

**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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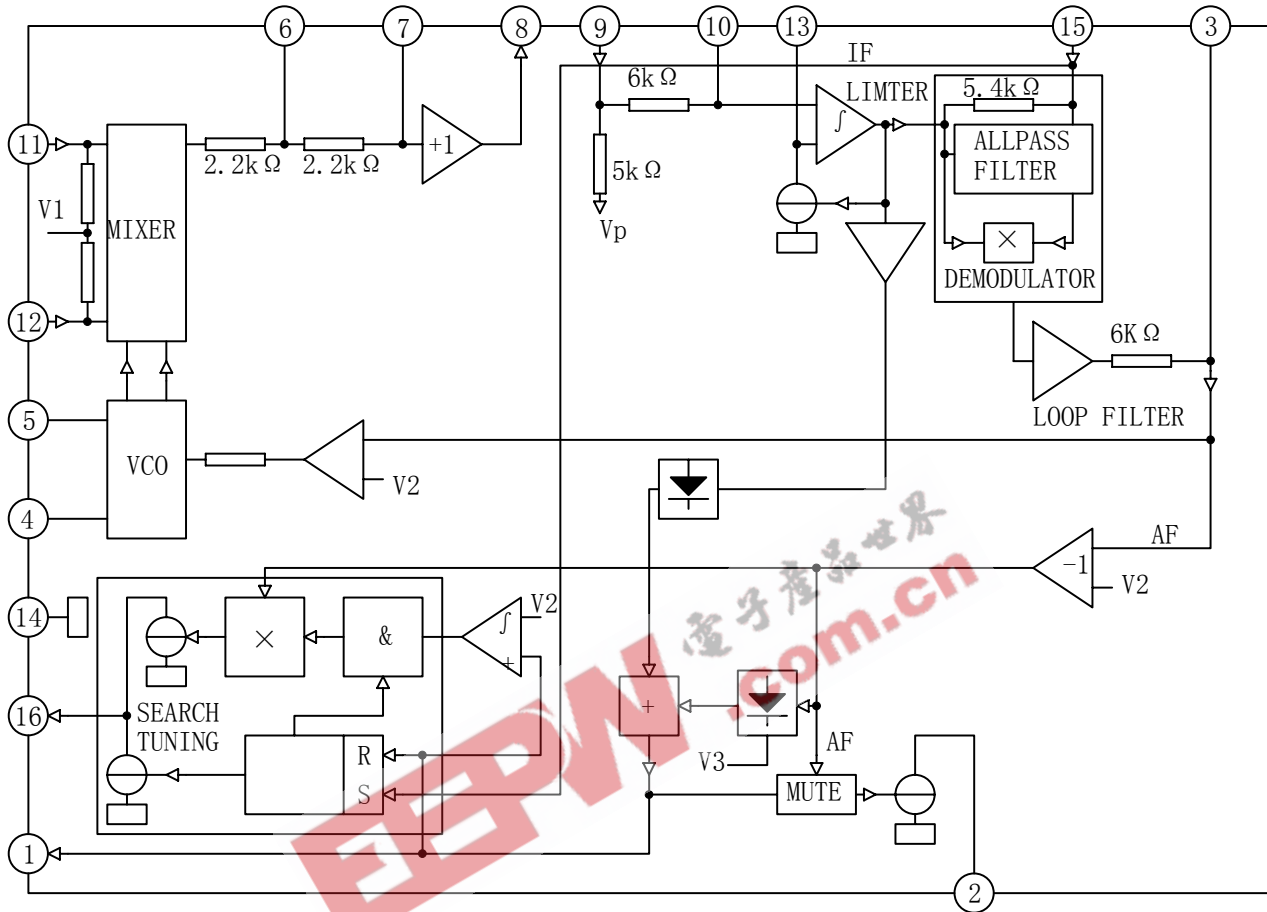
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**BLOCK DIAGRAM**



**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<sub>cc</sub>=3V, T<sub>amb</sub>=25°C, Unless otherwise specified)

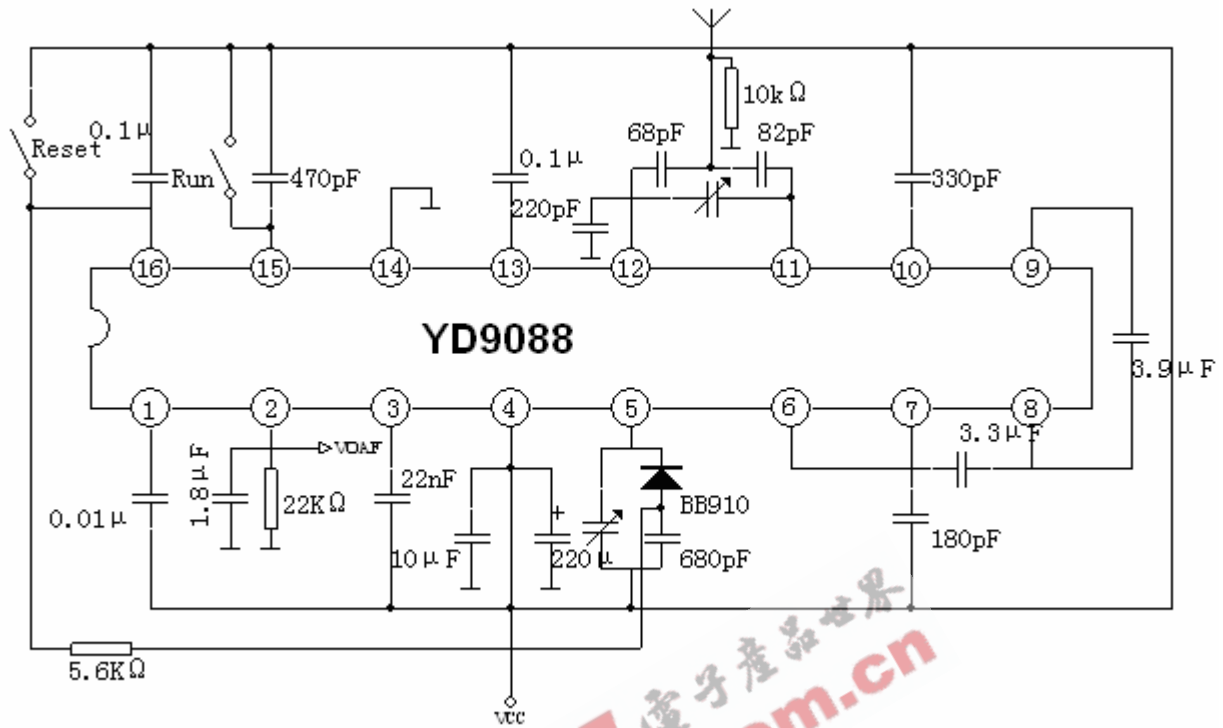
**DC CHARACTERISTICS**

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

**AC CHARACTERISTICS**

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT	
RF Sensitivity Input Voltage (RMS value)	V <sub>i(rms)</sub>	V <sub>oAF</sub> =-3dB, V <sub>oAF</sub> =0dB at V <sub>in</sub> =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 <sub>1000</sub>	100mV RMS ripple on V <sub>p</sub> , f=1kHz	7	10		dB	
Audio Output Signal	V <sub>o</sub>	R <sub>L</sub> =22k Ω	60	85	120	mV	
Search Tuning (with BB910 and C <sub>16</sub> =0.1 μ F)							
Minimum Output Voltage On Pin16	V <sub>16</sub>	Limiting point		V <sub>P</sub> -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 <sub>AFC</sub> / Δ V3	Voltage at pin3	4.75	9.5	19	μ S	

APPLICATION CIRCUIT



OUTLINE DRAWING

