



## RE46C108

### Piezoelectric Horn Driver and Voltage Regulator

#### Product Specification

#### General Description

The RE46C108 is a piezoelectric horn driver with a voltage regulator that can operate at 3.3V or 5V. It is intended for applications requiring a 9V horn driver with a low voltage logic supply. The horn feedback control pin is designed for use with self-oscillating piezoelectric horn but can also be used in direct drive applications.

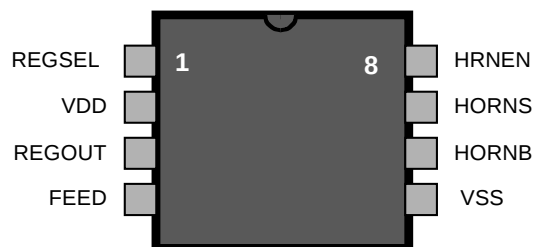
#### Applications

Smoke detectors  
CO Detectors  
Personal Security Products  
Electronic Toys

#### Features

- Low Quiescent Current
- Low Horn Driver Ron
- Voltage Regulation to 3.3V or 5V
- Available in DIP and SOIC packaging
- Available in Standard Packaging or RoHS Compliant Pb Free Packaging

#### Pin Configuration



#### Absolute maximum ratings

|                                          |                                      |
|------------------------------------------|--------------------------------------|
| Supply Voltage $V_{DD}$                  | -.5V to +14V                         |
| Input voltage Range $V_{in}$             | -.3V to $V_{DD} + .3V$ , except FEED |
| FEED Input Voltage Range $V_{inf}$       | -10V to +22V                         |
| Input Current $I_{in}$                   | 10mA, except FEED                    |
| Operating Temperature                    | -40 to 85°C                          |
| Continuous Output Current (HornS, HornB) | 30mA                                 |
| Continuous Output Current (REGOUT)       | 55mA                                 |

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only and operation at these conditions for extended periods may affect device reliability.

This product utilizes CMOS technology with static protection; however proper ESD prevention procedures should be used when handling this product. Damage can occur when exposed to extremely high static electrical charges

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Electrical Characteristics at  $T_A = 25^\circ\text{C}$ ,  $V_{DD} = 9\text{V}$ ,  $V_{SS} = 0\text{V}$  (unless otherwise noted).

| Parameter                                | Test Pin       | Test Conditions                                                        | Limits |     |      | Units         |
|------------------------------------------|----------------|------------------------------------------------------------------------|--------|-----|------|---------------|
|                                          |                |                                                                        | Min    | Typ | Max  |               |
| Supply Voltage                           | Vdd            | Operating                                                              | 6.0    | 9.0 | 13.8 | V             |
| Standby Supply Current                   | Vdd            | Hrnen=Vss; No Loads                                                    |        |     | 4    | $\mu\text{A}$ |
| Input Leakage                            | Hrnen, Resel   | Vin=Vdd or Vss                                                         | -100   |     | 100  | nA            |
|                                          | FEED           | Feed = +22V                                                            |        | 20  | 50   | $\mu\text{A}$ |
|                                          | FEED           | Feed = -10V                                                            | -50    | -15 |      | $\mu\text{A}$ |
| Input Voltage Low                        | Hrnen, Regsel  |                                                                        |        |     | 1.0  | V             |
| Input Voltage High                       | Hrnen, Regsel  |                                                                        | 2.3    |     |      | V             |
| Output Low Voltage                       | Horns or Hornb | Iout=16mA; Vdd=9V                                                      |        | 0.3 | 0.5  | V             |
|                                          |                | Vdd=7.2V                                                               |        |     | 0.9  | V             |
| Output High Voltage                      | Horns or Hornb | Iout=-16mA; Vdd=9V                                                     | 8.5    | 8.7 |      | V             |
|                                          |                | Vdd=7.2V                                                               | 6.3    |     |      | V             |
| Regulator Voltage                        | Regout         | Iout<50mA; Regsel=Vdd                                                  | 4.75   | 5.0 | 5.25 | V             |
|                                          |                | Iout<50mA; Regsel=Vss<br>$T_A = -40$ to $85^\circ\text{C}$ See note #3 | 3.10   | 3.3 | 3.50 | V             |
| Line Regulation                          | Regout         | $6\text{V} < V_{DD} < 12\text{V}$ ; No load                            |        | 30  |      | mV            |
| Load Regulation                          | Regout         | $0\text{mA} < I_{out} < 20\text{mA}$                                   |        | 100 |      | mV            |
| Brown-Out Threshold Voltage *See note #1 | Vdd            | Regsel=Vdd or Vss<br>Falling edge of Vdd                               | 4.5    | 5.0 | 5.5  | V             |
| Brown-Out Pull Down Current              | Regout         | Vdd=4.5V; Regout=2V                                                    | 15     | 25  |      | mA            |
| Regout Overvoltage Clamp *See note #2    | Regout         | Regsel=Vdd; Iout > 1mA                                                 | 5.5    | 6.0 | 6.5  | V             |
|                                          |                | Regsel=Vss; Iout > 1mA                                                 | 3.7    | 4.0 | 4.3  | V             |

Notes:

1/ The brown-out threshold voltage is the Vdd voltage at which the regulator will be disabled and Regout will be pulled to Vss.

2/ In normal operation, the regulator will provide high-side current of up to 20mA, but current sinking capability is typically under 1 $\mu\text{A}$ . The overvoltage clamp is intended to limit the voltage at Regout when it is pulled up by an external source.

3/ The limits shown are 100% tested at 25C only. Test limits are guard-banded based on temperature characterization to guarantee compliance at temperature extremes.

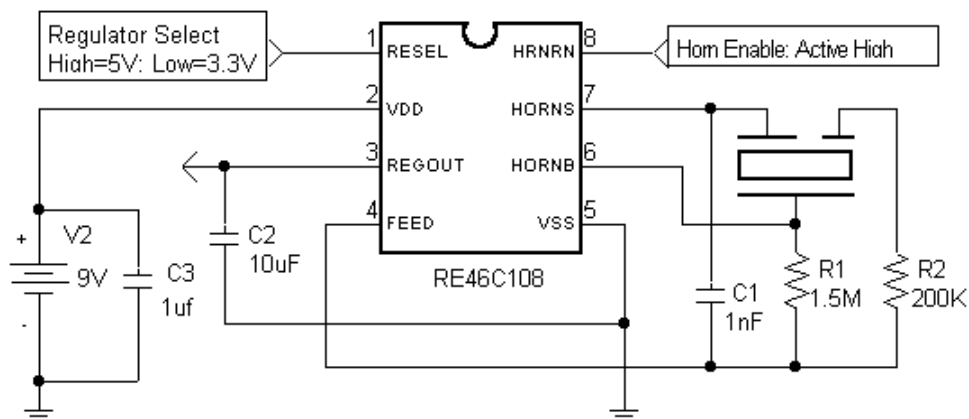
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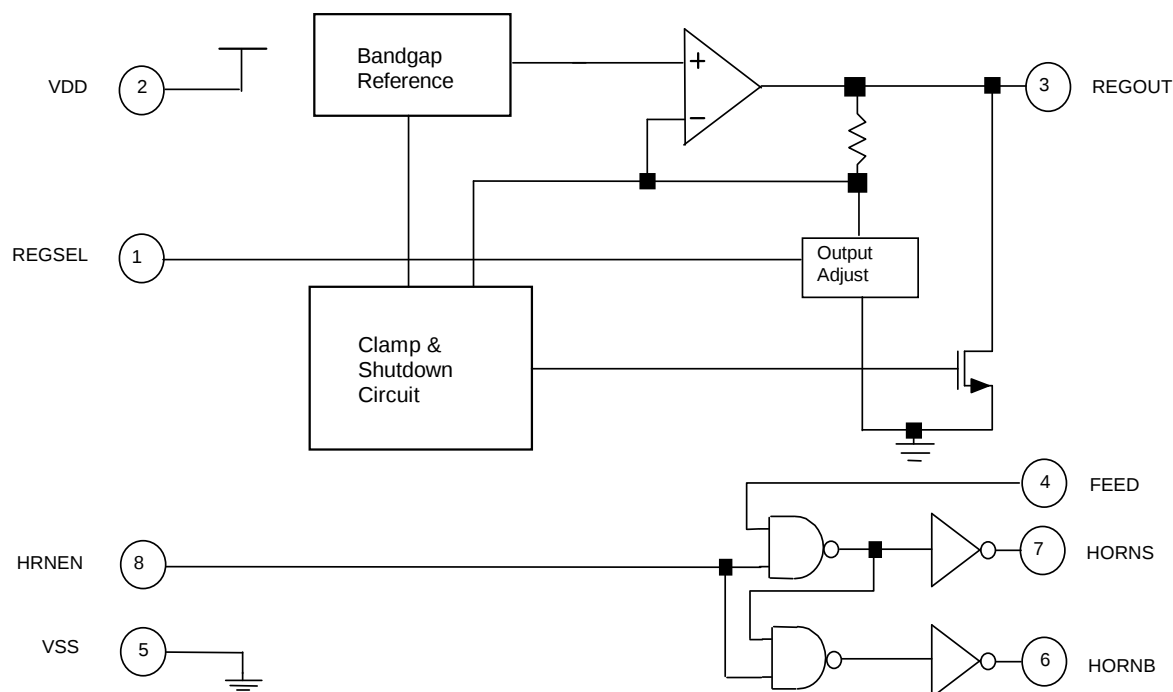
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## Typical Application



Typical Application Using Self Resonating Piezoelectric Horn

## Functional Block Diagram



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