BIPOLAR ANALOG INTEGRATED CIRCUIT

μPC1276G

FM FRONT END

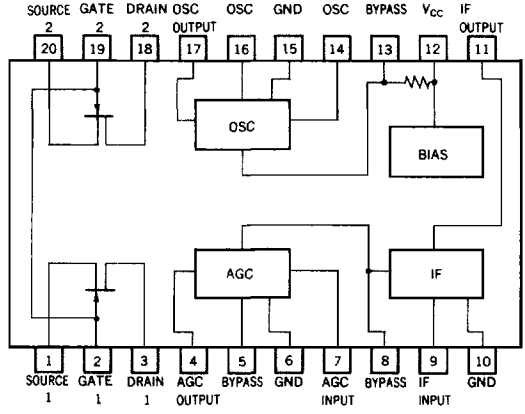
DESCRIPTION

The μPC1276G is a monolithic integrated circuit designed for FM front end of an electric tuner used in a car stereo receiver. The μPC1276G consists of a double balanced mixer using J-FET, an oscillator, an AGC amplifier, and a IF amplifier.

FEATURES

- Excellent cross modulation characteristic.
- Excellent IF rejection.
- Built-in IF amplifier.
- Double balanced mixer using J-FET.

BLOCK DIAGRAM (Top View)



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ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

DC Supply Voltage	V_{CC}	10	V
Package Dissipation	P_D	600 (T_a = +75 °C)	mW
Operating Temperature	T_{opt}	−30 to +75	°C
Storage Temperature	T_{stg}	−40 to +125	°C

RECOMMENDED OPERATING CONDITION (T_a = 25 °C)

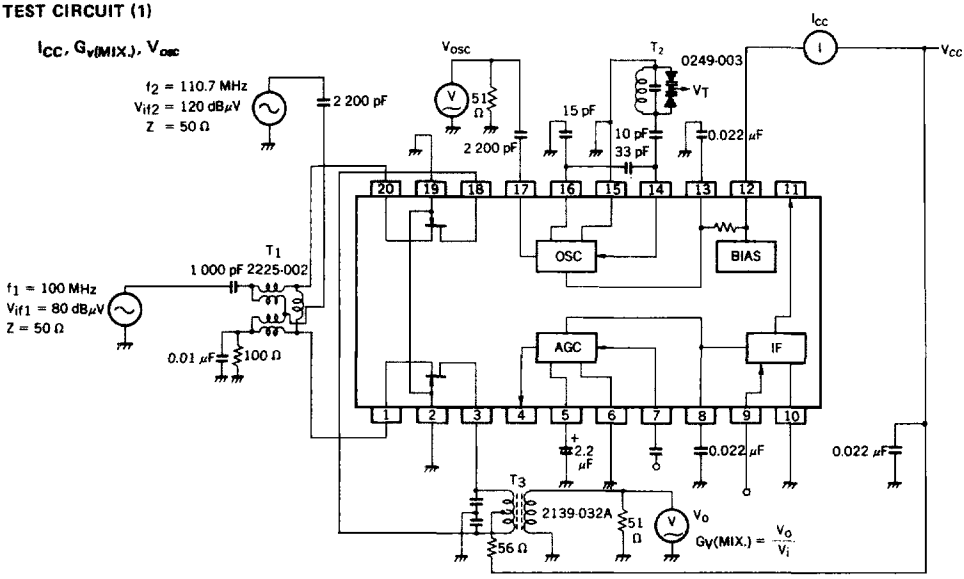
DC Supply Voltage Range	V_{CC}	7.5 to 9.0 V

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, V_{CC} = 8.5 V)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Circuit Current 1	I_{CC1}	10	15	20	mA	quiescent
IF Amp. Gain	$G_{V(IF)}$	18	21	24	dB	f = 10.7 MHz, V_i = 80 dBμV
AGC Output Voltage 1	V_{AGC1}		0		mV	quiescent
AGC Output Voltage 2	V_{AGC2}	6.0	6.4	6.8	V	V_i = 90 dBμV, R_L = 620 Ω
AGC Operate Voltage	$V_{i(AGC)}$	75	80	83	dBμV	Point of changing from V_{AGC} = 0 to V_{AGC} = 6 V
Local Oscillator Voltage	V_{osc}	36	60	77	$mV_{r.m.s.}$	R_L = 50 Ω, f = 100 MHz
Conversion Gain	$G_{V(MIX.)}$	7	11	13	dB	f_1 = 100 MHz, V_i = 80 dBμV f_2 = 110.7 MHz, V_i = 120 dBμV
MIX. Noise Figure	$NF_{(MIX.)}$		4		dB	f = 100 MHz

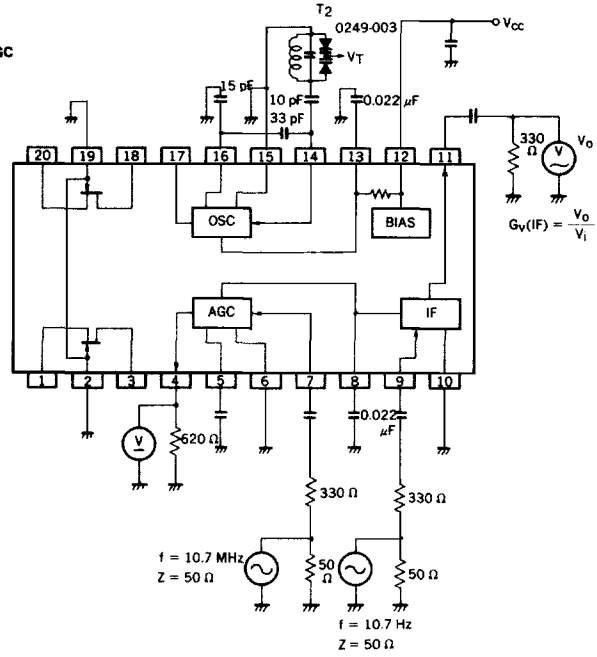
TEST CIRCUIT (1)

I_{CC}, $G_{V(MIX.)}$, V_{osc}



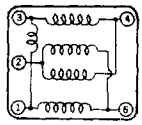
TEST CIRCUIT (2)

$G_{V(IF)}$, $V_{i(AGC)}$, V_{AGC}



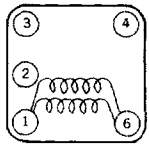
COIL DATA

T_1 : MIX. Coil



	2225-002 (SUMIDA)	IX385DNS-001 (TOKO)
1-6	4 1/2T	4 1/2T
2-4	4 1/2T	4 1/2T
2-6	4 1/2T	4 1/2T
3-4	4 1/2T	4 1/2T
1-3	9T	13T
	$L_{1\text{-}3} \fallingdotseq 0.74\ \mu H$ (f = 25.2 MHz)	$L_{1\text{-}3} \fallingdotseq 1.05$ nH

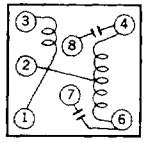
T_2 : OSC Coil



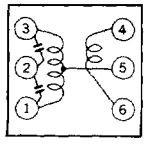
0249-003 (SUMIDA)
6-1 2 1/2 x2
$L \fallingdotseq 105$ nH, $Q_u \fallingdotseq 120$ (f = 100 MHz)

363SNS-009APZ (TOKO)
6-1 2 1/2 x 2
$L \fallingdotseq 80$ nH $Q_u > 70$ (f = 100 MHz)

T_3 : IFT Coil

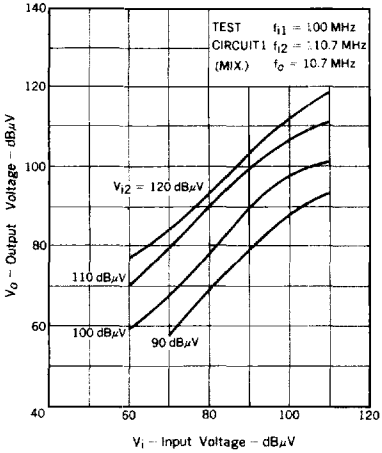


2139-032A (SUMIDA)
3-1 2T
4-2 10 1/2T
2-6 10 1/2T
C = 33 pF
f = 10.7 MHz, $Q_u \fallingdotseq 40$

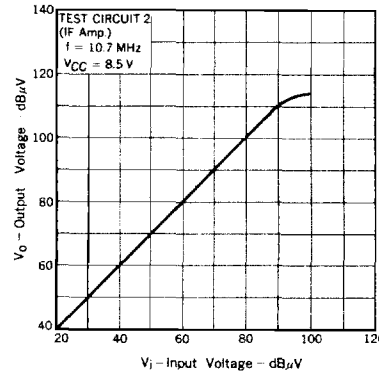


X388AH-1015FTM (TOKO)
4-6 8 1/2T
3-5 10 1/4T
1-5 10 1/4T
C = 33 pF
f = 10.7 MHz, $Q_u > 60$

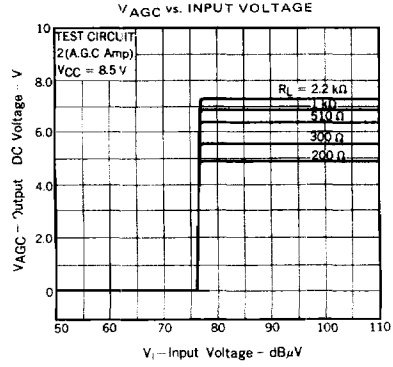
INPUT vs. OUTPUT VOLTAGE (MIX.)



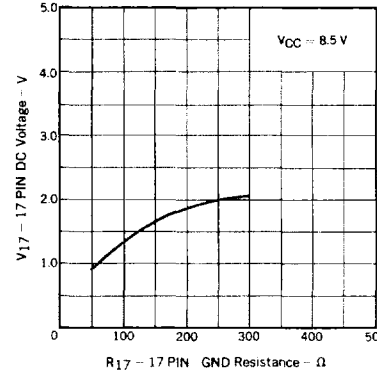
INPUT vs. OUTPUT VOLTAGE (IF AMPLIFIER)



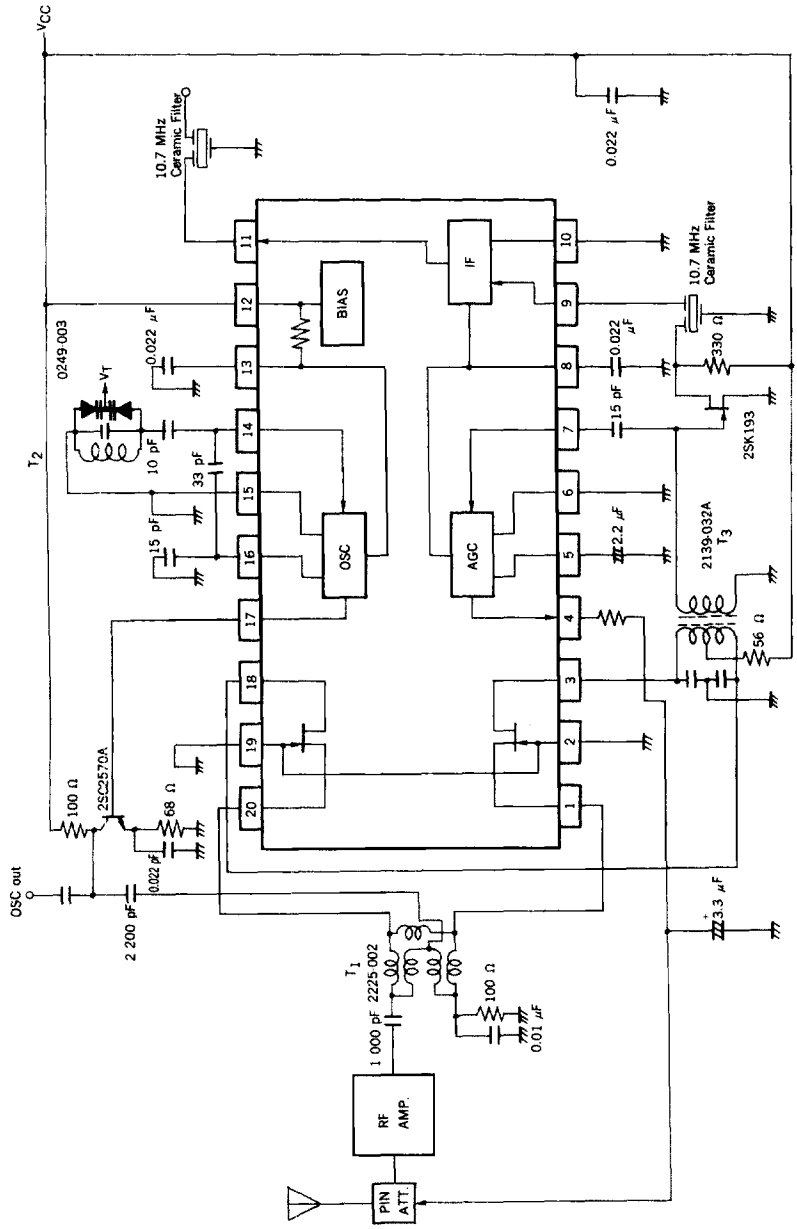
V_{AGC} vs. INPUT VOLTAGE



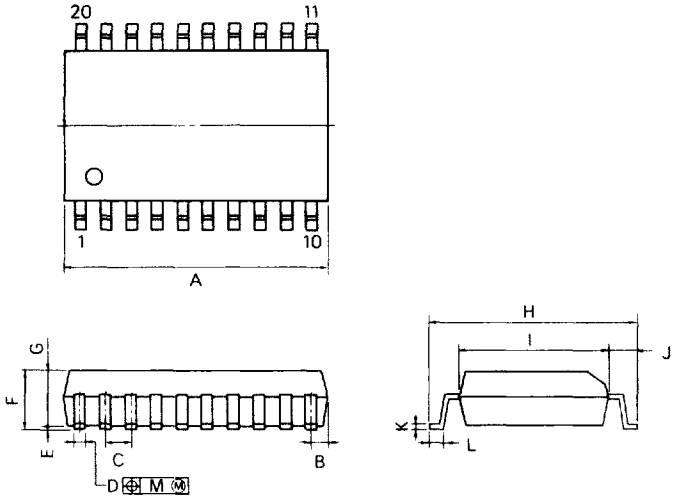
17PIN-GND RESISTANCE vs. 17PIN DC VOLTAGE



APPLICATION CIRCUIT



20PIN PLASTIC MINI FLAT (375 mil)



P20GM-50-375B

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	$0.40^{+0.10}_{-0.05}$	$0.016^{+0.004}_{-0.003}$
E	0.1 ± 0.1	0.004 ± 0.004
F	2.9 MAX.	0.115 MAX.
G	2.50	0.098
H	$10.3^{+0.3}_{-0}$	$0.406^{+0.012}_{-0.013}$
I	7.2	0.283
J	1.6	0.063
K	$0.15^{+0.10}_{-0.05}$	$0.006^{+0.004}_{-0.002}$
L	$0.8^{+0.2}_{-0}$	$0.031^{+0.009}_{-0.008}$
M	0.12	0.005