

NEC
ELECTRON DEVICE

PRELIMINARY PRODUCT INFORMATION

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC2531

FM FRONT END

DESCRIPTION

The μ PC2531 is a monolithic integrated circuit designed for FM front end of an electric tuner used in a car stereo receiver. The μ PC2531 consists of a balanced mixer using J-FET, an oscillator, an AGC amplifier, keyed AGC circuit, and IF amplifier.

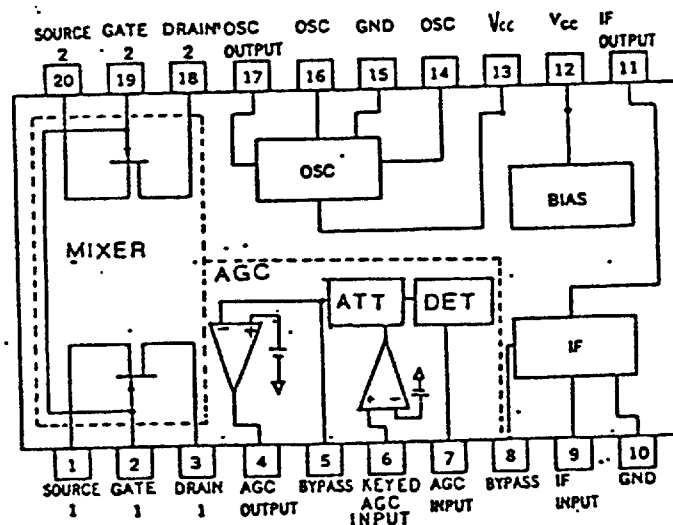
FEATURES

- Excellent cross modulation characteristic.
- Excellent IF rejection.
- Built-in IF amplifier.
- Balanced mixer using J-FET.
- Built-in keyed AGC circuit.

ORDERING INFORMATION

Part Number	Package
μ PC2531GS	20 PIN PLASTIC SOP (300 mil)

BLOCK DIAGRAM (Top View)



The information contained in this document is being issued in advance of the production cycle for the device. The parameters for the device may change before final production or NEC Corporation, at its own discretion, may withdraw the device prior to its production.

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(O.D.No.)
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ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

DC Supply Voltage	V_{CC}	10	V
Package Dissipation	P_D	600 ($T_a = +75^\circ\text{C}$)	mW
Operating Temperature	T_{Op1}	-30 to +75	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to +125	$^\circ\text{C}$

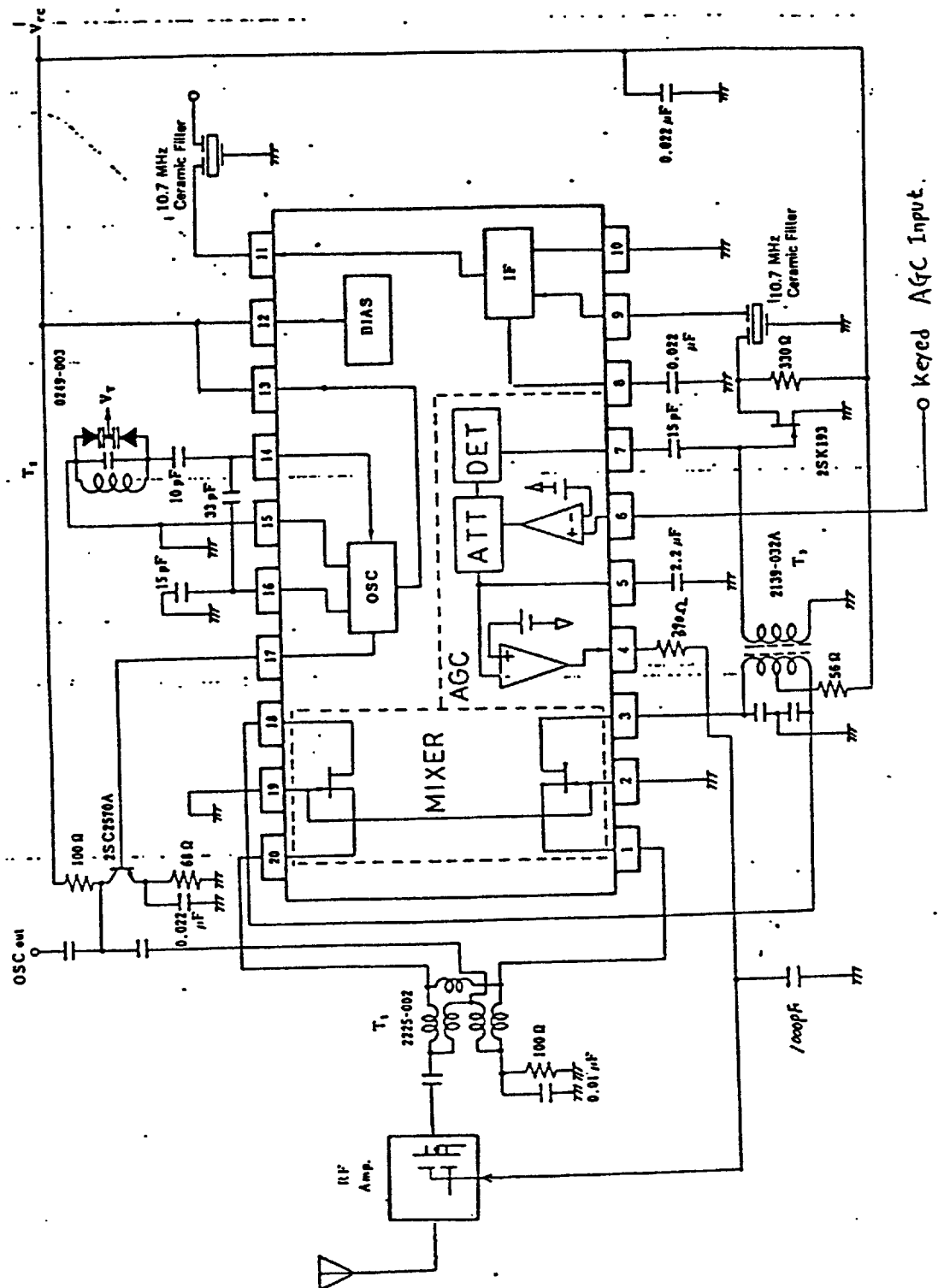
RECOMMENDED OPERATING CONDITION ($T_a = 25^\circ\text{C}$)

DC Supply Voltage Range	V_{CC}	7.5 to 9.0 V
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ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{CC} = 8.0\text{ V}$)

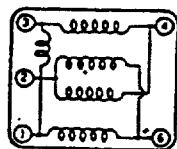
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Circuit Current I	I_{CC1}		20		mA	quiescent
IF Amp. Gain	$G_v(1F)$		21		dB	$f = 10.7\text{ MHz}$, $V_i = 80\text{ dB}\mu\text{V}$
AGC Output Voltage 1	V_{AGC1}			8.0	V	quiescent
AGC Output Voltage 2	V_{AGC2}		0.2		V	$V_i = 90\text{ dB}\mu\text{V}$
AGC Operate Voltage	$V_i(AGC)$		80		dB μV	Point of changing from $V_{AGC} = \text{high}$ to $V_{AGC} = \text{low}$.
Local Oscillator Voltage	V_{osc}		60		mV _{r.m.s.}	$R_L = 50\ \Omega$, $f = 100\text{ MHz}$
Conversion Gain	$G_v(MIX.)$		11		dB	$f_1 = 100\text{ MHz}$, $V_i = 80\text{ dB}\mu\text{V}$ $f_2 = 110.7\text{ MHz}$, $V_i = 120\text{ dB}\mu\text{V}$
MIX. Noise Figure	$NF(MIX.)$		4		dB	$f = 100\text{ MHz}$

APPLICATION CIRCUIT



COIL DATA

T₁ : MIX. Coil



2288-003 (SUMIDA)

1-6 4 1/2T

2-4 4 1/2T

2-6 4 1/2T

3-4 4 1/2T

1-3 9T

L₁₋₃ ≈ 0.74 μH (f = 25.2 MHz)

IX385DNS-001 (TOKO)

4 1/2T

4 1/2T

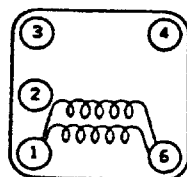
4 1/2T

4 1/2T

13T

L₁₋₃ ≈ 1.05 nH

T₂ : OSC Coil



0249-003 (SUMIDA)

6-1 2 1/2 x 2

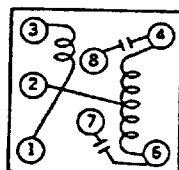
L ≈ 105 nH, Q_u ≈ 120 (f = 100 MHz)

363SNS-009APZ (TOKO)

6-1 2 1/2 x 2

L ≈ 80 nH Q_u > 70 (f = 100 MHz)

T₃ : IFT Coil



2139-032A (SUMIDA)

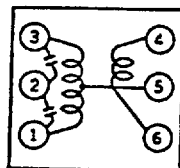
3-1 2T

4-2 10 1/2T

2-6 10 1/2T

C = 33 pF

f = 10.7 MHz, Q_u ≈ 40



X388AH-1015FTM (TOKO)

4-6 8 1/2T

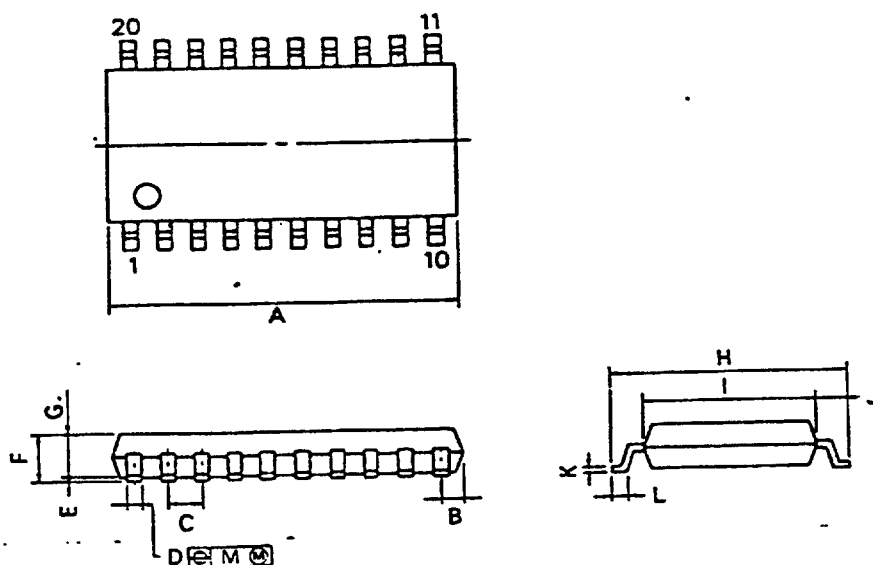
3-5 10 1/4T

1-5 10 1/4T

C = 33 pF

f = 10.7 MHz, Q_u > 60

20PIN PLASTIC SOP (300 mil)



P20GM-50-300B.C

NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

ITEM	MILLIMETERS	INCHES
A	13.00 MAX.	0.512 MAX.
B	0.78 MAX.	0.031 MAX.
C	1.27 (T.P.)	0.050 (T.P.)
D	0.40 ± 0.05	0.016 ± 0.002
E	0.1 ± 0.1	0.004 ± 0.004
F	1.8 MAX.	0.071 MAX.
G	1.55	0.061
H	7.7 ± 0.3	0.303 ± 0.012
I	5.6	0.220
J	1.1	0.043
K	0.20 ± 0.05	0.008 ± 0.002
L	0.6 ± 0.3	0.024 ± 0.009
M	0.12	0.005