

PCM-RF Signal Processing**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

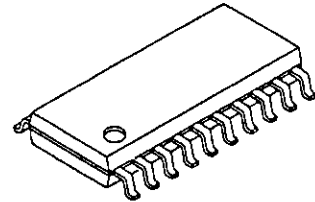
Absolute Maximum Ratings (Ta=25°C)

- Power supply voltage V_{cc} 10 V
- Operating temperature T_{opr} -20 to +75 °C
- Storage temperature T_{stg} -55 to +150 °C
- Allowable power dissipation P_D 690 mW

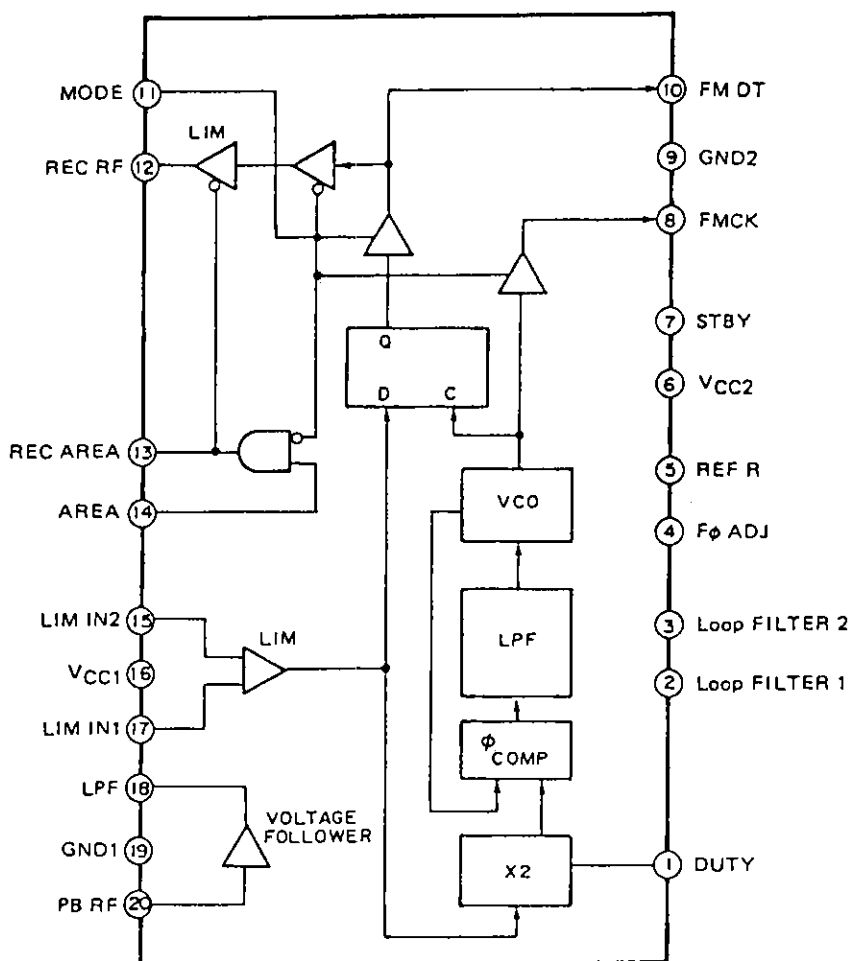
Recommended Operating Condition

4.75 to 5.25 V

20-pin SOP (Plastic)



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

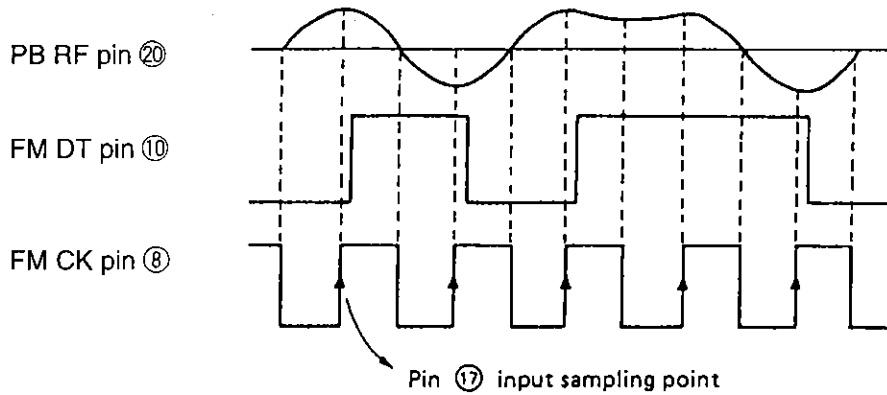
*1 For t_{pd} measurements, see Fig. 3 Timing Chart.

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

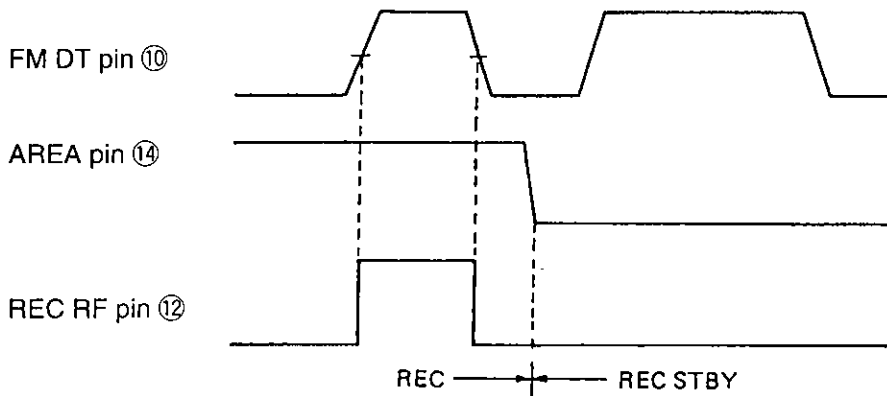


Fig. 2 Electrical characteristics measuring circuit

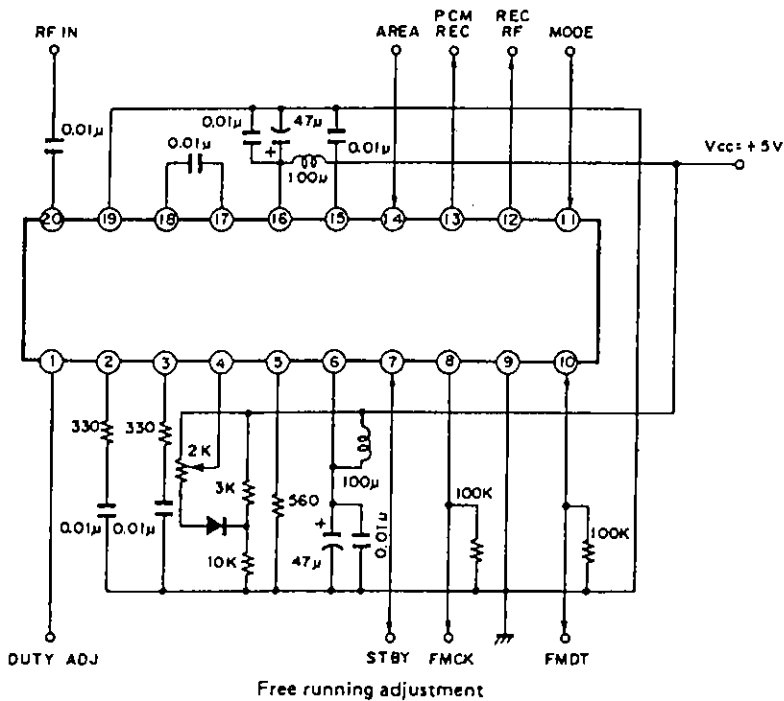
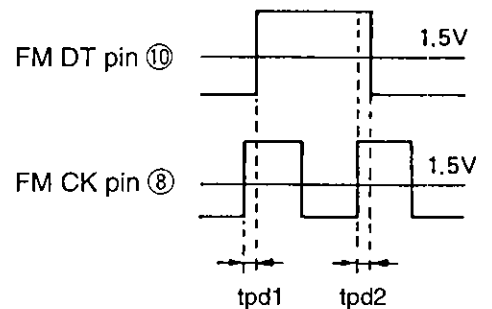


Fig. 3 tpd measurement



Standard Circuit Designing Data

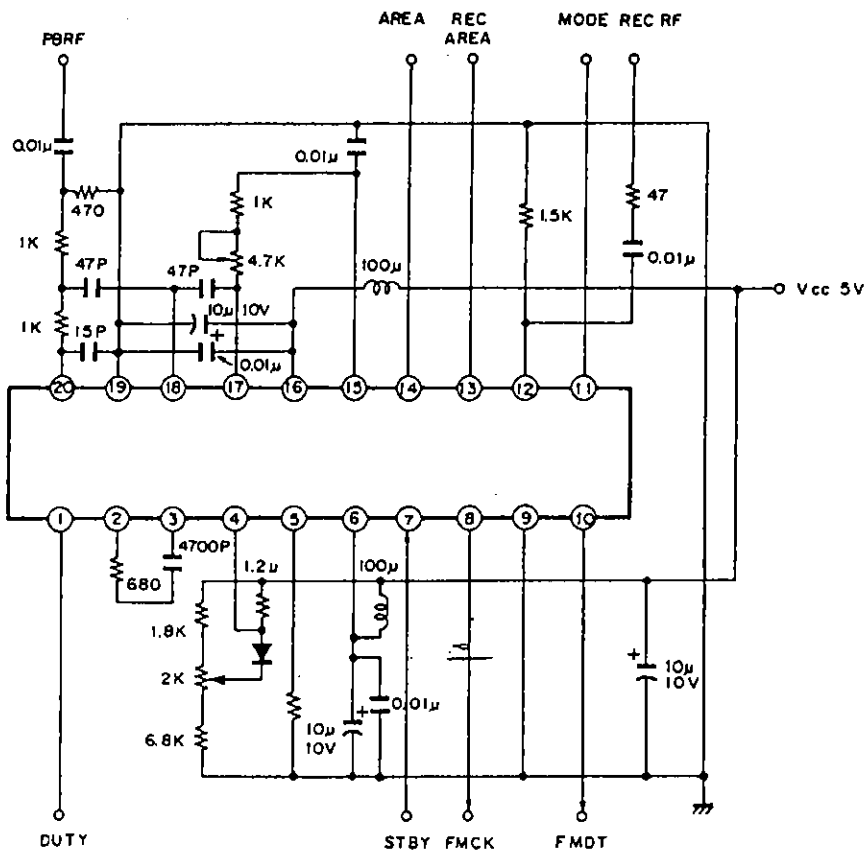
Standard pin voltage (DC): See Fig. 2

No.	Voltage	No.	Voltage
1	3.8V	11	5*V or 0V
2	4.3V	12	3.7 to 4.2V
3	4.3V	13	0 or 4.2V
4	4.85*V	14	5*V or 0V
5	0.2V	15	2.3V
6	5.0*V (Vcc)	16	5.0*V (Vcc)
7	5*V or 0V	17	2.3V
8	Clock output	18	2.3V
9	0* (GND)	19	0*V (GND)
10	Data output	20	2.3V

*: Externally applied

During PB mode (Pins ⑦ and ⑩: H)

Fig. 4 Application circuit



Application circuits shown are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits or for any infringement of third party patent and other right due to same.

Fig. 5 Free running frequency vs. Power supply voltage

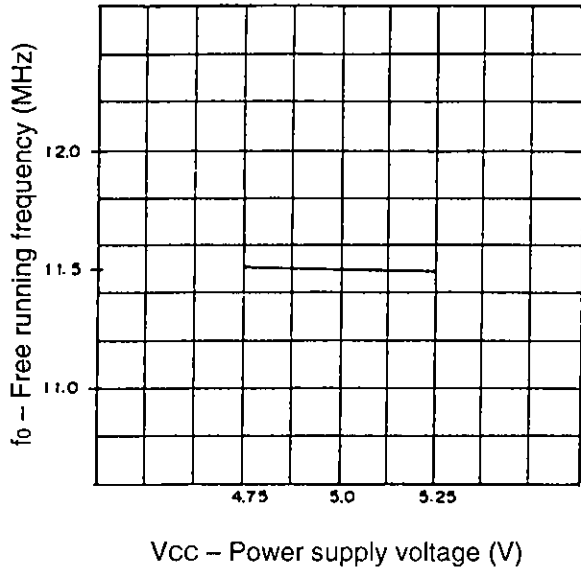


Fig. 6 Pin ⑦ current vs. Voltage

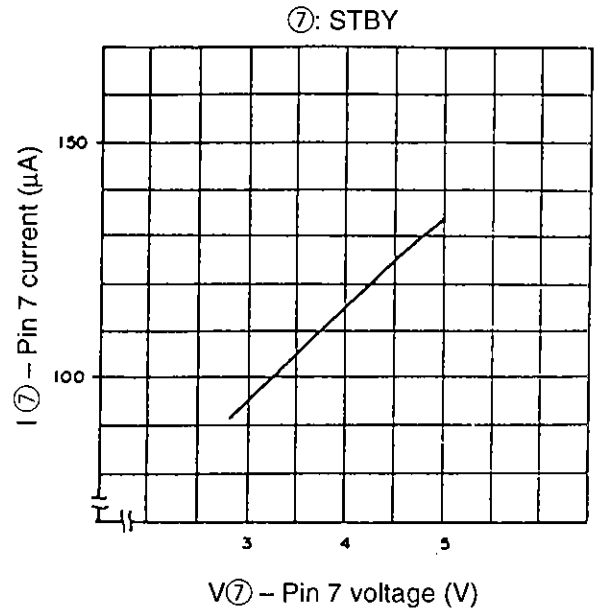


Fig. 7 Pin ⑪ current vs. Voltage

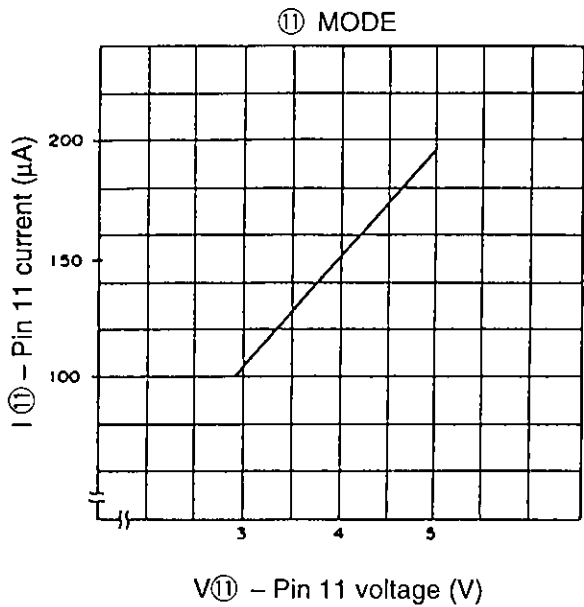


Fig. 8 Pin ⑭ current vs. Voltage

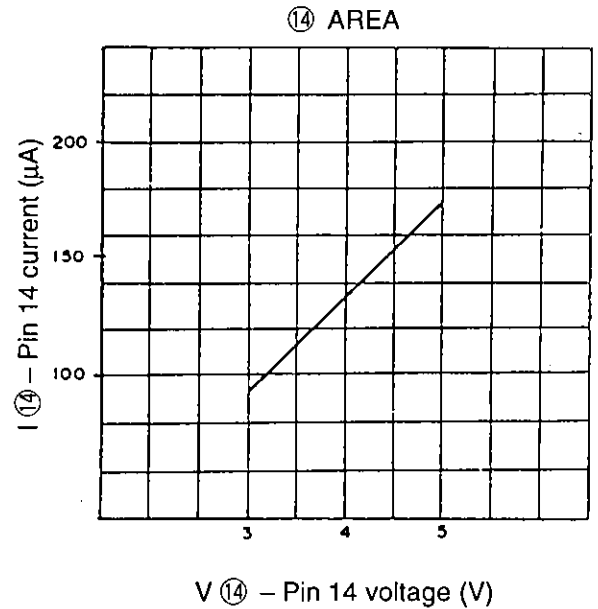


Fig. 9 Free running frequency vs. Pin ④ voltage

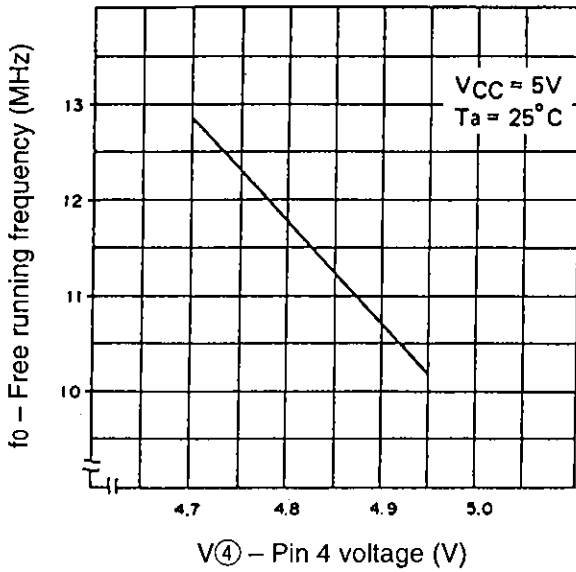


Fig. 10 Free running frequency vs. Ambient temperature

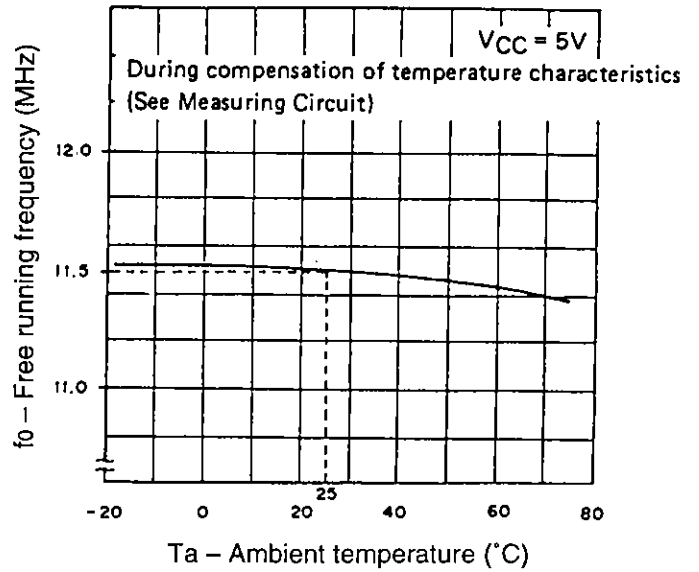
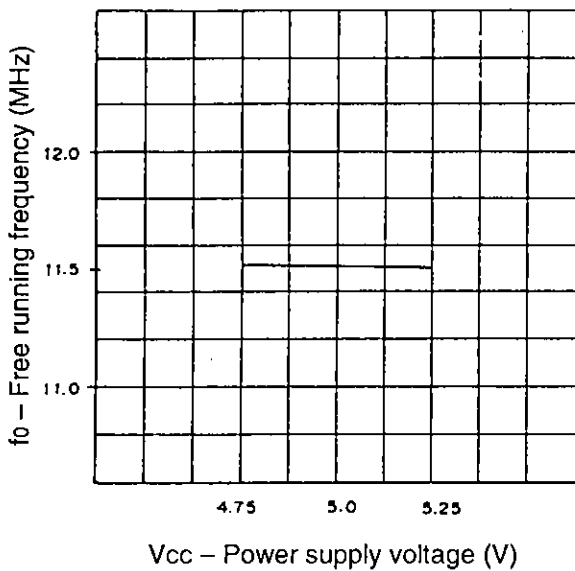
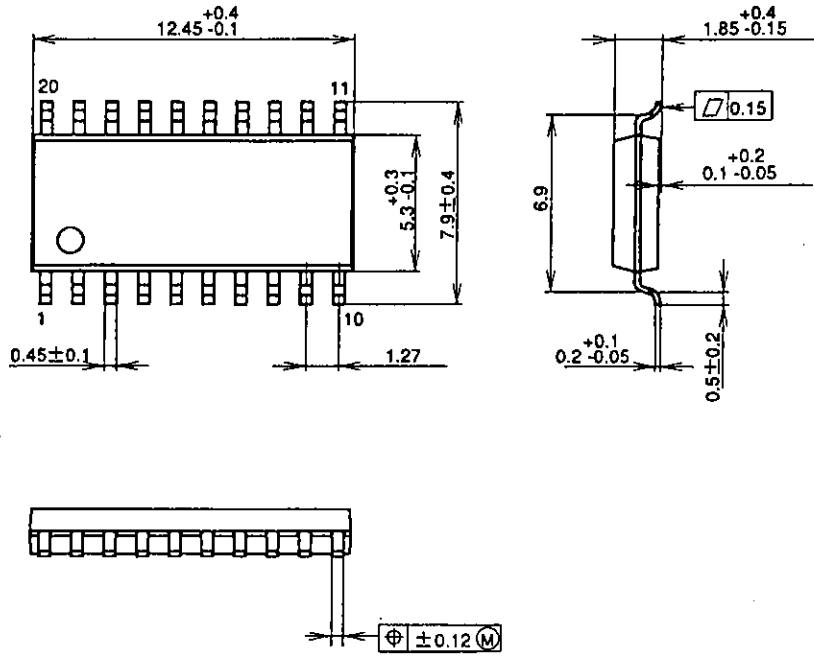


Fig. 11 Free running frequency vs. Power supply voltage



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