AN7286S

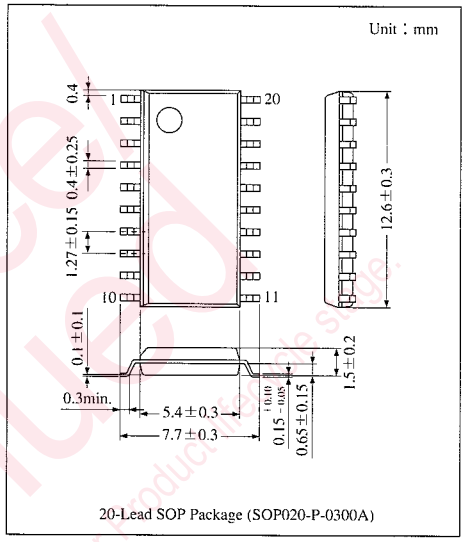
AM Demodulator Circuit for Car Tuner

■ Overview

The AN7286S is an IC designed for AM radio demodulation. It is best suitable to be mounted in a car. It is superior in auditory sense for weak electric field by employing ATC (Auto Tone Controller) and has realized high performance also for strong electric field.

■ Features

- ATC function
- Low distortion factor (0.3%)
- High S/N (55dB)
- SEEK sensitivity switching function

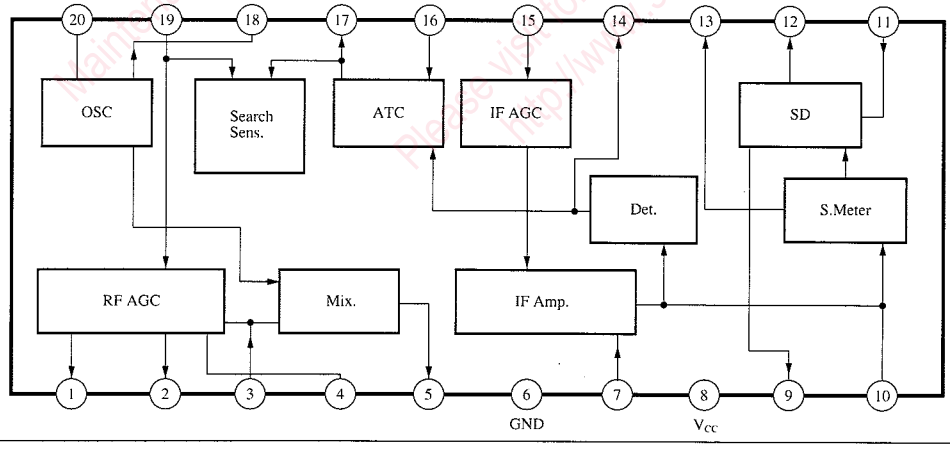


20-Lead SOP Package (SOP020-P-0300A)

■ Pin Name

Pin No.	Pin Name	Pin No.	Pin Name
1	Voltage Output for RF Gain Control	11	SSC SW
2	Current Output for PIN Diode Drive	12	IF Count Output & LO/DX Changeover
3	Mix. Input	13	Signal Meter Output
4	RFAGC Time Constant Setting Pin	14	Detector Output
5	Mix. Output	15	IF AGC Level Detection
6	GND	16	ATC Input & ATC sw
7	IF Input	17	AF Output & LO Sensitivity Setting
8	V_{CC}	18	OSC Buffer Output
9	SD Output	19	Wide Frequency Band AGC Level Detection & DX Sensitivity Setting
10	IF Amp. Load Pin	20	OSC Coil Pin

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	9.2	V
Supply Current	I_{CC}	45	mA
Power Dissipation Note 1)	P_D	207	mW
Operating Ambient Temperature	T_{opr}	−30 ~ +80	℃
Storage Temperature	T_{stg}	−55 ~ +125	℃

Note 1) Value at Ta=80℃, Free air

■ Recommended Operating Range (Ta=25℃)

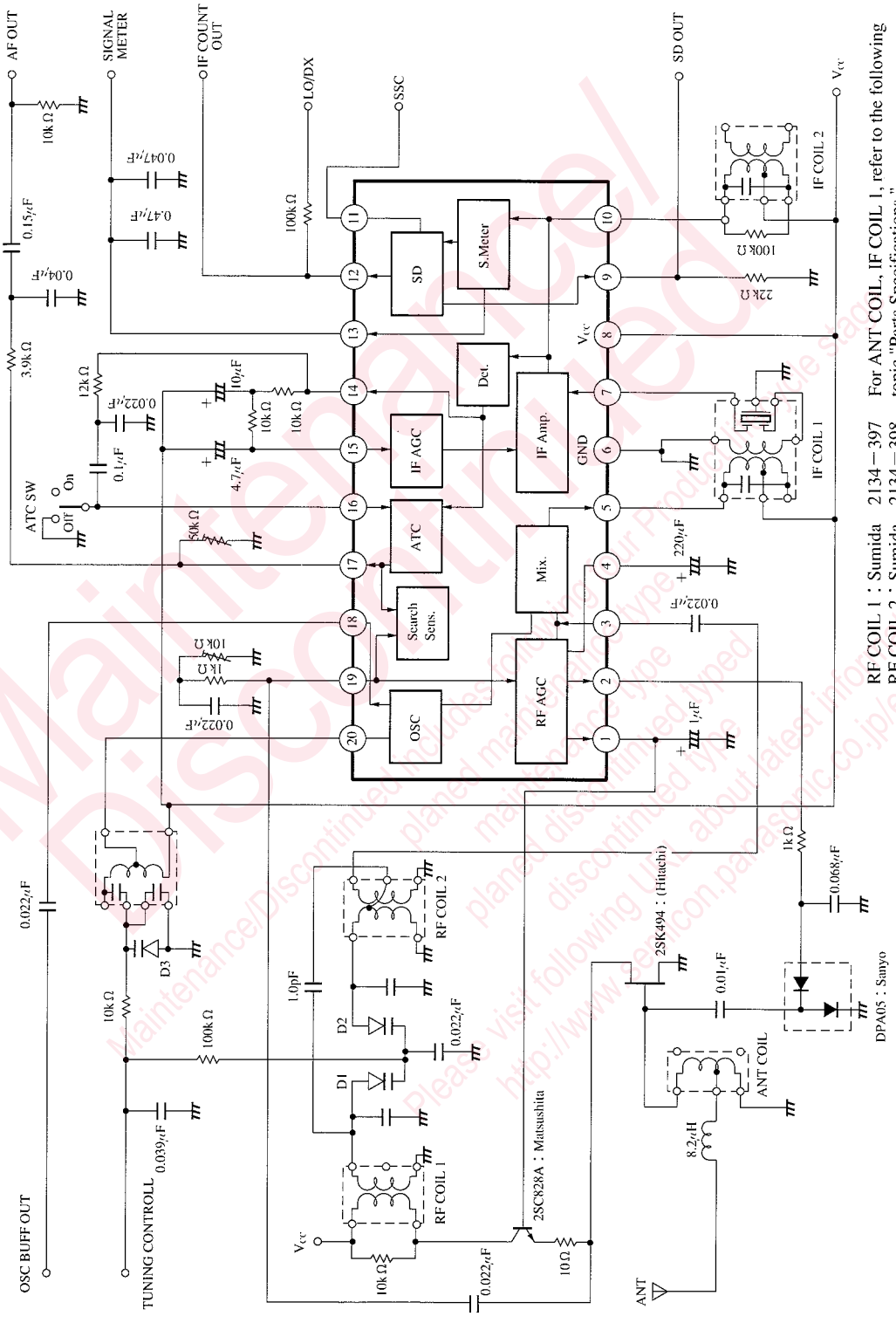
Parameter	Symbol	Range
Operating Supply Voltage Range	V_{CC}	7.2V ~ 9.0V

■ Electrical Characteristics (V_{CC}=8V, f_i=1kHz, Ta=25℃)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
Consumption Current 1	I_{to1}	No input	20	30	35	mA
Consumption Current 2	I_{to2}	V_{in}=130dBμ	25	34	40	mA
Detection Output	V_O	V_{in}=74dBμ, 400Hz 30%mod.	100	125	155	mV
Signal to Noise Ratio	SN	V_{in}=74dBμ, 400Hz 30%mod.	50	54	58	dB
AGC Width	W	74dBμ 400Hz 30%, Output −10dB Input Width	54	58	62	dB
ATC Operation	ΔATC	V_i=14dBμ 1kHz 30%mod. (V_O at ATC off)−(V_O at ATC on)	2	4	6	dB
Distortion Factor 1	THD1	V_{in}=74dBμ, 400Hz 80%mod.	0.01	0.3	1.0	%
Distortion Factor 2	THD2	V_{in}=130dBμ, 400Hz 80%mod.	0.01	0.4	1.0	%
Wide Frequency Band AGCon Input	V_{wa}	No input of desired wave, Interference wave 1.4MHz	82	88	94	dBμ
Local Osc. Buffer Output	V_{os}	No input	170	210	250	mV
IF Count Output 1	V_{if1}	V_{in}=40dBμ 400Hz 30%mod.	145	200	255	mV
IF Count Output 2	V_{if2}	No input	—	—	10	mV
SD Output 1	V_{sd1}	V_{in}=40dBμ 400Hz 30%mod.	4.5	4.8	5.0	V
SD Output 2	V_{sd2}	No input	0.0	0.2	0.5	V
Signal Meter Output 1	V_{sm1}	No input	1	10	100	mV
Signal Meter Output 2	V_{sm2}	V_{in}=30dBμ 400Hz 30%mod.	0.6	0.85	1.1	V
Signal Meter Output 3	V_{sm2}	V_{in}=130dBμ 400Hz 30%mod.	4.0	4.6	4.95	V
Search Sensitivity DX	Sd	Input for f=450k±2kHz (400Hz 30%mod.), IF count output : 120mV or more	24.5	30	35.5	dBμ
Search Sensitivity LO	SL	Input for f=450k±2kHz (400Hz 30%mod.), IF count output : 120mV or more	44.5	50	55.5	dBμ

Note) Tuning condition : Adjust the tuning control voltage so that frequency of local Osc. buffer output could be 1450kHz.
No input : $V_{in} \leqq -20$dBμ

■ Application Circuit

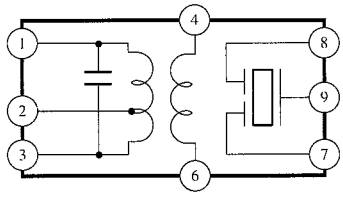


RF COIL 1 : Sumida 2134−397
RF COIL 2 : Sumida 2134−398
OSC COIL : Sumida 2136−022
IF COIL 2 : Sumida SA−044
D1, D2, D3 : Tohko KV1235Z

For ANT COIL, IF COIL 1, refer to the following topic "Parts Specifications."

■ Parts Specifications

IF COIL 1



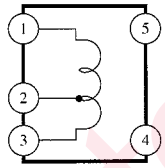
COIL section (Mitsumi products)

No load Q＝35±20%
Inside capacitance＝180pF±10%
1－2：39T
2－3：130T
4－6：27T

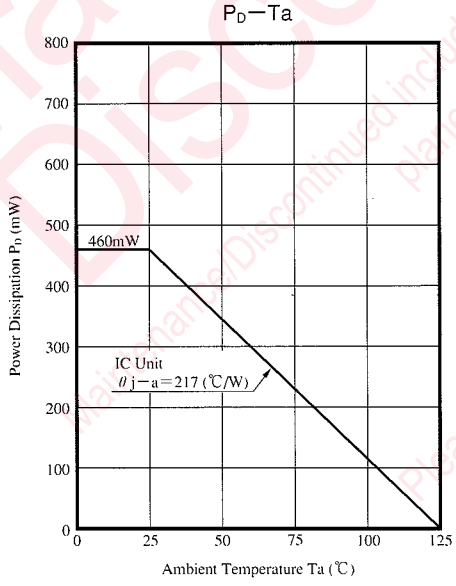
Ceramic film section (Equivalents)

Murata Seisakusho：SFP450H

ANT COIL



No load Q＝50min. L＝5, 9mH±3%
(f＝252kHz)
3－1：405T
3－2：197T
2－1：208T



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