

KA4558/AI

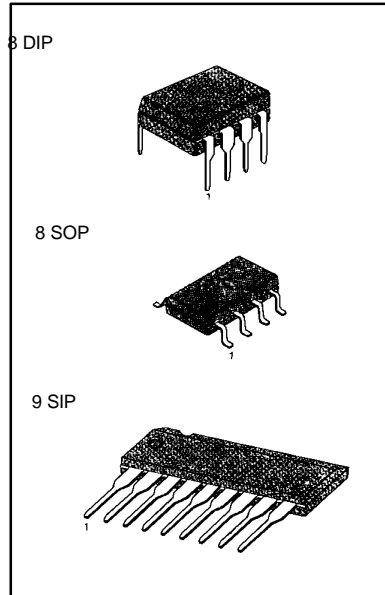
DUAL OPERATIONAL AMPLIFIER

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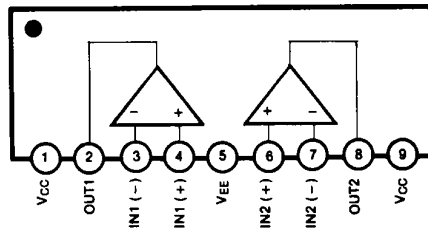
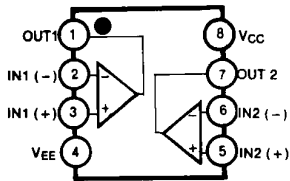
The KA4558 series is a monolithic integrated circuit designed for dual operational amplifier.

FEATURES

- No frequency compensation required.
- No latch-up.
- Large common mode and differential voltage range.
- Parameter tracking over temperature range.
- Gain and phase match between amplifiers.
- Internally frequency compensated.
- Low noise input transistors.



BLOCK DIAGRAM



ORDERING INFORMATION

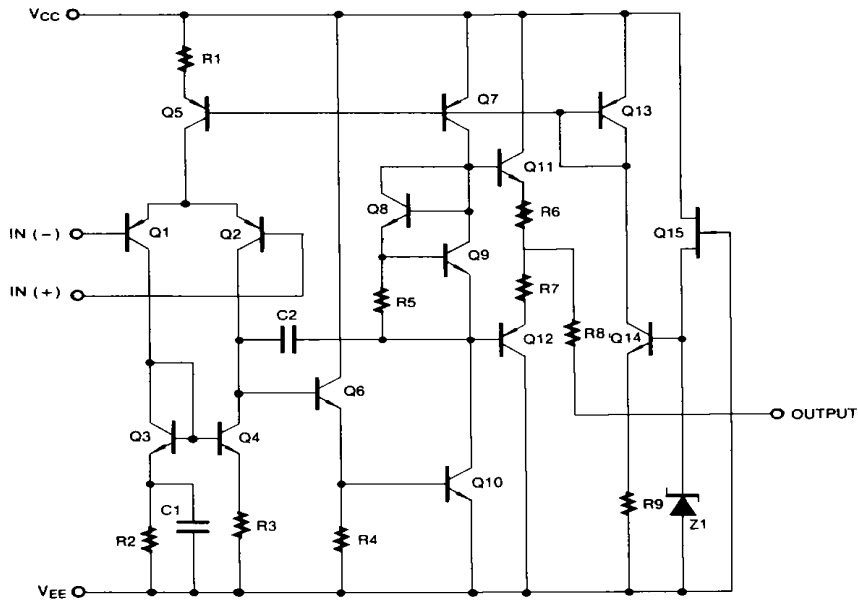
Device	Package	Operating Temperature
KA4558 KA4558A	8 DIP	0 ~ + 70; É
KA4558S KA4558AS	9 SIP	
KA4558D KA4558AD	8 SOP	
KA4558I KA4558A	8 DIP	
KA4558IS KA4558AIS	9 SIP	-40 ~ + 85; É
KA4558ID	8 SOP	
KA4558AID		



KA4558/AI

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SCHEMATIC DIAGRAM (One Section Only)



**ABSOLUTE
MAXIMUM
RATINGS**

Characteristic	Symbol	Value	Unit
Supply Voltage KA4558A/AI	V_{CC}	± 22	V
KA4558/I		± 18	V
Differential Input Voltage	$V_{I(DIFF)}$	± 30	V
Input Voltage	V_I	± 15	V
Power Dissipation	P_D	400	mW
Operating Temperature Range KA4558I/AI	T_{OPR}	-40 ~ + 85	$^{\circ}C$
KA4558/KA4558A		0 ~ + 70	$^{\circ}C$
Storage Temperature Range		T_{STG}	-65 ~ + 150

KA4558/AI

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ELECTRICAL CHARACTERISTICS

(V_{CC} = 15V, V_{EE} = -15V, T_A = 25°C unless otherwise specified)

Characteristic	Symbol	Test Conditions	KA4558A/AI			KA4558/I			Unit
			Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	V _{IO}	R _{Si} = 10kΩ NOTE 1		1	5		2	6	mV
				1	6			7.5	
Input Offset Current	I _{IO}	T _A = T _{A(MAX)} T _A = T _{A(MIX)}		5	200		5	200	nA
				3	200			300	
				20	500			300	
Input Bias Current	I _{BIAS}	T _A = T _{A(MAX)} T _A = T _{A(MAX)}		30	500		30	500	nA
				20	500			800	
				100	1500			800	
Large Signal Voltage Gain	G _V	V _{O(P-P)} = 10V, R _{Li} = 2kΩ NOTE 1	50	200		20	200	V/mV	
			25						
Common Mode Input Voltage Range	V _{I(R)}	NOTE 1	±2	±3		±2	±3	V	
			±2	±3					
Common Mode Rejection Ratio	CMRR	R _{Si} = 10kΩ NOTE 1	70	90		70	90	dB	
			70	90					
Supply Voltage Rejection Ratio	PSRR	R _{Si} = 10kΩ NOTE 1	76	90		76	90	dB	
			76	90		76	90		
Output Voltage Swing	V _{O(P,P)}	R _{Li} = 10kΩ R _{Li} = 2kΩ NOTE 1	±2	±4		±2	±4	V	
			±0	±3		±0	±3		
Supply Current (Both Amplifiers)	I _{CC}	T _A = T _{A(MAX)} T _A = T _{A(MAX)}		3.5	5.0		3.5	5.8	mA
					4.5			5.0	
					6.0			6.7	
Power Consumption (Both Amplifiers)	P _C	T _A = T _{A(MAX)} T _A = T _{min}		70	150		70	170	mW
					135			150	
					180			200	
Slew Rate	SR	V _i = 10V, R _{Li} = 2kΩ C _i = 100pF	1.2			1.2		V/μs	
Rise Time	t _{RES}	V _i = 20mV, R _{Li} = 2kΩ C _i = 100pF		0.3		0.3		μs	
Overshoot	OS	V _i = 20mV, R _{Li} = 2kΩ C _i = 100pF		15		15		%	

NOTE 1

KA4558A : T_{A(MIN)} = 0°C, T_{A(MAX)} = 70°C

KA4558AI/I : T_{A(MIN)} = -40°C, T_{A(MAX)} = 85°C



TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 1 BURST NOISE vs SOURCE RESISTANCE

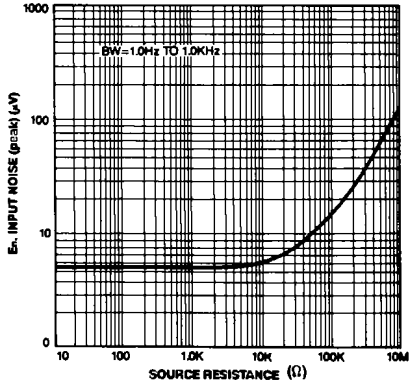


Fig. 2 RMS NOISE vs SOURCE RESISTANCE

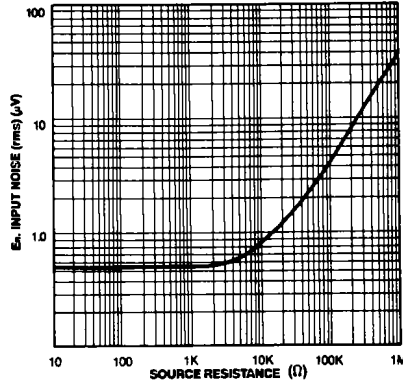


Fig. 3 OUTPUT NOISE vs SOURCE RESISTANCE

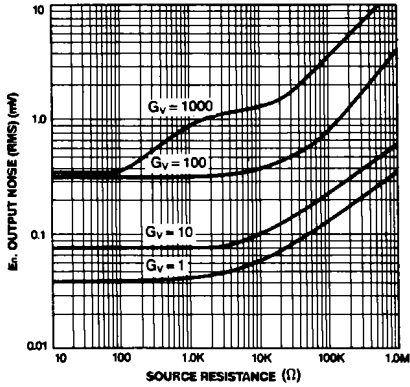


Fig. 4 SPECTRAL NOISE DENSITY

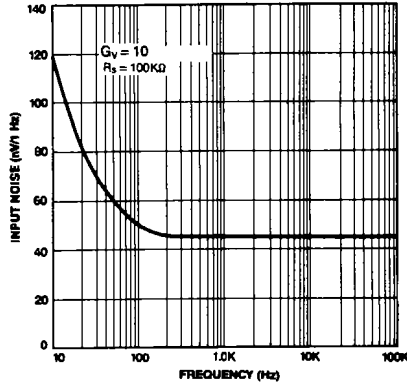


Fig. 5 OPEN LOOP FREQUENCY RESPONSE

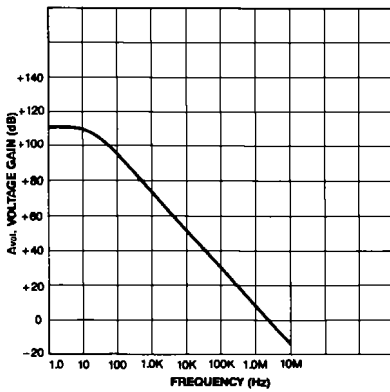


Fig. 6 PHASE MARGIN vs FREQUENCY

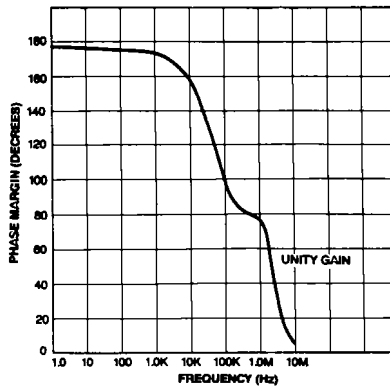


Fig. 7 POSITIVE OUTPUT VOLTAGE SWING vs LOAD RESISTANCE

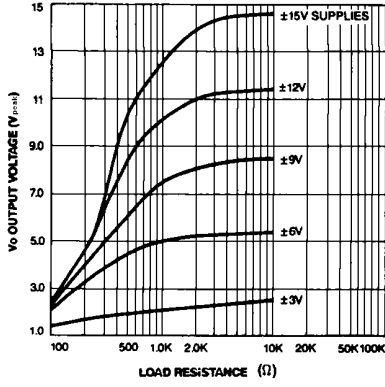


Fig. 8 NEGATIVE OUTPUT VOLTAGE SWING vs LOAD RESISTANCE

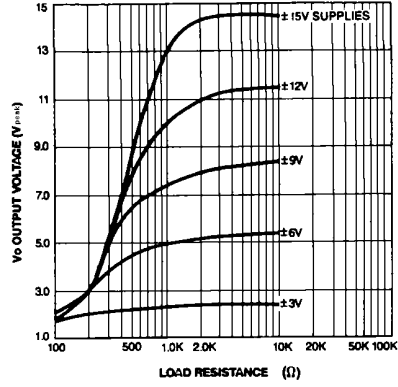
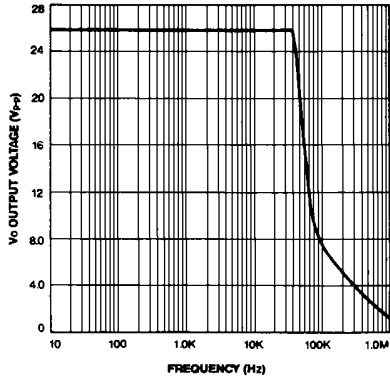
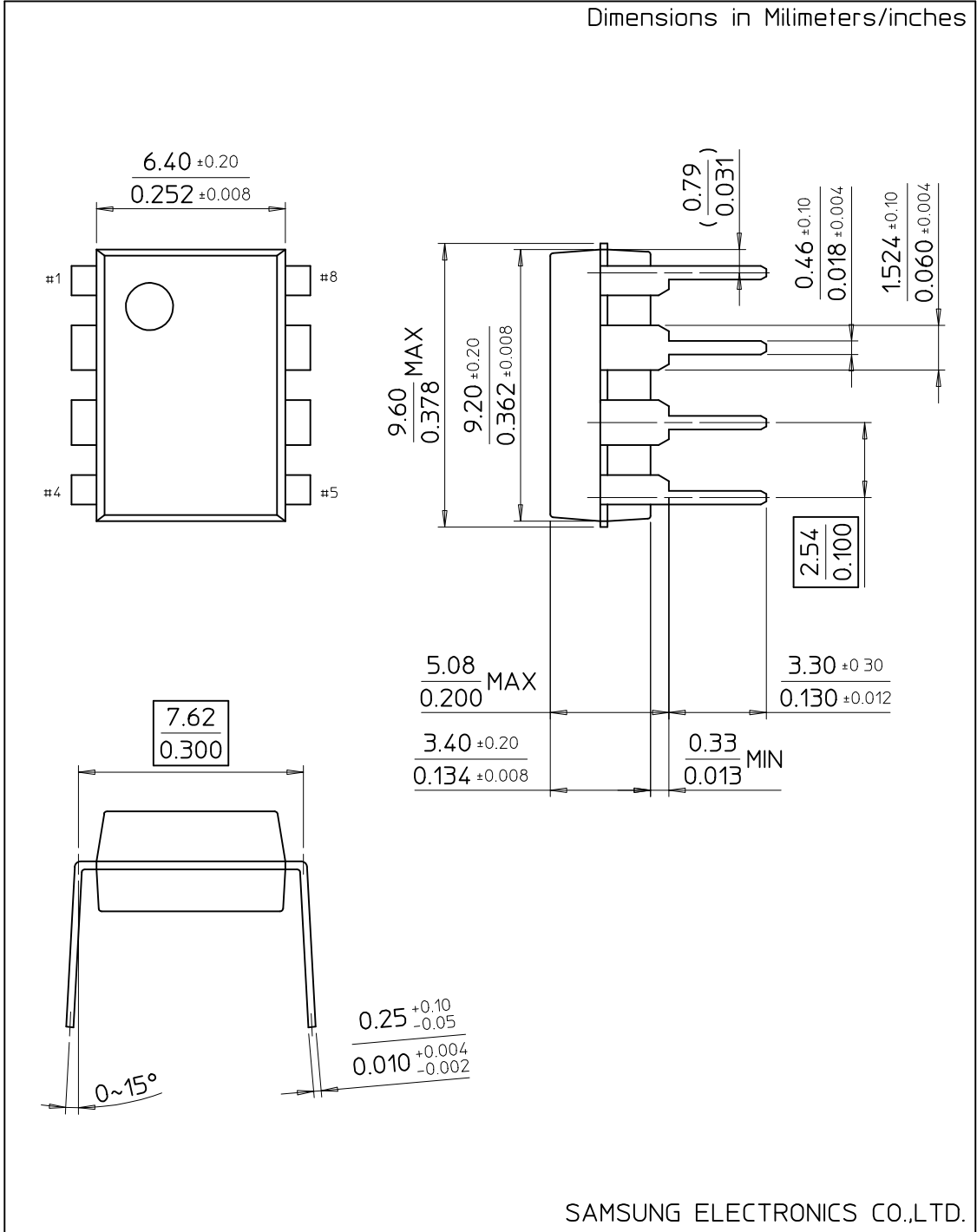


Fig. 9 POWER BANDWIDTH (LARGE SIGNAL SWING VERSUS FREQUENCY)



8-DIP-300

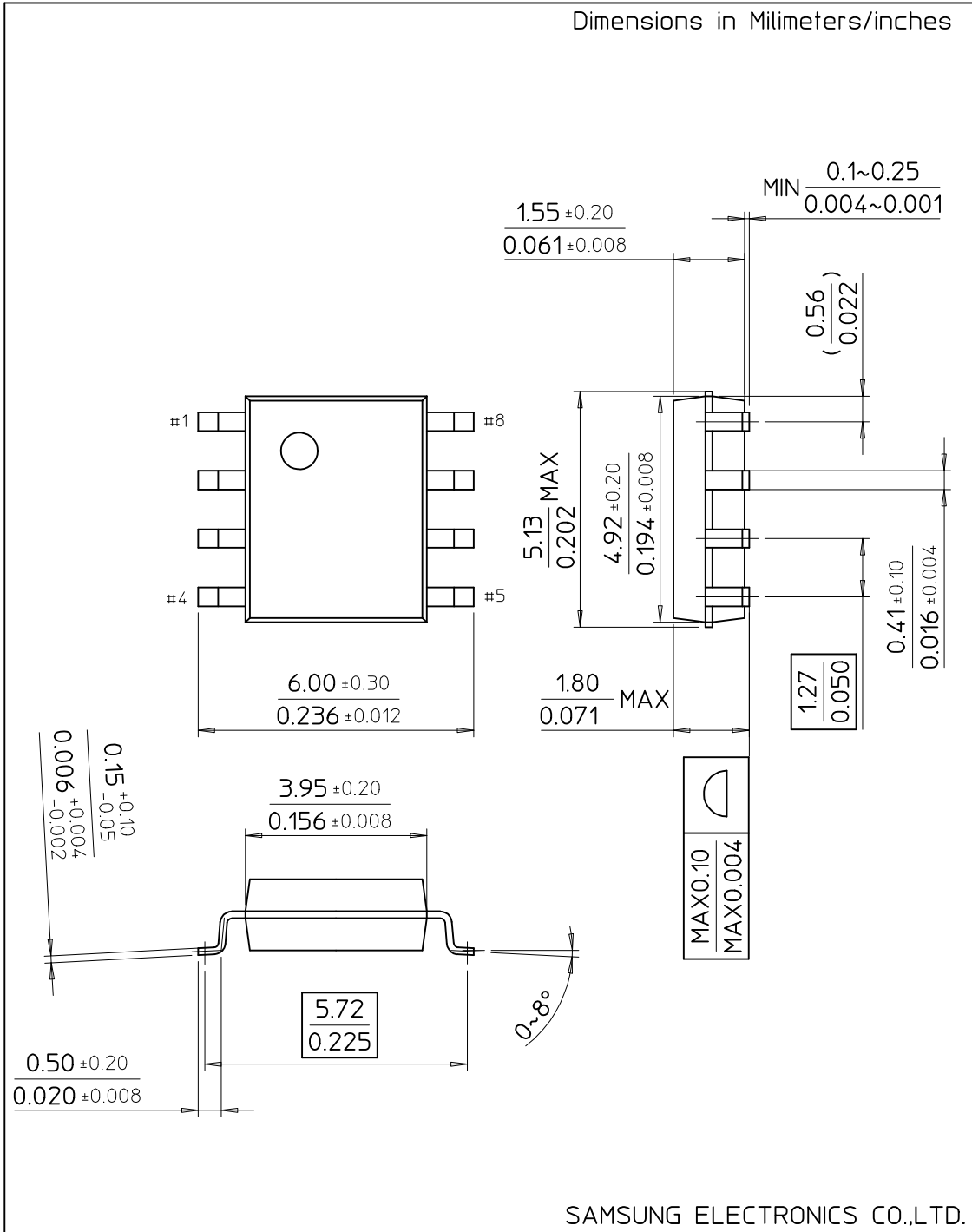
Dimensions in Millimeters/inches



SAMSUNG ELECTRONICS CO.,LTD.

8-SOP-225

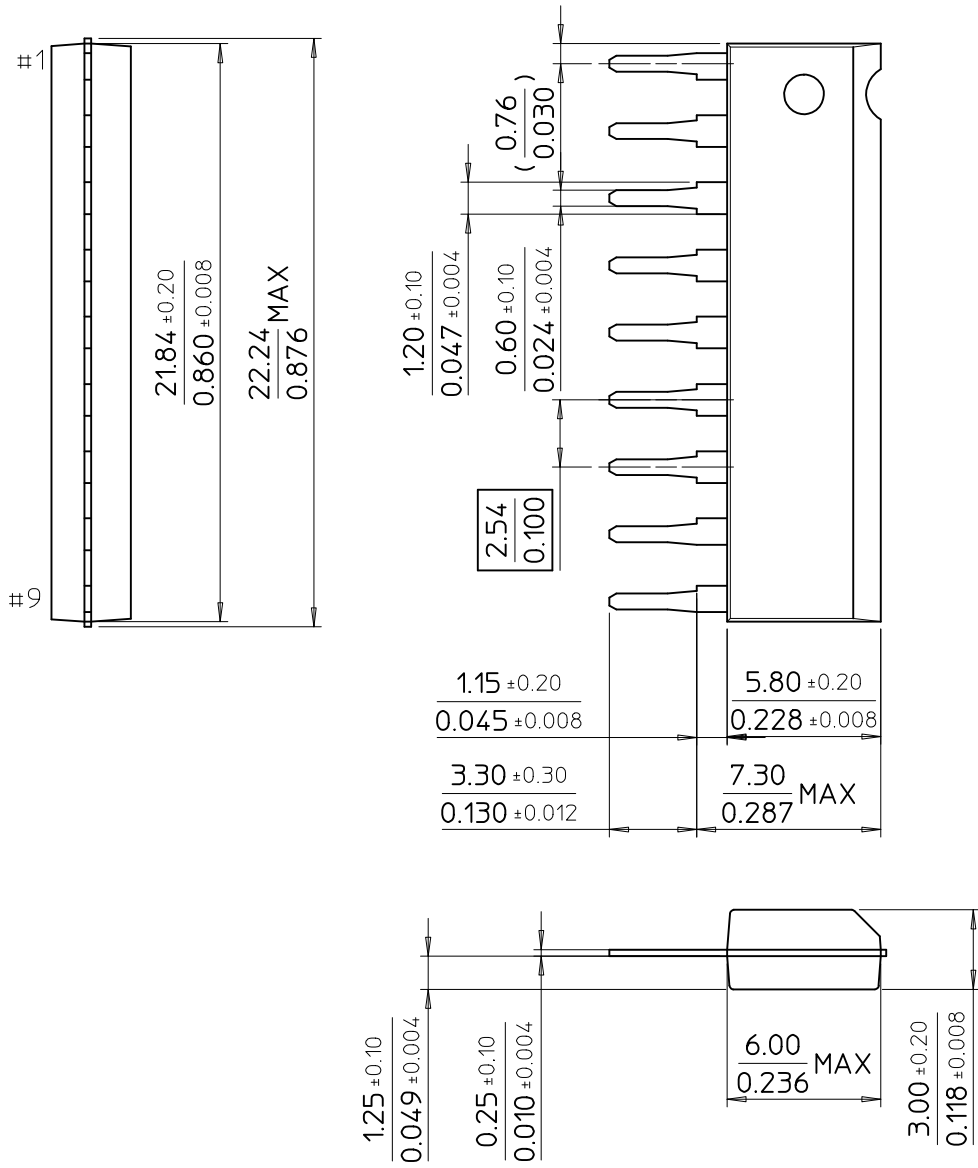
Dimensions in Millimeters/inches



SAMSUNG ELECTRONICS CO.,LTD.

9-SIP

Dimensions in Milimeters/Inches



SAMSUNG ELECTRONICS CO.,LTD.