NEC

TX-IF SiMMIC FOR W-CDMA ACG + I/Q MODULATOR

UPC8191K

FEATURES

- **LOW POWER CONSUMPTION:**
  V_{CC} = 3.0 V
- **SMALL 20 PIN QFN PACKAGE:**
  Flat lead style for better performance
- **TAPE AND REEL PACKAGING AVAILABLE**

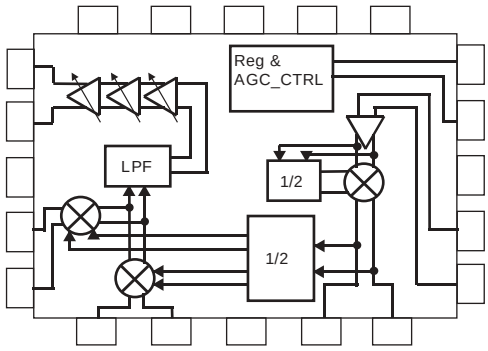
DESCRIPTION

The UPC8191K is a Silicon Microwave Monolithic Integrated Circuit designed as a transmitter/TX section for W-CDMA. The UPC8191K is a TX-IF IC including IF-AGC amplifier and modulator. This IC is suitable for kit-use for W-CDMA IF section.

This IC was developed using NEC's new ultra high seed silicon bipolar process.

NEC's stringent quality assurance and test procedures ensure the highest reliability and perormance.

BLOCK DIAGRAM



APPLICATIONS

- **W-CDMA**

ELECTRICAL CHARACTERISTICS (unless otherwise specified, T_A = 25°C, V_{CC} = 3.0 V, fIF = 570 MHz, fLO = 760 MHz, PLO = -15 dBm, fI/Q =10 kHz, 400 mVp-p balanced sine-wave)

PART NUMBER PACKAGE OUTLINE			UPC8191K QFN-20		
SYMBOLS	**PARAMETERS AND CONDITIONS**	**UNITS**	**MIN**	**TYP**	**MAX**
I_{CC}	Circuit Current, No Signals At power saving mode	mA μA	– –	30.5 0	38 1
P_{OUT}	Output Power, V_{CONT}= 2.3 V, I/Q = 400mVp-p balanced V_{CONT}= 0.3 V, I/Q = 400mVp-p balanced	dBm	-17 –	-13 -93	– -88
LoL	Local Leakage, V_{CONT}= 2.3 V, I/Q = 400mVp-p balanced	dBc	–	–	-30
IoL	Image Leakage, V_{CONT}= 2.3 V, I/Q = 400mVp-p balanced	dBc	–	–	-30
	Output Harmonics 1, Leakage when IF output = 190 MHz	dBc	–	–	-20
	Output Harmonics 2, Leakage when IF output = 380 MHz	dBc	–	–	-30
$T_{PS(Rise)}$	Rise time from power-saving mode	us	–	–	10
$V_{PS(Rise)}$	Rising voltage from power-saving mode	V	–	–	2.2
$V_{PS(fall)}$	Falling voltage from power-saving mode	V	0.5	–	–

STANDARD CHARACTERISTICS FOR REFERENCE (unless otherwise specified, T_A = 25°C, V_{CC} = 3.0 V, fIF = 570 MHz, fLO = 760 MHz, PLO = -15 dBm, fI/Q =10 kHz, 400 mVp-p balanced sine-wave)

PART NUMBER PACKAGE OUTLINE			UPC8191K QFN-20		
SYMBOLS	**PARAMETERS AND CONDITIONS**	**UNITS**	**MIN**	**TYP**	**MAX**
	Output Noise Level 1,Pout = -25 dBm, fIF±20MHz	dBm/Hz	–	-148	–
	Output Noise Level 1,Pout = -65 dBm, fIF±20MHz	dBm/Hz	–	-162	–
GF	Gain Flatness, fIF±2.5MHz	dB	–	–	0.5
EVM	Error Vector Magnitude, I/Q = 3.84 Msps QPSK	%rms	–	3	–
ACPR	fIF±5 MHz, I/Q=3.84 Msps QPSK	dBc	–	-55	–

ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CC}	Supply Voltage	V	4.0
V_{PS}, V_{CONT}	Applied Voltage	V	-0.3 to V_{CC} +0.3
T_A	Operating Ambient Temperature	°C	-40 to +85
T_{STG}	Storage Temperature	°C	-55 to +150

Notes:
1. Operation in excess of any one of these parameters may result in permanent damage.

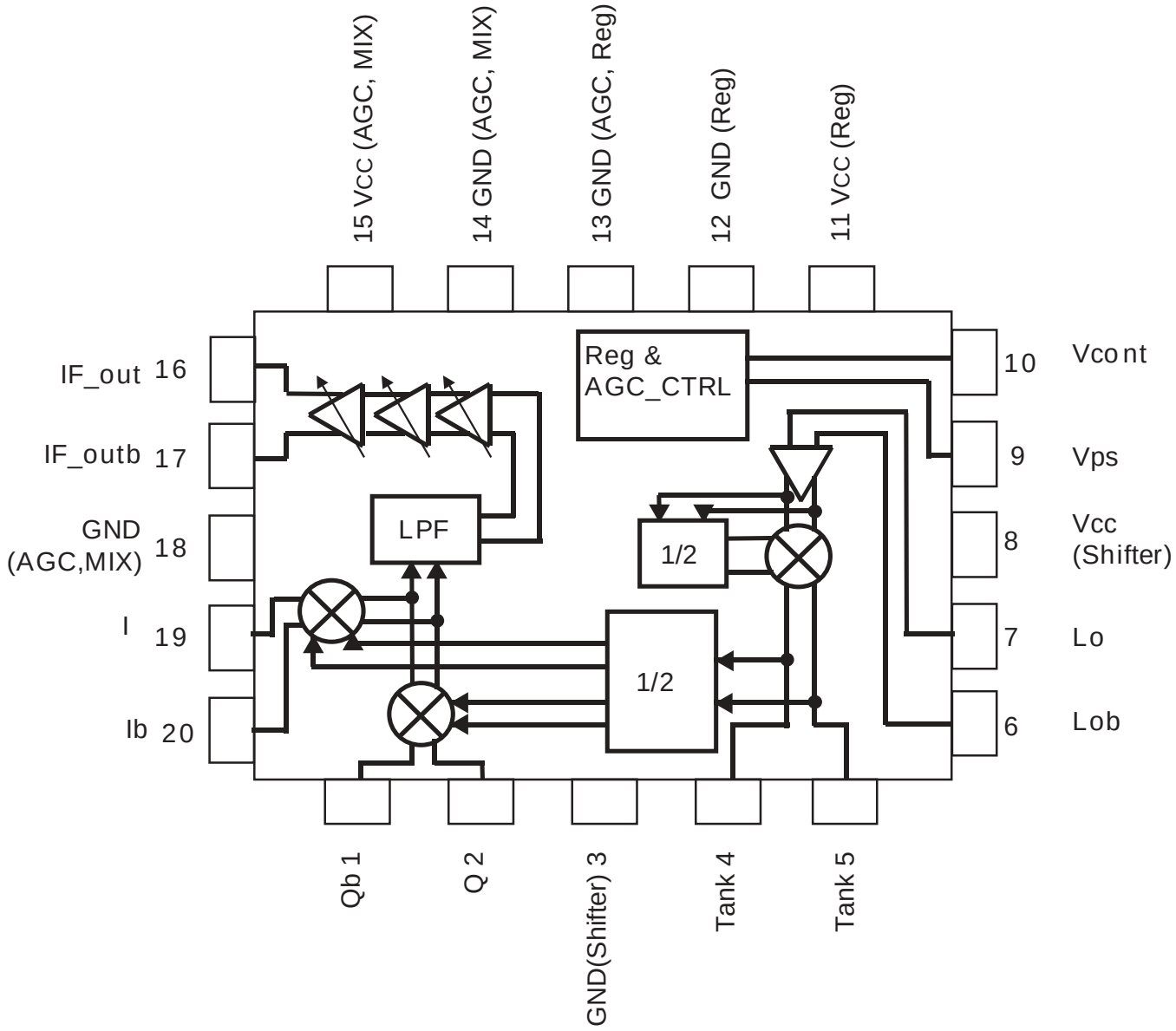
RECOMMENDED OPERATING CONDITIONS

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V_{CC}	Supply Voltage	V	2.7	3.0	3.3
T_A	Operating Ambient Temperature	°C	-25	+25	+85
fIF	IF Frequency	MHz	–	570	–
f_{LO}	Local Frequency	MHz	–	760	–
P_{LO}	Local input Level	dBm	-18	-15	-12
ZIF	IF output impedance, Balanced output internal resistance	kΩ	–	1	–
VI/Q	I/Q Maximum Input Voltage	V	–	–	1

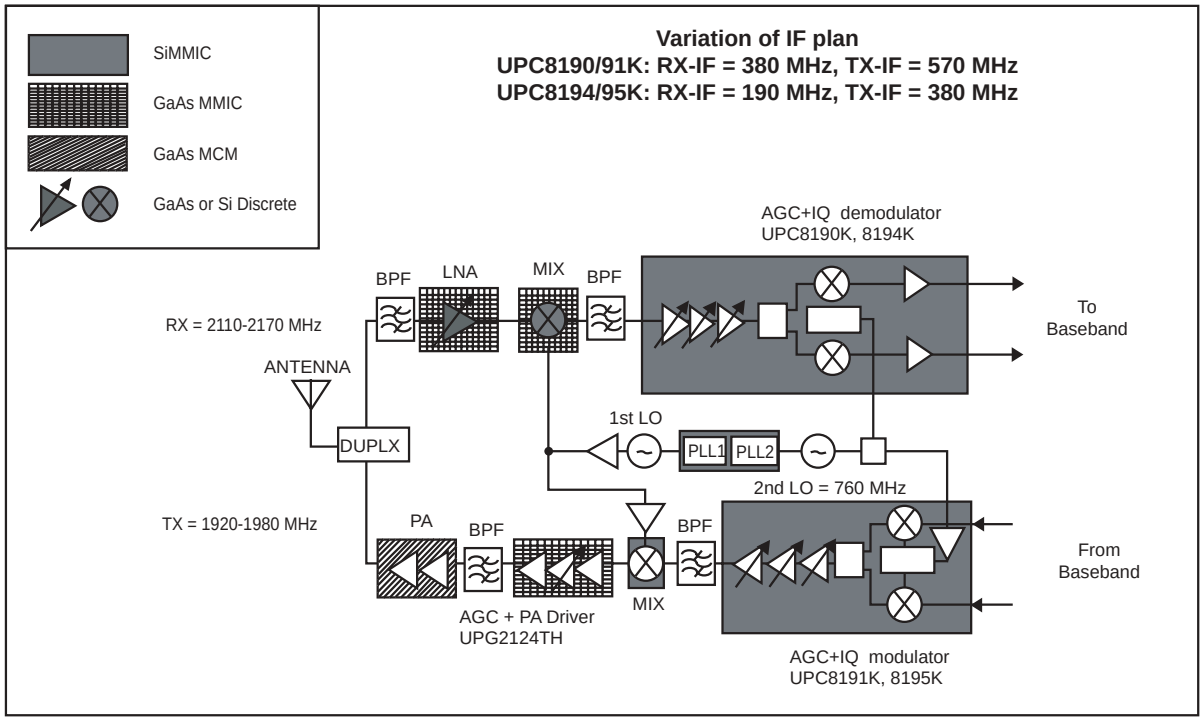
ORDERING INFORMATION

Part Number	Package
UPC8191K-E1	20 Pin plastic QFN

BLOCK DIAGRAM (Units in mm)



APPLICATION EXAMPLE: W-CDMA



OUTLINE DIMENSIONS (Units in mm)

Package Outline QFN-20