TEMPERATURE TEMPERATURE



APPLICATION INFORMATION

1. RF AMP

The RF AMP is a common base type, so the operating frequency range is improved. The GND of the bypass capacitor (Pin 2) should be located closely at Pin 5 (GND). When using the bypass capacitor at V_{CC}-line of Pin 3. We can expect an improvement of the S/N ratio.

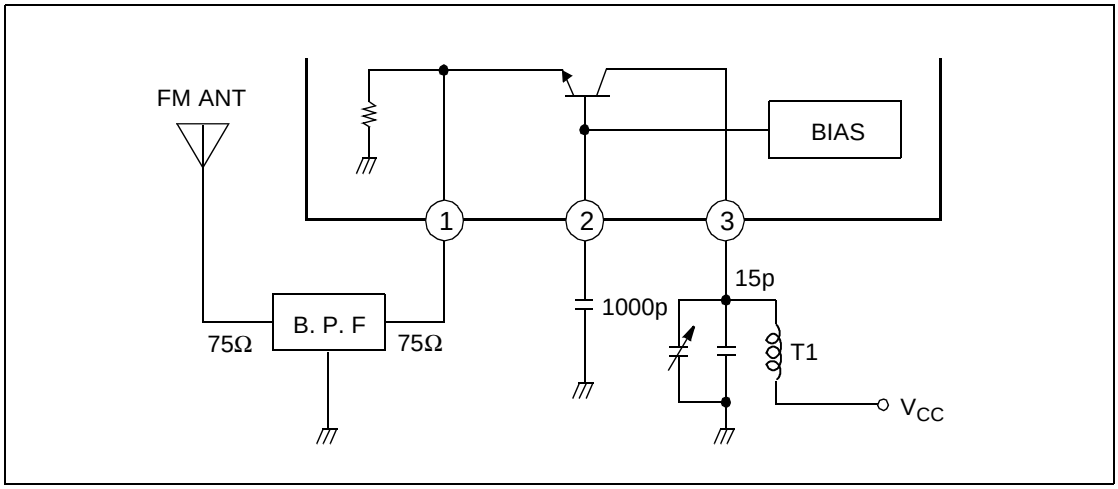


Figure 4.

2. MIXER

The mixer stage uses a double balanced type in order to protect the leakage of OSC, spurious radiation. Also, this is built into the limiter in order to improve the strong input characteristic.

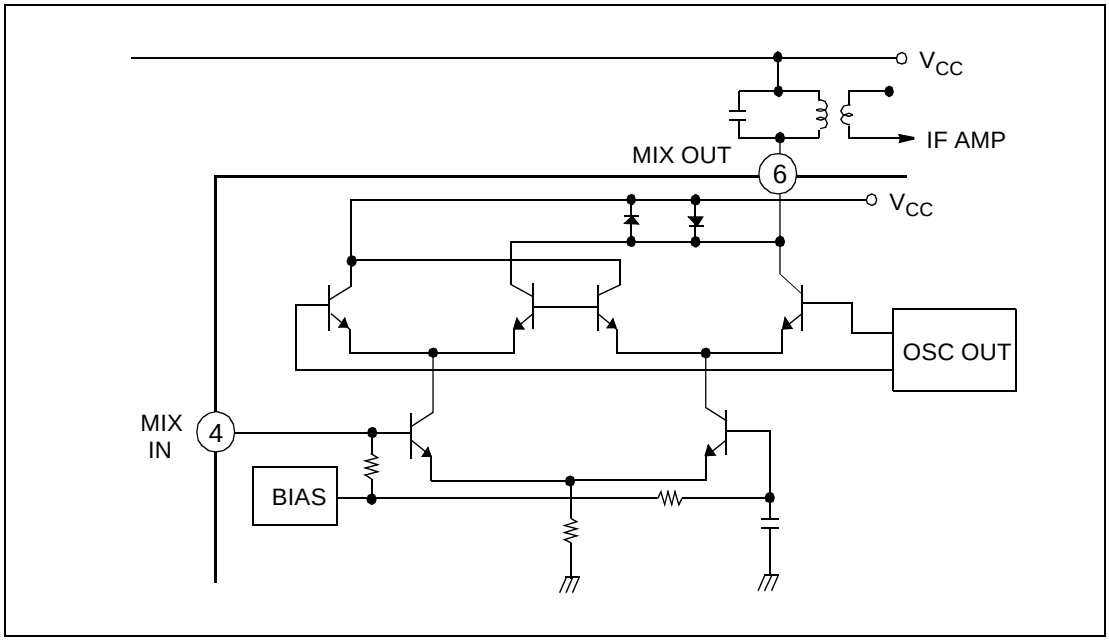


Figure 5.

LOCAL OSCILLATION

The local oscillator uses a colpitts oscillator for stable oscillation at high frequency. This is built into the OSC buffer in order to stably operate the OSC frequency and OSC voltage at strong input.

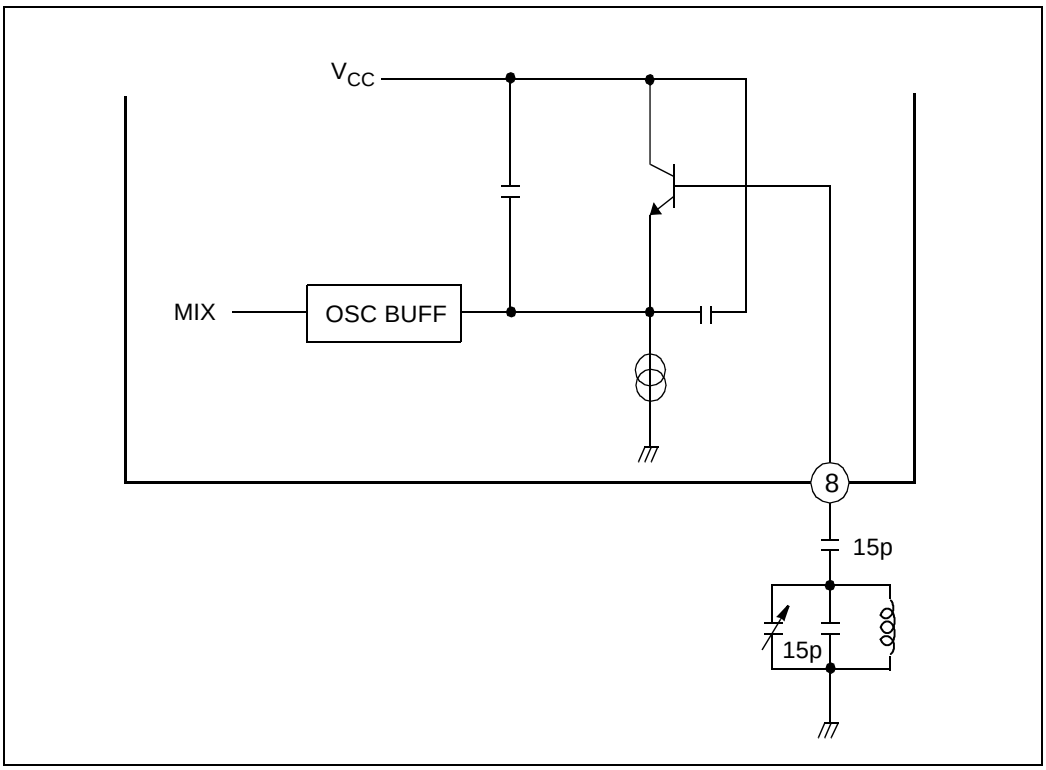
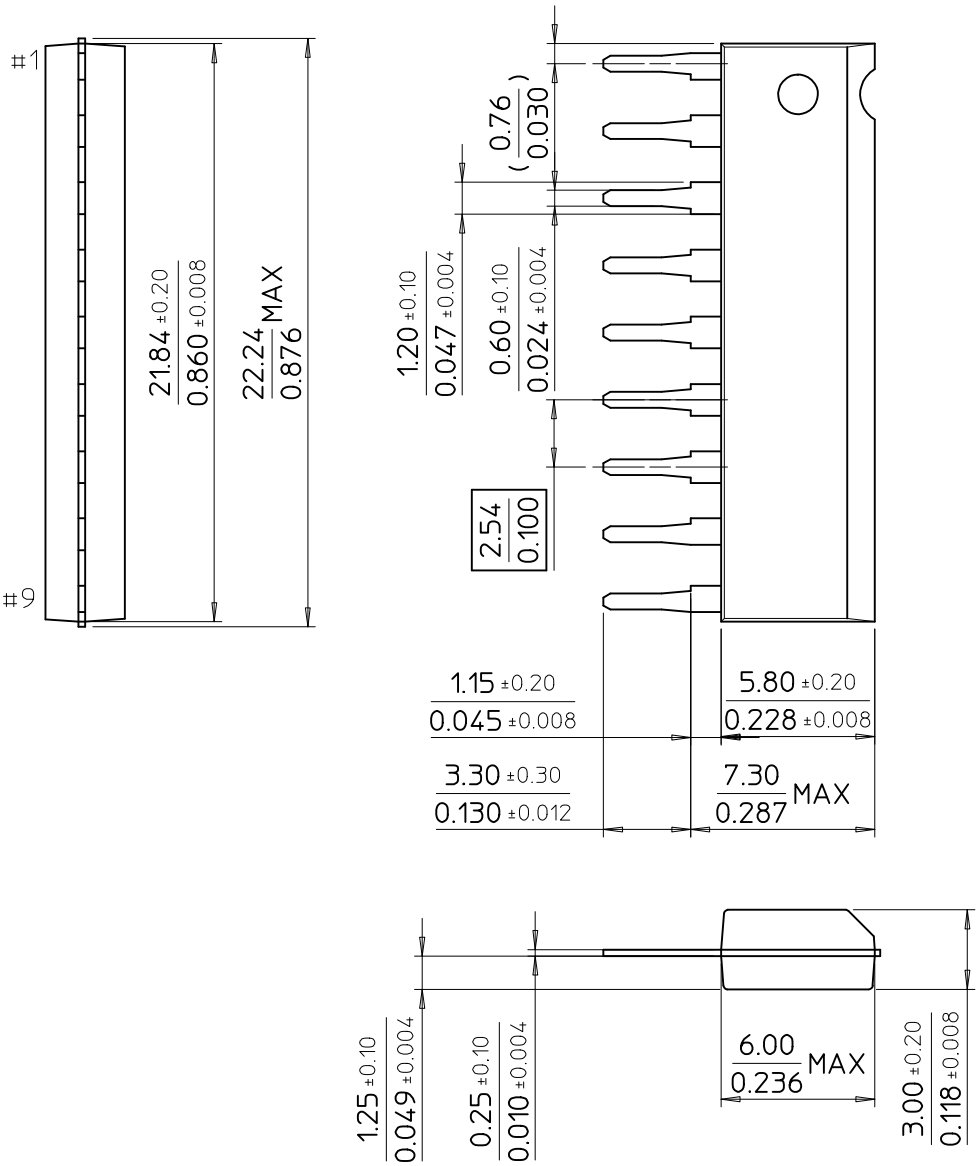


Figure 6.

9–SIP

Dimensions in Milimeters/Inches



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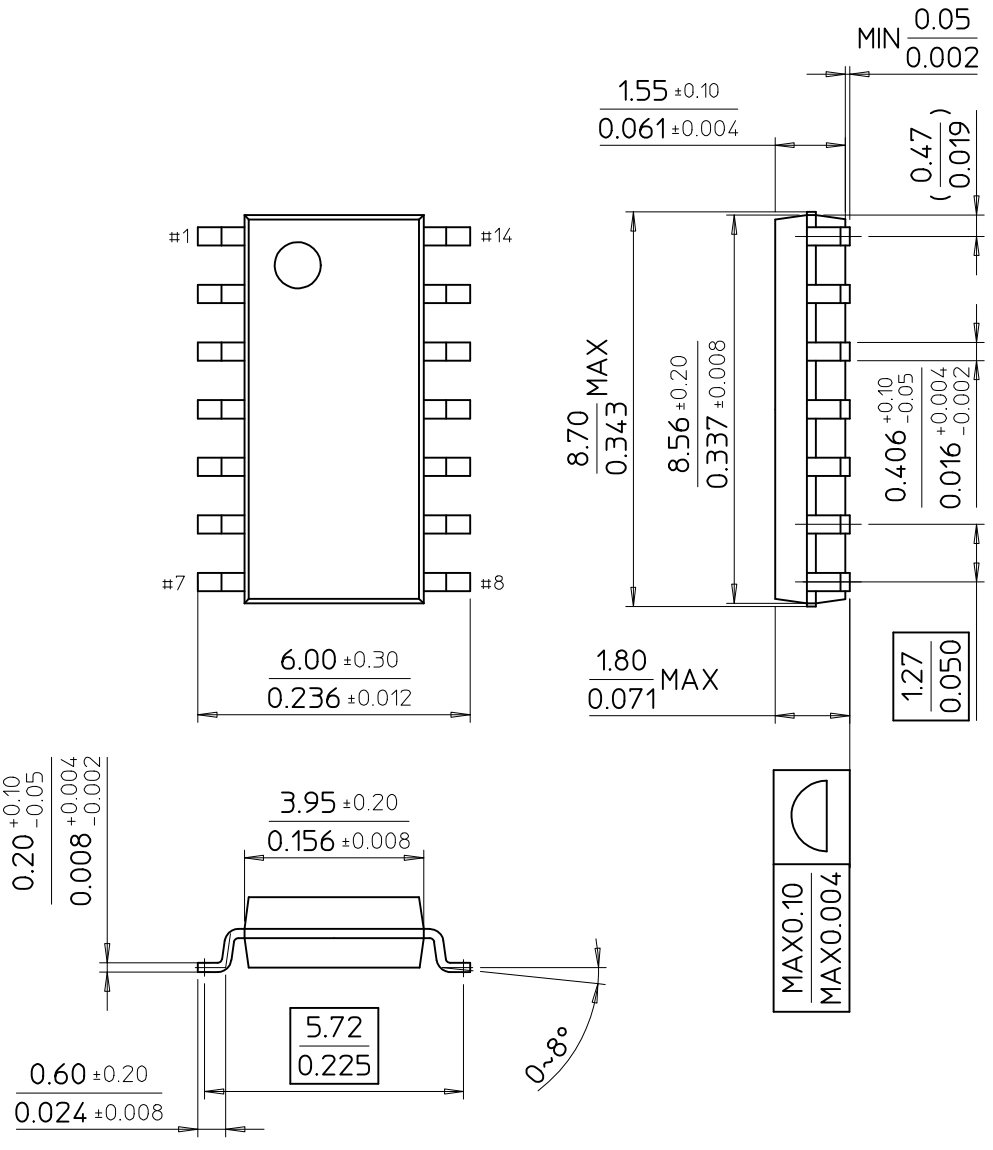
14-SOP-225B

Dimensions in Milimeters/inches



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