

## PCM-RF Signal Processing

**For the availability of this product, please contact the sales office.**

**Description**

The CX20102 is a bipolar IC which has been developed for the processing of PCM audio RF signals of the 8 mm VTR, and consists of the following functions:

- Recording system : Limiter, and Area selector switch
- Playback system : Voltage follower for RF equalizer, Limiter, Tri-state TTL buffer, PLL, and D-FF

**Features**

- Single 5V ( $5.0 \pm 0.25V$ ) power supply operation.
- Low power consumption (85mW typical in a REC mode, and 110 mW typical in a PB mode)
- Built-in power saving functions

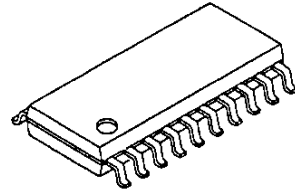
**Absolute Maximum Ratings (Ta=25°C)**

- Power supply voltage      Vcc      10      V
- Operating temperature      Topr   -20 to +75   °C
- Storage temperature      Tstg   -55 to +150   °C
- Allowable power dissipation      Po      690      mW

**Recommended Operating Condition**

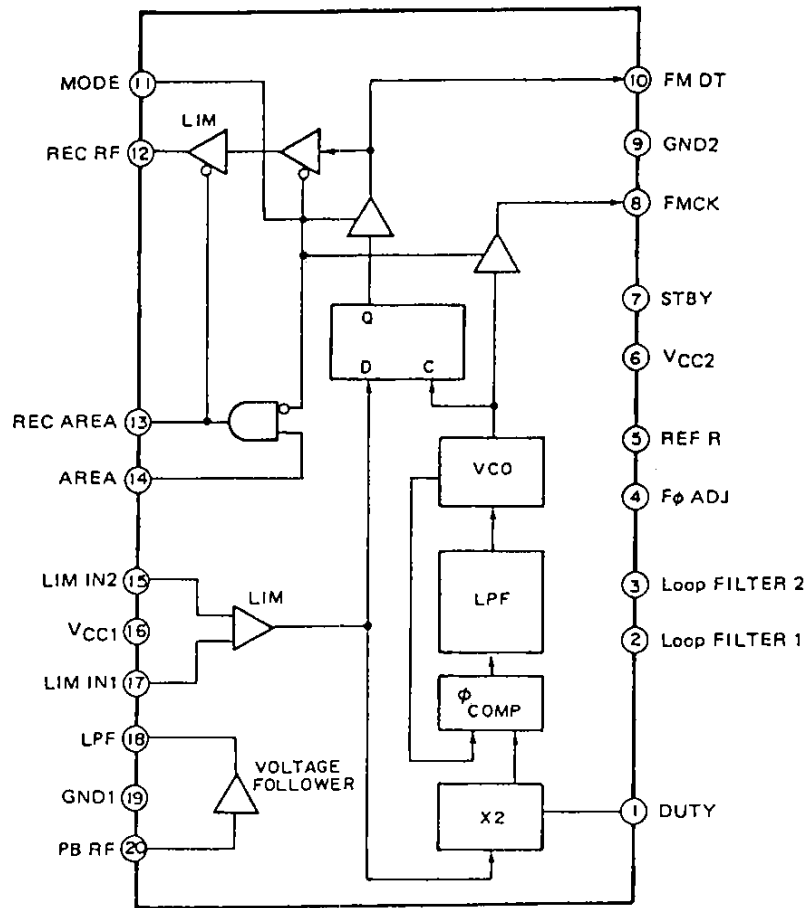
4.75 to 5.25 V

20-pin SOP (Plastic)



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Block Diagram



## Pin Description

No.	Name	Description
1	DUTY	Fine adjustment of the input waveform sampling phase Normally open
2	Loop filter 1	Connects an external loop filter time constant
3	Loop filter 2	Connects an external loop filter time constant
4	F $\phi$ ADJ	Adjusting pin of the VCO free running frequency
5	REF R	R externally attached VCO current source
6	Vcc2	Digital Vcc
7	STBY	Power saving control pin; standby at L (CMOS level)
8	FMCK	Clock output
9	GND2	Digital GND
10	FMDT	Data input/output
11	MODE	REC/PB selector pin (CMOS level)
12	REC RF	REC mode RF output (LIM OUT)
13	REC AREA	REC AREA output (CMOS level)
14	AREA	AREA input 2 (CMOS level)
15	LIM IN2	Limiter input
16	Vcc1	Analog Vcc
17	LIM IN1	Limiter input 1
18	LPF	Voltage follower output
19	GND1	Analog GND
20	RBRF	Voltage follower input

## Electrical Characteristics

See Measuring Circuit Diagram 2

Ta=25°C, Vcc=5 V;

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
PB current consumption	I <sub>CCPB</sub>	Pins ⑦ and ⑪ : H		19	25	mA
REC current consumption	I <sub>CCREC</sub>	Pin ⑦ : H		16	20	mA
PB standby current	I <sub>CCST</sub>			12	15	mA
Clock capture range	C.R <sub>CK</sub>	Pins ⑦ and ⑪ : H	11.0		12.0	MHz
Output level	V <sub>OH</sub>	1. With pin ① open, adjust the free running frequency at 11.5MHz	2.2			V
Pins ⑧ and ⑩	V <sub>OL</sub>				0.8	V
Data clock delay time *1	t <sub>pd</sub>	2. Input 50mV 11MHz and 12MHz from pin ① and perform measurement	4		35	nS
Operating input voltage	V <sub>IN</sub>		50			mVp-p
Output level Pin ⑬	V <sub>OH</sub>	Pins ⑦ and ⑭ : H	3.5			V
	V <sub>OL</sub>	Pins ⑦ : H or Pins ⑦, ⑭ and ⑪ : H or Pins ⑦ and ⑪ : H			1.5	V
Input current Pins ⑦ and ⑭	I <sub>IH</sub>	Input voltage: 4V		120	200	μA
	I <sub>IL</sub>	Input voltage: 0V	-2	0	+2	μA
Operating input voltage Pins ⑦ and ⑭	V <sub>IH</sub>		3.5			V
	V <sub>IL</sub>				1.5	V
Input current Pin ⑩	I <sub>IH</sub>	Input voltage: 5V			60	μA
	I <sub>IL</sub>	Input voltage: 0V	-2	0	2	μA
Operating input voltage Pin ⑩	V <sub>IH</sub>		2.5			V
	V <sub>IL</sub>				1.5	V
Input current Pin ⑪	I <sub>IH</sub>	Input voltage: 3.5V		130	200	
	I <sub>IL</sub>	Input voltage: 0V	-2	0	2	
Operating input voltage Pin ⑪	V <sub>IH</sub>		2.5			V
	V <sub>IL</sub>				0.8	V
Voltage follower gain	G <sub>VF</sub>	Pins ⑦ and ⑪ : H Input: Pin ⑳ 6MHz, 0.6Vp-p Output: Pin ⑱	-1.5	0	1	dB
REC RF LIM output	V <sub>LIM</sub>	Pins ⑦ and ⑭ : H Input: Pin ⑩ TTL level input Output: Pin ⑫	0.40	0.50	0.56	Vp-p

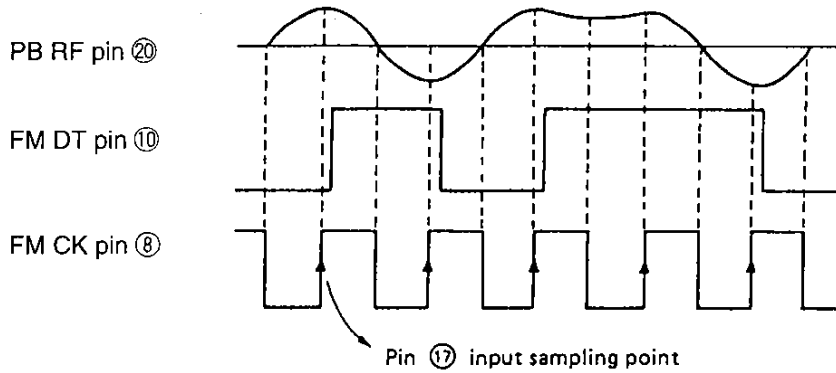
\*1 For t<sub>pd</sub> measurements, see Fig. 3 Timing Chart.

## Truth Table

Operation State	Pin 7	Pin 11	Pin 14
Power saving	L	X	X
PB	H	H	X
REC	H	L	H
REC standby	H	L	L

X: Don't care

Fig. 1 Operating description  
PB



REC. REC STBY

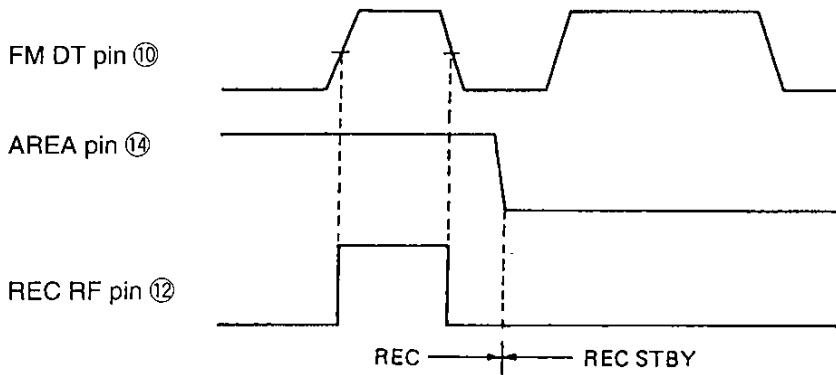


Fig. 2 Electrical characteristics measuring circuit

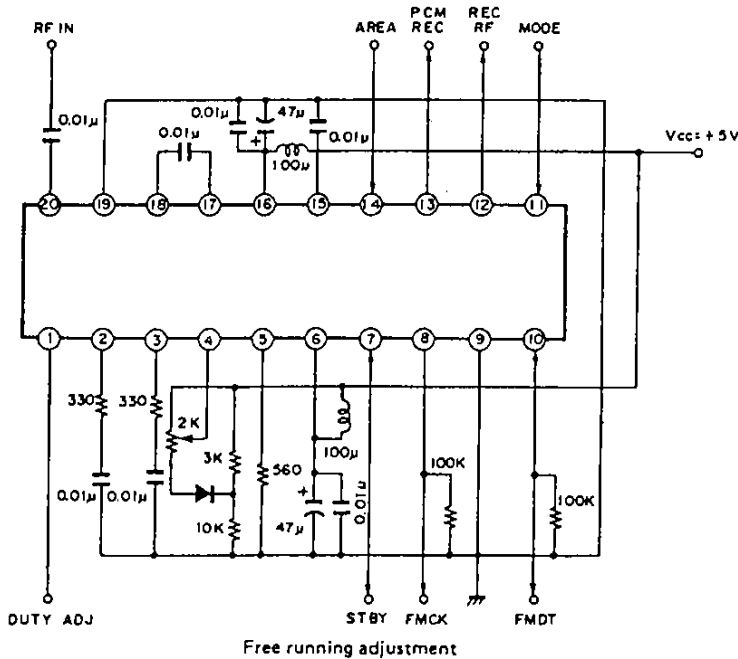


Fig. 3 tpd measurement

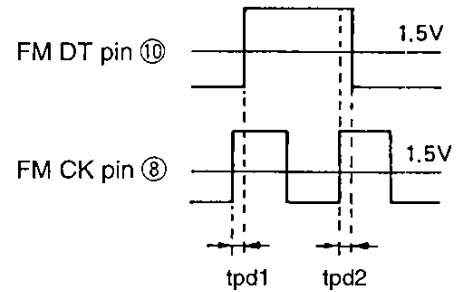




Fig. 5 Free running frequency vs. Power supply voltage

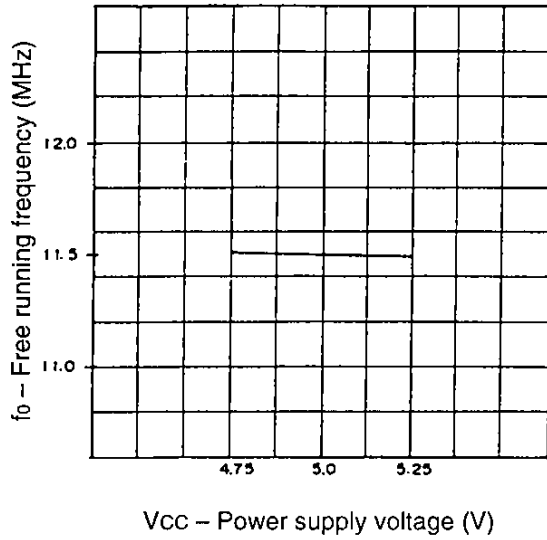


Fig. 6 Pin ⑦ current vs. Voltage

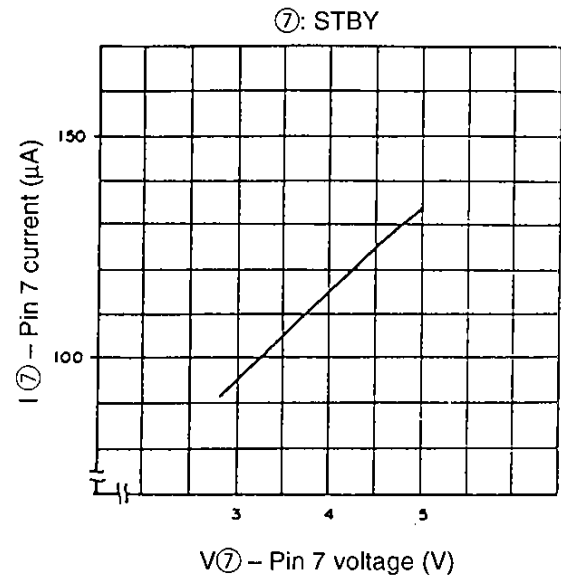


Fig. 7 Pin ⑪ current vs. Voltage

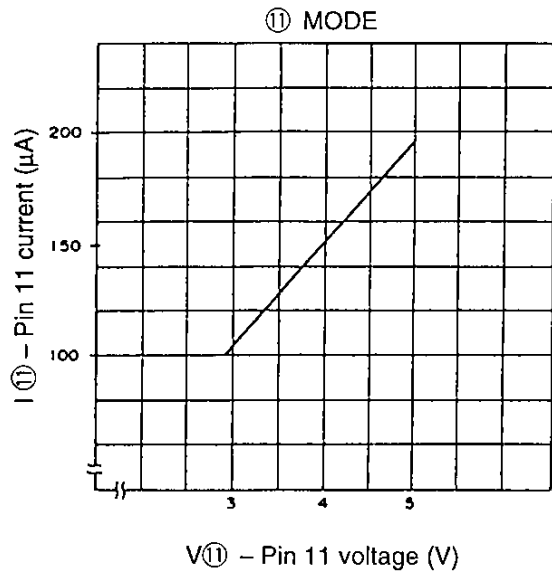


Fig. 8 Pin ⑭ current vs. Voltage

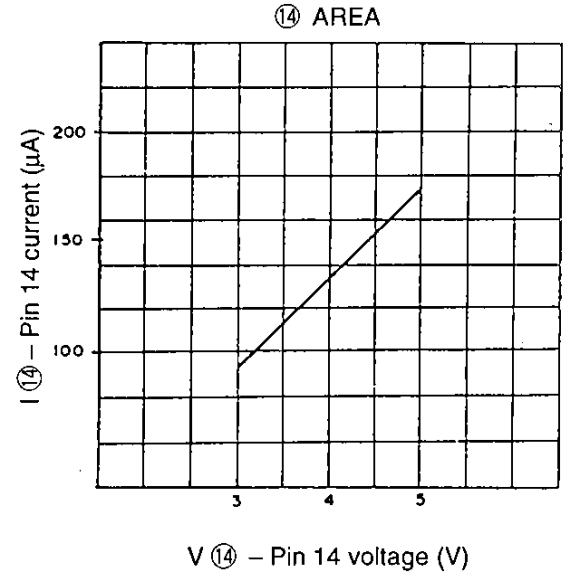


Fig. 9 Free running frequency vs. Pin ④ voltage

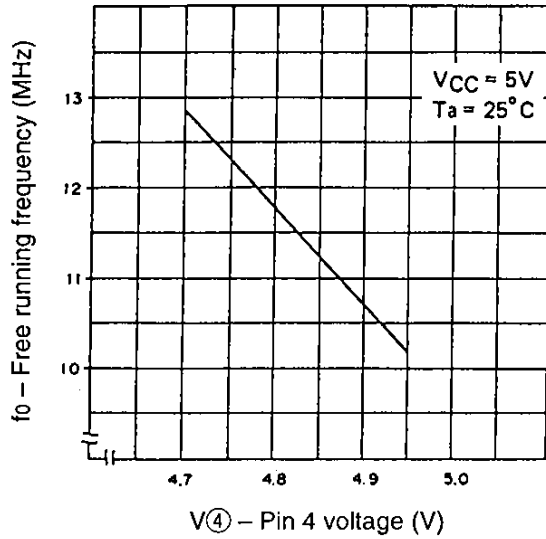


Fig. 10 Free running frequency vs. Ambient temperature

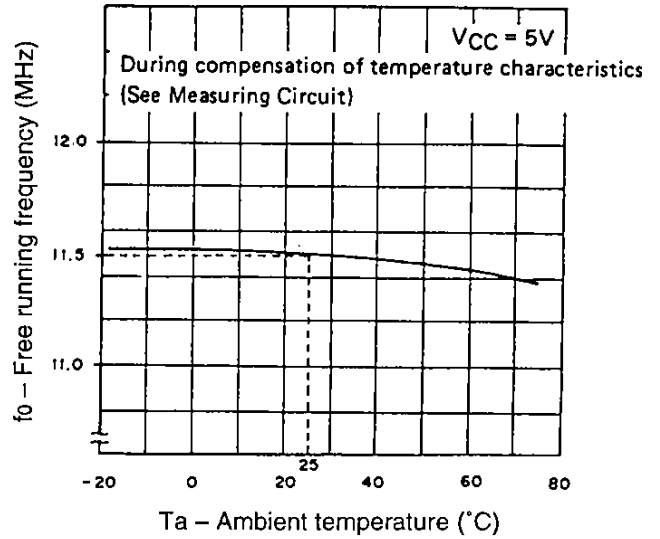
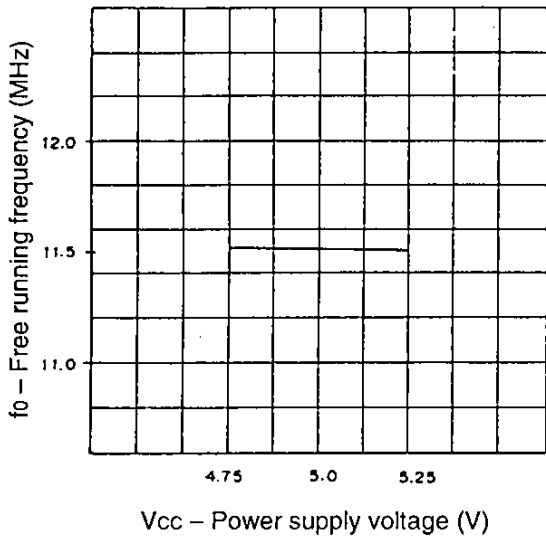


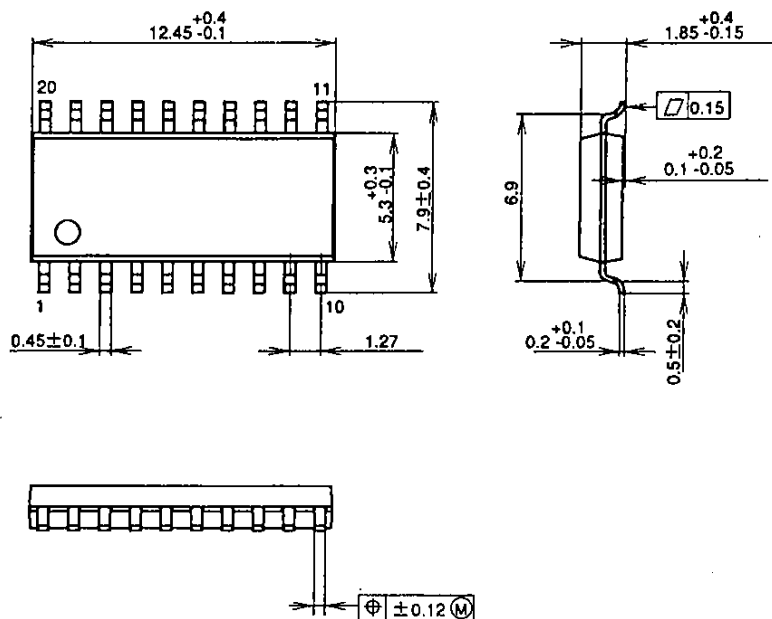
Fig. 11 Free running frequency vs. Power supply voltage





Package Outline Unit : mm

20PIN SOP (PLASTIC) 300MIL



PACKAGE STRUCTURE

SONY CODE	SOP-20P-L01
EIAJ CODE	*SOP020-P-0300-A
JEDEC CODE	_____

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE WEIGHT	0.3g