

FM RECEIVER CIRCUIT FOR BATTERY SUPPLY**—YD9088****DESCRIPTION**

The YD9088 is a bipolar integrated circuit for use in mono portable and pocket radios. It is used when a minimum of peripheral components (of small dimensions and low costs) is important. The circuit contains a frequency-locked-loop (FLL) system with an intermediate Frequency (IF) of about 70kHz. Selectivity is achieved by active RC-filters. De-tuning related to the IF and too weak input signals is suppressed by the mute circuit.

FEATURES

- *Equipped with all stages of a mono receiver from antenna to audio output
- *Mute circuit
- *Search tuning with a single varicap diode
- *Mechanical tuning with integrating AFC
- *AM application supported
- *Power supply polarity protection
- *Power supply voltage down to 1.8V

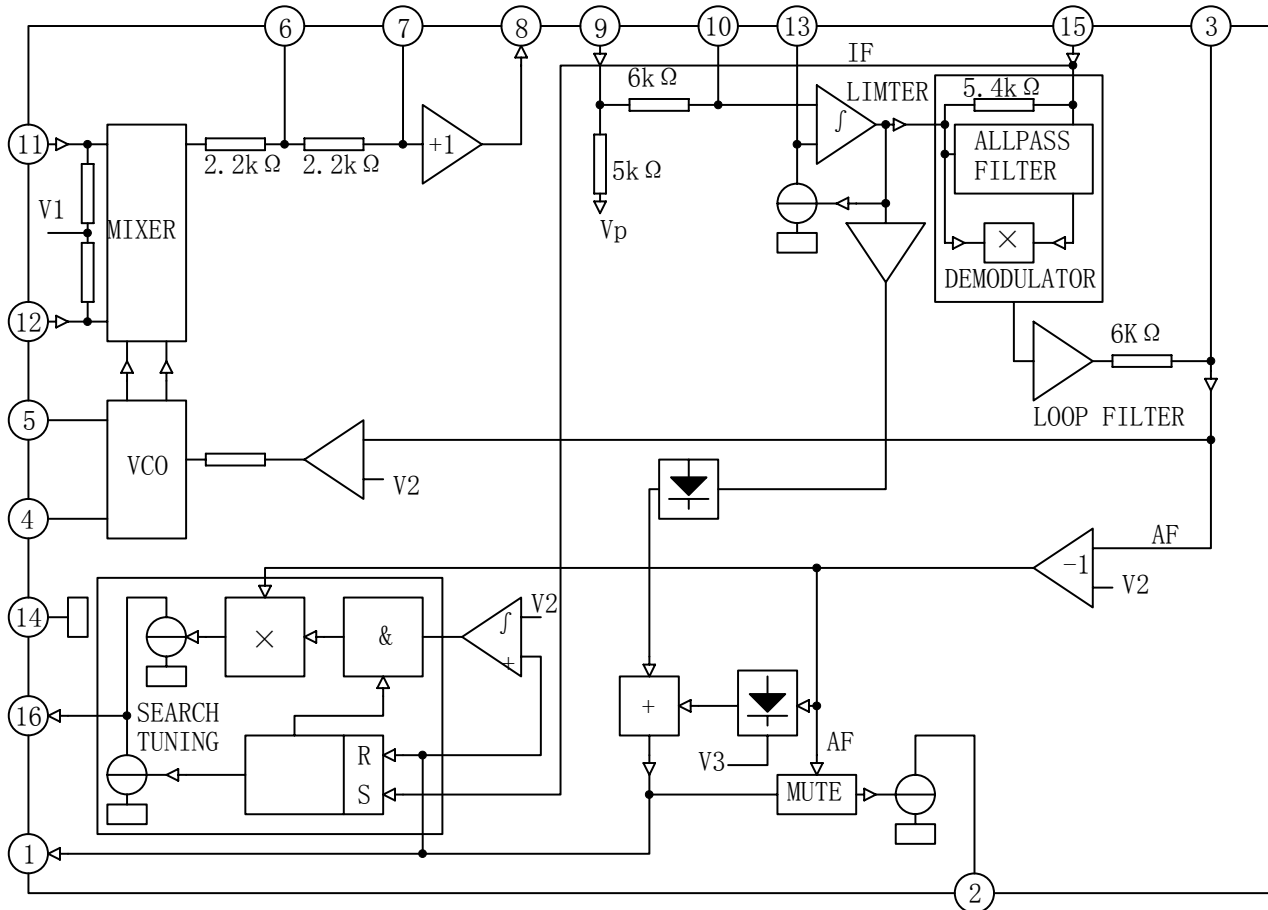
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BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Tamb=25°C)

| PARAMETER | SYMBOL | VALUE | UNIT |
|-----------------------|--------|----------|------|
| Supply voltage | Vcc | 5 | V |
| Operating temperature | Topr | -10~+70 | °C |
| Storage temperature | Tstg | -55~+150 | °C |

ELECTRICAL CHARACTERISTICS (V_{cc}=3V, T_{amb}=25°C, Unless otherwise specified)

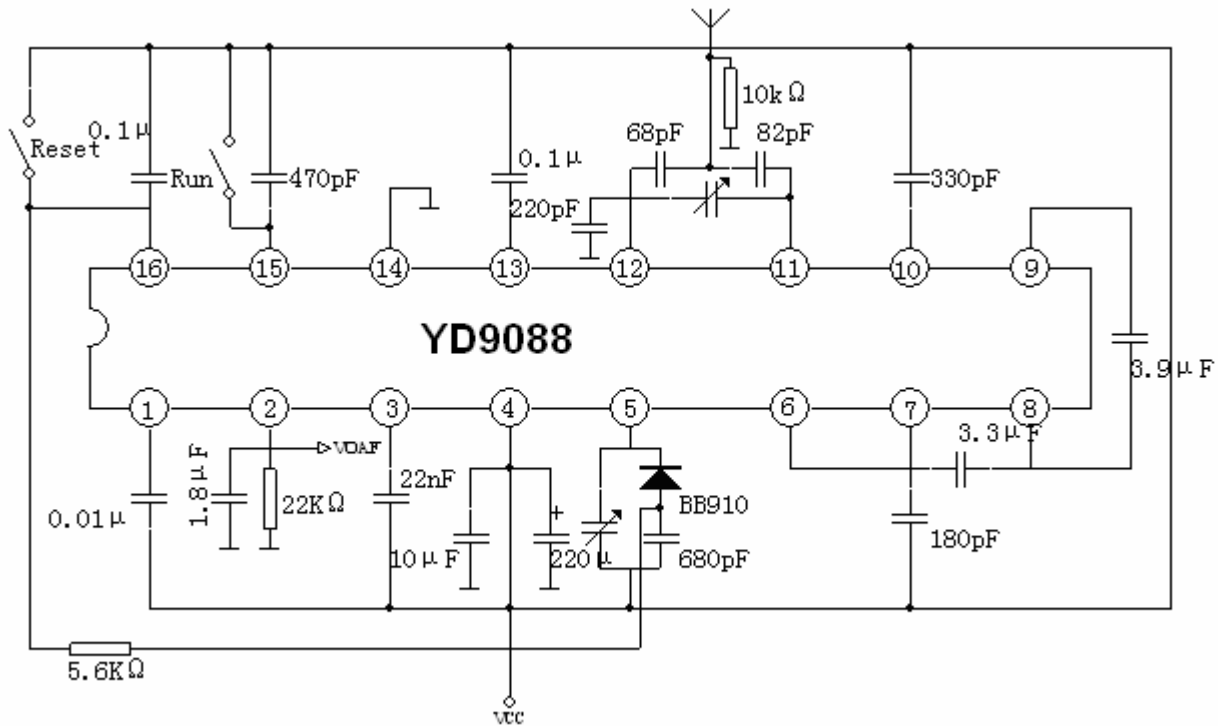
DC CHARACTERISTICS

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|-------------------------------------|----------------------|------|------|------|------|
| Supply Voltage | V _p | 1.8 | 3 | 5 | V |
| Supply Current | I _p | 4.2 | 5.2 | 6.6 | mA |
| DC Voltage On Pin1 | V ₁ | 2.50 | 2.55 | 2.60 | V |
| DC Voltage On Pin3 | V ₃ | 2.64 | 2.69 | 2.74 | V |
| DC Voltage On pin6 and Pin7 | V _{6,7} | 2.38 | 2.44 | 2.50 | V |
| DC Voltage On Pin8 | V ₈ | 1.60 | 1.67 | 1.74 | V |
| DC Voltage On Pin9, Pin10 and Pin13 | V _{9,10,13} | 2.42 | 2.47 | 2.52 | V |
| DC Voltage On Pin11 and Pin12 | V _{11,12} | 0.91 | 0.94 | 0.98 | V |
| DC Voltage On Pin15 | V ₁₅ | 2.06 | 2.12 | 2.18 | V |
| AF Output Vurrent On Pin2 | I ₂ | 45 | 60 | 80 | μ A |
| Oscillator Vurrent On Pin5 | I ₅ | 275 | 375 | 500 | μ A |

AC CHARACTERISTICS

| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT | |
|---|---------------------------|---|----------|----------------------|-----|-------|-----|
| RF Sensitivity Iinput Voltage (RMS value) | V _i (rms) | V _{oAF} =-3dB, V _{oAF} =0dB at V _{in} =1mV | Mute off | | 3 | 6 | μ V |
| | | | Mute on | 3 | 6 | 12 | |
| | | (S+N)/N=26dB | | | 5 | 10 | μ V |
| Signal Handing | | Δ f=±75kHz, THD<10% | 100 | 200 | | mV | |
| Signal Plus Noise-to-noiseRatio | (S+N)/N | | 52 | 56 | | dB | |
| Signal Harmonic Distortion | THD | Δ f=±22.5kHz | | 1 | 1.4 | % | |
| | | Δ f=±75kHz | | 2.4 | 3.3 | % | |
| AM Rejection | AMR | FM:1kHz, ±75kHz AM:1kHz, m=0.8 | 47 | 52 | | dB | |
| RippleRejection | RR ₁₀₀₀ | 100mV RMS ripple on V _p , f=1kHz | 7 | 10 | | dB | |
| Audio Output Signal | V _o | R _L =22k Ω | 60 | 85 | 120 | mV | |
| Search Tuning (with BB910 and C ₁₆ =0.1 μ F) | | | | | | | |
| Minimum Output Voltage On Pin16 | V ₁₆ | Limiting point | | V _P -1.85 | | V | |
| Tuning Steepness | Δ V/ Δ t | Voltage at pin16 | 95 | 210 | 420 | mV/s | |
| Oscillator Steepness | Δ fosc/ Δ t | | 1.25 | 2.83 | 5.6 | MHz/S | |
| AFC Steepness | Δ I _{AFC} / Δ V3 | Voltage at pin3 | 4.75 | 9.5 | 19 | μ S | |

APPLICATION CIRCUIT



OUTLINE DRAWING

