

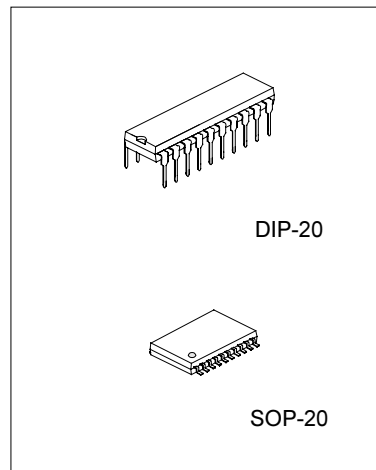
COMPANDER

DESCRIPTION

SA8507 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. SA8507 includes compressor, expander, pre-amp, filter amp, limiter and mute/bypass logic.

FEATURES

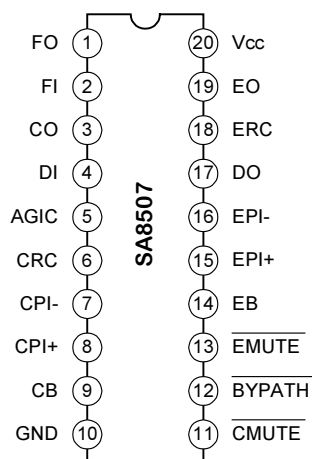
- * Wide supply voltage: 2.4V ~ 7V
- * Easy gain control
- * Mute/bypass logic
- * Data in/out pin



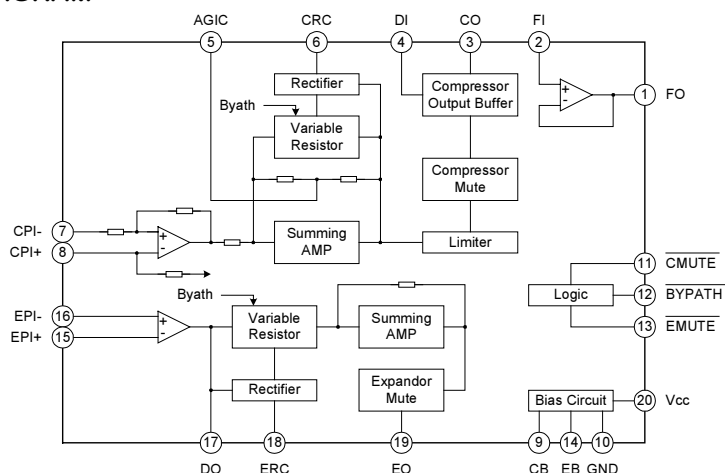
ORDERING INFORMATION

SA8507D	DIP-20-300 Package
SA8507S	SOP-20-375 Package

PIN CONFIGURATION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	VCC	10	V
Power Dissipation	SA8507D	1000	mW
	SA8507S	410	mW
Operating Temperature	TOPR	-22 ~ +70	°C
Storage Temperature	TSTG	-55 ~ +150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
DC ELECTRICAL CHARACTERISTICS						
Operating Voltage	VCC	--	--	2.4	7.0	V
Operating Current	ICC	No Signal	--	4.0	6.5	mA
COMPRESSOR PART						
Standard Output Voltage	VO(COMP)	Vin=12.5mV	240	300	360	mVrms
Gain Deference	ΔGV1(COMP)	Vin=-20dB(300mV=0dB)	-0.5	0	+0.5	dB
	ΔGV2(COMP)	Vin=-40dB	-1.0	0	+1.0	
Bypass Gain Difference	ΔGVB(COMP)	Vout=0dB, BYPATH=GND	-1.5	0	+1.5	dB
Output Distortion	THD _{COMP}	Vin=0dB	--	0.5	1.0	%
Noise Output Voltage	VNO(COMP)	Rg=620hm	--	3.0	5.5	mVrms
Mute Attenuation Radio	ATT _{MUTE}	Vin=0dB, CMUTE=GND	60	80	--	dB
Maximum Voltage	Vout	--	1.15	1.35	1.50	Vrms

(To be continued)

(Continued)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
EXPANDER PART						
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	+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_{EXP}	$V_{in}=0dB$	--	0.5	1.5	%
Noise Output Voltage	$V_{NO(EXP)}$	$R_g=620\Omega$	--	10.0	30.0	μV_{rms}
Mute Attenuation Ratio	ATT_{MUTE}	$V_{in}=0dB, EMUTE=GND$	60	80	--	dB
Max. Output Voltage	$V_{OEXP(MAX)}$	$THD=10\%$	700	800	--	mVrms

PIN DESCRIPTION

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	FO	Filter Amp Output	11	CMUTE	Compressor Mute
2	FI	Filter Amp Input	12	BYPATH	No Companding
3	CO	Compressor Output	13	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	Vcc	Supply Voltage

The schematic diagram illustrates the internal circuitry of a 10-pin IC, which is used for TX modulation. The IC is represented by a horizontal line with pins numbered 1 through 10. The circuit includes several operational amplifiers (Op-Amps) and a logic block. Key components and connections include:

- Pin 1:** Connected to a 33k resistor and a 47μF capacitor to ground. The output of this stage is connected to the Speaker.
- Pin 2:** Connected to a 104 capacitor to ground and a 132 capacitor to the output of the first Op-Amp.
- Pin 3:** Connected to a 101 capacitor to ground and a 120k resistor to the output of the first Op-Amp.
- Pin 4:** Connected to a 39k resistor to ground and a 473 capacitor to the output of the first Op-Amp.
- Pin 5:** Connected to a 22μF capacitor to ground and a 22μF capacitor to the output of the first Op-Amp.
- Pin 6:** Connected to a 22μF capacitor to ground and a 22μF capacitor to the output of the first Op-Amp.
- Pin 7:** Connected to a 8.2k resistor to ground and a 1μF capacitor to the output of the first Op-Amp.
- Pin 8:** Connected to a 103 resistor to ground and a 223 capacitor to the output of the first Op-Amp.
- Pin 9:** Connected to a 2.2k resistor to ground and a 2.2k resistor to the output of the first Op-Amp.
- Pin 10:** Connected to a 2.2k resistor to ground and a 2.2k resistor to the output of the first Op-Amp.
- Internal Components:** The IC contains several Op-Amps, a logic block, and various resistors and capacitors. The output of the first Op-Amp is connected to the Speaker. The output of the second Op-Amp is connected to the 39k resistor to ground. The output of the third Op-Amp is connected to the 22μF capacitor to ground. The output of the fourth Op-Amp is connected to the 8.2k resistor to ground. The output of the fifth Op-Amp is connected to the 103 resistor to ground. The output of the sixth Op-Amp is connected to the 2.2k resistor to ground. The output of the seventh Op-Amp is connected to the 2.2k resistor to ground. The output of the eighth Op-Amp is connected to the 2.2k resistor to ground. The output of the ninth Op-Amp is connected to the 2.2k resistor to ground. The output of the tenth Op-Amp is connected to the 2.2k resistor to ground.

PACKAGE OUTLINE

