

DBL 5015

COMPANDOR

The DBL5015 is an noise reduction IC for cordless phone. It is a compandor IC that consist of a compressor and an expander. Compandor reduces transmission noise. by compressing and transmitting outgoing signals and expanding received signals.

The ICs are designed for minimum requirement of external components and for low voltage operation.

Small size is an advantage when used in equipment in which space is a premium. For DATA, input and output terminals are provided for convenience.

Two styles of pockaging, DIP and SOP, are available to meet different reguriements.

FEATURES

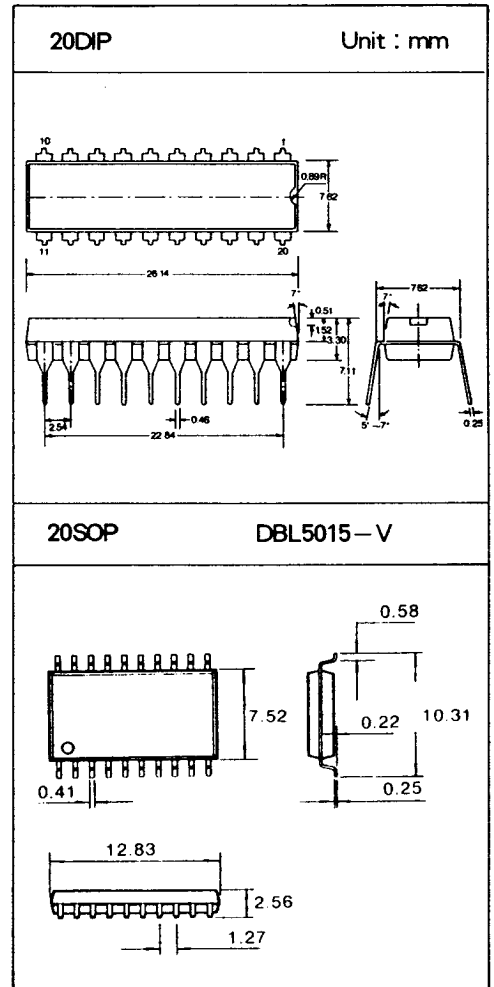
- Low voltage operation $V_{opr.} = 2.4 \sim 7.0V$
- Low current consumption $I_{cc} = 4mA (V_{cc} = 3V)$
- Microphone amplifier used in compressor
- Has data input output terminals
- Has a buffer amplifier for filter
- Mute can be set up independently
- Through Funtions
- Built in limiter (for compressor)

MAXIMUM RATINGS ($T_a = 25^\circ C$)

| Characteristic | Symbol | Rating | Unit |
|-----------------------------|-----------|----------------|------------|
| Maximum Supply Voltage | V_{cc} | 10 | V |
| Power Dissipations | P_D | 1000(D) note 1 | mW |
| | | 410(S) note2 | |
| Operating Temperature Range | T_{opr} | $-20 \sim 70$ | $^\circ C$ |
| Storage Temperature Range | T_{sto} | $-55 \sim 150$ | $^\circ C$ |

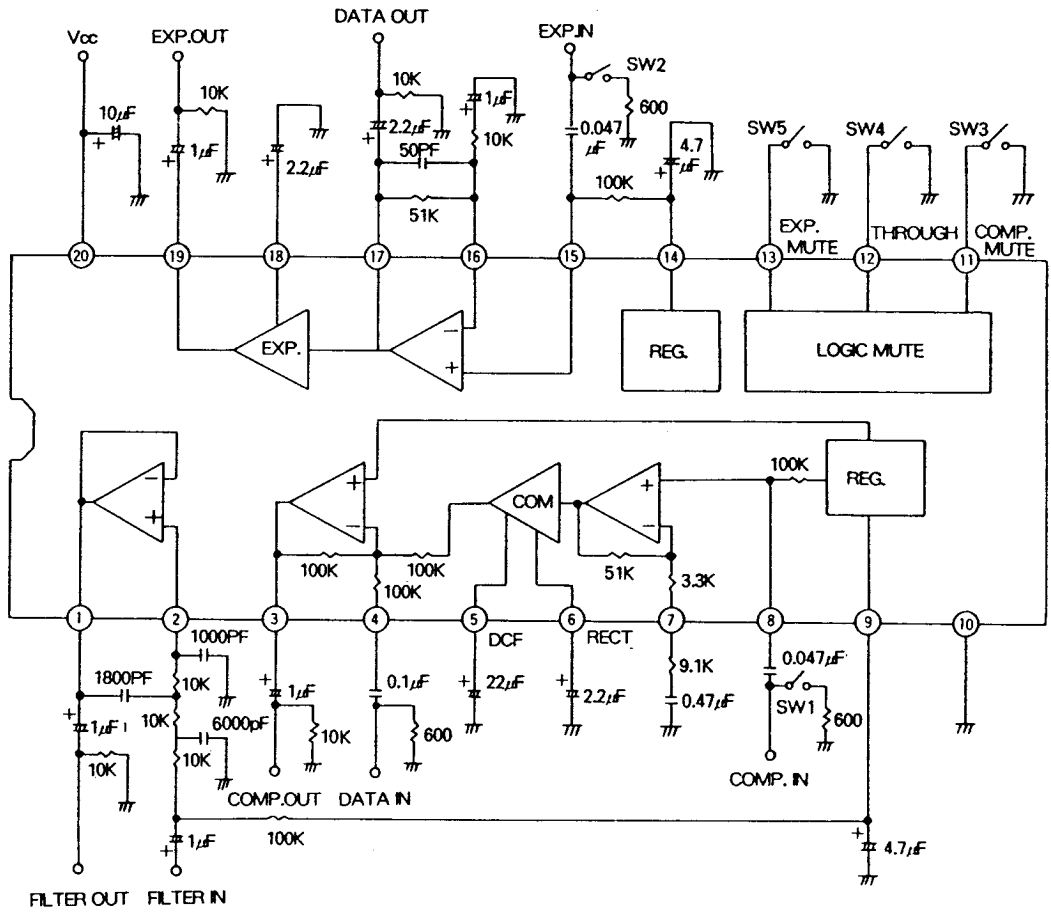
* note 1. Above $T_a = +25^\circ C$, derate at 8mW/

2. Above $T_a = +25^\circ C$, derate at 3.3mW/



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□ BLOCK DIAGRAM AND TEST CIRCUIT



□ SWITCH POSITION

| Switch terminal | High(Open or Vcc) | Low(GND) |
|-----------------|--------------------|--------------|
| PIN 11 (SW 3) | Comp Mute OFF | Comp Mute ON |
| PIN 12 (SW 4) | Compandor | Through |
| PIN 13 (SW 5) | Exp Mute OFF | Exp Mute ON |
| PIN 8 (SW 1) | Signal Input--OFF | |
| PIN 15 (SW 2) | Signal Input--OFF | |

□ ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $T_a=25\text{ }^\circ\text{C}$, $V_{cc}=3\text{V}$, $f=\text{kHz}$, $R_L=10\text{K}\Omega$)

| Characteristics | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|----------------------|-----------------|--|------|------|------|---------------------|
| Squelch Current | I_{ccQ} | No Signal | — | 4.0 | 6.5 | mA |
| Reference Voltage | V_{ref} | — | 1.4 | 1.5 | 1.55 | V |
| COMPRESSOR | | | | | | |
| Input Resistance | R_{IN} | — | 90 | 120 | — | $\text{K}\Omega$ |
| Standard Input level | V_{IN} | $V_{OUT}=300\text{mV}_{rms}=0\text{dB}$ | 8.0 | 12.5 | 17.0 | mV_{rms} |
| Gain error (1) | $\Delta G_V(1)$ | $v_{IN}=-20\text{dB}$ | -0.5 | 0 | -0.5 | dB |
| Gain error (2) | $\Delta G_V(2)$ | $V_{IN}=-40\text{dB}$ | -0.1 | 0 | -1.0 | dB |
| Through ON/OFF Diff. | ΔG_V | $v_{IN}=0\text{dB}$, 12pin GND | -1.5 | 0 | -1.5 | dB |
| Distortion | THD | $V_{IN}=620\Omega$ | — | 0.5 | 1.0 | % |
| Noise output | V_{NO} | $R_g=620\Omega$ | — | 3.0 | 5.5 | mV_{rms} |
| Muting attenuation | MATT | $V_{IN}=0\text{dB}$, 11pin GND | 60 | 80 | — | V_{OP} |
| Limiting voltage | V_{L1} | — | 1.15 | 1.35 | 1.50 | |
| EXPANDER | | | | | | |
| Standard Input level | V_{OUT} | $V_{IN}=300\text{mV}_{rms}=0\text{dB}$ | 110 | 130 | 160 | mV_{rms} |
| Gain error (1) | $\Delta G_V(1)$ | $v_{IN}=-10\text{dB}$ | -0.5 | 0 | -0.5 | dB |
| Gain error (2) | $\Delta G_V(2)$ | $v_{IN}=-20\text{dB}$ | -1.0 | 0 | -1.0 | dB |
| Gain error (3) | $\Delta G_V(3)$ | $V_{IN}=-30\text{dB}$ | -1.5 | 0 | -1.5 | dB |
| Through ON/OFF Diff. | ΔG_V | $v_{IN}=0\text{dB}$, 12pin GND | -2.5 | -1.0 | -0.5 | dB |
| Distortion | THD | $V_{IN}=0\text{dB}$ | — | 0.5 | 1.5 | % |
| Noise output | V_{NO} | $R_g=620\Omega$ | — | 10 | 30 | μV_{rms} |
| Muting attenuation | MATT | $V_{IN}=0\text{dB}$, 13pin | 60 | 80 | — | dB |
| Max. output voltage | $V_{OUT(MAX)}$ | THD 10% level | 700 | 800 | — | mV_{rms} |
| Buffer Amp(LPF) | | | | | | |
| Voltage Gain | G_V | $V_{IN}=300\text{mV}_{rms}$ | -0.5 | 0 | 0.5 | dB |
| Freq. Charact (1) | Δf_1 | $V_{IN}=300\text{mV}_{rms}$, $f=3\text{KHz}$ | -4.5 | -3 | 0 | dB |
| Freq. Charact (2) | Δf_2 | $V_{IN}=300\text{mV}_{rms}$, $f=30\text{KHz}$ | -75 | -60 | -55 | dB |
| Distortion | THD | $V_{IN}=300\text{mV}_{rms}$ | — | 0.02 | 0.1 | % |

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ELECTRICAL CHARACTERISTICS

(PIN VOLTAGE AT VCC=3V AND NO INPUT SIGNAL)

| PIN NO. | NAME | TYPE.VAL | UNIT | PIN NO. | NAME | TYPE.VAL | UNIT |
|---------|------------|----------|------|---------|-----------|----------|------|
| 1 | FILTER OUT | 1.5 | V | 11 | COMP MUTE | 1.3 | V |
| 2 | FILTER IN | 1.5 | V | 12 | THROUGH | 1.3 | V |
| 3 | COMP OUT | 1.5 | V | 13 | EXP MUTE | 1.3 | V |
| 4 | DATA IN | 1.5 | V | 14 | EXP REF | 1.5 | V |
| 5 | C-DCF | 1.5 | V | 15 | EXP IN | 1.5 | V |
| 6 | COMP RECT | 0.6 | V | 16 | EXP NF | 1.5 | V |
| 7 | COMP NF | 1.5 | V | 17 | DATA OUT | 1.5 | V |
| 8 | COMP IN | 1.5 | V | 18 | EXP RECT | 0.6 | V |
| 9 | COMP REF | 1.5 | V | 19 | EXP OUT | 1.5 | V |
| 10 | GND | GND | V | 20 | VCC | VCC | V |

TYPICAL PERFORMANCE CHARACTERISTICS

- Input Voltage VS Output Voltage

