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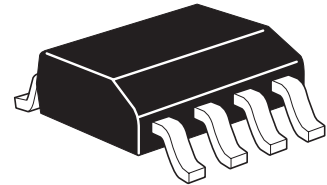
# ZLNB1001

## DBS tone and polarity multiplex controller

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### Description

The ZLNB1001 multiplex controller is one of a wide range of satellite receiver LNB and IF distribution support circuits available from Zetex. It supports a single IF path providing logic outputs to select one of four IF switch input channels, which typically using PIN diodes. It is intended for use in multi-switch applications for selection and distribution of universal LNB IF output signals, replacing many discrete components including the voltage regulator to save both manufacturing cost and PCB size whilst improving reliability.



The highly accurate control input of the ZLNB1001 has both voltage and tone control for the four required states. The voltage threshold is nominally 14.5 V and to meet the demanding requirements of some broadcasters it has a switching range of 14.0 V to 15 V. The threshold is temperature compensated to minimize drift. This features a low and stable input current that enables transient protection to be achieved with the addition of only a single resistor.

The outputs are configured to deliver a positive regulated voltage drive of 7 V when a desired channel is selected, and 0V when de-selected.

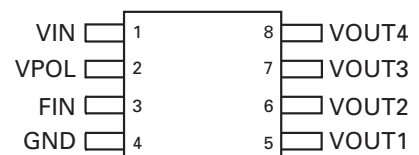
### Features

- Precision voltage and tone detectors
- Temperature compensated
- Low cost solution
- Integrated tone filter
- Powered from STB: no additional power requirement
- Direct drive to PIN diodes
- SO8 SMD package

### Applications

- Switch boxes for satellite IF distribution
- LNB receivers

### Pin out - top view



## Absolute maximum ratings

|                       |              |
|-----------------------|--------------|
| Input voltage         | 25V          |
| Output current        | 50mA         |
| Operating temperature | -40 to 85°C  |
| Storage temperature   | -50 to 150°C |

## Electrical characteristics

Test conditions (unless otherwise stated):  $V_{in} = 10V$  to  $21V$  via series resistor as test circuit,  $T_{amb} = 25^{\circ}C$

| Symbol        | Parameter                  | Conditions   | Min. | Typ. | Max. | Units   |
|---------------|----------------------------|--|------|------|------|---------|
| $I_S$         | Supply current             | $I_{OUT} = 0$                                      | 1.5  | 3.2  | 5.5  | mA      |
| $I_{POL}$     | Input current at $V_{POL}$ | $V_{POL} = 15V$<br>$V_{in} = 15V$                  | 130  | 220  | 350  | $\mu A$ |
| $V_{TVPOL}^*$ | Threshold voltage          | $T_{amb} = -40$ to $80^{\circ}C$<br>$V_{in} = 15V$ | 14   | 14.5 | 15   | V       |
| $V_{TFIN}$    | Tone threshold             | $f = 22kHz^{\dagger}$                              | 100  | 170  | 350  | mV p-p  |
| $V_{OUTH}$    | Output voltage "high"      | For selected output,<br>$I_{OUT} = 20$ mA (source) | 6.5  | 7    | 7.5  | V       |
|               |                            | For selected output,<br>$I_{OUT} = 0$              | 7.5  | 8    | 8.5  | V       |
| $V_{OUTL}$    | Output voltage "low"       | For unselected output,<br>$I_{OUT} = -1$ mA (sink) |      | 0.15 | 0.5  | V       |
| $T_{SW}$      | Switching speed            |  |      |      | 10   | ms      |

### NOTES:

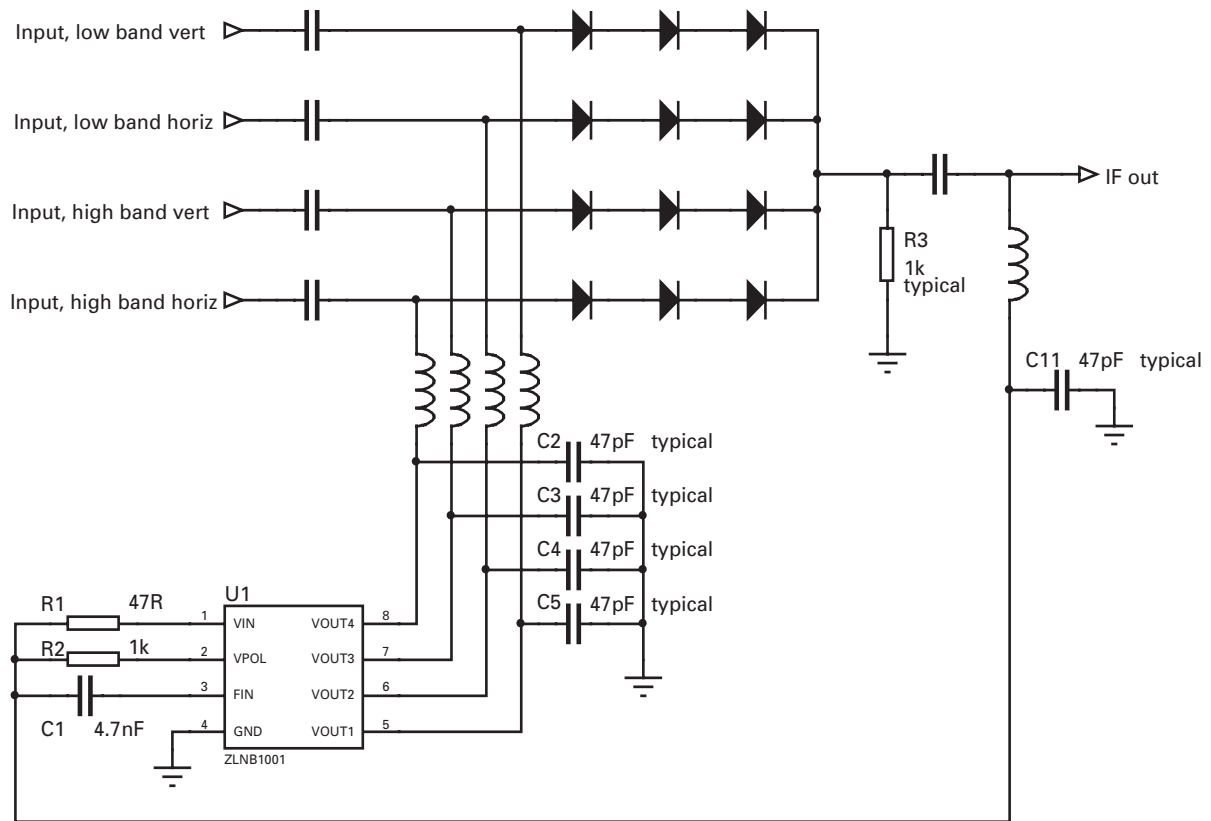
\* Threshold voltage is adjustable using external resistor.

† Waveform of 22 kHz tone is shown in test circuit diagram.

## Truth table

| Tone | $V_{POL}$     | Output 1    | Output 2    | Output 3    | Output 4    | Satellite signal       |
|------|---------------|-------------|-------------|-------------|-------------|------------------------|
| Off  | $< V_{TVPOL}$ | <b>High</b> | Low         | Low         | Low         | <b>Low band Vert</b>   |
| Off  | $> V_{TVPOL}$ | Low         | <b>High</b> | Low         | Low         | <b>Low band Horiz</b>  |
| On   | $< V_{TVPOL}$ | Low         | Low         | <b>High</b> | Low         | <b>High band Vert</b>  |
| On   | $> V_{TVPOL}$ | Low         | Low         | Low         | <b>High</b> | <b>High band Horiz</b> |

## Typical application circuit using pin diodes

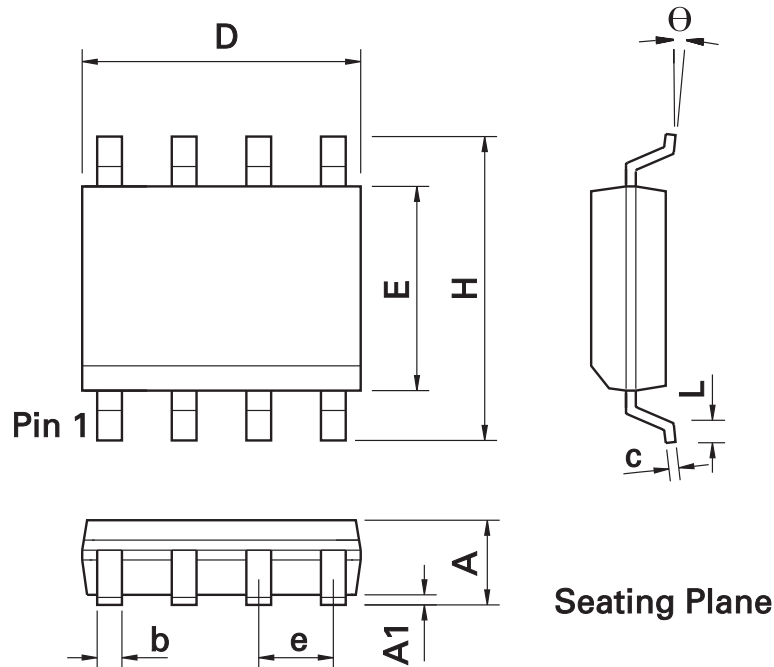


## Application information

The schematic diagram above shows the typical application driving RF signal PIN diodes. Values of suitable external components are shown. R1 R2 and C1 are required to achieve specified operation. Values of other components are typical of the application. When one signal path is selected according to the Truth Table, the selected signal diodes carry a forward current set by R3. The other signal diodes are biased off, R3 providing a degree of reverse bias.

In order to limit the peak current in the device, it is recommended that the output decoupling capacitor value, including C2, C3, C4 and C5, should not be excessive. Normally this total is expected to be less than a few hundred pF in the intended application.

## Package details - SO8



## Package dimensions

Dimensions in inches are control dimensions, dimensions in millimeters are approximate.

| DIM | Millimeters |      | Inches |       | DIM | Millimeters |      | Inches    |       |
|-----|-------------|------|--------|-------|-----|-------------|------|-----------|-------|
|     | Min.        | Max. | Min.   | Max.  |     | Min.        | Max. | Min.      | Max.  |
| A   | 1.35        | 1.75 | 0.053  | 0.069 | e   | 1.27 BSC    |      | 0.050 BSC |       |
| A1  | 0.10        | 0.25 | 0.004  | 0.010 | b   | 0.33        | 0.51 | 0.013     | 0.020 |
| D   | 4.80        | 5.00 | 0.189  | 0.197 | c   | 0.19        | 0.25 | 0.008     | 0.010 |
| H   | 5.80        | 6.20 | 0.228  | 0.244 | Θ   | 0°          | 8°   | 0°        | 8°    |
| E   | 3.80        | 4.00 | 0.150  | 0.157 | h   | 0.25        | 0.50 | 0.010     | 0.020 |
| L   | 0.40        | 1.27 | 0.016  | 0.050 | -   | -           | -    | -         | -     |

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