

## INTRODUCTION

S1T8507C is a automatic gain control system that is used for dynamic range compression and expansion.

By companding the signal , this can reduce the noise components.

S1T8507C includes compressor, expander, pre-amp, filter amp, limiter and mute/bypass logic.

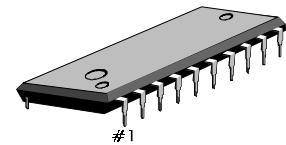
## FEATURES

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

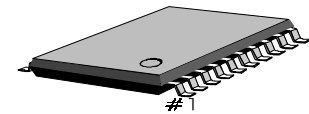
## ORDERING INFORMATION

Device	Package	Operating Temperature
S1T8507C01-D0B0	20-DIP-300A	-20°C to +70°C
S1T8507C01-S0B0	20-SOP-375	

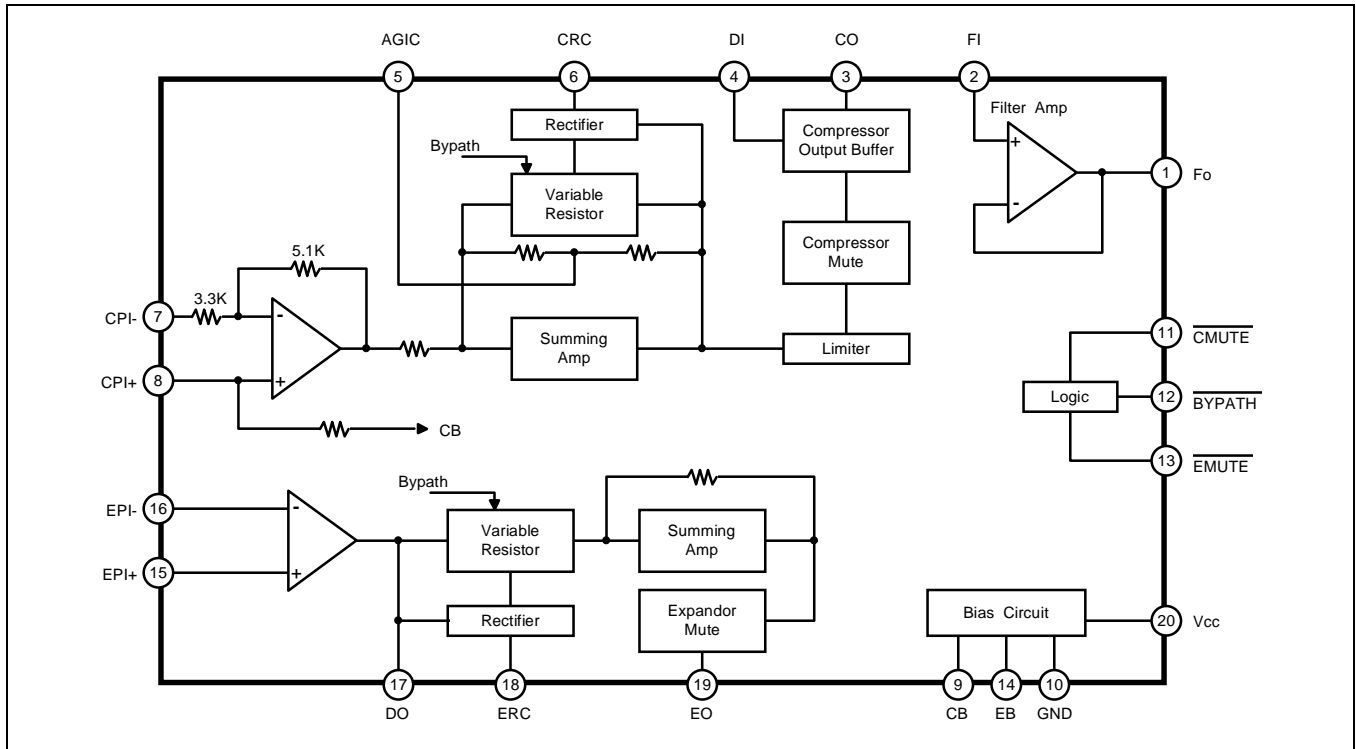
20-DIP-300A



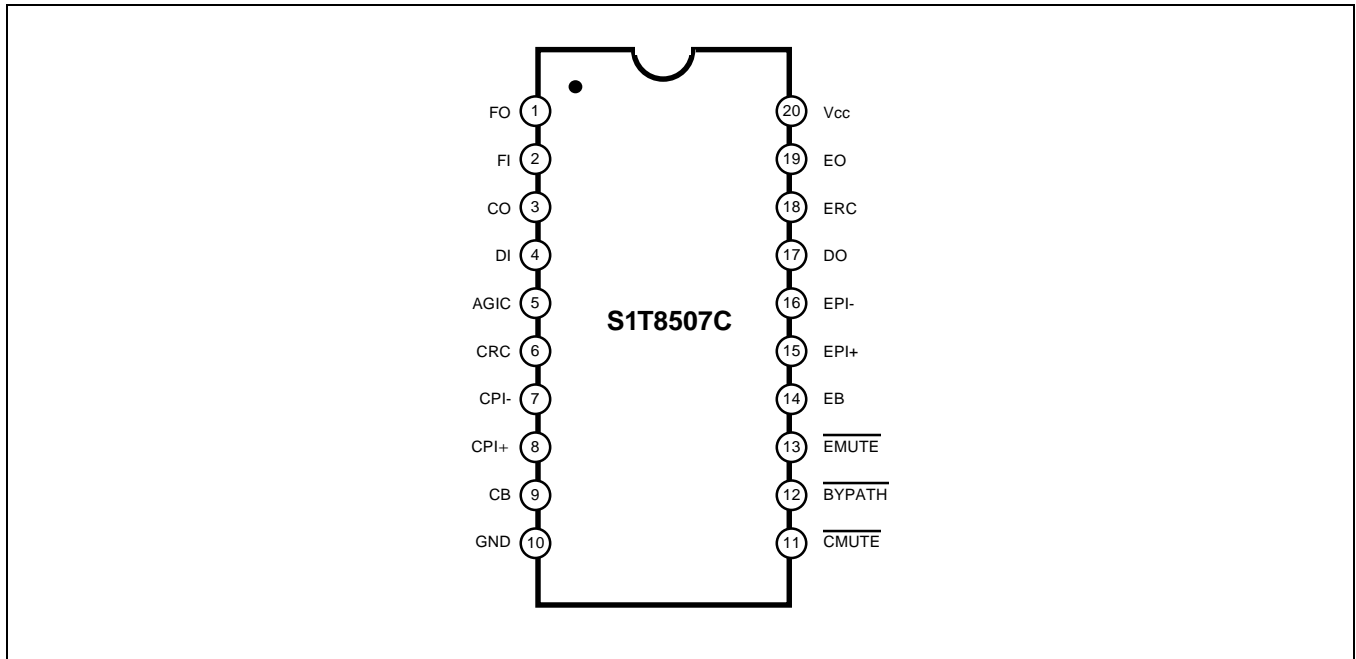
20-SOP-375



**BLOCK DIAGRAM**



**PIN CONFIGURATION**



## 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

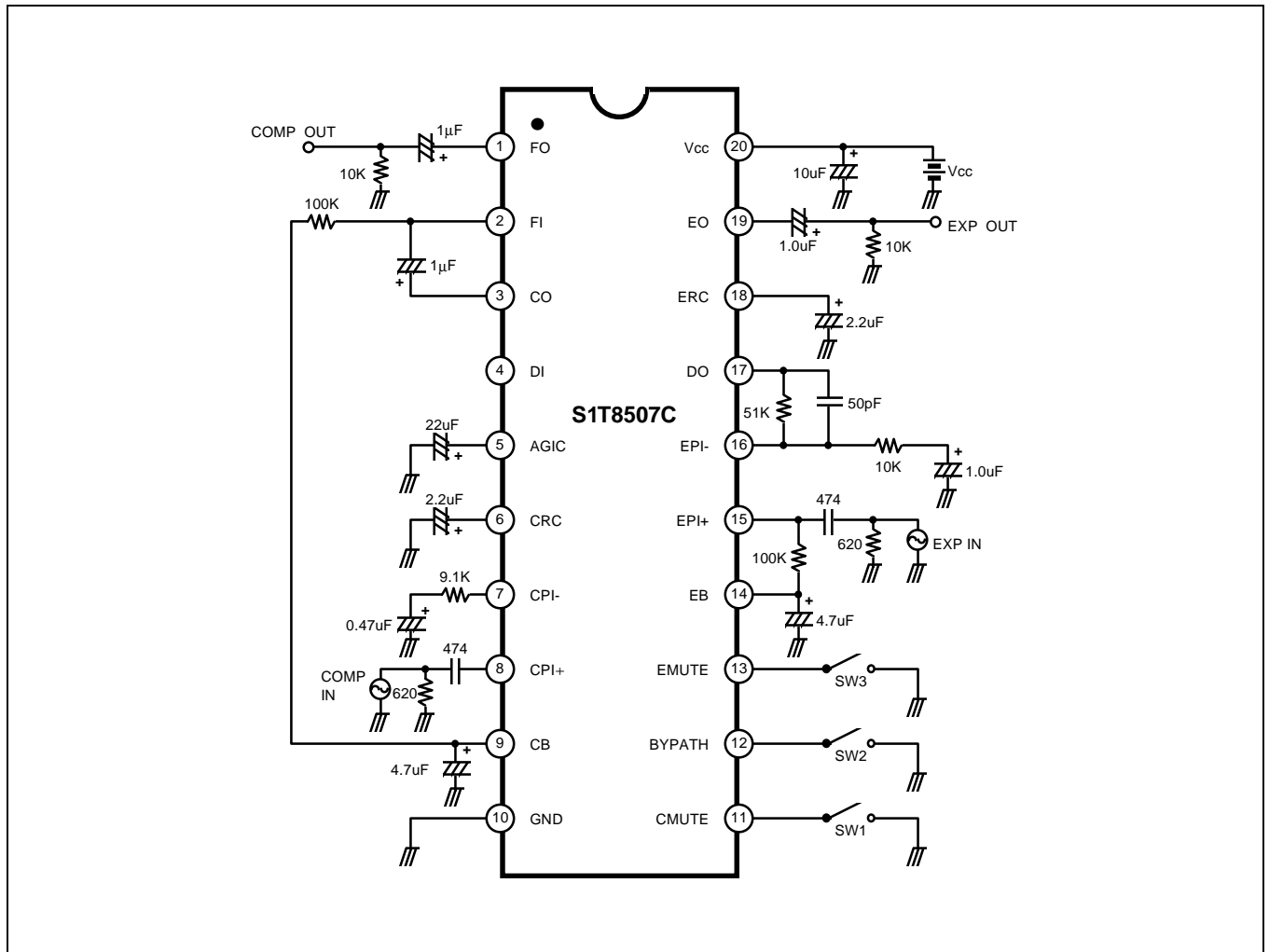
Characteristic		Symbol	Value	Unit
Supply Voltage		V <sub>CC</sub>	10	V
Power Dissipation	S1T8507C01-D0B0	P <sub>D</sub>	1000	mW
	S1T8507C01-S0B0		410	
Operating Temperature		T <sub>OPR</sub>	– 20 to + 70	°C
Storage Temperature		T <sub>STG</sub>	– 55 to + 150	°C

## 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 <sub>CC</sub>	–	–	2.4	7.0	V
Operating Current	I <sub>CC</sub>	No Signal	–	4.0	6.5	mA
<b>COMPRESSOR PART</b>						
Standard Input Voltage (0dB)	V <sub>I (COMP)</sub>	V <sub>CC</sub> = 300mVrms = 0dB	8.0	12.5	17.0	mVrms
Gain Difference	ΔG <sub>V1 (COMP)</sub>	Vin = –20dB	–0.5	0	+0.5	dB
	ΔG <sub>V2 (COMP)</sub>	Vin = –40dB	–1.0	0	+1.0	
Bypass Gain Difference	ΔG <sub>VB (COMP)</sub>	Vin = 0dB, BYPATH = GND	–1.5	0	+1.5	dB
Output Distortion	THD <sub>COMP</sub>	Vin = 0dB	–	0.5	1.0	%
Noise Output Voltage	V <sub>NO (COMP)</sub>	Rg = 620ohm	–	3.0	5.5	mVrms
Mute Attenuation Ratio	ATT <sub>MUTE</sub>	Vin = 0dB, CMUTE = GND	60	80	–	dB
Limiting Voltage	V <sub>LIM (COMP)</sub>	–	1.15	1.35	1.50	Vp-p
<b>EXPANDER PART</b>						
Standard Output Level (0dB)	V <sub>O (EXP)</sub>	Vin = 30mVrms = 0dB	110	130	160	mVrms
Gain Difference	ΔG <sub>V1 (EXP)</sub>	Vin = –10dB-0.5	–0.5	0	+0.5	dB
	ΔG <sub>V2 (EXP)</sub>	Vin = –20dB	–1.0	0	+1.0	
	ΔG <sub>V3 (EXP)</sub>	Vin = –30dB	–1.5	0	+2.0	
Bypass Gain Difference	ΔG <sub>VB (EXP)</sub>	Vin = 0dB, BYPATH = GND	–2.5	0	+0.5	dB
Output Distortion	THD <sub>EXP</sub>	Vin = 0dB	–	0.5	1.5	%
Noise Output Voltage	V <sub>NO (EXP)</sub>	Rg = 620ohm	–	10.0	30.0	μVrms
Mute Attenuation Ratio	ATT <sub>MUTE</sub>	Vin = 0dB, EMUTE = GND	60	80	–	dB
Max. Output Voltage	V <sub>OEXP (MAX)</sub>	THD = 10%	700	800	–	mVrms

TEST CIRCUIT



APPLICATION CIRCUIT

(HAND SET)

