

# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

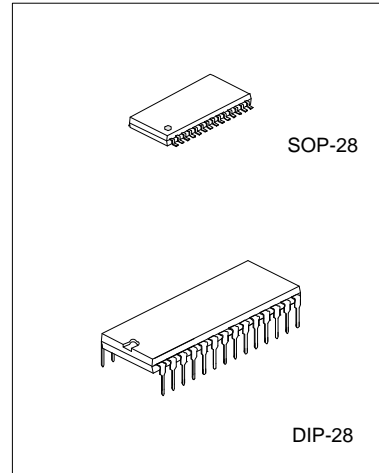
## FM/AM Radio

### DESCRIPTION

The UTC CXA1191 is a one-chip FM/AM radio IC designed for radio-cassette tape recorders and headphone tape recorders.

### FEATURES

- \*Small number of peripheral components
- \*Low current consumption ( $V_{CC}=3V$ )
  - FM:  $I_b=5.3mA$  (Typ.)
  - AM:  $I_b=3.4mA$  (Typ.)
- \*Built-in FM/AM select switch
- \*Large current of AF amplifier



### FUNCTIONS

#### FM section

- RF amplifier, Mixer and OSC (incorporating AFC variable capacitor)
- IF amplifier
- Quadrature detection
- Tuning LED driver

#### AM section

- RF amplifier, Mixer and OSC (with RF AGC)
- IF amplifier (with IF AGC)
- Detector
- Tuning LED driver

#### AF section

- Electronic volume control
- FM muting

#### Structure

- Bipolar silicon monolithic IC

### ABSOLUTE MAXIMUM RATINGS( $T_a=25^\circ C$ )

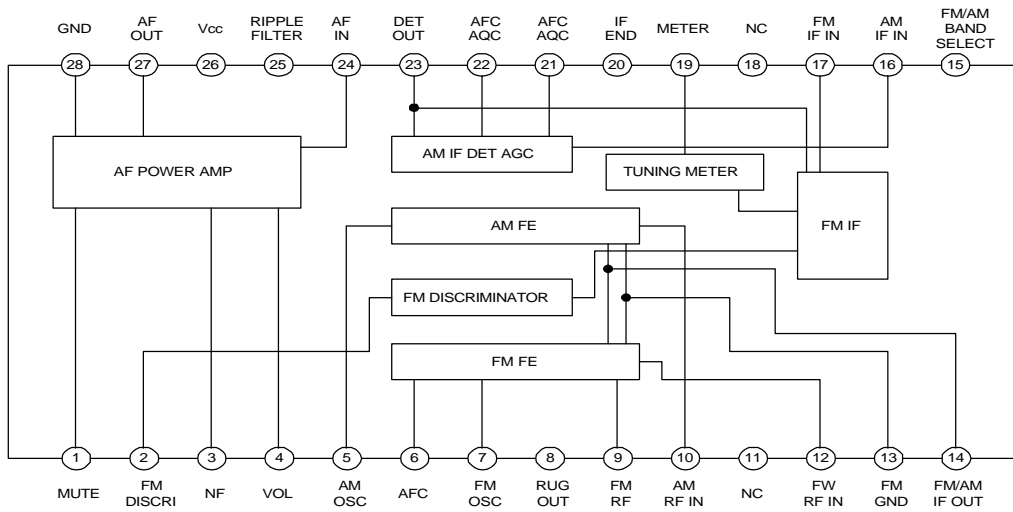
PARAMETER	SYMBOL	VALUE	UNIT
Supply voltage	$V_{CC}$	9	V
Operating temperature	$T_{opr}$	-10 ~ +60	$^\circ C$
Storage temperature	$T_{stg}$	-50 ~ +125	$^\circ C$
Allowable power dissipation	$P_D$	700 (SOP-28) 1000 (DIP-28)	mW

# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

## RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply voltage	V <sub>cc</sub>	2 ~ 7.5 (SOP-28)	V
	V <sub>cc</sub>	2 ~ 8.5 (DIP-28)	V

## BLOCK DIAGRAM



# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

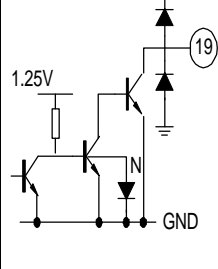
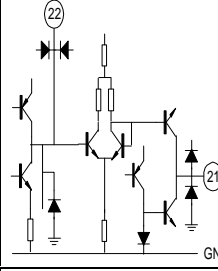
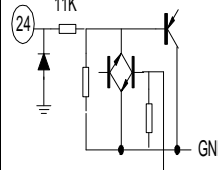
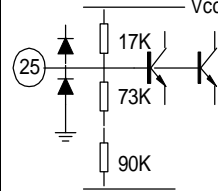
## PIN CONFIGURATIONS

PIN	SYMBOL	VOLTAGE(V)				EQUIVALENT CIRCUIT	DESCRIPTION
		V <sub>cc</sub> =3V		V <sub>cc</sub> =6V			
		FM	AM	FM	AM		
1	MUTE	0	0	0	0		
2	FM DISCRI	2.18	2.7	4.88	5.43		Phase-shift circuit, Connect ceramic discriminator.
3	NF	1.5	1.5	3.0	3.0		Negative feedback pin
27	AF OUT	1.5	1.5	3.0	3.0		Power amplifier output pin
4	VOL CONT	1.25	1.25	1.25	1.25		Connect variable resistor for electronic volume control.
5	AM OSC	1.25	1.25	1.25	1.25		AM local oscillation circuit
6	AFC	1.25	*	1.25	*		AFC variable capacitor pin
8	REG OUT	1.25	1.25	1.25	1.25		Regulator pin 1.25V (Typ.)
7	FM OSC	1.25	1.25	1.25	1.25		FM local oscillation circuit

# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

9	FM RF	1.25	1.25	1.25	1.25		Connect FM RF tuning coil.
12	FM RF IN	0.3	0	0.3	0		FM RF input pin
10	AM RF IN	1.25	1.25	1.25	1.25		AM RF input
11	NC	0	0	0	0		
13	GND (FE GND)	0	0	0	0		
14	FM/AM FE OUT	0.36	0.2	0.36	0.2		IF output pin of FM and AM, Connect IF filter
15	BAND SELECT	0.84	0	0.88	0		FM and AM bands selection switch pin. During GND it becomes AM and during open it becomes FM.
16	AM IF IN	0	0	0	0		Input pin of AM IF
17	FM IF IN	0.34	0	0.88	0		Input pin of FM IF
18	NC	0	0	0	0		

# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

19	METER	1.6	1.6	4.5	4.5		Meter drive circuit (For tuning indicator)
20	GND	0	0	0	0		
21	AFC/AGC	1.25	1.49	1.25	1.49		AFC pin of W band. During AM, it determines time constant of AGC.
22	AFC/AGC	1.25	1.25	1.25	1.25		AFC pin of J band. During AM, it determines time constant of AGC.
23	DET OUT	1.25	1.0	1.25	1.0		Detection output pin
24	AF IN	0	0	0	0		Power amplifier input pin
25	RIPPLE FILTER	2.71	2.71	5.4	5.4		Ripple filter
26	Vcc	3.0	3.0	6.0	6.0		Power supply pin
28	GND	0	0	0	0		Power GND

\*Note: The pin voltage of pin 6 during AM, it is the same pin voltage of pin22 (23) during J BAND and is the same pin voltage of pin 21 (22) during W BAND.

# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

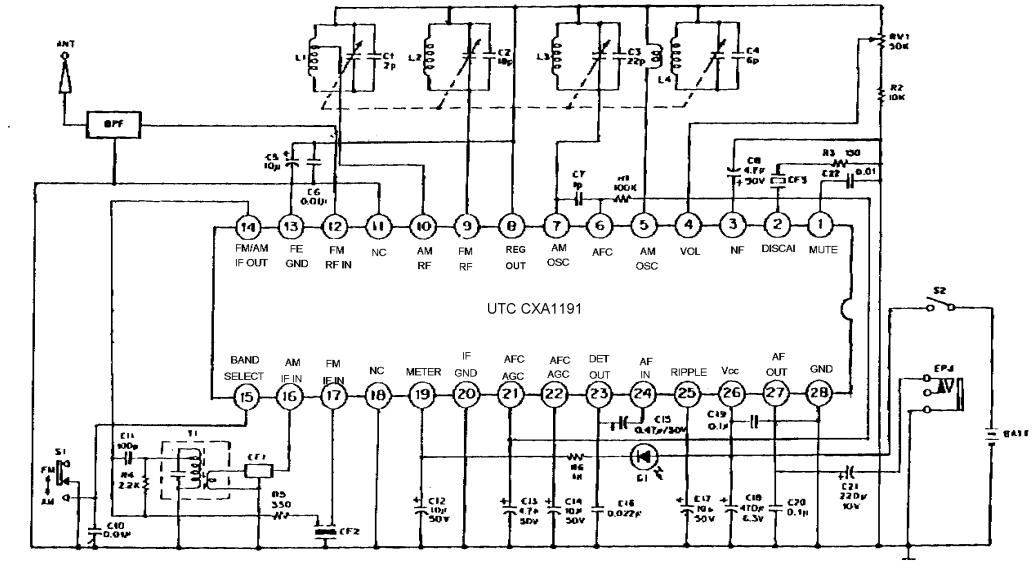
## ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=6V)

NO	ITEM	SYMBOL	SW						TEST POINT	CONDITIONS	MIN	TYP	MAX	UNIT
			CONDITIONS											
			1	2	3	4	5	6						
1	AM circuit current	ID1	A	B	A	A	A	A	IA	No signal, AM	-	3.5	10.0	mA
2	FM circuit current	ID2	A	B	A	A	B	A	IA	No signal, FM	-	7.0	14.0	mA
3	FM front end voltage gain	GV1	A	B	A	A	B	A	VA	V <sub>IN1</sub> =40dBμV, 100MHz	32	39	46	dB
4	FM detection output level	VD1	A	-	-	A	B	A	VD	V <sub>IN3</sub> =90dBμV, 10.7 MHz (1 kHz, 22.5kHz DEV)	39	77.5	155	Vrms
5	FM IF knee level	VD2	A	-	-	A	B	A	VD	V <sub>IN3</sub> level at a point 3 dB down from V <sub>IN3</sub> =90dBμV, 10.7 MHz (1 kHz, 22.5kHz DEV)	-	24	32	dBμV
6	FM detection output distortion factor	THD1	A	-	-	A	B	A	VD	V <sub>IN3</sub> =90dBμV, 10.7 MHz (1 kHz, 75kHz DEV)	-	0.3	2.0	%
7	FM meter current	IB1	A	-	-	A	B	A	IM	V <sub>IN3</sub> =60dBμV, 10.7 MHz	1.8	3.5	7.0	mA
8	AM front end voltage gain	GV2	A	A	A	A	A	A	VB	V <sub>IN3</sub> =60dBμV, 1660 kHz	15	22	29	dB
9	AM IF voltage gain	GV3	A	A	-	A	A	A	VD	V <sub>IN3</sub> when 455kHz (1kHz, 30% MOD) output is -34dBm	14	20	27	dBμV
10	AM detection output level	VD3	A	A	-	A	A	A	VD	V <sub>IN3</sub> =85dBμV, 455kHz (1kHz, 30% MOD)	39	77.5	155	Vrms
11	AM meter current	IB2	A	A	-	A	A	A	IM	V <sub>IN3</sub> =85dBμV, 455kHz (1kHz, 30% MOD)	1.3	3.0	7.0	mA
12	AM detection output distortion factor	THD2	A	A	B	B	A	A	VD	V <sub>IN3</sub> =60dBμV, 1660kHz (1kHz, 30% MOD), Vcc=7.8V	-	0.6	2.0	%
13	Audio voltage gain	GV4	A	-	-	-	-	B	VE	V <sub>IN3</sub> =60dBμV, 10.7MHz V <sub>IN1</sub> =30dBμV, 1kHz	27	31.5	36	dB
14	Audio distortion factor	THD3	A	-	-	-	-	B	VE	Distortion factor for output of 50mV V <sub>IN3</sub> =60dBμV, 10.7MHz V <sub>IN1</sub> =20dBμV, 1kHz	-	0.3	2.5	%
15	Muting level	VD4	A	-	-	-	-	B	VE	Muting level for 50 mW output V <sub>IN1</sub> =20dBm, 1kHz V <sub>IN3</sub> OFF	8	15	22	dB

0dBμV=1μV

# UTC CXA1191 LINEAR INTEGRATED CIRCUIT

## APPLICATION CIRCUIT





LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

[LittleDiode.com](http://LittleDiode.com)

Looking forward to providing you with the best possible service.