

# UTC TA8127 LINEAR INTEGRATED CIRCUIT

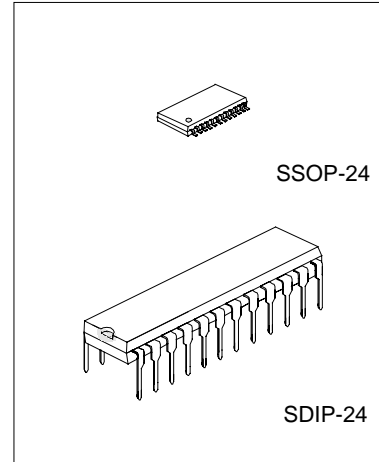
## 3V AM / FM 1 CHIP TUNER IC

### DESCRIPTION

The UTC TA8127 is the AM / FM 1 chip tuner IC, which is designed for Portable Radios and 3V Headphone Radios.

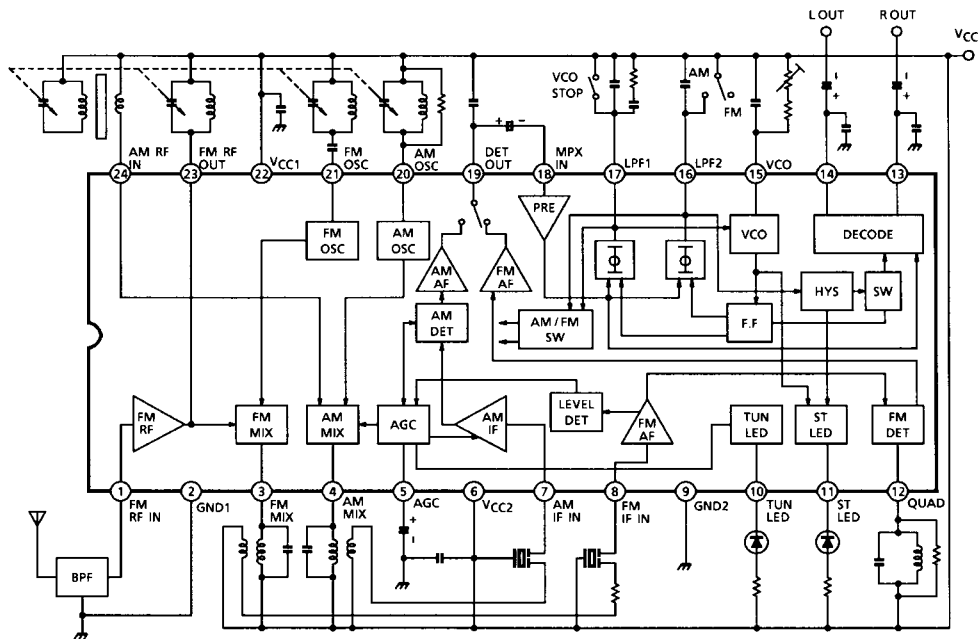
### FEATURES

- \*Built-in FM F/E, AM / FM IF and FM MPX
- \*AM Detector Coil and IF Coupling Condenser are not needed.
- \*Operating Supply Voltage Range  
Vcc=1.8~7.0V (Ta=25°C)



\*Pb-free plating product number: TA8127L

### BLOCK DIAGRAM



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## ABSOLUTE MAXIMUM RATINGS (TA=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V <sub>CC</sub>	8	V
LED Current	I <sub>LED</sub>	10	mA
LED Voltage	V <sub>LED</sub>	8	V
Power Dissipation	PD (note)		mW
SSOP		400	
SDIP		1200	
Operating Temperature	T <sub>OPR</sub>	-25 to +75	°C
Storage Temperature	T <sub>STG</sub>	-55 to +150	°C

Note: Derated above 25°C in the proportion of 9.6mW/°C for SDIP and of 3.2mW/°C for SSOP.

## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25°C, V<sub>CC</sub>=3V, F/E: f=83MHz, fm=1kHz

FM IF : f=10.7MHz, Δf=±22.5kHz, fm=1kHz

AM : f=1MHz, MOD=30%, fm=1kHz

MPX : fm=1kHz )

PARAMETER		SYMBOL	*	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current		I <sub>CC</sub> (FM)	1	V <sub>in</sub> =0, FM Mode		13.2	20.0	mA
		I <sub>CC</sub> (AM)	1	V <sub>in</sub> =0, AM Mode		8.4	13.5	mA
F / E	Input Limiting Voltage	V <sub>in</sub> (lim.)	1	-3dB Limiting		10.0		dB <sub>μ</sub> V EMF
	Local OSC Voltage	V <sub>OSC</sub>	2	f <sub>OSC</sub> =72.3MHz		105		mV <sub>rms</sub>
FM IF	Input Limiting Voltage	V <sub>in</sub> (lim.) IF	1	-3dB Limiting	40	46	53	dB <sub>μ</sub> V EMF
	Recovered Output Voltage	V <sub>OD</sub>	1	V <sub>in</sub> =80dB <sub>μ</sub> V EMF	55	80	110	mV <sub>rms</sub>
	Signal to Noise Ratio	S/N	1	V <sub>in</sub> =80dB <sub>μ</sub> V EMF		70		dB
	Total Harmonic Distortion	THD	1	V <sub>in</sub> =80dB <sub>μ</sub> V EMF		0.4		%
	AM Rejection Ratio	AMR	1	V <sub>in</sub> =80dB <sub>μ</sub> V EMF		32		dB
AM	Lamp ON Sensitivity	V <sub>L</sub>	1	I <sub>L</sub> =1mA	45	51	56	dB <sub>μ</sub> V EMF
	Gain	G <sub>v</sub>	1	V <sub>in</sub> =26dB <sub>μ</sub> V EMF	40	70	110	mV <sub>rms</sub>
	Recovered Output Voltage	V <sub>OD</sub>	1	V <sub>in</sub> =60dB <sub>μ</sub> V EMF	55	80	110	mV <sub>rms</sub>
	Signal to Noise Ratio	S/N	1	V <sub>in</sub> =60dB <sub>μ</sub> V EMF		42		dB
	Total Harmonic Distortion	THD	1	V <sub>in</sub> =60dB <sub>μ</sub> V EMF		1.0		%
Pin 19 Output Resistance		R <sub>19</sub>	1	FM Mode		0.75		kΩ
				AM Mode		12.5		

\*TEST CIRCUIT

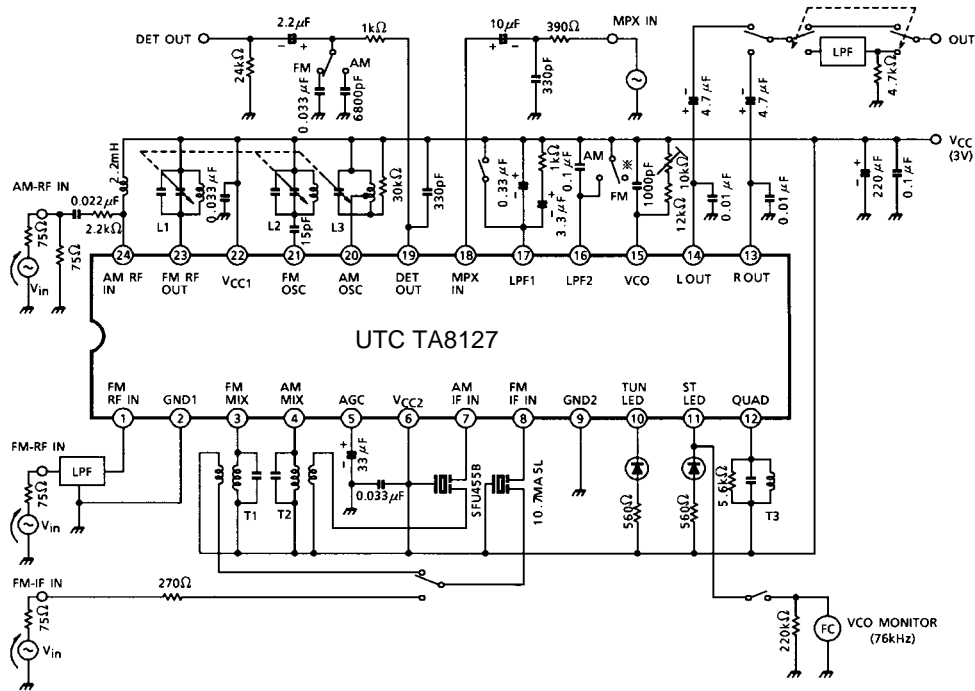
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PARAMETER		SYMBOL	*	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
MPX	Input Resistance	RIN	-			24		k $\Omega$	
	Output resistance	ROUT	-			5		k $\Omega$	
	Max. Composite Signal Input Voltage	Vin(max.) STEREO	1	L+R=90%, P=10%, fm=1kHz, THD=3%		350		mVrms	
	Separation	Sep	1	L+R=135mVrm, P=15mVrms	fm=100Hz		42		dB
					fm=1kHz	35	42		
					fm=10kHz		42		
	Total Harmonic Distortion	Monaural	THD (MONAURAL)	1	Vin=150mVrms		0.2		%
		Stereo	THD (STEREO)			L+R=135mVrm, P=15mVrms		0.2	
	Voltage Gain	GV(MPX)	1	Vin=150 mVrms	-5	-3	-1		dB
	Channel Balance	C.B.	1	Vin=150 mVrms	-2	0	2		dB
	Stereo Lamp Sensitivity	ON	V <sub>L</sub> (ON)	1	Pilot Input		8	16	mVrms
		OFF	V <sub>L</sub> (OFF)			Pilot Input	2	6	
	Stereo Lamp Hysteresis	V <sub>H</sub>	1	To LED turn off from LED turn on		2			mVrms
	Capture Range	C.R.	1	P=15mVrms		$\pm$ 3			%
Signal to Noise Ratio	S/N	1	Vin=150mVrms		70			dB	

\*TEST CIRCUIT

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## TEST CIRCUIT 1

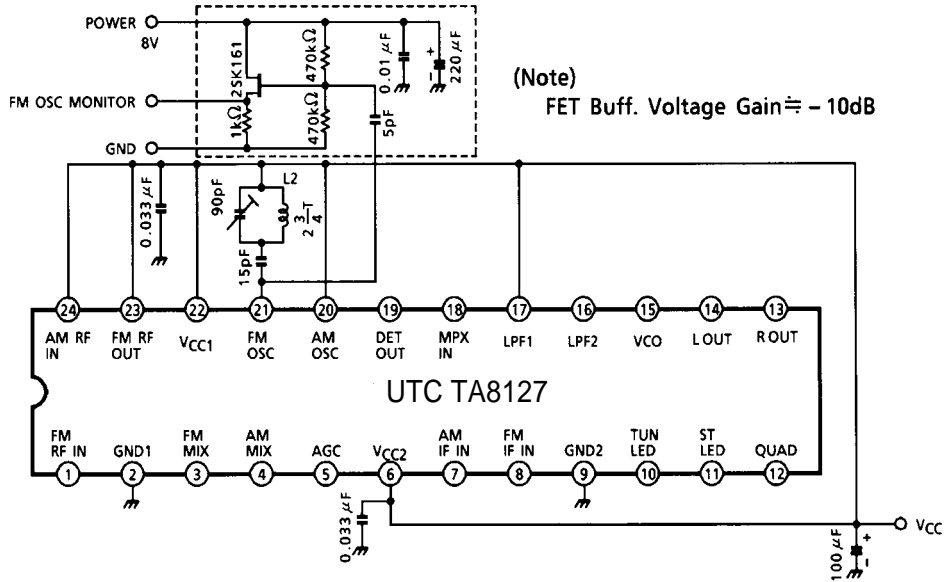


NOTE: POLYESTER FILM CONDENSER

Using other types of condensers, there are some cases that the MPX does not do normal stereo action at high temperature or low temperature.

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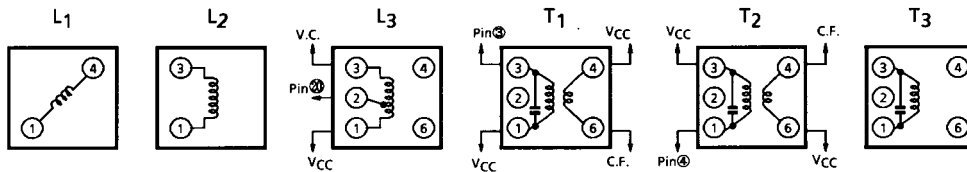
## TEST CIRCUIT 2



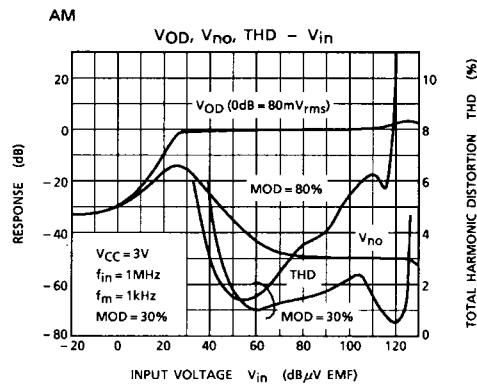
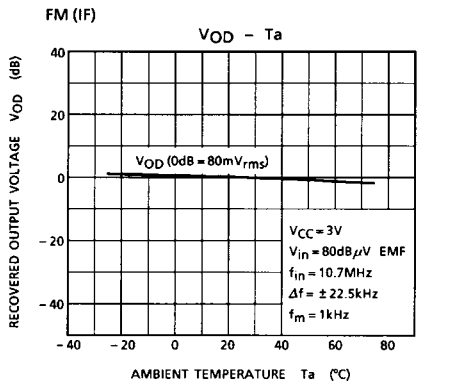
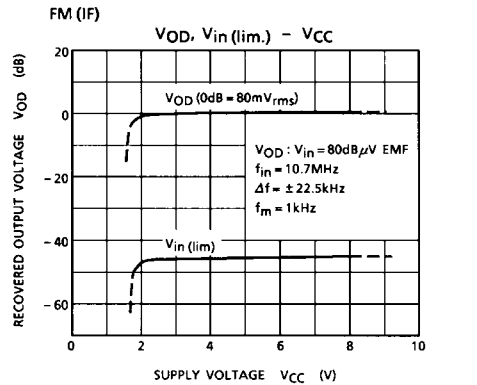
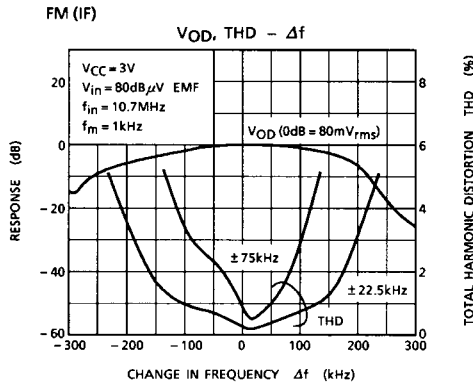
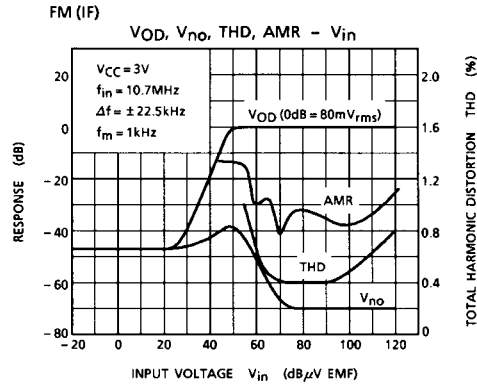
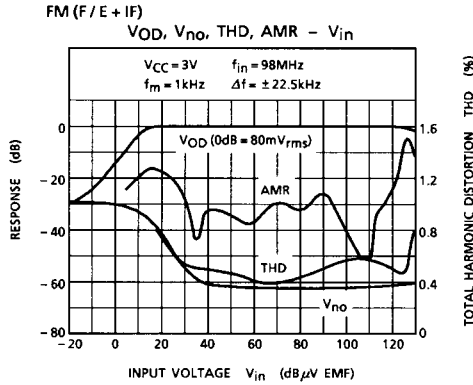
## COIL DATA

COIL NO.	TEST FREQ. (Hz)	L (μH)	Co (pF)	Qo	TURNS					WIRE (mmΦ)	REFERENCE
					1-2	2-3	1-3	1-4	4-6		
L1 FM RF	100M			100				2.5		0.5UEW	⑤ 53T-037-202
L2 FM OSC	100M			100			2.75			0.5UEW	⑤ 0258-244
L3 AM OSC	796K	288		115	13	73				0.08UEW	⑤ 4147-1356-038
T1 FM MIX	10.7M		75	100			13		2	0.1UEW	⑤ 2153-414-041
T2 AM MIX	455k		180	120			180		15	0.08UEW	⑤ 2150-2162-165
T3 FM DET	10.7M		47	165			16			0.09UEW	⑤ 2153-4095-122

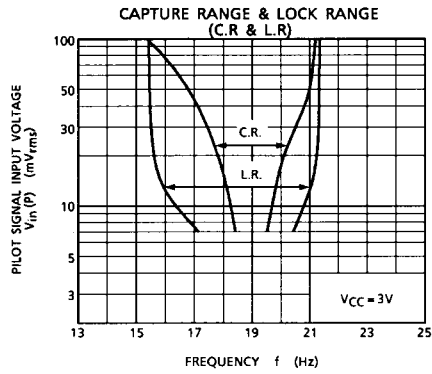
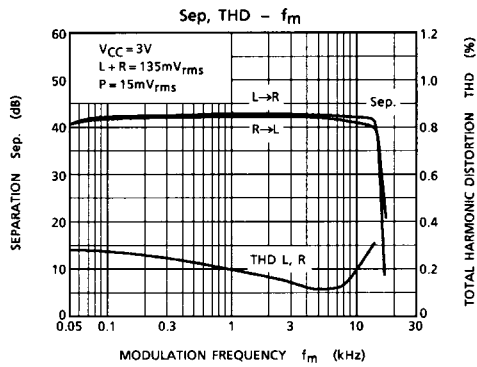
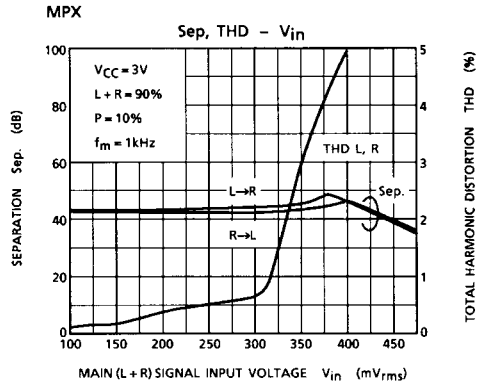
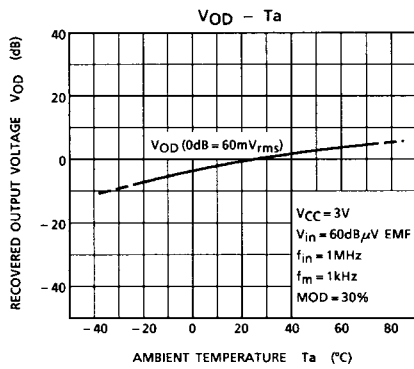
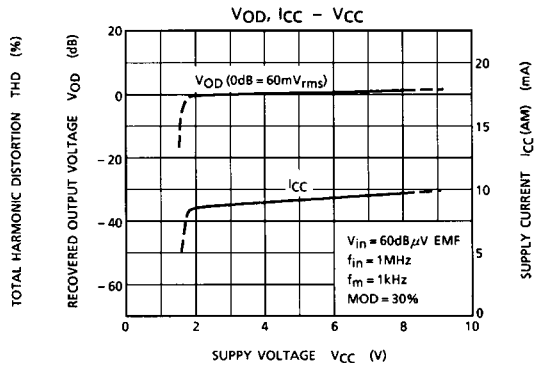
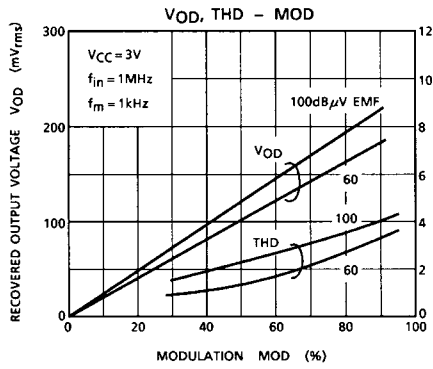
⑤: SUMIDA ELECTRIC CO., LTD



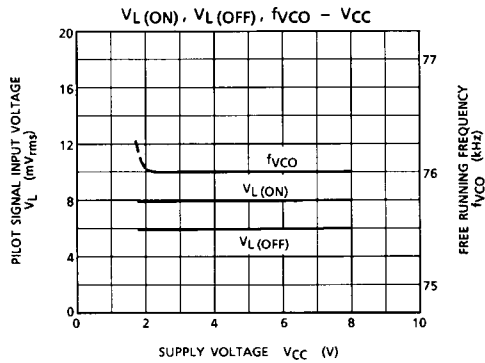
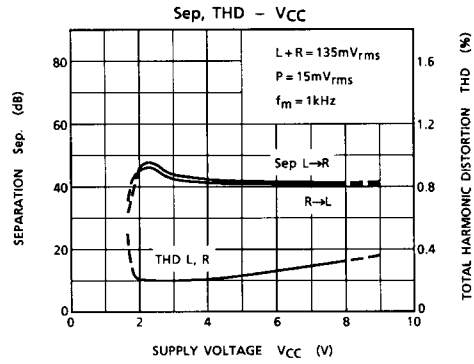
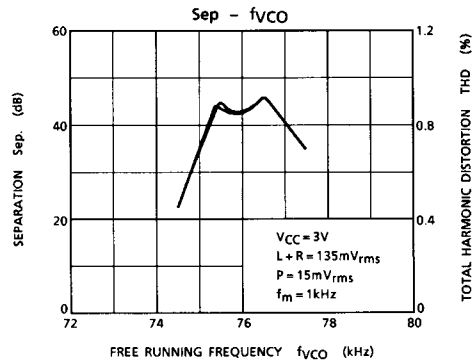
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