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**AM/FM 1 CHIP TUNER IC—YD2149****FUNCTIONS**

YD2149 are AM/FM 1 chip tuner ICs, which are designed for portable Radios and 3V Head phone Radios. This is suitable for Digital Tuning System Applications. FM Local Oscillation Voltage is set up low relatively, for NEW FCC.

- For NEW FCC.
- Suitable for combination with Digital Tuning System which is included IF Counter.
- One terminal type AM/FM IF count output for IF counter of Digital Tuning system.
  - FM: 1.3375MHz(1/8 dividing)
  - AM: 450kHz
- Built-in Mute Circuit for IF count output.
- For adopting ceramic Discriminator, it is not necessary to adjust the FM Quad Detector Circuit.
- Built-in FM MPX VCO circuit.
- Built-in one terminal type AM/FM Local Oscillator Buffer Output for Digital Tuning System Applications.
  - Built-in 1/16 Pre-scaler for FM Local OSC Buffer.
- Built-in AM Low cut circuit.
- Low supply voltage range( $V_{cc}=3V, T_a=25^{\circ}C$ )
  - I<sub>ccq</sub>(FM)=13mA(Typ)
  - I<sub>ccq</sub>(FM)=8.5mA(Typ)
- Operating Supply voltage range : $V_{cc}=1.8\sim 7V(T_a=25^{\circ}C)$

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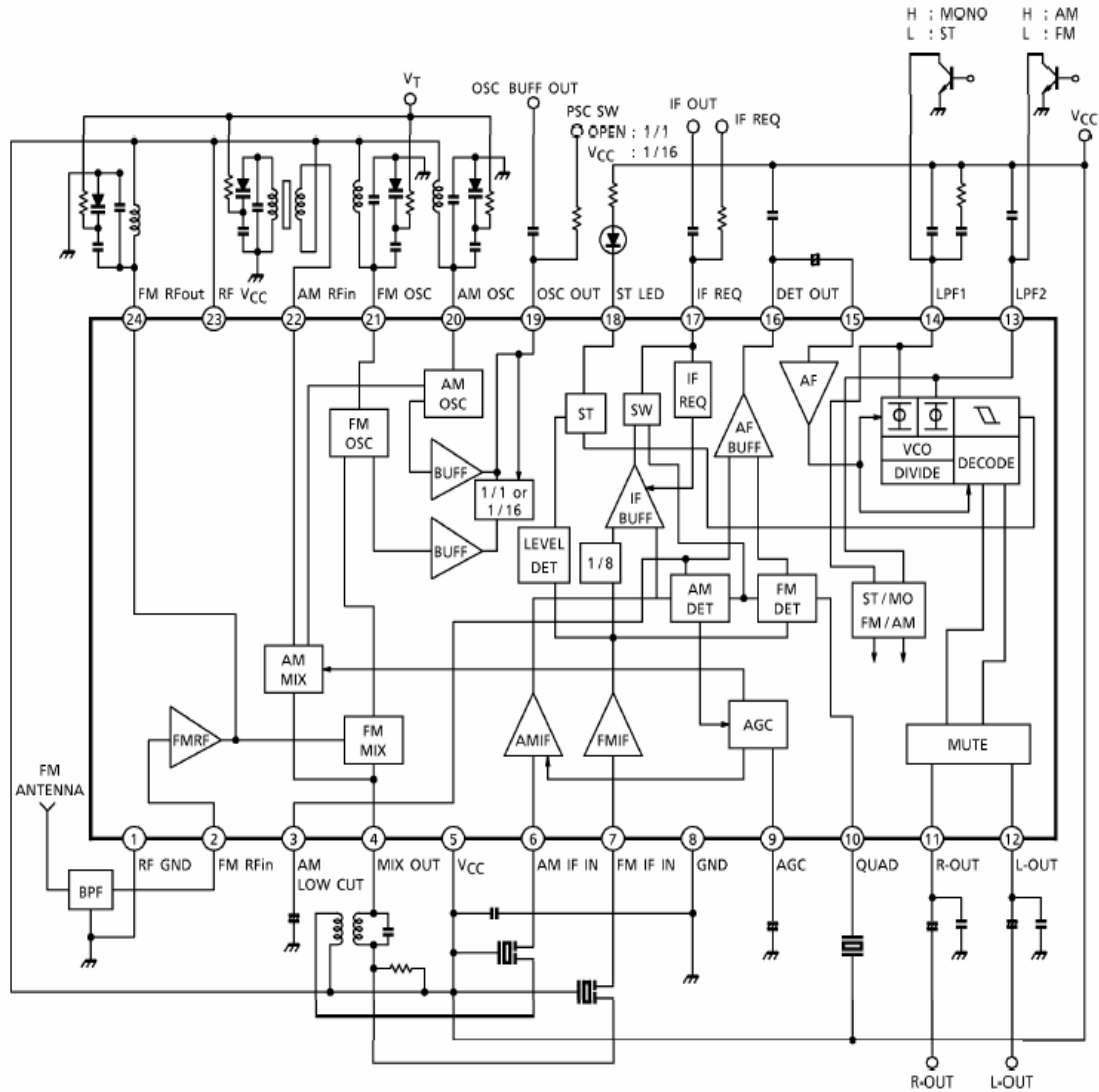
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BLOCK DIAGRAM



**EXPLANATION OF TERMINALS**

Pin No.	CHARACTERISTIC	Pin No.	CHARACTERISTIC
1	RF GND	13	LPF2
2	FM-RF IN	14	LPF1
3	AM LOW CUT	15	MPX IN
4	MIX OUT	16	DET OUT
5	V <sub>CC</sub>	17	IF REQ
6	AM IF IN	18	ST LED
7	FM IF IN	19	OSC OUT
8	GND	20	AM OSC
9	AGC (AM AGC)	21	FM OSC
10	QUAD	22	AM RF IN
11	R-OUT	23	RF VCC
12	L-OUT	24	FM RF OUT

**MAXIMUM RATINGS** (T<sub>amb</sub>=25°C)

CHARACTERISTIC	SYMOL	RATING	UNIT
Supply	V <sub>CC</sub>	8	V
LED Current	I <sub>LED</sub>	10	mA
LED Votage	V <sub>LED</sub>	8	V
Power Dissipation	YD2111N	PD (Note)	mW
	YD2111F		
Operating Temperature	T <sub>opr</sub>	-25~+75	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

Note: Derated above 25°C in the proportion of 9.6 mW/°C (2149N)、4 mW/°C (2149F) .

**ELECTICAL CHARACTERISTICS**

(Unless otherwise specified, T<sub>amb</sub>=25°C, V<sub>CC</sub>=3V, F/E: f=98MHz, f<sub>m</sub>=1kHz

FM IF: f=10.7MHz, f=±22.5kHz, f<sub>m</sub>=1kHz

AM : f=1MHz, MOD=30%, f<sub>m</sub>=1kHz

MPX : f<sub>m</sub>=1kHz)

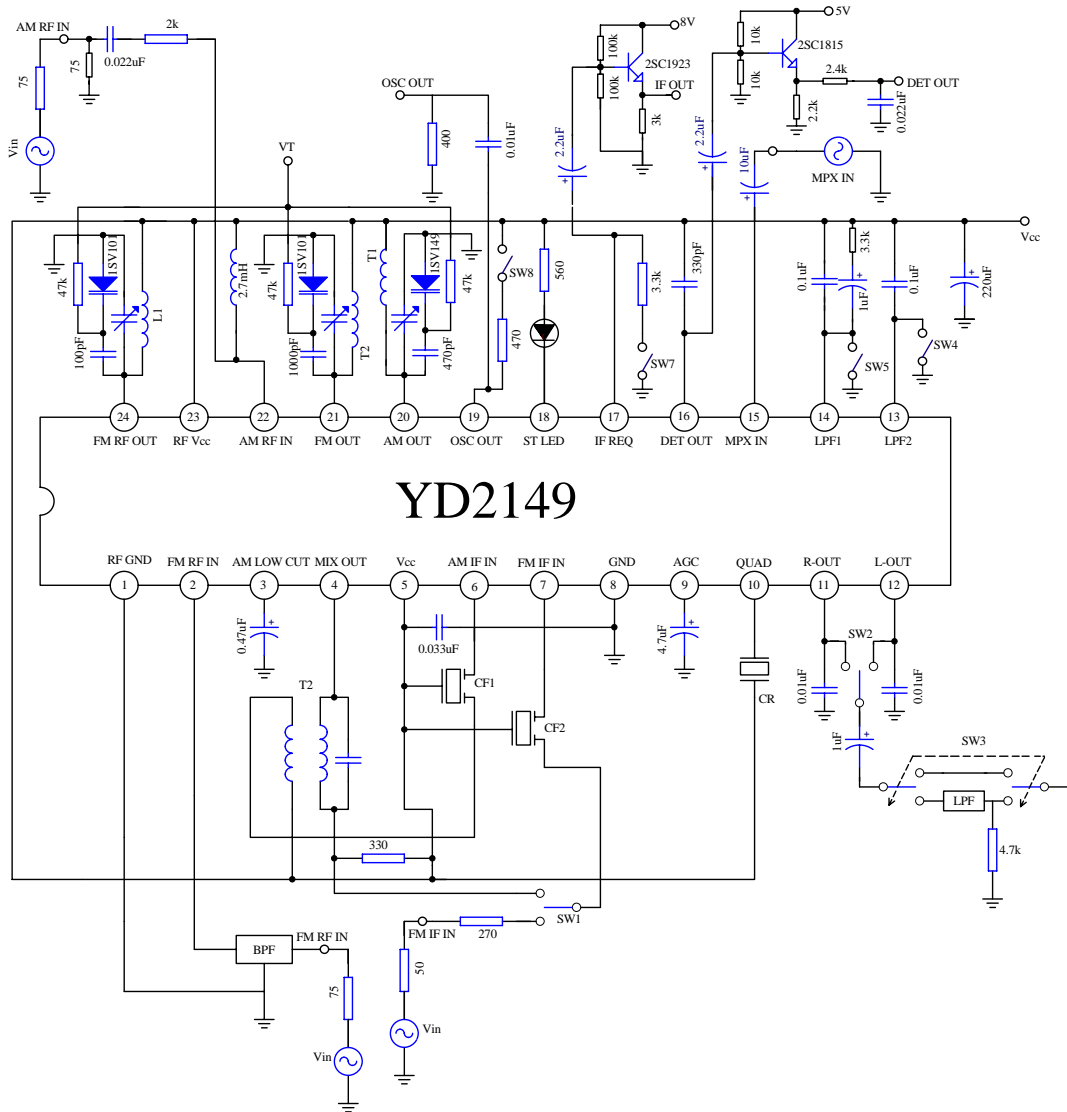
CHARACTERSTIC		SYMOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I <sub>cc</sub> (FM)	V <sub>in</sub> =0, FM mode		13	16.5	mA
		I <sub>cc</sub> (AM)	V <sub>in</sub> =0, AM mode		8.5	11.0	
F/E	Input Limiting Voltage	V <sub>in</sub> (lim)	-3dB limiting		10		dB $\mu$ V
	Local OSC Buffer Output Voltage 1	V <sub>OSC</sub> FM1	f <sub>OSC</sub> =108.7 MHz	23	35		mV <sub>rms</sub>
	Local OSC Buffer Output Voltage 2	V <sub>OSC</sub> FM2	f <sub>OSC</sub> =6.79375 MHz	75	110		mV <sub>rms</sub>
FM IF	Input Limiting Voltage	V <sub>in</sub> (lim)IF	-3 dB limiting	37	42	47	dB $\mu$ V
	Recovered Output Voltage	V <sub>OD</sub>	V <sub>in</sub> =80dB $\mu$ V	200	250	300	mV <sub>rms</sub>
	Signal To Noise Ratio	S/N	V <sub>in</sub> =80dB $\mu$ V		75		dB
	Total Harmonic Distortion	THD	V <sub>in</sub> =80dB $\mu$ V		0.3		%
	IF Count Output Frequency	f <sub>IF</sub> (FM)	V <sub>in</sub> =80dB $\mu$ V; SW7:ON	1.3373	1.3375	1.3377	MHz
	IF Count Output Voltage	V <sub>IF</sub> (FM)	V <sub>in</sub> =80dB $\mu$ V; SW7:ON	250	290	330	mV <sub>p-p</sub>
	IF Count Output Sensitivity	IF sens(FM)	SW7:ON	42	47	52	dB $\mu$ V
AM	Gain	G <sub>V</sub>	V <sub>in</sub> =27dB $\mu$ V	20	38	70	mV <sub>rms</sub>
	Recovered Output Voltage	V <sub>OD</sub>	V <sub>in</sub> =60dB $\mu$ V	60	85	108	mV <sub>rms</sub>
	Signal To Noise Ratio	S/N	V <sub>in</sub> =60dB $\mu$ V		41		dB
	Total Harmonic Distortion	THD	V <sub>in</sub> =60dB $\mu$ V		0.7		%
	Local OSC Buffer Output Voltage	V <sub>OSC</sub> AM	f <sub>OSC</sub> =1.45 MHz	55	75		mV <sub>rms</sub>
	IF Count Output Voltage	V <sub>IF</sub> (AM)	V <sub>in</sub> =60dB $\mu$ V; SW7:ON	250	290	330	mV <sub>p-p</sub>
	IF Count Output Sensitivity	IF sens(AM)	SW7:ON	33	38	43	dB $\mu$ V

PIN17 Output Resistance		$R_{17}$	FM mode		0.75		$k\Omega$		
			AM mode		15.5				
MPX	Input Resistance		$R_{IN}$		55		$k\Omega$		
	Output Resistance		$R_{OUT}$		5		$k\Omega$		
	Max. Composite Signal Input Voltage		$V_{in\ MAX}$ (STEREO)	L+R=90%, P=10%, fm=1kHz, THD=3%		700		$mV_{rms}$	
	Separation		Sep.	L+R=180 Mvrms, P=20mVrms	fm=100HZ	45		dB	
					fm=1kHz	35			45
					fm=10kHz				45
	THD	Monaural	THD (MONAURAL)	$V_{in}=200mV$		0.3		%	
		Stereo	TGD (STEREO)	L+R=180mV P=20mV		0.3			
	Voltage		GV	$V_{in}=200mV$	-2.7	-1.2	0.2	dB	
	Channel Balance		C.B.	$V_{in}=200mV$	-1.5	0	1.5	dB	
	Stereo LED Sensitivity	ON	VL(ON)	Pilot Input(19kHz)		10	14	$mV_{rms}$	
		OFF	VL(OFF)		5	8	$mV_{rms}$		
	Stereo LED Hysteresis		$V_H$	LED ON → OFF		2		$mV_{rms}$	
	Capture Range		C.R.	P=15mVrms		$\pm 8$		%	
Signal Noise Ratio		S/N	$V_{in}=200mV$		80		dB		
Muting Attenuation		MUTE	$V_{in}=200mV$		80		dB		

# YODA INTEGRATED CIRCUIT

# YD2149

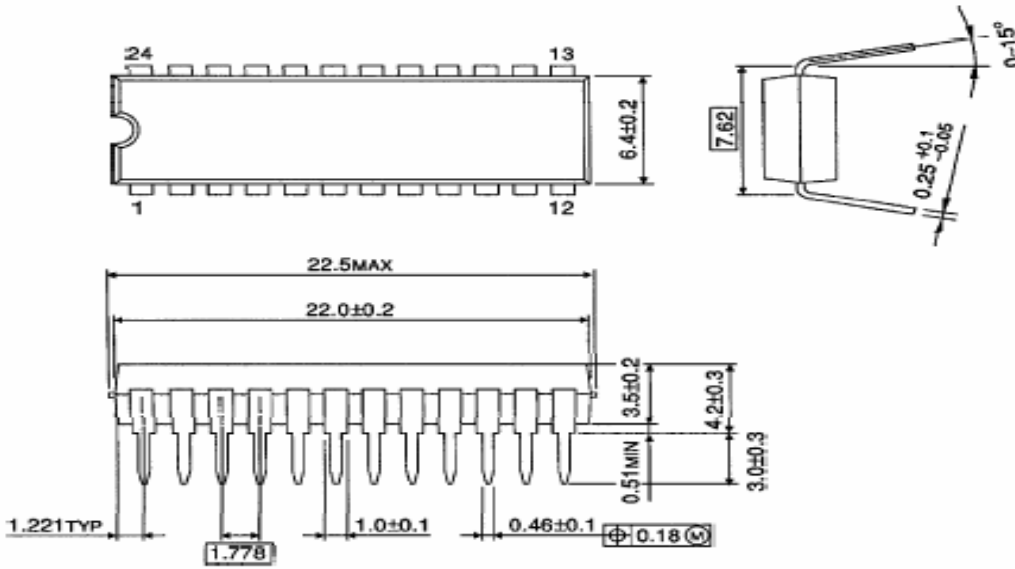
## TWES CIRCUIT



PACKAGE DIMENSIONS

SDIP24-P-300-1.78

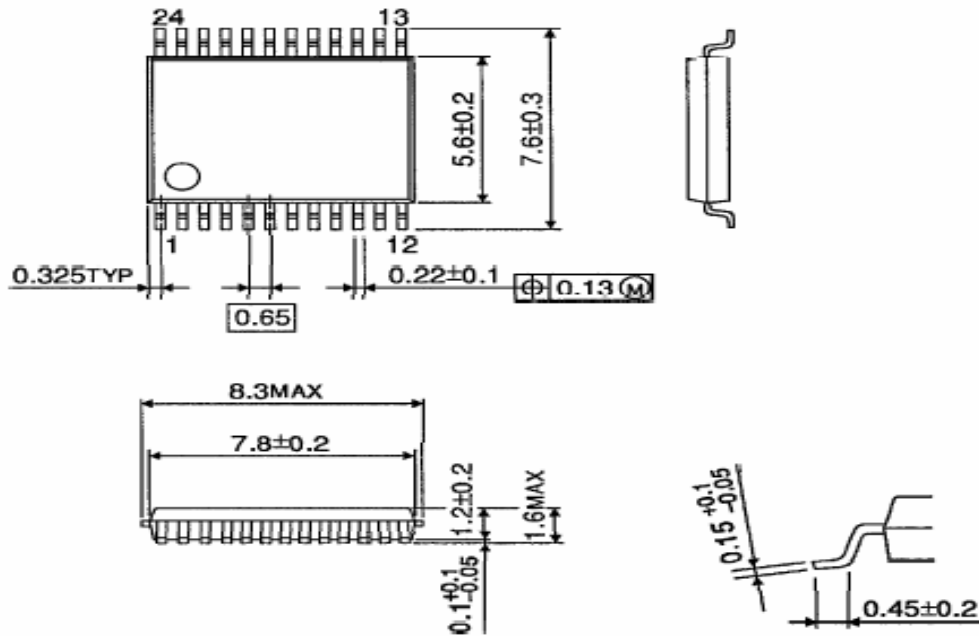
Unit : mm



Weight : 1.2 g (Typ.)

PACKAGE DIMENSIONS  
SSQP24-P-300-0.65A

Unit : mm



Weight : 0.14 g (Typ.)