AN7283S

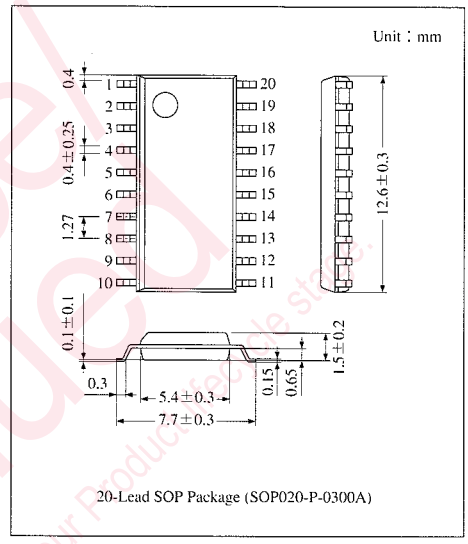
FM Front End IC for Car Radio

■ Overview

The AN7283S is a FM front end IC designed for car radio, supporting DTSs other than RF amp. It has buffer output of local oscillation frequency and also incorporates 2Loop-AGC and PIN diode driver for antenna damping (ADX).

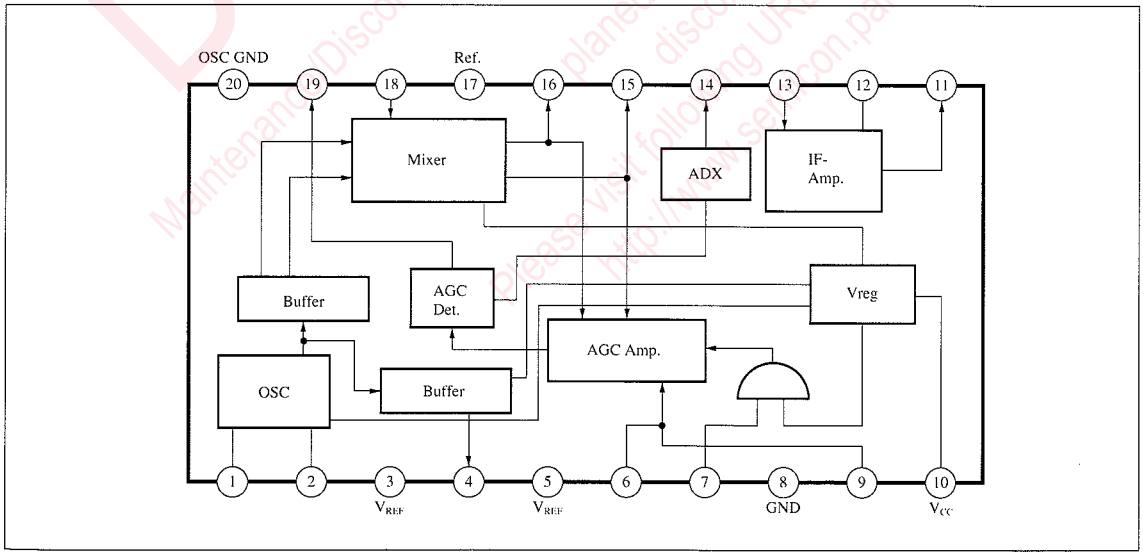
■ Features

- High sensitivity, high S/N ratio
- Improved IM characteristics at strong input
- 2Loop-AGC supported
- PIN diode driver (ADX) built-in
- Built-in IF amp. with opposite (positive) temperature characteristics to RF amp.
- Difference from AN7280S
  1) Without chemical capacitor of level detection out put
  2) IP6dB improved (122dBμ)
  3) Gain of pre-amp. fixed (25dB)
  4) S/N improved (+2dB)



ICs for Tuner

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	9.6	V
Supply Current	I_{CC}	48	mA
Power Dissipation	P_D	230	mW
Operating Ambient Temperature	T_{opr}	−30 ~ +80	℃
Storage Temperature	T_{stg}	−55 ~ +125	℃

■ Recommended Operating Range (Ta=25℃)

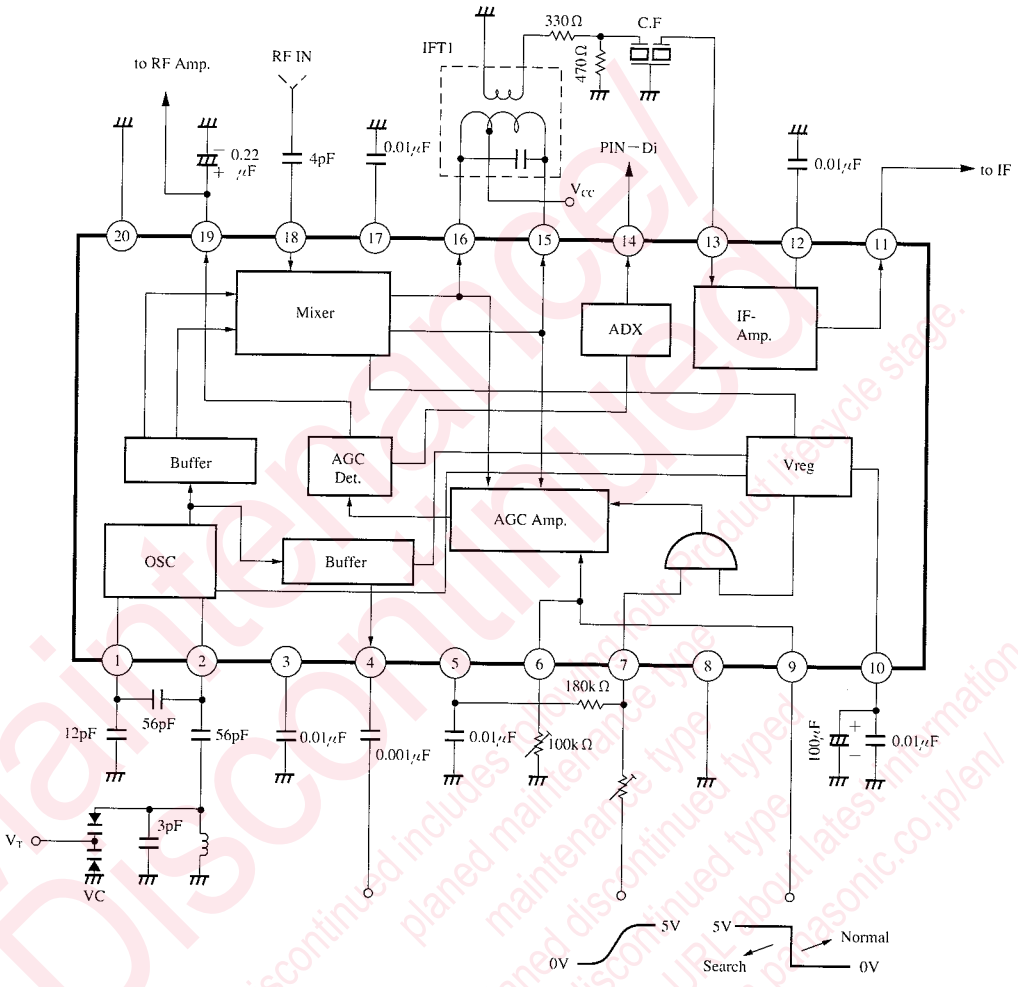
Parameter	Symbol	Range
Operating Supply Voltage Range	V_{CC}	7.2V ~ 9.2V

■ Electrical Characteristics (V_{CC}=8V, Ta=25℃±2℃)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
S/N Ratio	N_{OUT}	V_{in}=17dBμ No modulation, however S is output at 400 Hz, 30% modulation	22	30	—	dB
Local Output Level	V_{OSC}	fosc=108.7MHz, No signal input, Measured at 4 pins	145	180	215	mV
IF Output Level	V_{OUT}	V_{in}=65dBμ	43	60	85	mV
AGC Max. Sensitivity	S_{AGC1}	Input level for V_{AGG}=3V	60	63	66	dBμ
AGC Sensitivity Variable Width	W_{AGC}	Difference between input level for V_{AGG}=3V and SAGC1	37	40	43	dB
AGC Voltage (H)	$V_{AGC(H)}$	V_{in}=58dBμ	6.0	6.4	6.8	V
AGC Voltage (L)	$V_{AGC(L)}$	V_{in}=68dBμ	—	0.05	0.5	V

Note) For tuning, variable capacitance or f_{in} must be adjusted for maximum IF output level. (f_{in}=17dBμ)

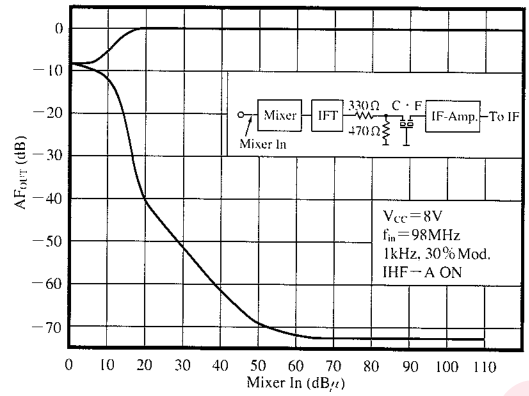
■ Application Circuit



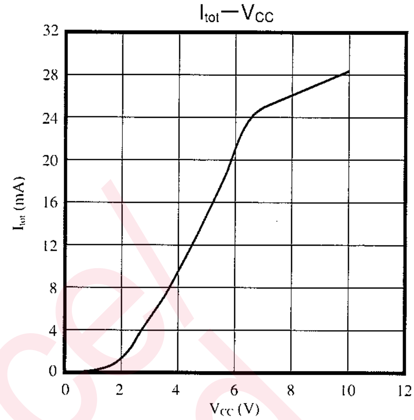
Control Voltage

TFT1	: Matsushita	7E7137A
VC	: Toshiba	KV1340A-3
CF	: Murata	SFE107MS3

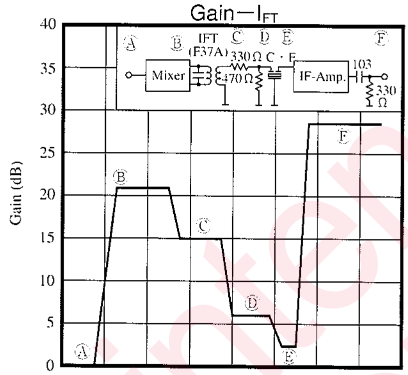
I/O Characteristics



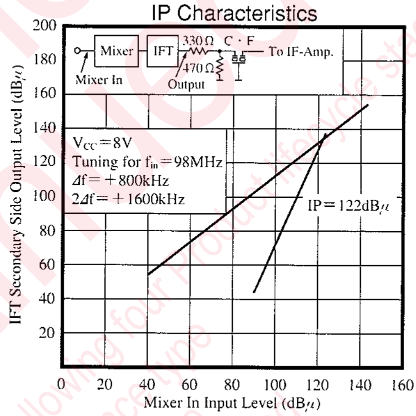
I_{tot}—V_{CC}



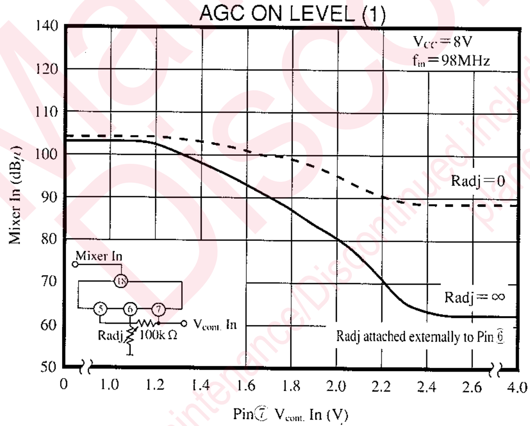
Gain—I_{FT}



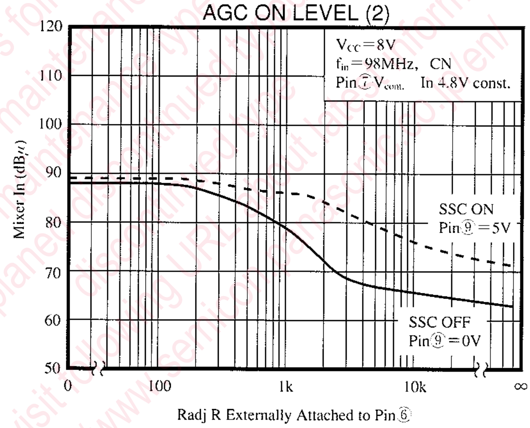
IP Characteristics

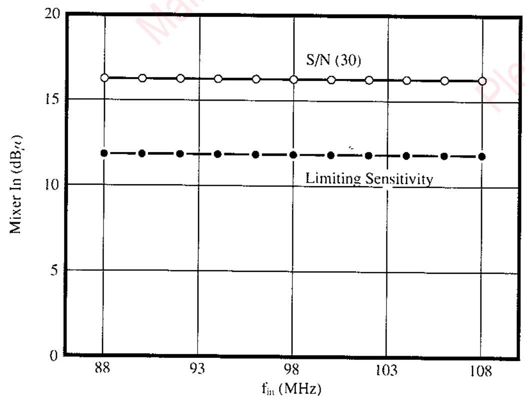


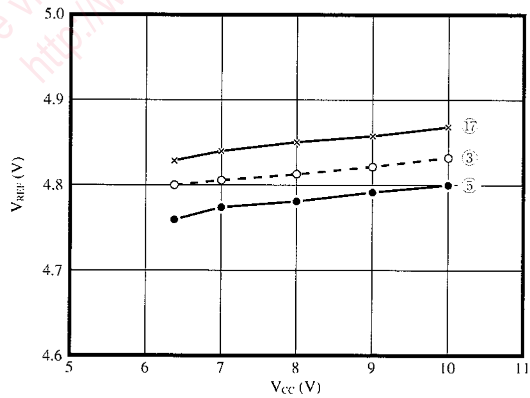
AGC ON LEVEL (1)

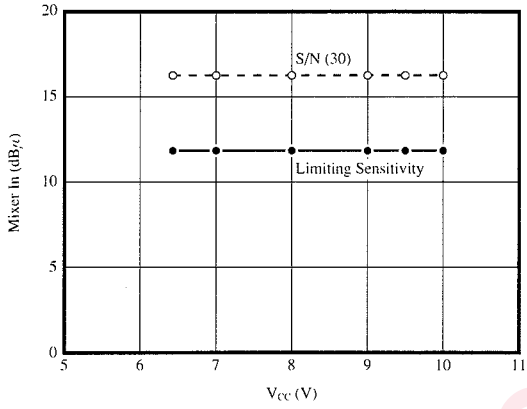


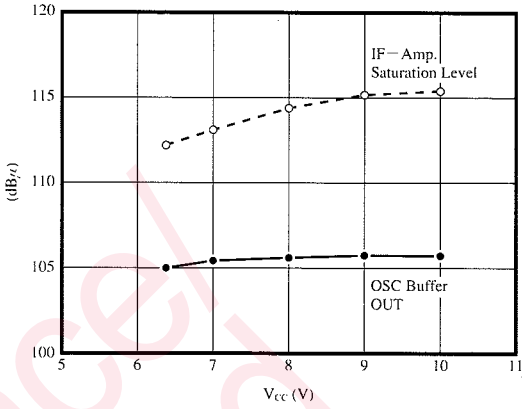
AGC ON LEVEL (2)

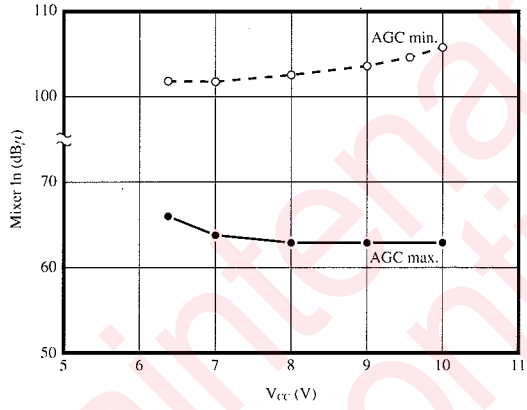


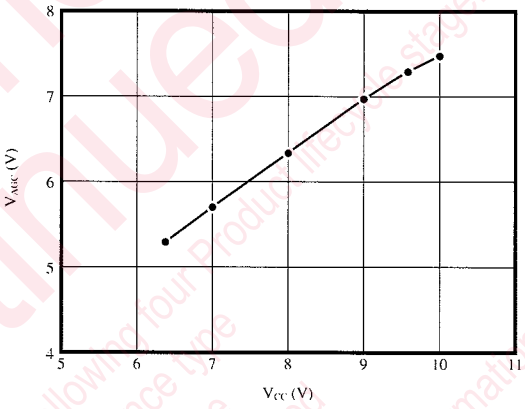


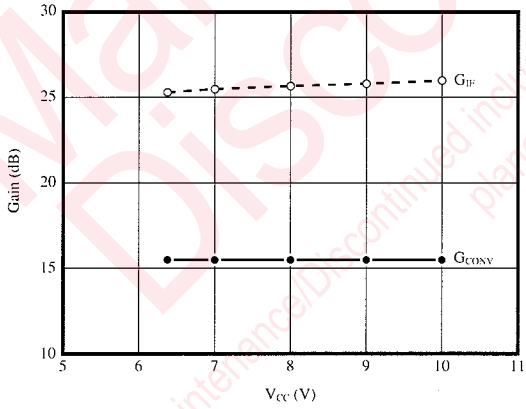


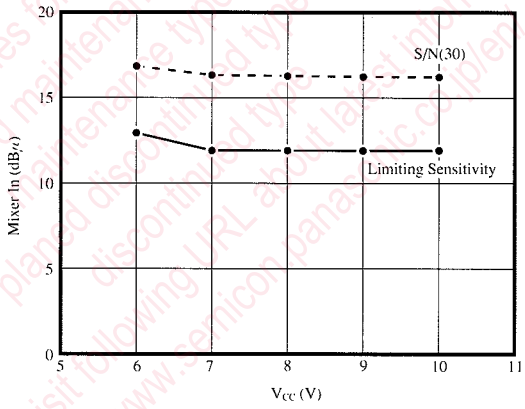


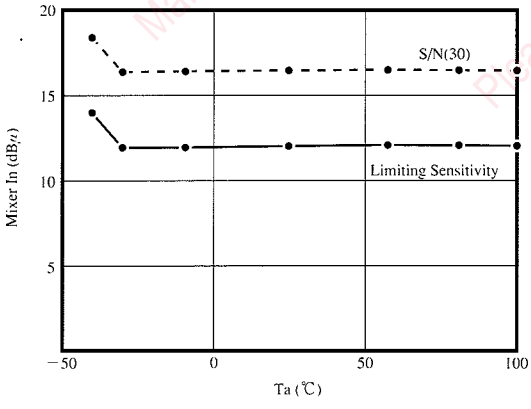


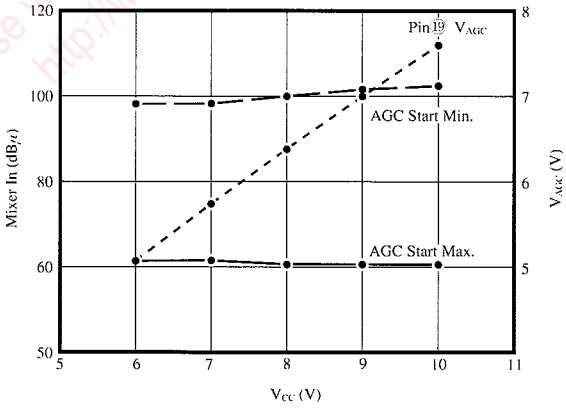


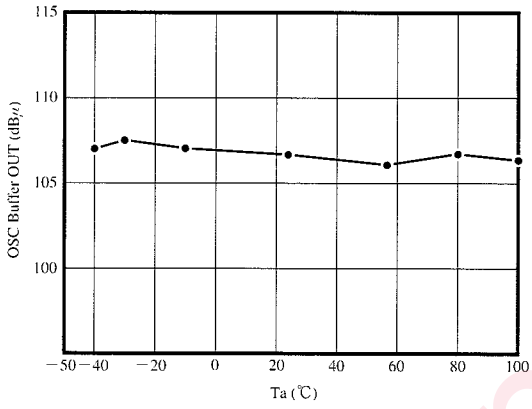


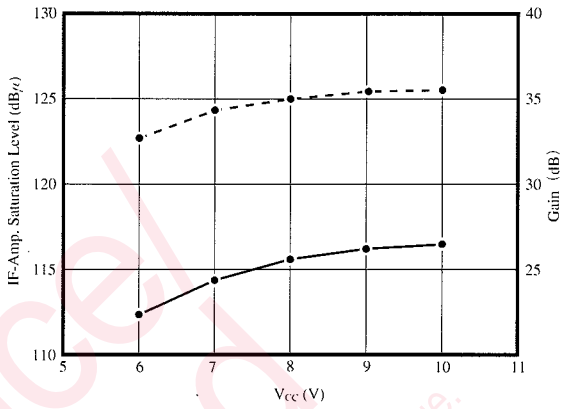


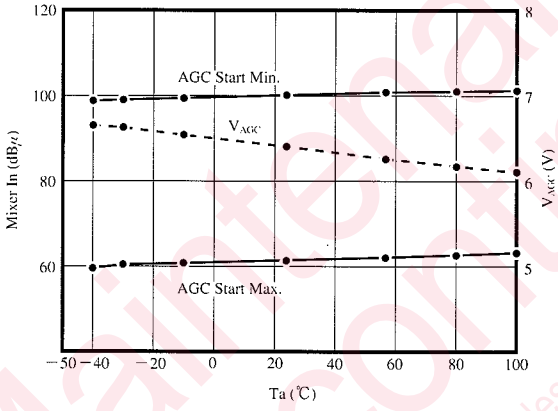


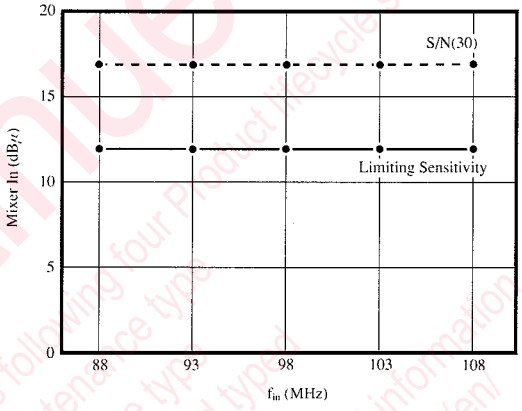




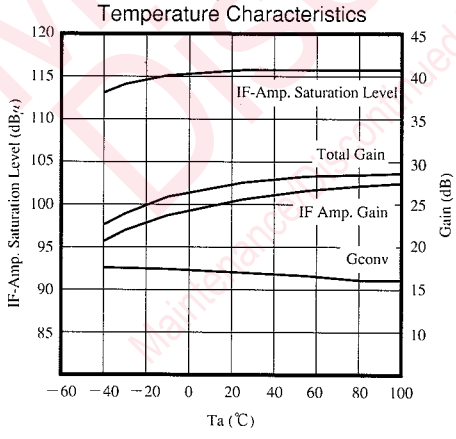




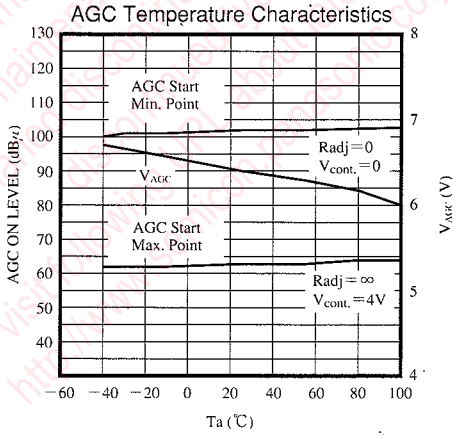




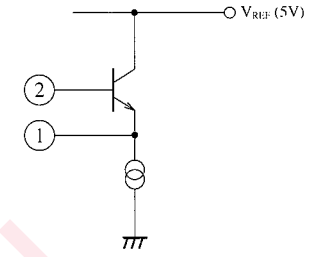
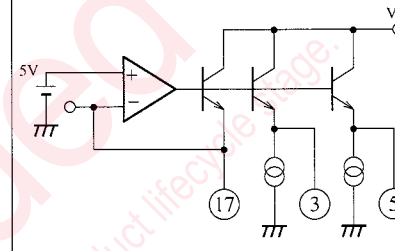
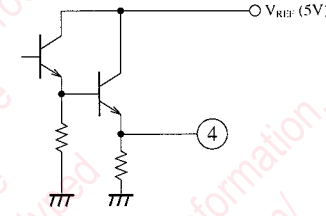
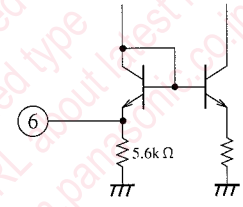
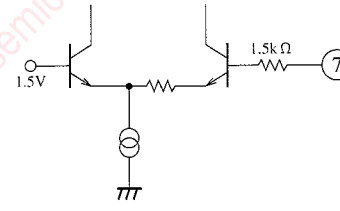
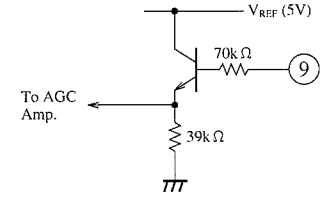
Gain and IF-Amp. Saturation Level Temperature Characteristics



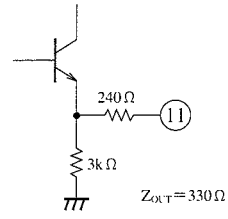
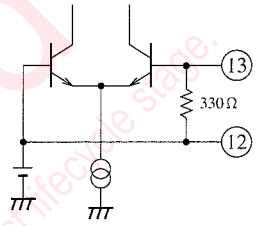
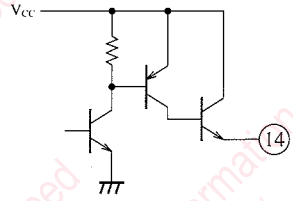
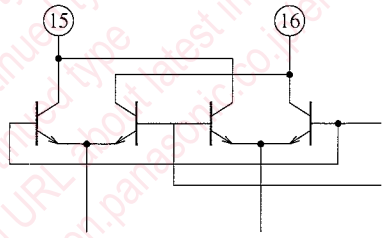
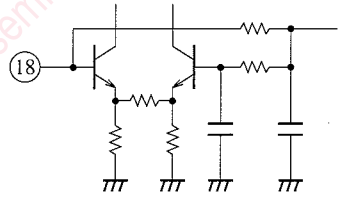
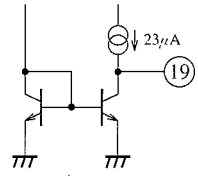
AGC Temperature Characteristics



Pin Description

Pin No.	Pin Name	Pin Description	Internal Equivalent Circuit
1	OSC Emitter	Emitter pin of local oscillation transistor	
2	OSC Base	Base pin of local oscillation transistor	
3 5 17	V_{REF} By-pass	By-pass pin of V_{REF} for mixer, OSC buffer and OSC section	
4	OSC Buffer Output	Pin outputting OSC signal to pre-scaler	
6	AGC-Amp. Gain Adjuster	Pin adjusting gain of AGC-Amp. by external resistor	
7	Control Signal Input	Pin inputting control signals from IF section and adjusting gain of AGC-Amp.	
8	GND	———	———
9	SSC	Pin inputting control signals from microcomputer and adjusting gain of AGC-Amp.	

■ Pin Description (Cont.)

Pin No.	Pin Name	Pin Description	Internal Equivalent Circuit
10	V_{CC}	———	———
11	IF-Amp. Output	IF-Amp. output pin	
12	IF-Amp. By-pass	By-pass pin of IF-Amp.	
13	IF-Amp. Input	Input pin of IF-Amp.	
14	ADX Output	PIN diode driver output pin, determining the max. current to PIN diode by value of resistance externally attached to Pin⑭.	
15 16	Mix. Output	Mixer output pin	
18	Mix. Input	Mixer input pin	
19	Level Detection Output	AGC signal output pin for second gate of RF-Amp.	
20	GND	OSC GND	———

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