



## 8507

## LINEAR INTEGRATED CIRCUIT

### 4mA COMPANDER

#### DESCRIPTION

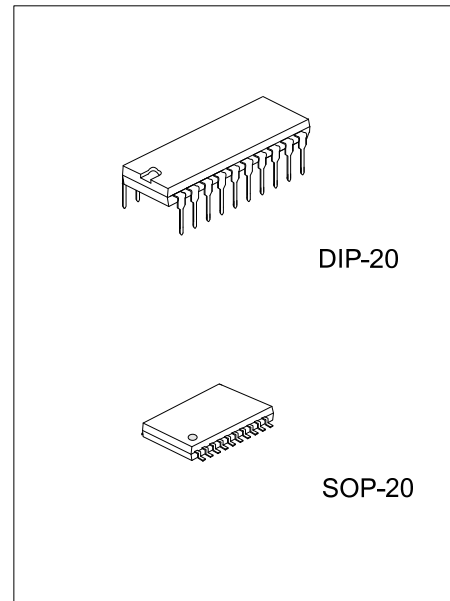
The UTC **8507** is a automatic gain control system that is used for dynamic range compression and expansion.

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

The UTC **8507** includes compressor, expander, pre-amp, filter amp, limiter and mute/bypass logic.

#### FEATURES

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



#### ORDERING INFORMATION

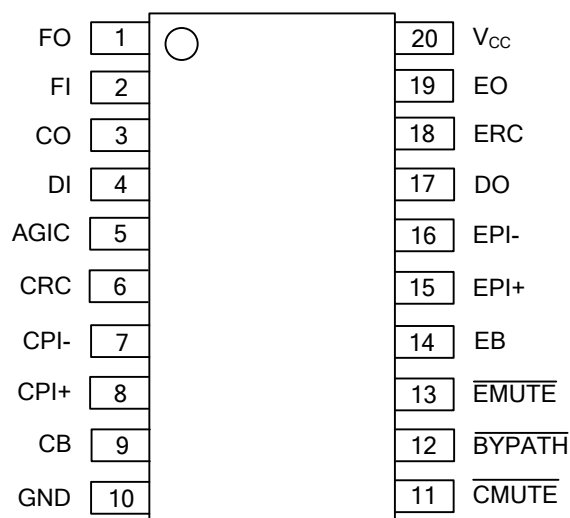
Ordering Number		Package	Packing
Lead Free	Halogen Free		
8507L-D20-T	8507G-D20-T	DIP-20	Tube
-	8507G-S20-R	SOP-20	Tape Reel

<p>8507L-D20-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) D20: DIP-20, S20: SOP-20</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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#### MARKING

DIP-20	SOP-20
<p>UTC □□□□ → Date Code</p> <p>8507□ → L: Lead Free</p> <p>□□ → G: Halogen Free</p> <p>□□ → Lot Code</p>	<p>UTC □□□□ → Date Code</p> <p>8507G → Lot Code</p>

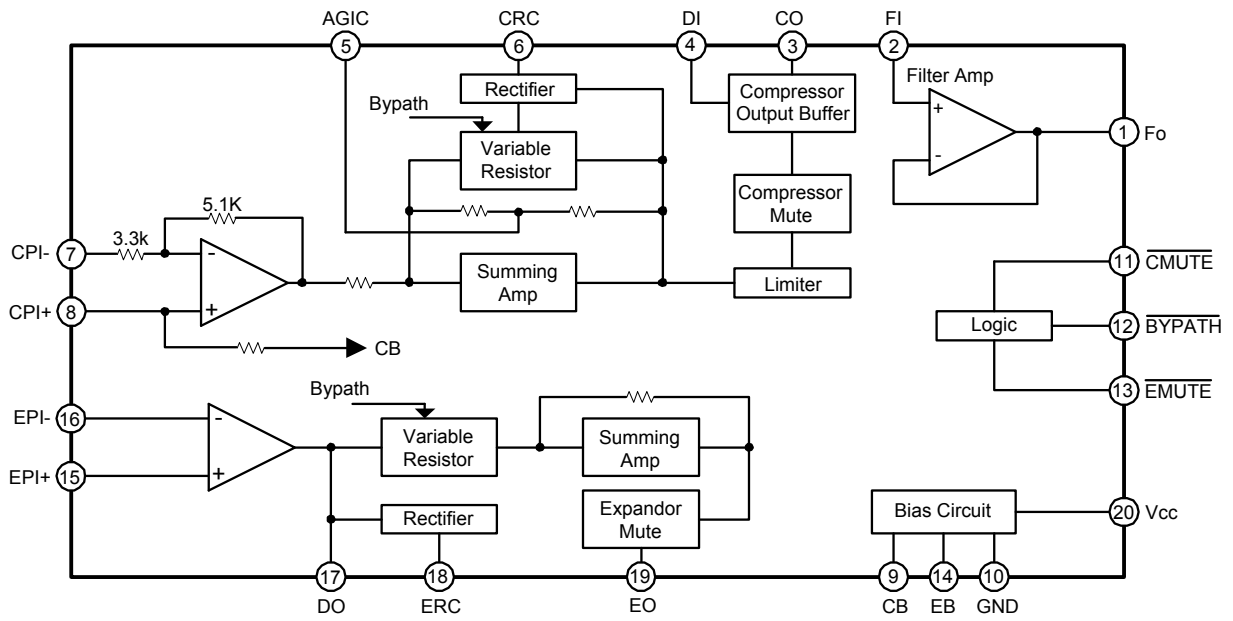
### ■ PIN CONFIGURATION



### ■ PIN DESCRIPTION

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

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

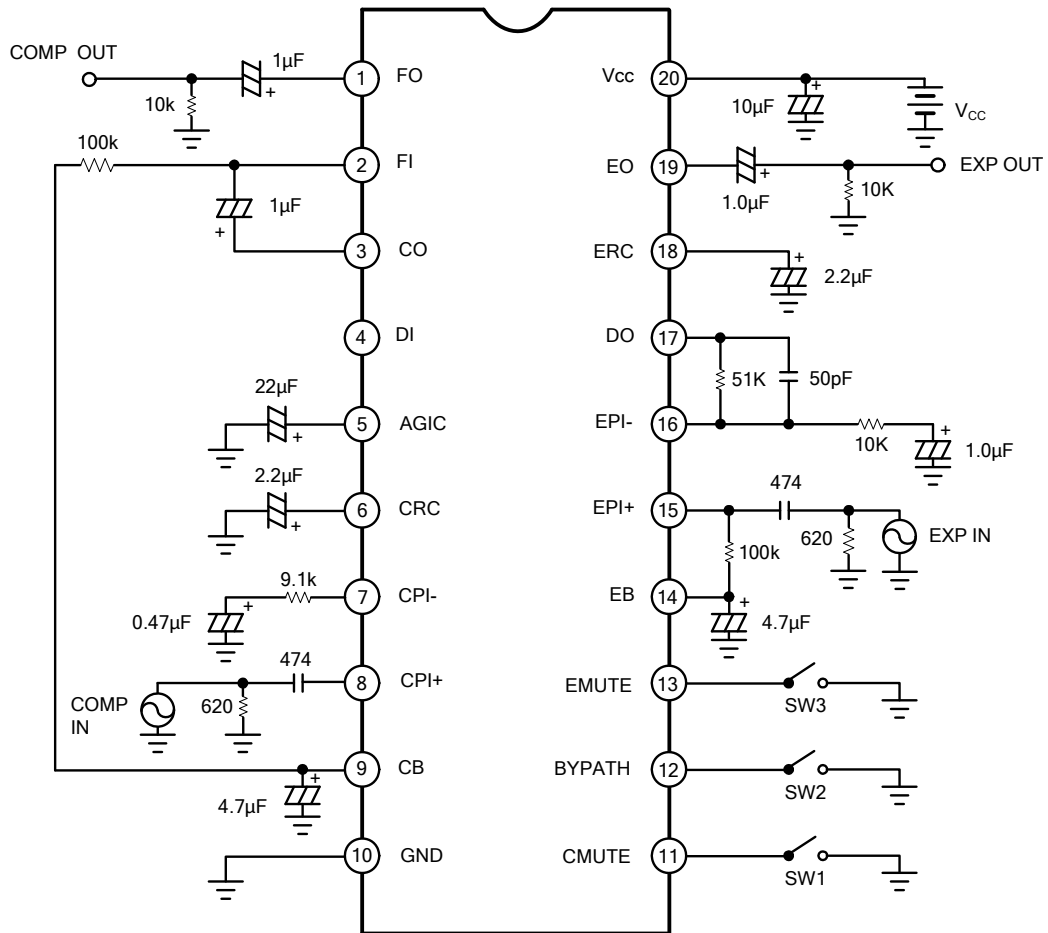
PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		$V_{CC}$	10	V
Power Dissipation	DIP-20		1000	mW
	SOP-20		410	mW
Operating Temperature		$T_{OPR}$	-20 ~ +70	°C
Storage Temperature		$T_{STG}$	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

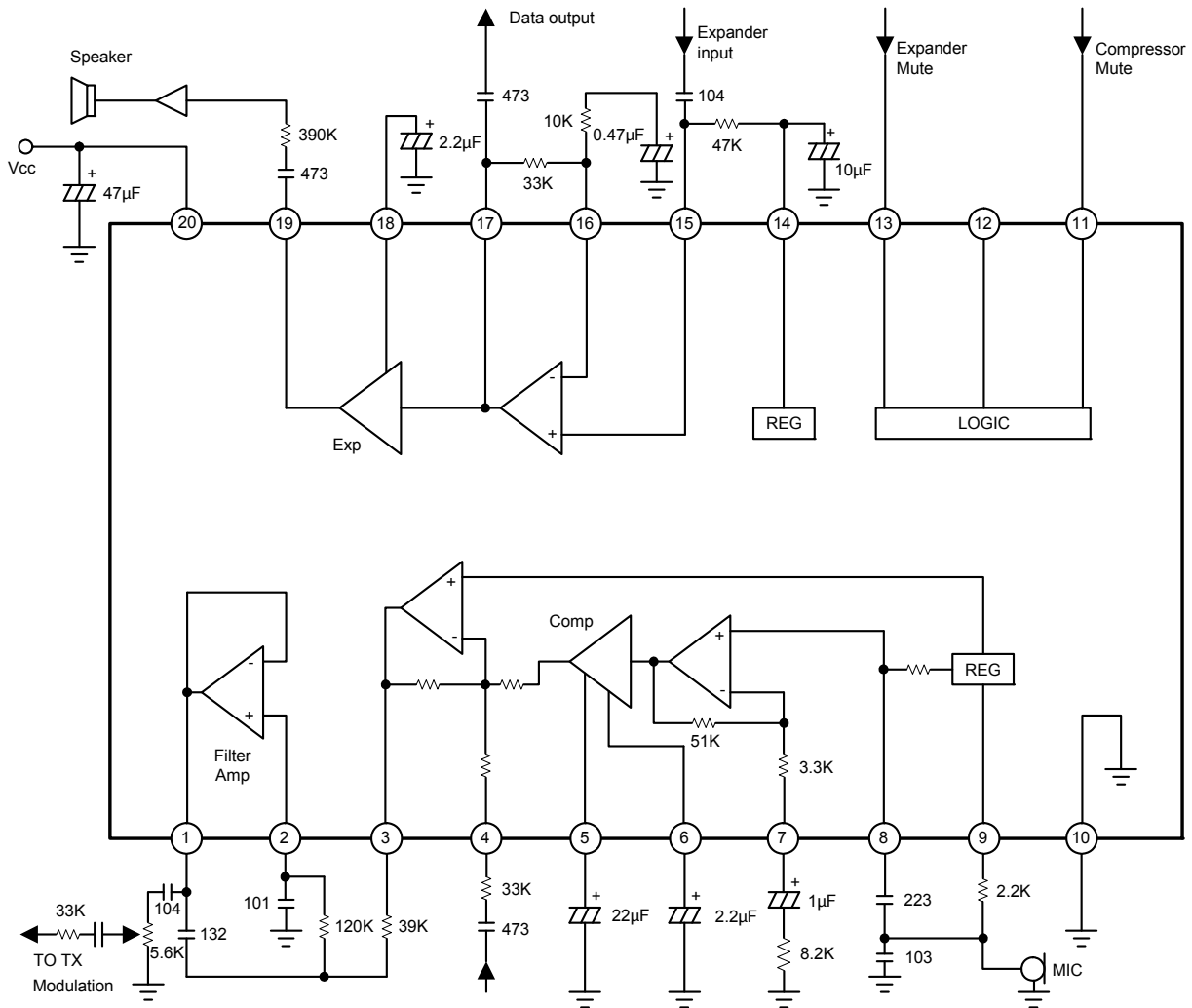
■ ELECTRICAL CHARACTERISTICS ( $V_{CC}=3V, f=1kHz, T_a=25^{\circ}C$ , unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
DC ELECTRICAL CHARACTERISTICS						
Operating Voltage	$V_{CC}$			2.4	7.0	V
Operating Current	$I_{CC}$	No signal		4.0	6.5	mA
COMPRESSOR PART						
Standard Input Voltage (0dB)	$V_{I(Comp)}$	$V_{OUT}=300mV_{rms}=0dB$	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	
Bypath Gain Difference	$\Delta G_{VB(Comp)}$	$V_{IN}=0dB, B_{YPATH}=GND$	-1.5	0	+1.5	dB
Output Distortion	THD <sub>COMP</sub>	$V_{IN}=0dB$		0.5	1.0	%
Noise Output Voltage	$V_{NO(Comp)}$	$R_G=620\Omega$		3.0	5.5	mVrms
Mute Attenuation Ratio	ATT <sub>MUTE</sub>	$V_{IN}=0dB, C_{MUTE}=GND$	60	80		dB
Limiting Voltage	$V_{LIM(Comp)}$		1.15	1.35	1.50	Vp-p
EXPANDER PART						
Standard Output Level (0dB)	$V_{O(Exp)}$	$V_{IN}=30mV_{rms}=0dB$	110	130	160	mVrms
Gain Difference	$\Delta G_{V1(Exp)}$	$V_{IN}=-10dB-0.5$	-0.5	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	
Bypath Gain Difference	$\Delta G_{VB(Exp)}$	$V_{IN}=0dB, B_{YPATH}=GND$	-2.5	0	+0.5	dB
Output Distortion	THD <sub>EXP</sub>	$V_{IN}=0dB$		0.5	1.5	%
Noise Output Voltage	$V_{NO(Exp)}$	$R_G=620\Omega$		10.0	30.0	$\mu V_{rms}$
Mute Attenuation Ratio	ATT <sub>MUTE</sub>	$V_{IN}=0dB, E_{MUTE}=GND$	60	80		dB
Limiting Voltage	$V_{OEXP(MAX)}$	THD=10%	700	800		mVrms

■ TEST CIRCUIT



■ APPLICATION CIRCUIT (HAND SET)



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