

# UTC 8507

# LINEAR INTEGRATED CIRCUIT

## COMPANDER

### DESCRIPTION

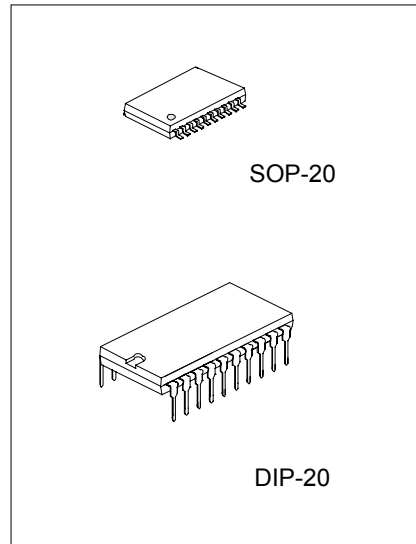
The UTC 8507 is a automatic gain control system that is used for dynamic range compression and expansion.

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

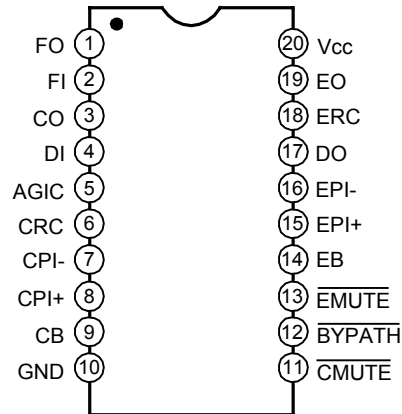
The UTC 8507 includes compressor, expander, pre-amp, filter amp, limiter and mute/bypass logic.

### FEATURES

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



### PIN CONFIGURATION



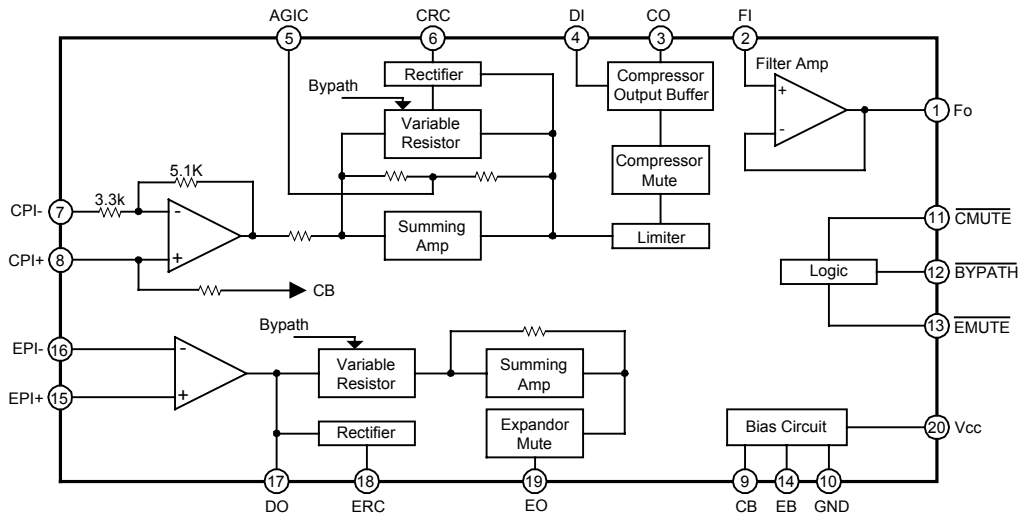
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## PIN DESCRIPTION

| 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               |

## BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

| PARAMETER             | SYMBOL           | RATINGS        | UNIT |
|-----------------------|------------------|----------------|------|
| Supply Voltage        | Vcc              | 10             | V    |
| Power Dissipation     | DIP-20<br>SOP-20 | P <sub>D</sub> | 1000 |
|                       |                  |                | 410  |
| Operating Temperature | T <sub>opr</sub> | -20 ~ +70      | °C   |
| Storage Temperature   | T <sub>stg</sub> | -55 ~ +150     | °C   |

# UTC

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QW-R123-006,B

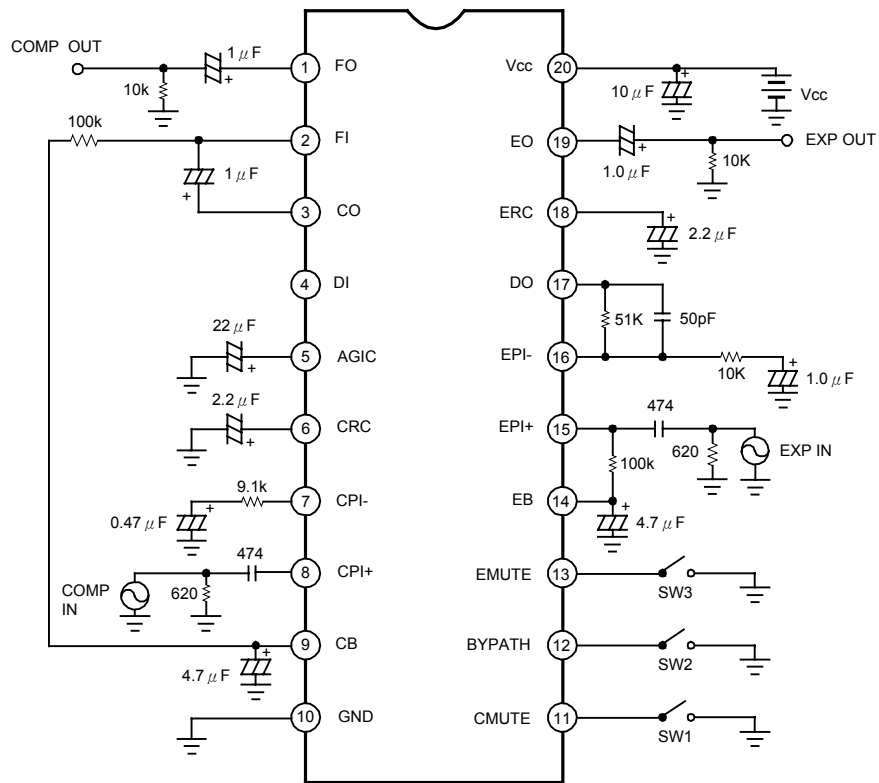
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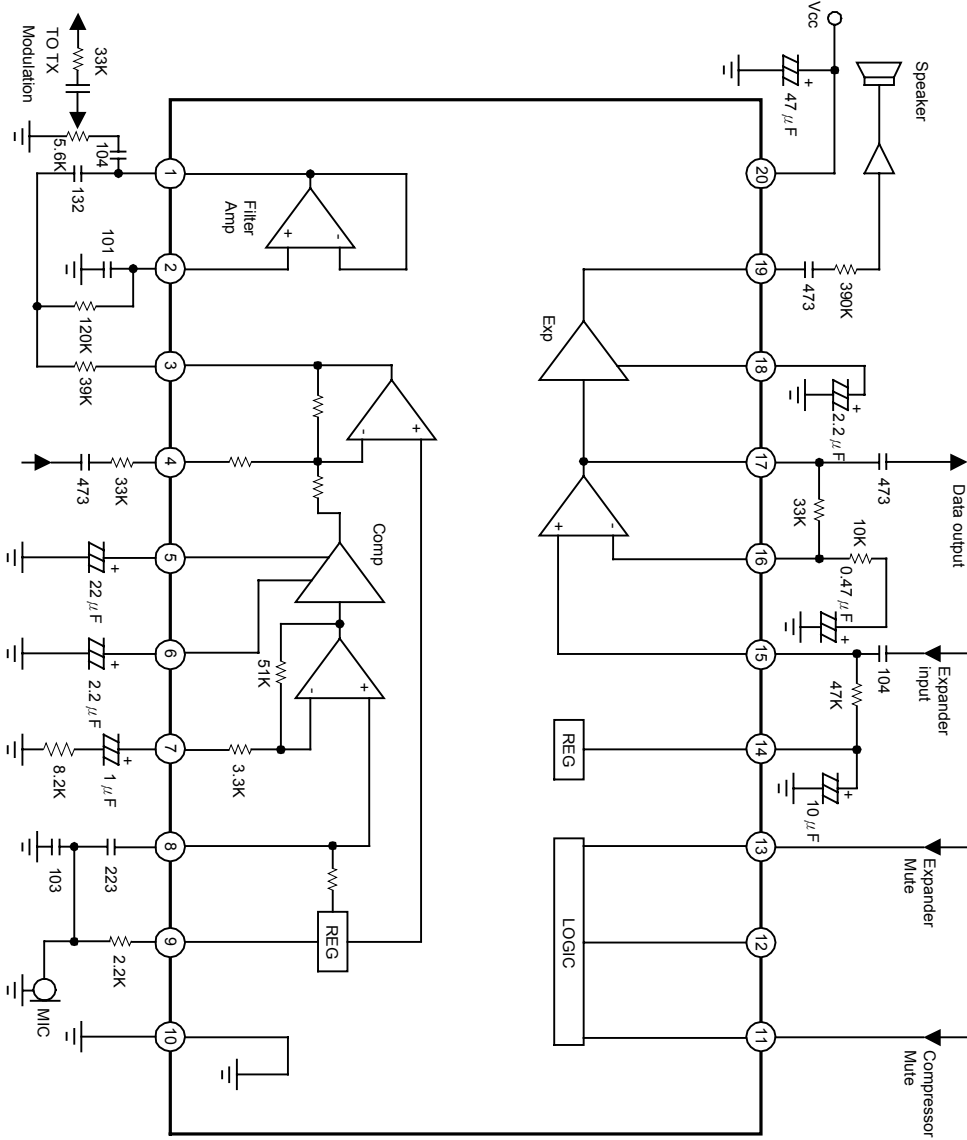
## ELECTRICAL CHARACTERISTICS (V<sub>CC</sub>=3V, f=1kHz, T<sub>a</sub>=25°C, unless otherwise noted)

| PARAMETER                            | SYMBOL                  | TEST CONDITIONS                             | 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>out</sub> =300mV <sub>rms</sub> =0dB | 8.0  | 12.5 | 17.0 | mV <sub>rms</sub> |
| Gain Difference                      | ΔG <sub>V1 (COMP)</sub> | V <sub>in</sub> =-20dB                      | -0.5 | 0    | +0.5 | dB                |
|                                      | ΔG <sub>V2 (COMP)</sub> | V <sub>in</sub> =-40dB                      | -1.0 | 0    | +1.0 |                   |
| Bypath Gain Difference               | ΔG <sub>VB (COMP)</sub> | V <sub>in</sub> =0dB, BYPATH=GND            | -1.5 | 0    | +1.5 | dB                |
| Output Distortion                    | THD <sub>COMP</sub>     | V <sub>in</sub> =0dB                        |      | 0.5  | 1.0  | %                 |
| Noise Output Voltage                 | V <sub>NO (COMP)</sub>  | R <sub>g</sub> =620Ω                        |      | 3.0  | 5.5  | mV <sub>rms</sub> |
| Mute Attenuation Ratio               | ATT <sub>MUTE</sub>     | V <sub>in</sub> =0dB, CMUTE=GND             | 60   | 80   |      | dB                |
| Limiting Voltage                     | V <sub>LIM (COMP)</sub> |   | 1.15 | 1.35 | 1.50 | V <sub>p-p</sub>  |
| <b>EXPANDER PART</b>                 |                         |   |      |      |      |                   |
| Standard Output Level (0dB)          | V <sub>O (EXP)</sub>    | V <sub>in</sub> =30mV <sub>rms</sub> =0dB   | 110  | 130  | 160  | mV <sub>rms</sub> |
| Gain Difference                      | ΔG <sub>V1 (EXP)</sub>  | V <sub>in</sub> =-10dB-0.5                  | -0.5 | 0    | +0.5 | dB                |
|                                      | ΔG <sub>V2 (EXP)</sub>  | V <sub>in</sub> =-20dB                      | -1.0 | 0    | +1.0 |                   |
|                                      | ΔG <sub>V3 (EXP)</sub>  | V <sub>in</sub> =-30dB                      | -1.5 | 0    | +2.0 |                   |
| Bypath Gain Difference               | ΔG <sub>VB (EXP)</sub>  | V <sub>in</sub> =0dB, BYPATH=GND            | -2.5 | 0    | +0.5 | dB                |
| Output Distortion                    | THD <sub>EXP</sub>      | V <sub>in</sub> =0dB                        |      | 0.5  | 1.5  | %                 |
| Noise Output Voltage                 | V <sub>NO (EXP)</sub>   | R <sub>g</sub> =620Ω                        |      | 10.0 | 30.0 | μV <sub>rms</sub> |
| Mute Attenuation Ratio               | ATT <sub>MUTE</sub>     | V <sub>in</sub> =0dB, EMUTE=GND             | 60   | 80   |      | dB                |
| Limiting Voltage                     | V <sub>OEXP (MAX)</sub> | THD=10%                                     | 700  | 800  |      | mV <sub>rms</sub> |

TEST CIRCUIT



APPLICATION CIRCUIT (HAND SET)



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