



RE46C104

Piezoelectric Horn Driver and Voltage Converter

Product Specification

General Description

The RE46C104 is a piezoelectric horn driver with voltage converter to provide maximum audibility in low voltage applications. The feedback control pin is designed for use with self-oscillating piezoelectric horn but can also be used in direct drive applications. The built-in charge pump voltage converter provides increased supply voltage for the horn drivers allowing outputs to swing from V_{ss} to $2 \times V_{dd}$. A charge pump enable pin is provided to minimize supply current when not in use.

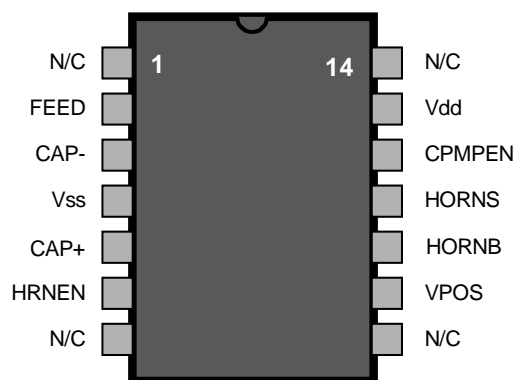
Applications

Smoke detectors
CO Detectors
Personal Security Products
Electronic Toys

Features

- Low Quiescent Current
- Low Driver R_{on}
- Wide Operating Voltage Range
- Available in Standard Packaging or RoHS Compliant Pb Free Packaging

Pin Configuration



Absolute maximum ratings

| | |
|--|--|
| Supply Voltage V_{dd} | -5V to +9.0V |
| 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 | 0 to 50°C |
| Continuous Output Current (HornS, HornB, or Vpos)..... | 30mA |

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 $T_A = 25^\circ\text{C}$, $V_{DD} = 5\text{V}$, $V_{SS} = 0\text{V}$ (unless otherwise noted).

| Parameter | Test Pin | Test Conditions | Limits | | | Units |
|---|----------------|---|--------|-----|-----|-------|
| | | | Min | Typ | Max | |
| Supply Voltage | Vdd | Operating | 4.0 | 5.0 | 8.0 | V |
| Standby Supply Current | Vdd | Hrnen, Cpmpen = Vss Feed = Vss ; Vdd = 5V | | 100 | 500 | nA |
| | Vdd | Hrnen, Cpmpen = Vss Feed = Vss ; Vdd = 8V | | 500 | | nA |
| Supply Current | Vdd | Hrnen = Vss Cpmpen = Vdd No Loads; See note 1 | | 200 | 500 | uA |
| Input Leakage | Hrnen & Cpmpen | Vin = Vdd or Vss | -100 | | 100 | nA |
| | FEED | Feed = +22V Cpmpen = Vdd | | 20 | 50 | uA |
| | FEED | Feed = -10V Cpmpen = Vdd | -50 | -15 | | uA |
| Input Voltage Low | Hrnen & Cpmpen | | | | 1.0 | V |
| Input Voltage High | Hrnen & Cpmpen | | 2.3 | | | V |
| Output Low Voltage | Horns or Hornb | Iout = 16mA Cpmpen = Vdd | | 0.3 | 0.5 | V |
| Output High Voltage | Horns or Hornb | Iout = -16mA Cpmpen = Vdd | 8.5 | 8.7 | | V |
| Vpos Output Voltage | Vpos | Iout = -16mA Cpmpen = Vdd Hrnen = Vss | | 8.9 | | V |
| Charge Pump Oscillator Freq | Vpos | | | 16 | | kHz |
| Charge Pump Power Efficiency | Vpos | Iout = -16mA C1=C2=10uF | | 85 | | % |
| Charge Pump Voltage Conversion Efficiency | Vpos | No Loads C1=C2=10uF | 95 | 99 | | % |

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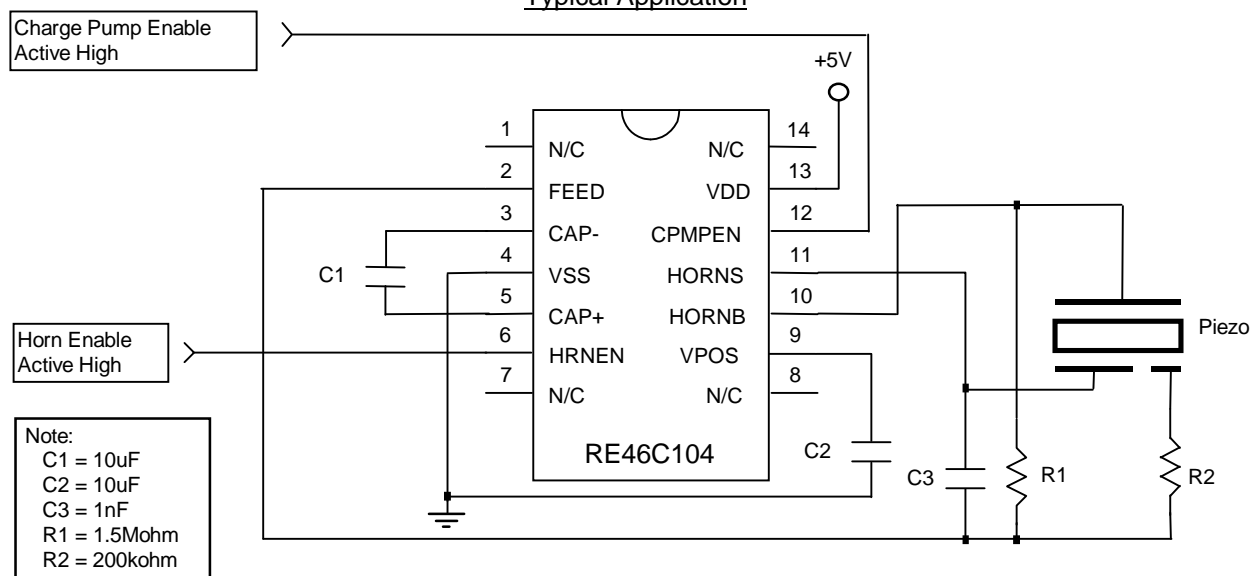
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Typical Application



RE46C104

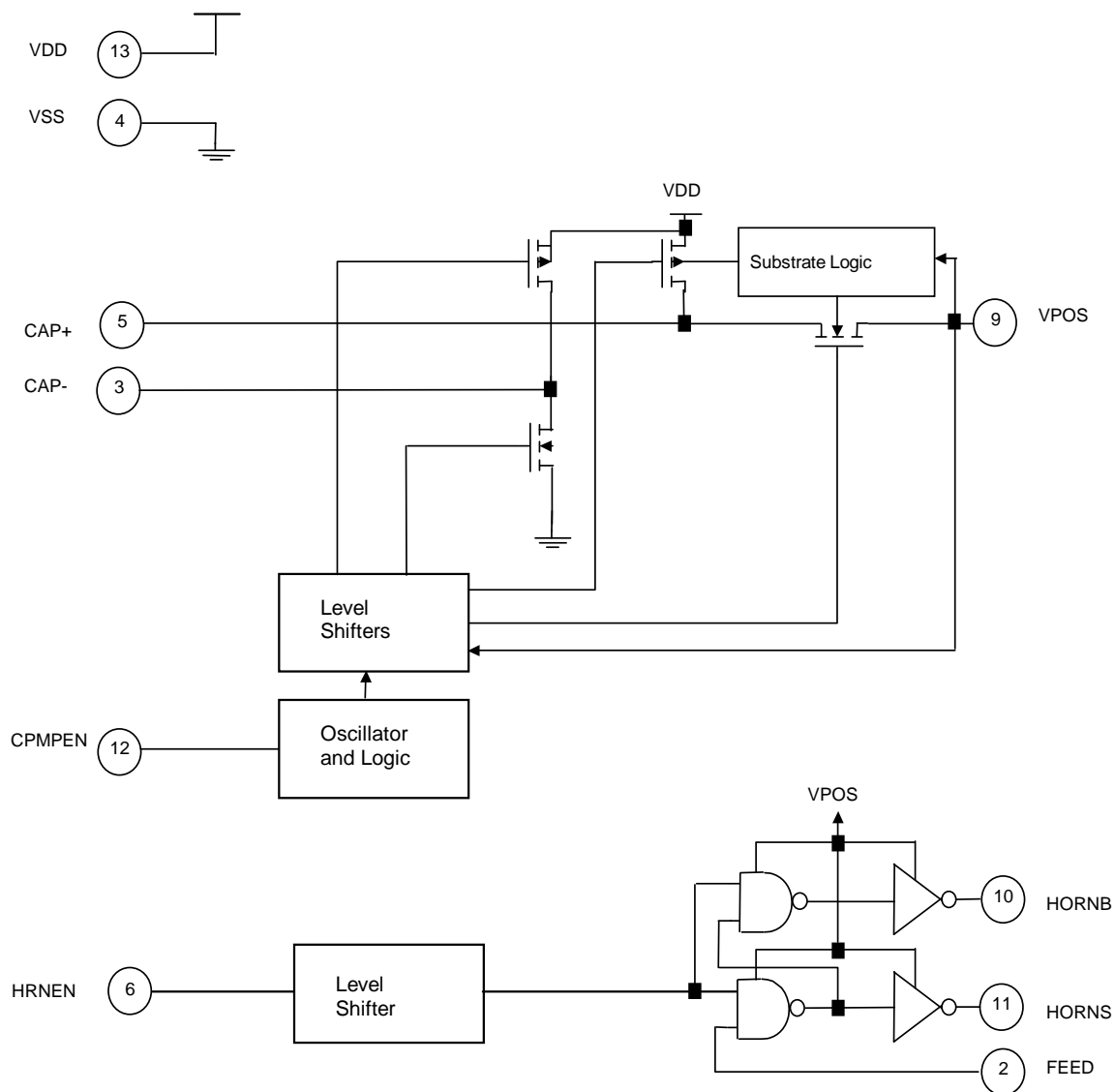
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Functional Block Diagram



Notes:

- 1/ The supply current specification is an average under steady state conditions. The instantaneous current will exceed this value when C1 and C2 charge-up initially (after charge pump is enabled) and during subsequent recharging of C1 and C2.

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