Low Power Amplifiers

Part Number	Typical Frequency Range @ 3dB down (MHz)	ELECTRICAL CHARACTERISTICS[1] (T_A = 25°C)												Package Number	Package Style
		V_{CC} (V)	I_{CC} (mA)			NF (dB)	Gain (dB)			RL_{IN} (dB)	RL_{OUT} (dB)	P_{1dB} (dBm)	ISOL (dB)		
			MIN	TYP	MAX	TYP	MIN	TYP	MAX	TYP	TYP	TYP	TYP		
UPC2745TB[6]	2700	3	5	7.5	10	6.0	9	12	14	11	5.5	-3.0	38	S06 / TB	SOT-363
UPC2746TB[6]	1500	3	5	7.5	10	4.0	16	19	21	13	8.5	-3.7	45	S06 / TB	SOT-363
UPC2747TB[3]	1800	3	3.8	5	7	3.3	9	12	14	14	10	-10.9	40	S06 / TB	SOT-363
UPC2748TB[3]	1500	3	4.5	6	8	2.8	16	19	21	11.5	8.5	-8.5	40	S06 / TB	SOT-363
UPC2749TB[4]	2900	3	4	6	8	4	13	16	18.5	10	13	-12.5	30	S06 / TB	SOT-363
UPC8151TB[5]	Note 7	3	2.8	4.2	5.8	6.0	9.5	12.5	14.5	5	10	+2.5	38	S06 / TB	SOT-363
UPC8178TB[4]	Note 9	3	1.4	1.9	2.4	5.5	9.0	11.5	13.5	8	–	-7	40	S06 / TB	SOT-363
UPC8179TB[4]	Note 9	3	2.9	4.0	5.4	5.0	13.0	15.5	17.5	7	–	1.5	42	S06 / TB	SOT-363
UPC8179TK[4]	Note 9	3	2.9	4.0	5.4	5.0	13.0	15.5	17.5	7	–	0.5	42	TK	Leadless Minimold

Notes:
1. Z_L = 50 Ω for all Electrical Characteristics. **2.** f = 1000 MHz test condition. **3.** f = 900 MHz test condition.
4. f = 1900 MHz test condition. **5.** f = 1000 MHz test condition. **6.** f = 500 MHz test condition. **7.** 100 - 1900 MHz with output port matching.
8. Differential amplifier. f = 400 MHz test condition. **9.** 100 - 2400 MHz with output port matching

Wideband Amplifiers

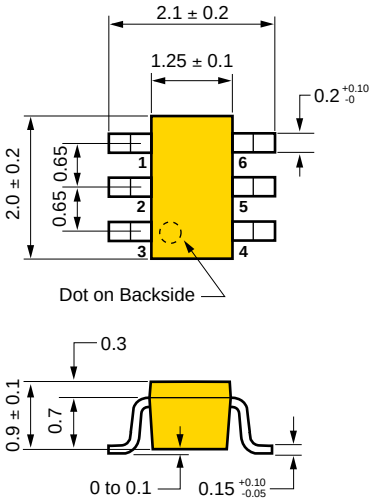
Part Number	Typical Frequency Range @ 3dB down (MHz)	ELECTRICAL CHARACTERISTICS[1] (T_A = 25°C)												Package Number	Package Style
		V_{CC} (V)	I_{CC} (mA)			NF (dB)	Gain (dB)			RL_{IN} (dB)	RL_{OUT} (dB)	P_{1dB} (dBm)	ISOL (dB)		
			MIN	TYP	MAX	TYP	MIN	TYP	MAX	TYP	TYP	TYP	TYP		
UPC1678GV[6]	2000	5	40	49	60	6.0	21	23	25	14	4	+15.9	35	S08 / GV	8 pin SSOP
UPC2708TB[2]	2900	5	20	26	33	6.5	13	15	18.5	11	20	+9.2	23	S06 / TB	SOT-363
UPC2709TB[2]	2300	5	19	25	32	5.0	21	23	26.5	10	10	+8.7	31	S06 / TB	SOT-363
UPC2710TB[6]	1000	5	16	22	29	3.5	30	33	36.5	6	12	+10.8	39	S06 / TB	SOT-363
UPC2711TB[2]	2900	5	9	12	15	5.0	11	13	16.5	25	12	-2.6	30	S06 / TB	SOT-363
UPC2712TB[2]	2600	5	9	12	15	4.5	18	20	23.5	12	13	-0.4	33	S06 / TB	SOT-363
UPC2762TB[4]	2900	3	–	27	35	7.0	11.5	15.5	17.5	8.5	12	+7	25	S06 / TB	SOT-363
UPC2763TB[4]	2700	3	–	27	35	5.5	18	21	24	11	9	+6.5	29	S06 / TB	SOT-363
UPC2771TB[3]	2100	3	–	36	45	6	19	21	24	14	10	+11.5	30	S06 / TB	SOT-363
UPC2776TB[5]	2700	5	18	25	33	6.0	21	23	26	7.5	20	+6	32	S06 / TB	SOT-363
UPC3215TB[4]	2900	5		14		2.3	18.5	20.5	—	15	9.5	+1.5	44	S06 / TB	SOT-363
UPC8181TB[4]	4000	3	–	23	30	4.5	18	21	24	10.5	10	+7	32	S06 / TB	SOT-363
UPC8182TB[4]	2900	3	22	30	38	4.5	17.5	20.5	23.5	0	11	+9.0	32	S06 / TB	SOT-363

Notes:
1. Z_L = 50 Ω for all Electrical Characteristics. **2.** f = 1000 MHz test condition. **3.** f = 900 MHz test condition.
4. f = 1900 MHz test condition. **5.** f = 1000 MHz test condition. **6.** f = 500 MHz test condition. **7.** 100 - 1900 MHz with output port matching.
8. Differential amplifier. f = 400 MHz test condition. **9.** 100 - 2400 MHz with output port matching

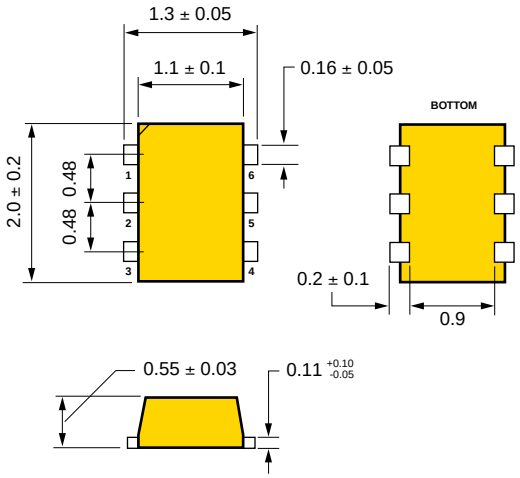
SiGe Low Noise Amplifiers

Part Number	Typical Frequency Range @ 3dB down (MHz)	ELECTRICAL CHARACTERISTICS[1] (T_A = 25°C)												Package Number	Package Style
		V_{CC} (V)	I_{CC} (mA)			NF (dB)	Gain (dB)			RL_{IN} (dB)	RL_{OUT} (dB)	P_{1dB} (dBm)	ISOL (dB)		
			MIN	TYP	MAX	TYP	MIN	TYP	MAX	TYP	TYP	TYP	TYP		
UPC8211TK	3000	3	–	3.5	4.5	1.3	15.5	18.5	21.5	7.5	14.5	-4	32.5	TK	Leadless Minimold

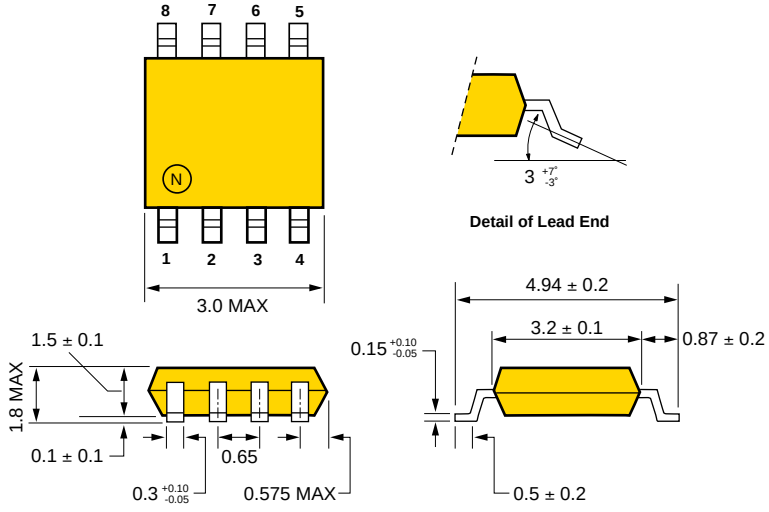
Low Power and Wideband Amplifiers continued



S06 / TB Package



TK Package



S08 / GV Package

Frequency Downconverters

Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)								Package Number	Package Style
	RF Input Frequency Range @3 dB Down (MHz)	IF Output Frequency Range @3 dB Down (MHz)	V_{CC} (V)	I_{CC} (mA)	Conversion Gain (dB)	P_{SAT} (dBm)	Noise Figure (dB)	Test Condition (Note)		
	TYP	TYP		TYP	TYP	TYP	TYP			
UPC2756TB	100-2000	10-300	3.0	5.9	14	-12	13	3	S06 / TB	SOT-363
UPC2757TB	100-2000	20-300	3.0	5.6	13	-8	13	4	S06 / TB	SOT-363
UPC2758TB	100-2000	20-300	3.0	11	17	-4	13	4	S06 / TB	SOT-363
UPC8112TB	800-2000	100-300	3.0	8.5	13	-3	11.2	5	S06 / TB	SOT-363
UPC2798GR	30–250	DC–150	5.0	23[7]	25	_	9[7]	6	S20	20 pin SSOP
UPC3220GR	30-250	0.1-150	5.0	20[7]	347	–	7[7]	6	S16	16 pin SSOP

Notes:

1. RF = 890 MHz, IF = 50 MHz. **2.** RF = 2000 MHz, IF = 403 MHz. **3.** RF = 1600 MHz, IF = 20 MHz. **4.** RF = 2000 MHz, IF = 250 MHz.
5. RF = 900 MHz, IF = 250 MHz. **6.** Designed for QAM receivers. Includes downconverter, AGC amp, video amp. **7.** AGC Amp and Mixer Block only.

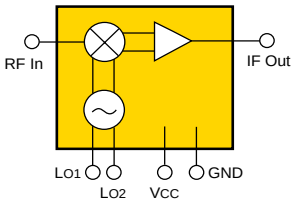
Frequency Upconverters

Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)								Package Number	Package Style
	IF Input Frequency Range @3 dB Down (MHz)	RF Output Frequency Range (MHz)	V_{CC} (V)	I_{CC} (mA)	Conversion Gain (dB)	P_{SAT}[2] (dBm)	Noise Figure (dB)	OIP_3		
	TYP	TYP		TYP	TYP	TYP	TYP			
UPC8106TB[1]	50-400	400-2000	3.0	9.0	10.0	-2.0	8.5	+5.5	S06 /TB	SOT-363
UPC8163TB[1]	50-300	800-2000	3.0	16.5	9.0	-2.0	12.5	+9.5	S06 / TB	SOT-363
UPC8172TB[3]	50-400	800-2500	3.0	9.0	8.5	0.0	10.4	+6.0	S06 / TB	SOT-363
UPC8187TB[4]	50-400	800-2500	3.0	15	11	+2.5	12	+10.0	S06 / TB	SOT-363

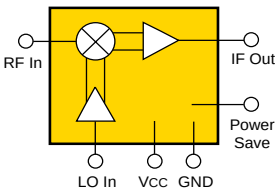
Notes:

1. RF = 900 MHz, LO = 660 MHz, P_{LO} = -5 dBm. **2.** P_{IN} = 0 dBm. **3.** RF = 1900 MHz, LO = 1660 MHz, P_{LOIN} = -5 dBm
4. RF = 1900 MHz, LO = 1780 MHz, P_{LO} = -5 dBm

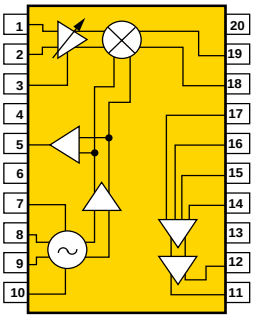
Downconverters



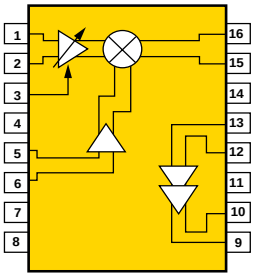
UPC2756TB



UPC2757 / 58TB
UPC8112TB

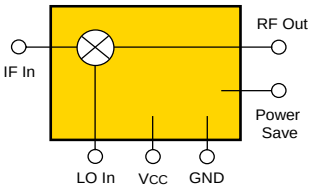


UPC2798GR

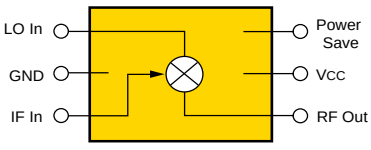


UPC3220GR
Out-of-Band
Tuner

Upconverters



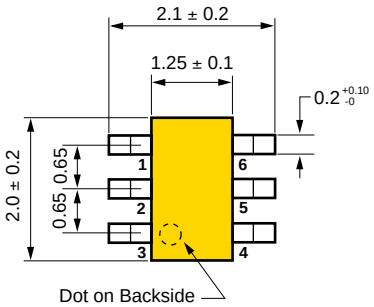
UPC8106 / 8163TB



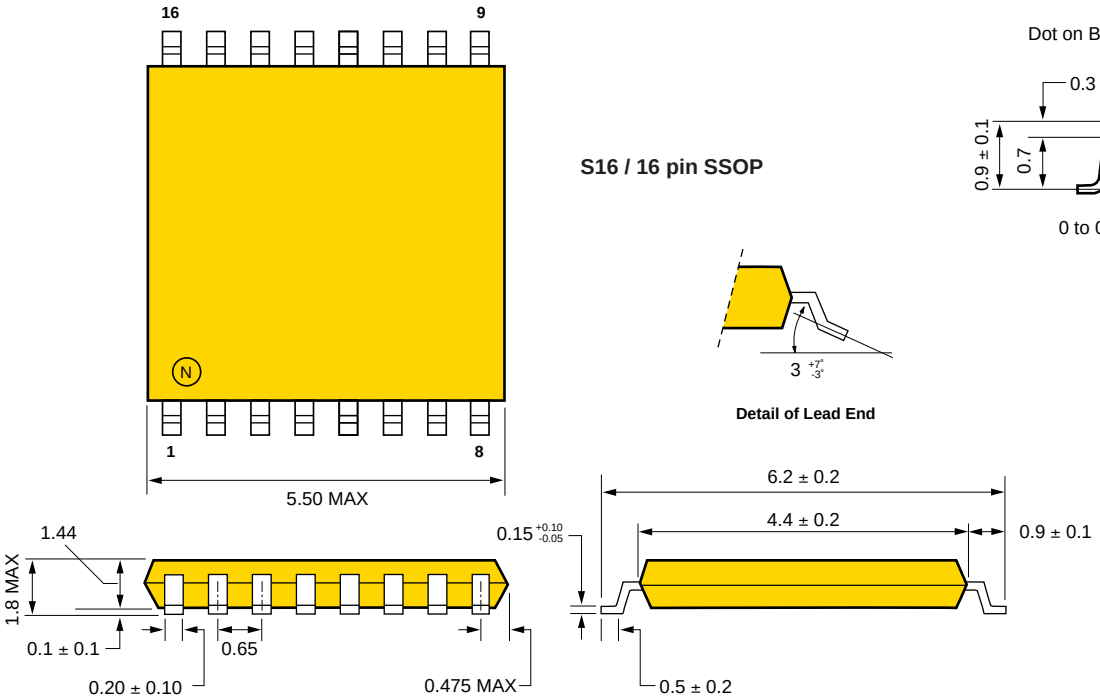
UPC8172 / 8187TB

Frequency Downconverters and Upconverters continued

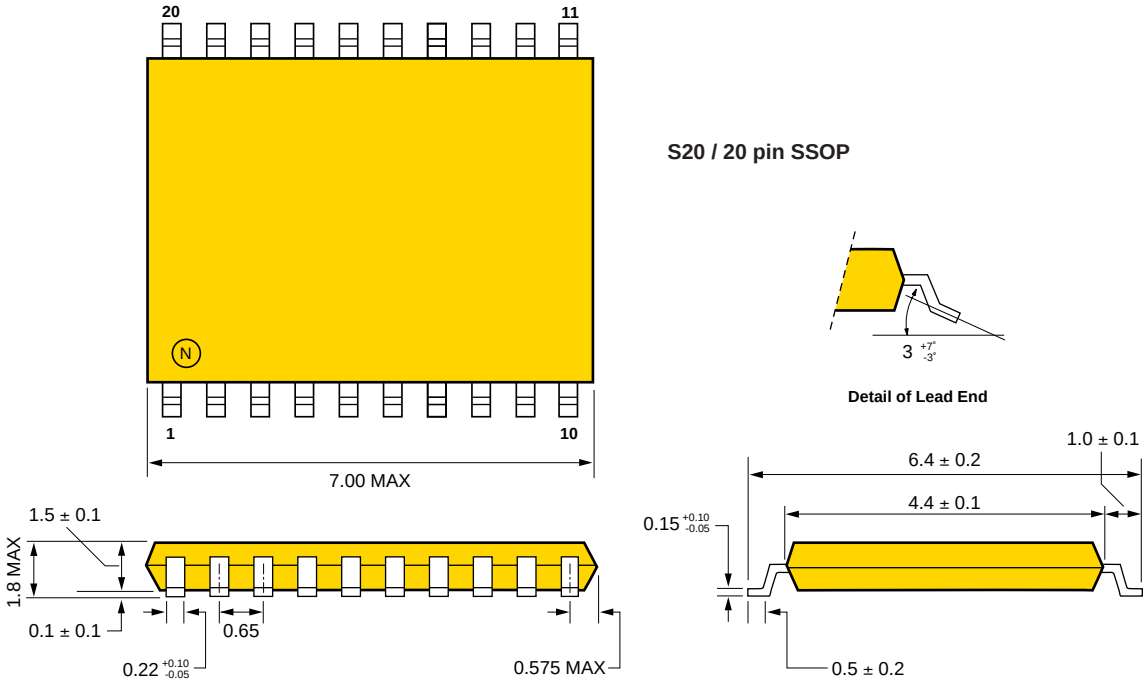
S06 / TB



S16 / 16 pin SSOP



S20 / 20 pin SSOP



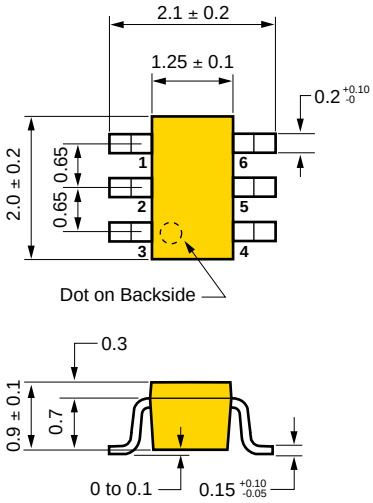
Prescalers

Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)								Divide Ratio	Package Number	Package Style
	f_{IN} (GHz)		P_{IN} (dBm)		P_{OUT}[1] (dBm)	V_{CC} (V)	I_{CC} (mA)				
	MIN	MAX	MIN	MAX	TYP		MIN	MAX			
UPB1507GV	0.5	3.0	-15	+6	NA [1]	5.0	12.5	26.5	64/128/256	S08 / GV	8 pin SSOP
UPB1508GV	0.5	3.0	-10	+10	-7	5.0	12 (TYP)		2	S08 / GV	8 pin SSOP
UPB1509GV	0.05	1.0	-20	-5	NA [2]	2.2 to 5.5	5.3 (TYP)		2/4/8	S08 / GV	8 pin SSOP
UPB1510GV	0.5	3.0	-15	+6	-7	5.0	15 (TYP)		4	S08 / GV	8 pin SSOP
UPB1511TB	0.05	0.8	-20	-5	NA [3]	3.0	3.5 (TYP)		2/4	S06 / TB	SOT-363

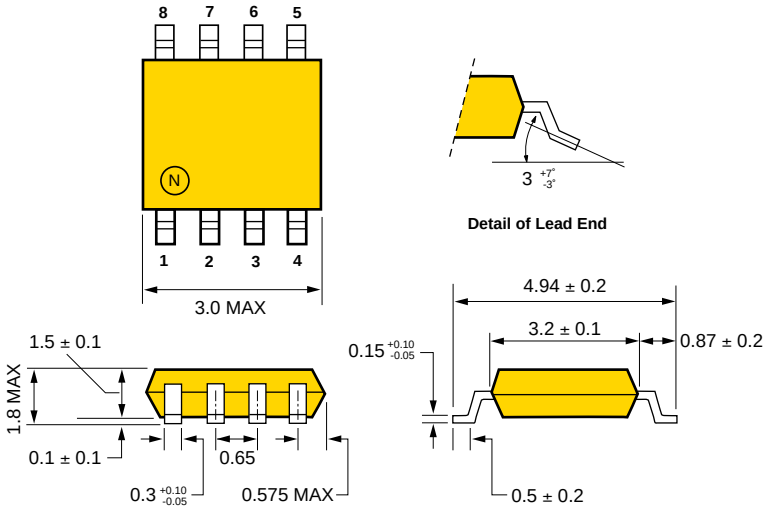
Notes:

1. Output voltage swing with C_L = 8 pF, V_{OUT} = 1.2 Vp-p minimum. **2.** Output voltage swing with R_L = 200 Ω, V_{OUT} = 0.1 Vp-p minimum.

3. Output voltage swing into R_L: 200Ω, V_{OUT} = 0.3 V_{P-P}



S06 / TB Package



S08 / GV Package

Video Amplifiers

Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)												Package Number	Package Style
	Video Amp							AGC Amp						
	V_{CC} (V)	I_{CC} (mA)	AVd [3,4]		BW [4,5] (MHz)		V_{op-p} (V_{p-p})	V_{CC} (V)	I_{CC} (mA)	Gain (dB)	AGC (dB)	NF (dB)		
			Gain 1	Gain 2	Gain 1	Gain 2								
	TYP	TYP	TYP	TYP	TYP	TYP	TYP	TYP	TYP	TYP	TYP	TYP		
UPC1663GV[1]	±6	13	320	10	120	700	4.0	—	—	—	—	—	S08 / GV	8 pin SSOP

Notes:
1. f = 10 MHz test condition.
2. f = 100 MHz test condition.
3. Differential Voltage Gain.
4. Operation conditions applicable to AVd and BW:
   Gain 1 – Gain select pins G1A and G1B are shorted.
   Gain 2 – Gain select pins G1A and G1B are open.
5. BW refers to Gain 3 dB down from:
   UPC1663GV = 100 kHz
   UPC3206GR = 5 MHz

AGC Amplifiers

Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)													Package Number	Package Style
	Typical Frequency Range @ 3 dB Down (MHz)	V_{CC} (V)	I_{CC} (mA)			NF (dB)	Gain (dB)			RL_{IN} (dB)	RL_{OUT} (dB)	P_{1dB} (dBm)	AGC (dB)		
			MIN	TYP	MAX	TYP	MIN	TYP	MAX	TYP	TYP	TYP	TYP		
UPC3217GV[3]	100	5	15	23	34	6.5	50	53	56	N/A	N/A	N/A[4]	53	S08 / GV	8 pin SSOP
UPC3218GV[3]	100	5	15	23	34	3.5	60	63	66	N/A	N/A	N/A[4]	53	S08 / GV	8 pin SSOP
UPC3219GV[3]	100	5	28	35	42	9	39	42	45	N/A	N/A	N/A[4]	42	S08 / GV	8 pin SSOP
UPC3221GV[3]	100	5	26	33	41	4.2	57	60	63	N/A	N/A	N/A[4]	50	S08 / GV	8 pin SSOP
UPC8204TK[5]	2500	3	8.5	11.5	15	7.5	11	14	17	13	N/A	+5	40	TK	6 pin recessed lead minimold

Notes:
1. f = 900 MHz test condition.
2. Positive gain slope vs. AGC voltage.
3. f_{IN} = 45 MHz, Z_S = 50Ω, Z_L = 250Ω
4. Output Voltage swing into R_L = 250Ω, V_{OUT} = 1.0 V_{P-P}
5. f_{in} = 2.4 GHz, 50 W in and out, -20 dBm input power

Driver Amplifiers

Part Number	TYPICAL ELECTRICAL CHARACTERISTICS (T_A = 25°C)						Package Number	Package Style
	V_{CC} (V)	I_{CC} (mA)	Gain (dB)	RL_{IN} (dB)	RL_{OUT} (dB)	P_{1dB} (dBm)		
UPD5702TU[1]	3	150	25	10	10	17	TU	8 pin L^2mm

Notes:
1. Measured at f = 1900 MHz

GPS Receivers

Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)					Package Number	Package Style
	RF Input Frequency (MHz)	IF Output Frequency (KHz)	V_{CC} (V)	I_{CC} (mA)	Conversion Gain (dB)		
	TYP	TYP		TYP	TYP		
UPB1007K[1]	1575.42	4,092.00	3.0	25.0	120	QFN 36	36 pin QFN
UPB1008K[1]	1575.42	132.00[2]	3.0	18.0	120	QFN 36	36 pin QFN
UPB1009K[1]	1575.42	4092.00	3.0	26.0	–	QFN 44	44 pin QFN

Notes:
1. Designed for GPS receivers. Includes RF and IF downconverters and PLL frequency synthesizer.
2. Using eRide Inc.'s proprietary DSP architecture.

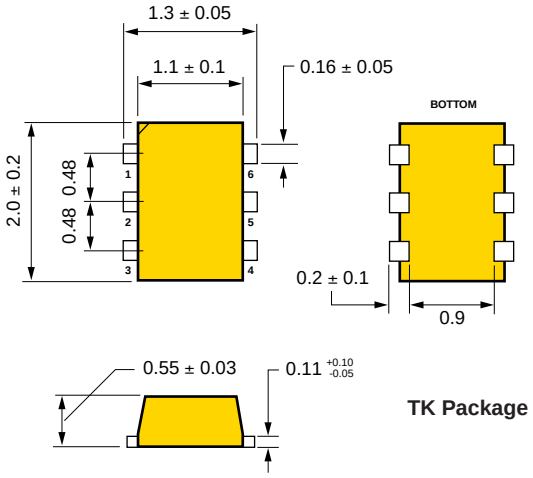
W-CDMA AGC Amplifier ICs

AGC AMPLIFIERS with I/Q MODULATOR								
Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)						Package Number	Package Style
	I/Q Input Frequency Range at 3 dB down (MHz)	IF Output Frequency Range at 1 dB down (MHz)	LO Frequency Range (dBm)	Output Power (incl. AGC) (dBm)	V_{CC} (mA)	I_{CC} (dB)		
UPC8191K	DC-10	263-615	350-820	-93 to -13	3.0	30.5	QFN 20	20 pin QFN
UPC8195K	DC-10	230-475	460-950	-88 to -13	3.0	25.5	QFN 20	20 pin QFN

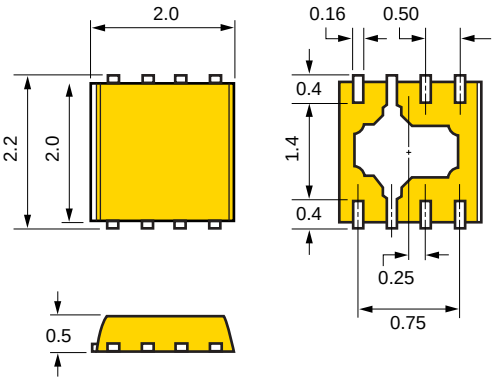
AGC AMPLIFIER with I/Q DEMODULATORS										
Part Number	ELECTRICAL CHARACTERISTICS (T_A = 25°C)								Package Number	Package Style
	RF Input Frequency Range (MHz)	I/Q Output Frequency Range (MHz)	Conversion Gain (Incl. AGC range) (dB)	V_{CC} (mA)	I_{CC} (dB)	Noise Figure (dB)	Input P1dB[1] (dBm)	IIP_3[2]		
UPC8190K	380	DC-10	-20 min/+77 max	3.0	9	9.5	-45	-55	QFN 20	20 pin QFN
UPC8194K	190	DC-10	-20 min/+77 max	3.0	9	9.5	-50	-55	QFN 20	20 pin QFN

Notes:

1. Input 1dB compression point at Gain = +50dB **2.** Third Order Input Intercept Point, Gain = +65dB, R_S = 600 balanced. P_{IN} = -70dBm

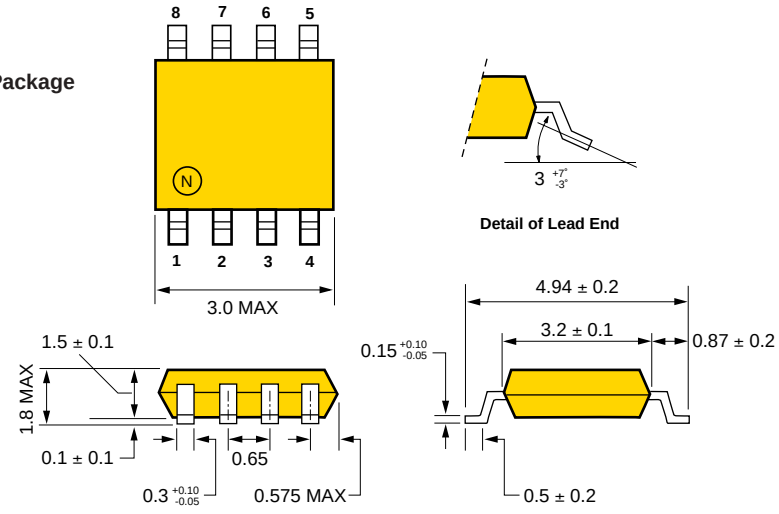


TK Package

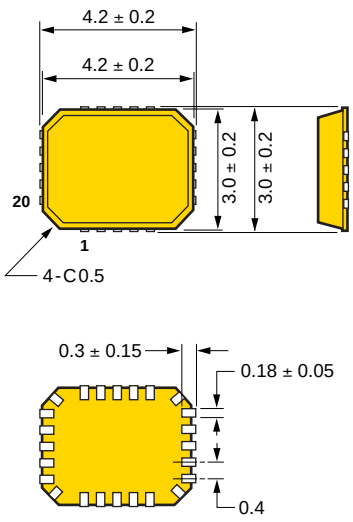


TU Package

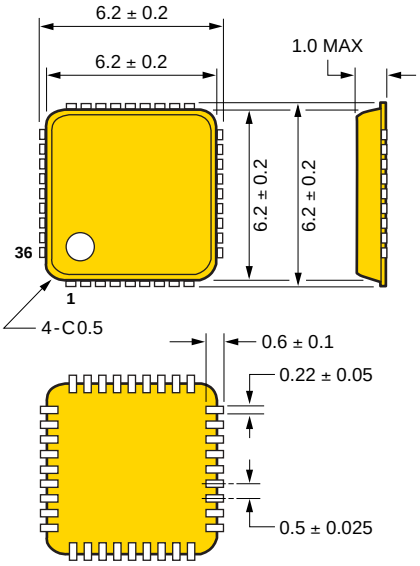
S08 / GV Package



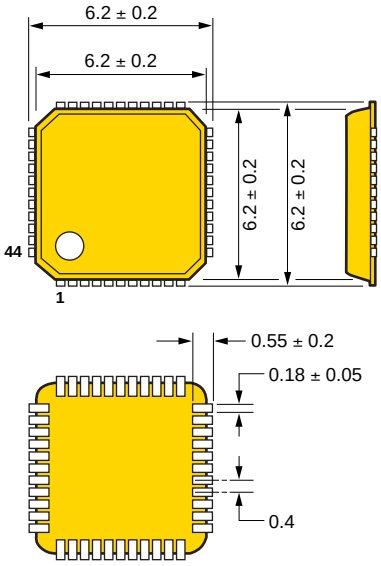
Amplifier, GPS and W-CDMA ICs continued



QFN 20

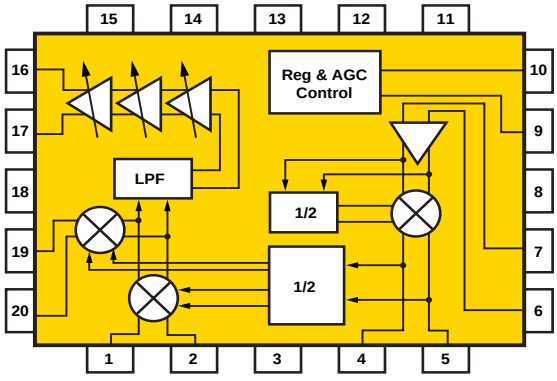


QFN 36

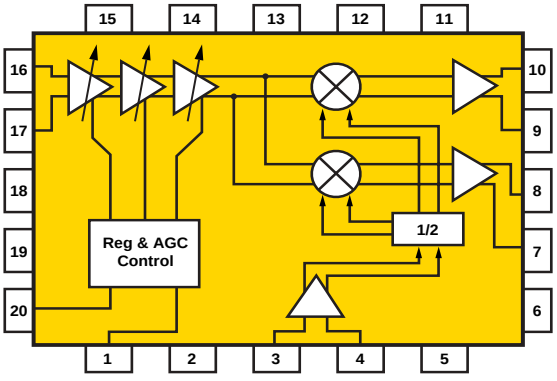


QFN 44

W-CDMA AGC Amplifier ICs

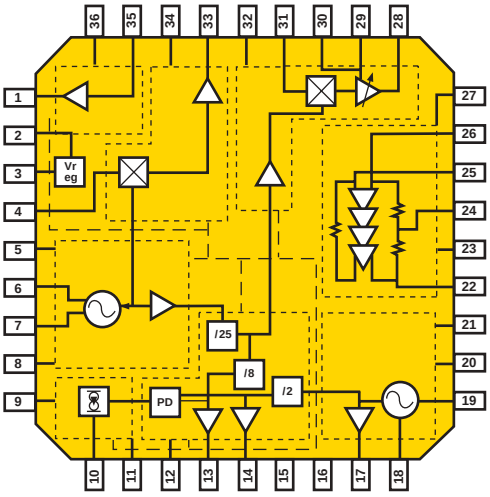


UPC8191K / UPC8195K
AGC Amplifer with IQ Modulator



UPC8190K / UPC8194K
AGC Amplifer with IQ Demodulator

GPS Receiver ICs



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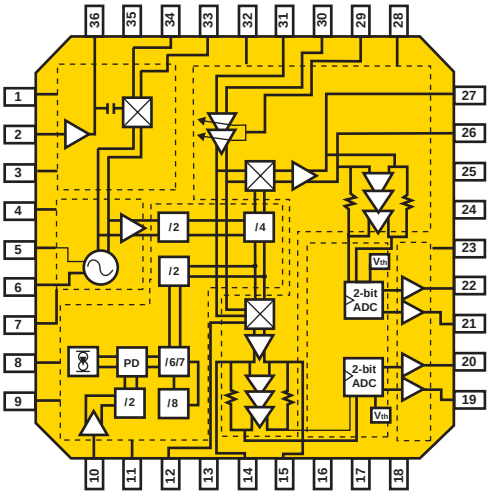

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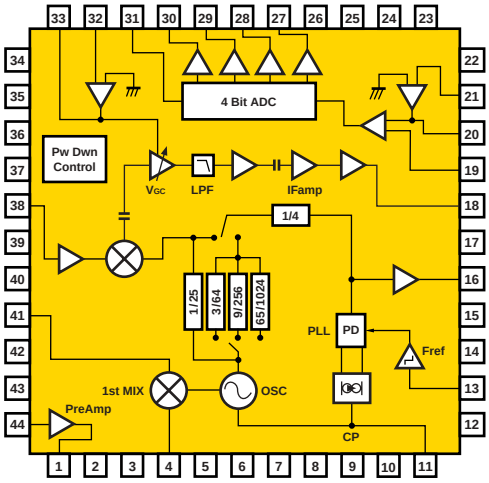

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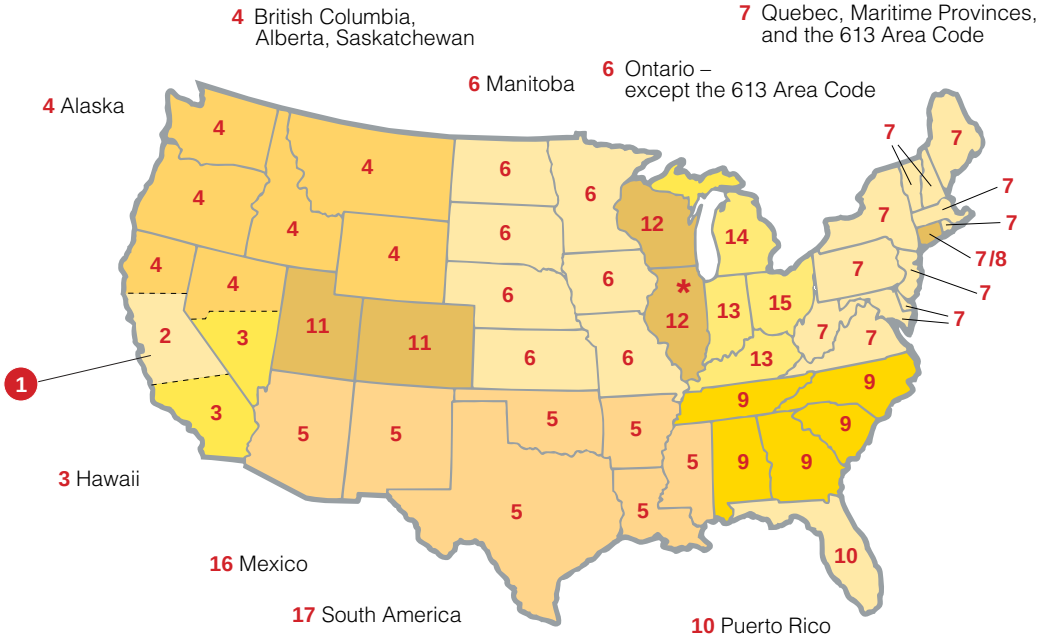

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Last modified: 01-13-04