

# KA8507

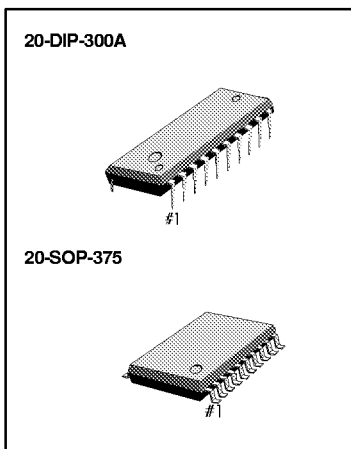
# COMPANDOR

## INTRODUCTION

KA8507 is a automatic gain control system that is used for dynamic range compression and expansion.  
 According to the companding the signal, this can reduce the noise components.  
 KA8507 includes compressor, expander, pre-amp, filter amp, limiter and mute/bypath logic.

## FEATURES

- Wide Supply Voltage (2.4 ~ 7V)
- Easy Gain Control
- Mute/Bypath Logic
- Data In/Out Pin



## ORDERING INFORMATION

Device	Package	Operating Temperature
KA8507	20-DIP-300A	- 20°C ~ + 70°C
KA8507D	20-SOP-375	

## BLOCK DIAGRAM

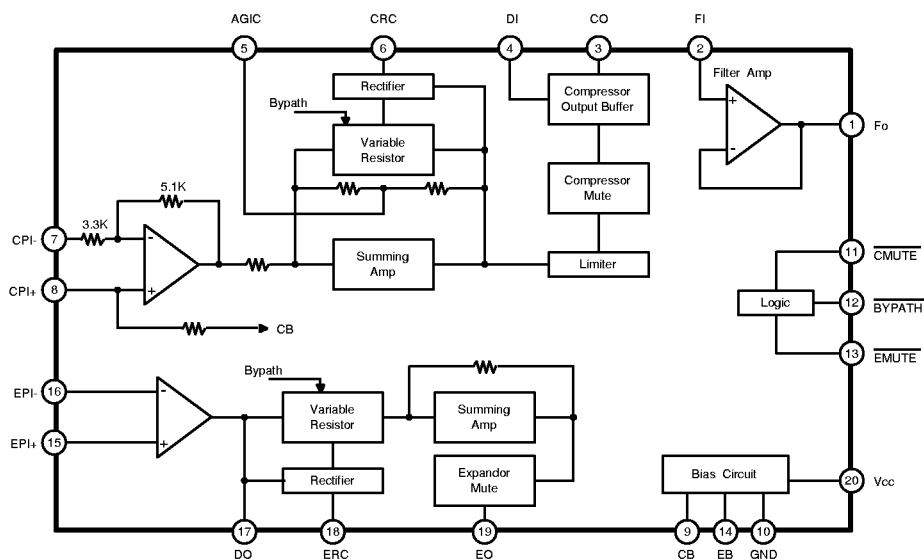


Fig. 1

PIN CONFIGURATION

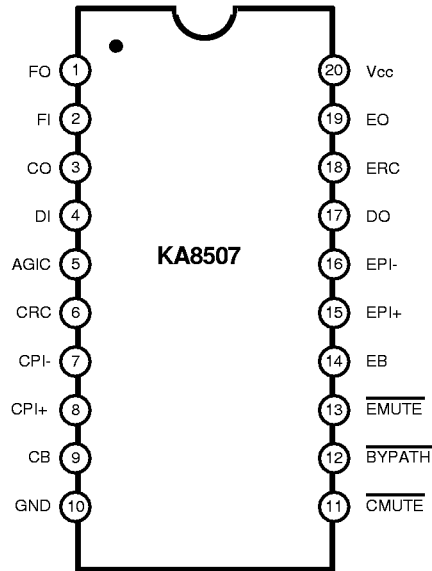


Fig. 2

PIN DESCRIPTION

Pin No	Symbol	Description	Pin No	Symbol	Description
1	FO	Filter Amp Output	11	$\overline{\text{CMUTE}}$	Compressor Mute
2	FI	Filter Amp Input	12	$\overline{\text{BYPATH}}$	No companding
3	CO	Compressor Output	13	$\overline{\text{EMUTE}}$	Expander Mute
4	DI	Data Input	14	EB	Expander Reference Bias
5	AGIC	AC Gain Infinity Capacitor	15	EPI +	Expander Non-Inverting Input
6	CRC	Compressor Rectifier Capacitor	16	EPI -	Expander Inverting Input
7	CPI -	Compressor Inverting Input	17	DO	Data Output
8	CPI +	Compressor Non-Inverting Input	18	ERC	Expander Rectifier Capacitor
9	CB	Compressor Reference Bias	19	EO	Expander Output
10	GND	Ground	20	V <sub>CC</sub>	Supply Voltage

## ABSOLUTE MAXIMUM RATINGS

Characteristic		Symbol	Value	Unit
Supply Voltage		$V_{CC}$	10	V
Power Dissipation	KA8507	$P_D$	1000	mW
	KA8507D		410	
Operating Temperature		$T_{OPR}$	- 20 ~ + 70	°C
Storage Temperature		$T_{STG}$	- 55 ~ + 150	°C

## ELECTRICAL CHARACTERISTICS

(V<sub>CC</sub> = 3V, f = 1KHz, T<sub>a</sub> = 25°C, unless otherwise noted)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
<b>DC ELECTRICAL CHARACTERISTICS</b>						
Operating Voltage	$V_{CC}$	-	-	2.4	7.0	V
Operating Current	$I_{CC}$	No Signal	-	4.0	6.5	mA
<b>COMPRESSOR PART</b>						
Standard Input Voltage (0dB)	$V_{I(COMP)}$	$V_{CC} = 300mV_{rms} = 0dB$	8.0	12.5	17.0	mVrms
Gain Difference	$\Delta G_{V1(COMP)}$	$V_{in} = -20dB$	-0.5	0	+0.5	dB
	$\Delta G_{V2(COMP)}$	$V_{in} = -40dB$	-1.0	0	+1.0	
Bypass Gain Difference	$\Delta G_{VB(COMP)}$	$V_{in} = 0dB, BYPATH = GND$	-1.5	0	+1.5	dB
Output Distortion	THD <sub>COMP</sub>	$V_{in} = 0dB$	-	0.5	1.0	%
Noise Output Voltage	$V_{NO(COMP)}$	$R_g = 620ohm$	-	3.0	5.5	mVrms
Mute Attenuation Ratio	ATT <sub>MUTE</sub>	$V_{in} = 0dB, CMUTE = GND$	60	80	-	dB
Limiting Voltage	$V_{LIM(COMP)}$	-	1.15	1.35	1.50	Vp-p
<b>EXPANDER PART</b>						
Standard Output Level (0dB)	$V_{O(EXP)}$	$V_{in} = 30mV_{rms} = 0dB$	110	130	160	mVrms
Gain Difference	$\Delta G_{V1(EXP)}$	$V_{in} = -10dB-0.5$	-0.5	0	+0.5	dB
	$\Delta G_{V2(EXP)}$	$V_{in} = -20dB$	-1.0	0	+1.0	
	$\Delta G_{V3(EXP)}$	$V_{in} = -30dB$	-1.5	0	+2.0	
Bypass Gain Difference	$\Delta G_{VB(EXP)}$	$V_{in} = 0dB, BYPATH = GND$	-2.5	0	+0.5	dB
Output Distortion	THD <sub>EXP</sub>	$V_{in} = 0dB$	-	0.5	1.5	%
Noise Output Voltage	$V_{NO(EXP)}$	$R_g = 620ohm$	-	10.0	30.0	μVrms
Mute Attenuation Ratio	ATT <sub>MUTE</sub>	$V_{in} = 0dB, EMUTE = GND$	60	80	-	dB
Max. Output Voltage	$V_{OEXP(MAX)}$	THD = 10%	700	800	-	mVrms

TEST CIRCUIT

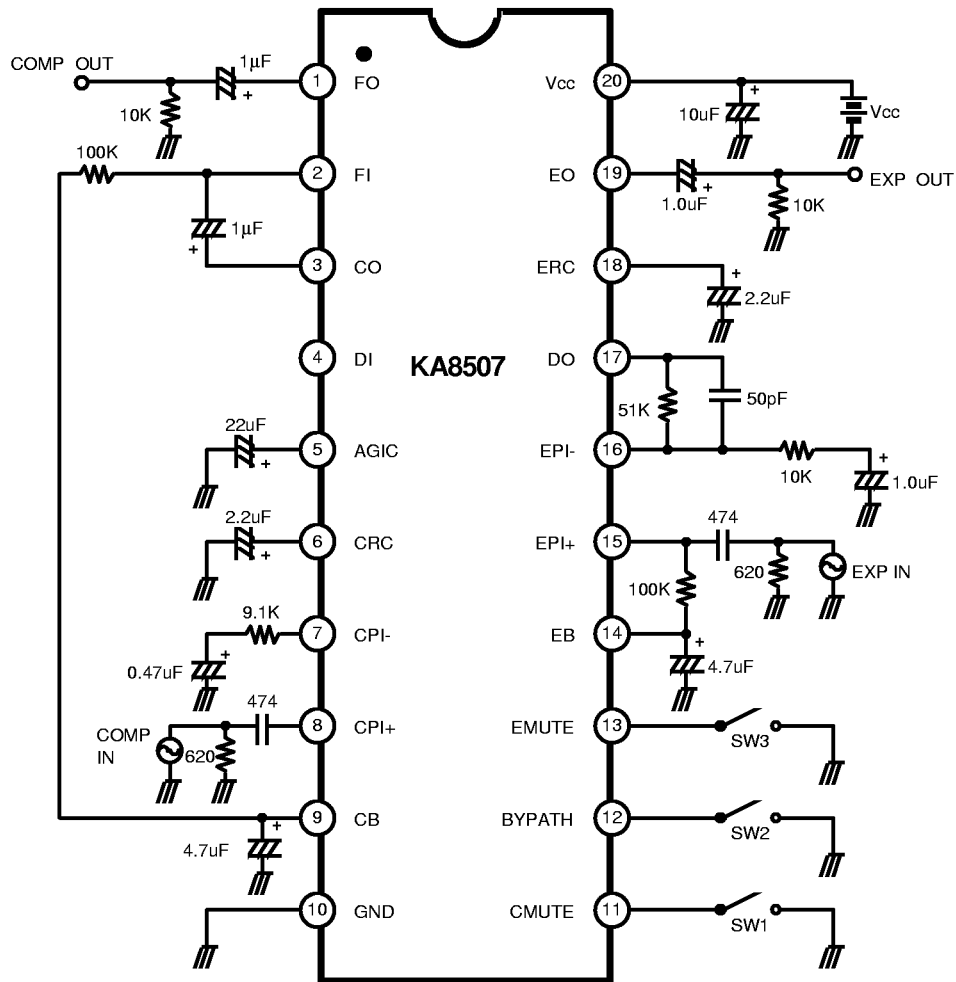


Fig. 3

APPLICATION CIRCUIT

(HAND SET)

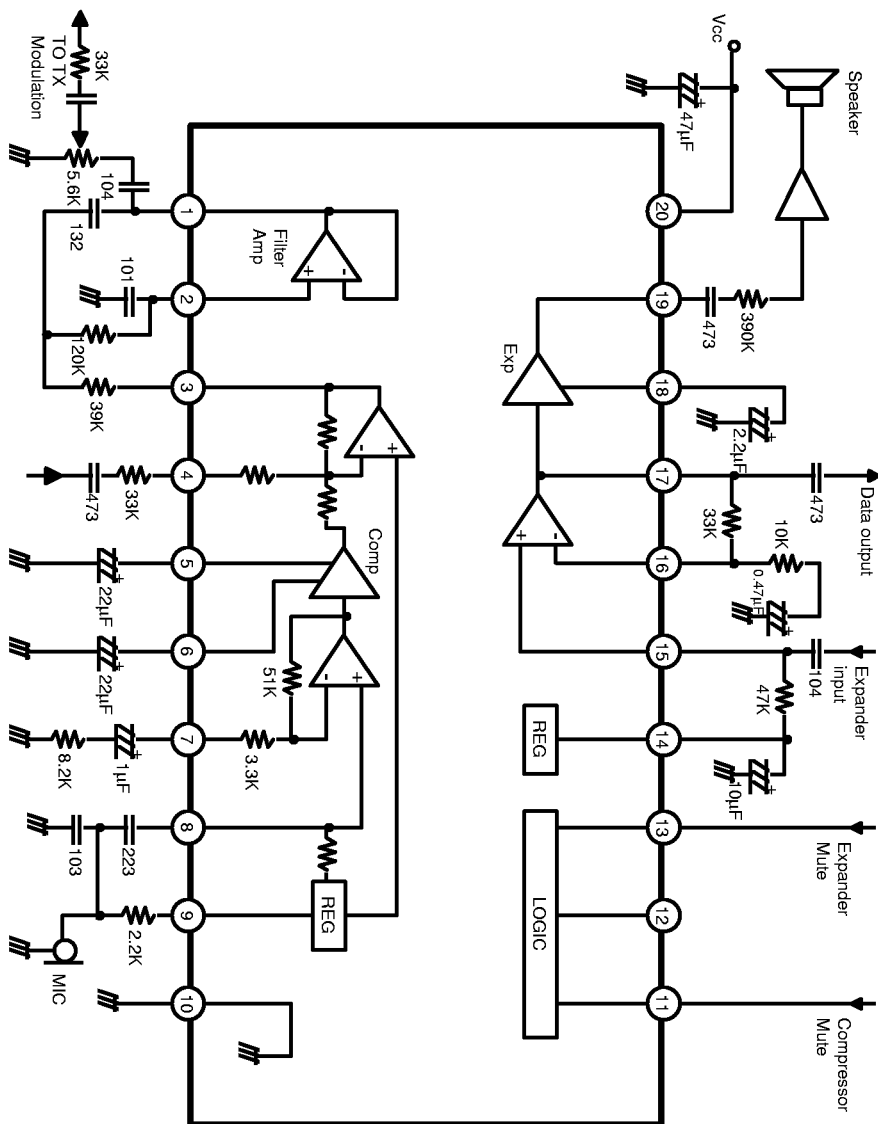
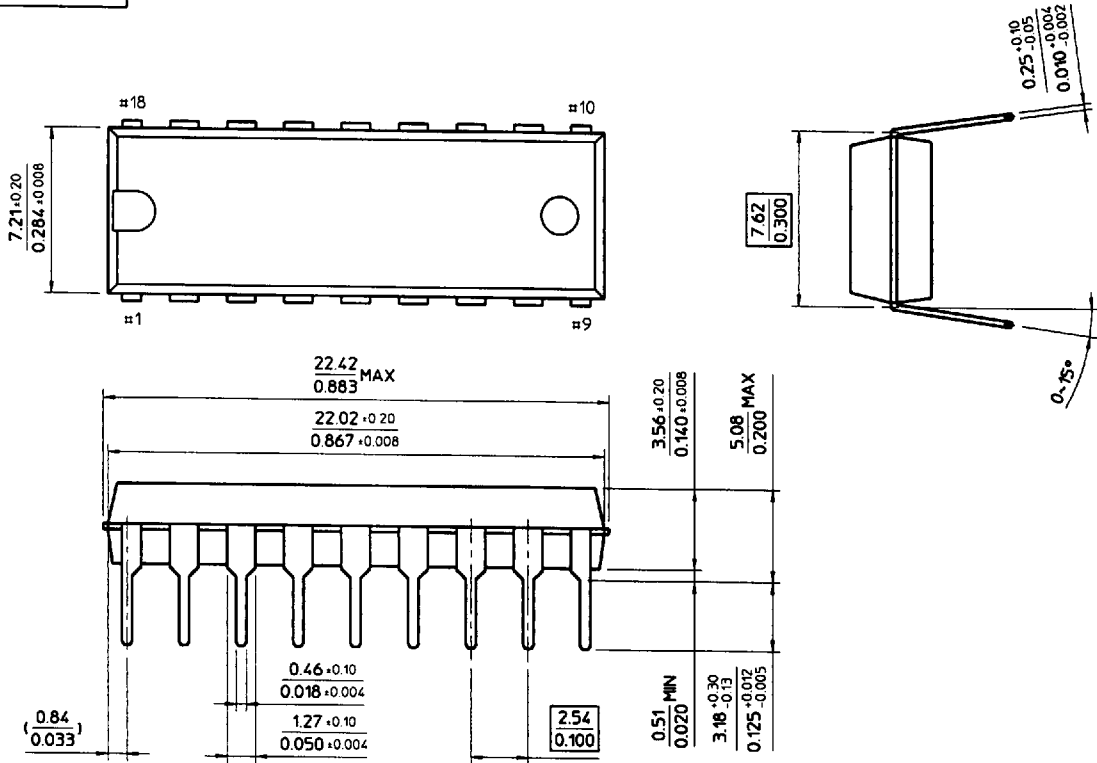
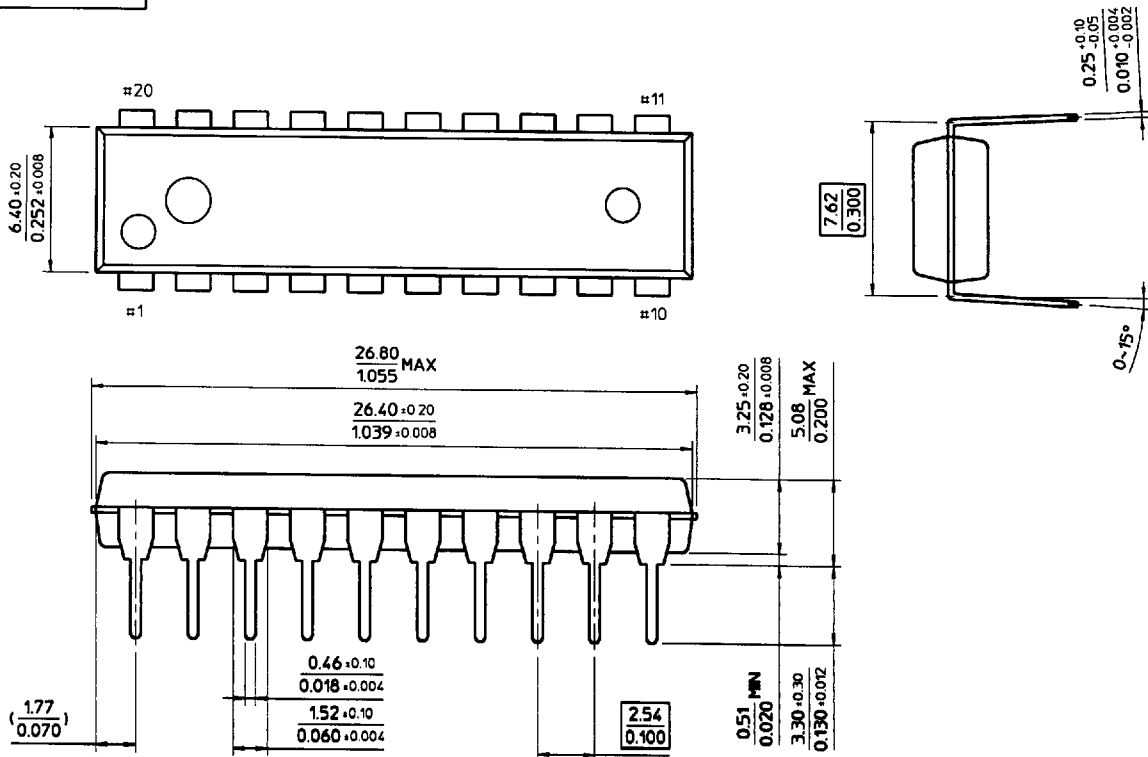


Fig. 4

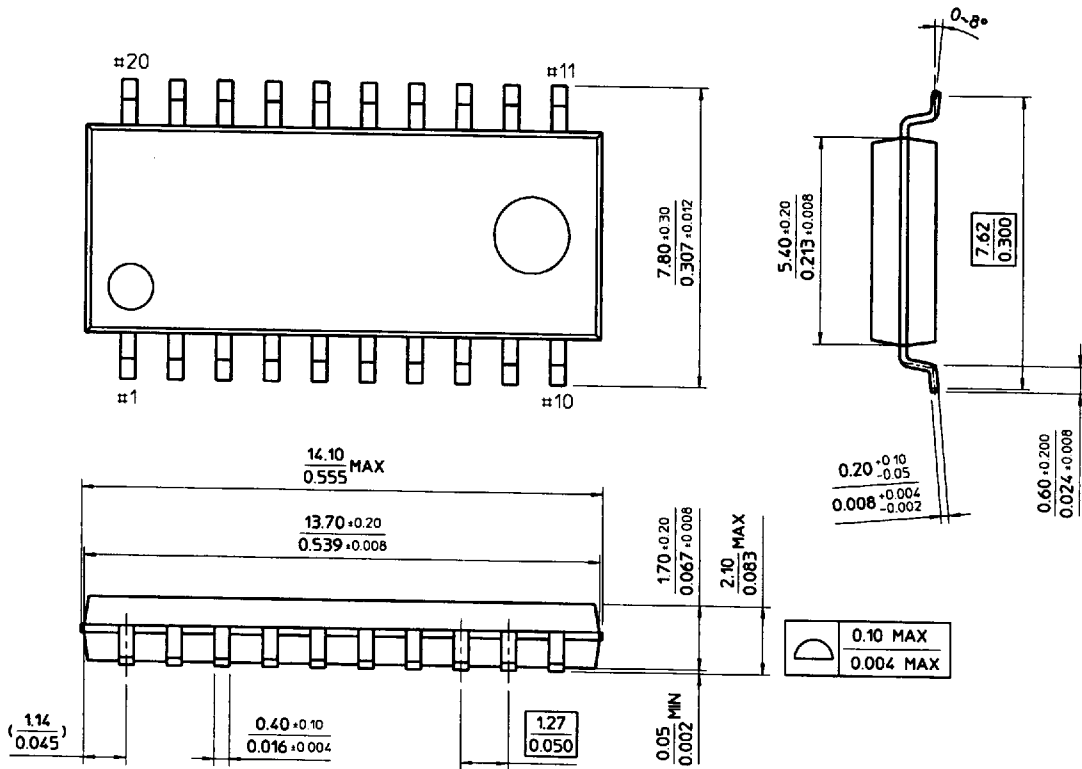
18-DIP-300B



20-DIP-300A



20-SOP-300



20-SOP-375

