

FEATURES

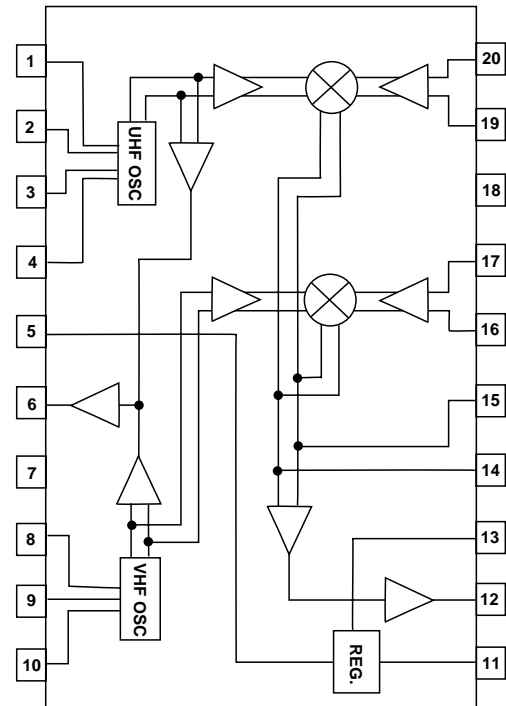
- UHF AND VHF DOWNCONVERTERS ON A SINGLE IC
- HIGH CONVERSION GAIN: 31 dB (UPC2744GS)
23 dB (UPC2743GS)
- LOW DISTORTION: UPC2743GS
- TYPICAL SATURATED OUTPUT POWER: +13 dBm
- 9 V SINGLE SUPPLY
- SMALL PACKAGE: 20 PIN SOP
Suitable for Surface Mount
- TAPE AND REEL PACKAGING OPTION AVAILABLE

DESCRIPTION

The UPC2743GS and UPC2744GS are Silicon Monolithic Integrated Circuits designed using the NESAT II MMIC process. These products consist of UHF and VHF double balanced mixers and local oscillators, an IF amplifier, an oscillator output buffer amplifier and a UHF/VHF switching circuit. These devices are ideal for TV and VCR tuners.

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

INTERNAL BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS (T_A = 25°C, V_{CC} = 9 V, f_{IF} = 45 MHz)

PART NUMBER PACKAGE OUTLINE			UPC2743GS G20						UPC2744GS G20					
			VHF ¹ CIRCUIT			UHF ² CIRCUIT			VHF ¹ CIRCUIT			UHF ² CIRCUIT		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
I _{CC}	Circuit Current (no signal)	mA	37	47	57	39	49	59	37	47	57	39	49	59
CG ³	Conversion Gain (P _{RF} = -30 dBm)													
	f _{RF} = 55 MHz	dB	16.5	20	23.5				21.5	25	28.5			
	f _{RF} = 200 MHz	dB	16.5	20	23.5				21.5	25	28.5			
	f _{RF} = 470 MHz	dB	16.5	20	23.5	19.5	23	26.5	21.5	25	28.5	27.5	31	34.5
CG ⁴	Conversion Gain (P _{RF} = -30 dBm)													
	f _{RF} = 55 MHz	dB		22						27.5				
	f _{RF} = 360 MHz	dB		22.5						28				
	f _{RF} = 400 MHz	dB					27						35.5	
P _{SAT} ³	Saturated Output Power (P _{RF} = 0 dBm)													
	f _{RF} = 55 MHz	dBm	10	13					10	13				
	f _{RF} = 200 MHz	dBm	10	13					10	13				
	f _{RF} = 470 MHz	dBm	10	13					10	13				
P _{SAT} ³	f _{RF} = 890 MHz	dBm				10	13					10	13	
	f _{RF} = 890 MHz	dBm				10	13					10	13	

Notes:

1. Mode Select (Pin 5) = open.
2. Mode Select (Pin 5) = 9 V.
3. Measured with external LO, P_{LO} = -5 dBm.
4. Measured with internal LO

ELECTRICAL CHARACTERISTICS (TA = 25°C, VCC = 9 V, fIF = 45 MHz)

PART NUMBER PACKAGE OUTLINE			UPC2743GS G20						UPC2744GS G20					
			VHF ¹ CIRCUIT			UHF ² CIRCUIT			VHF ¹ CIRCUIT			UHF ² CIRCUIT		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Posc ⁴	Power at OSC Output (Pin 6)		-20		0	-20		0	-20		0	-20		0
	f _{LO} = 100 to 900 MHz	dBm												
	f _{LO} = 100 MHz	dBm		-4			-4			-4			-4	
	f _{LO} = 405 MHz	dBm		-5			-5			-5			-5	
	f _{LO} = 445 MHz	dBm		-9			-9			-9			-9	
	f _{LO} = 845 MHz	dBm		-13			-13			-13			-13	
NF ³	Noise Figure	f _{RF} = 55 MHz	dB	13	16					11	14			
		f _{RF} = 200 MHz	dB	13	16					11	14			
		f _{RF} = 470 MHz	dB	13	16		12	15		11	14		10	13
		f _{RF} = 890 MHz	dB				12	15					10	13
NF ⁴	Noise Figure	f _{RF} = 55 MHz	dB	12.3						9.2				
		f _{RF} = 360 MHz	dB	13.4						9.4				
		f _{RF} = 400 MHz	dB				11.0						8.3	
		f _{RF} = 800 MHz	dB				12.7						10.0	
CM ⁵	1% Cross Modulation	f _{des} = 55 MHz	dBμ		97					92				
		f _{des} = 360 MHz	dBμ		94					90				
		f _{des} = 400 MHz	dBμ					92					82	
		f _{des} = 800 MHz	dBμ					90					80	
S/I ⁶	Six Channel Beat	dBc		57.5						53.5				

Notes:

1. Mode Select (Pin 5) = open.
2. Mode Select (Pin 5) = 9 V.
3. Measured with external LO, P_{LO} = -5 dBm.
4. Measured with internal LO.
5. f_{UNDESIRE}D = f_{DESIRE}D + 12 MHz, P_{IN} = -30 dBm, AM 100 KHz, 30% modulation, S/I ratio = 46 dBc, open output terminal.
6. f_p = 83.25 MHz, f_s = 87.75, P_{IN} = -30 dBm each, f_{LO} = 129 MHz.

ABSOLUTE MAXIMUM RATINGS¹ (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Vcc	Supply Voltage	V	11.0
PT	Total Power Dissipation ²	mW	750
TOP	Operating Temperature	°C	-20 to +75
TSTG	Storage Temperature	°C	-55 to +150

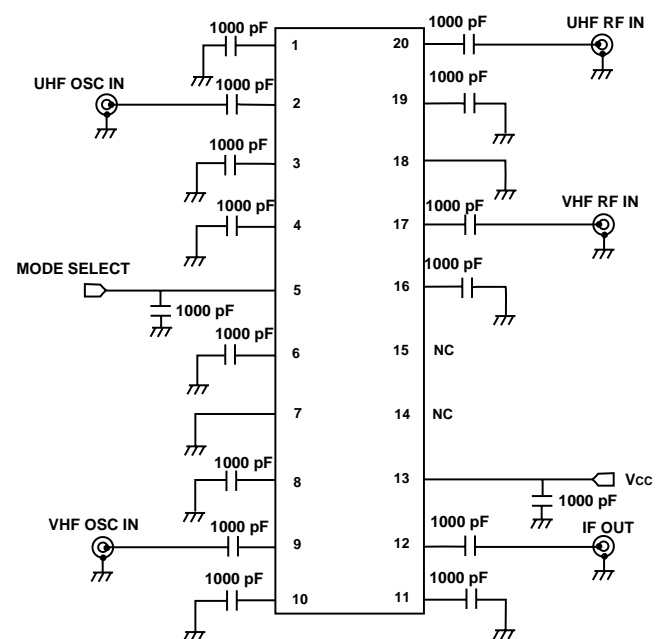
Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. Mounted on a 50 x 50 x 1.6 mm epoxy glass PWB (TA = +75°C).

RECOMMENDED OPERATING CONDITIONS

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
Vcc	Supply Voltage	V	8.0	9.0	10.0

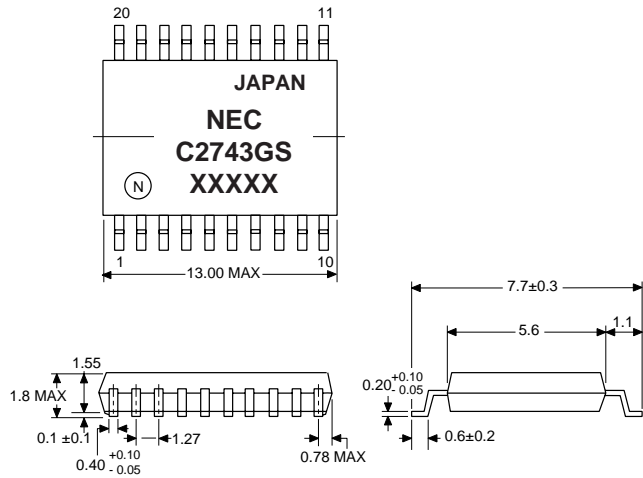
TEST CIRCUIT - EXTERNAL OSCILLATOR



MODE	Vcc	MODE SELECT
VHF	9V	Open
UHF	9V	9V

OUTLINE DIMENSIONS¹ (Units in mm)

PACKAGE OUTLINE² G20

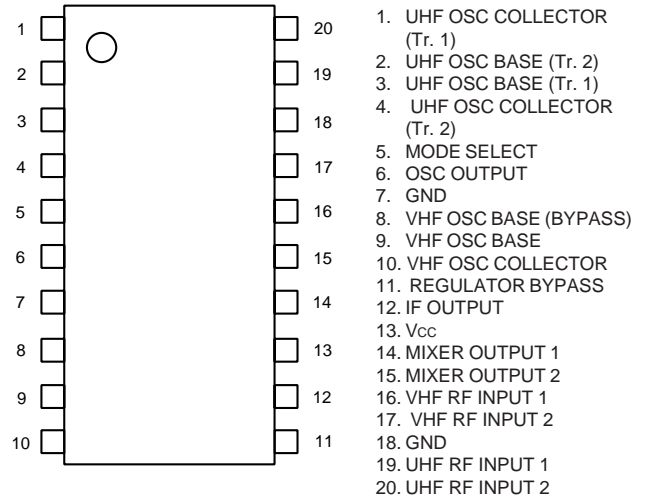


Notes:

1. All dimensions are typical unless otherwise specified.
2. Package will be marked 2743 or 2744 as shown. "XXXXX" is date/lot code.

LEAD CONNECTIONS

(Top View)



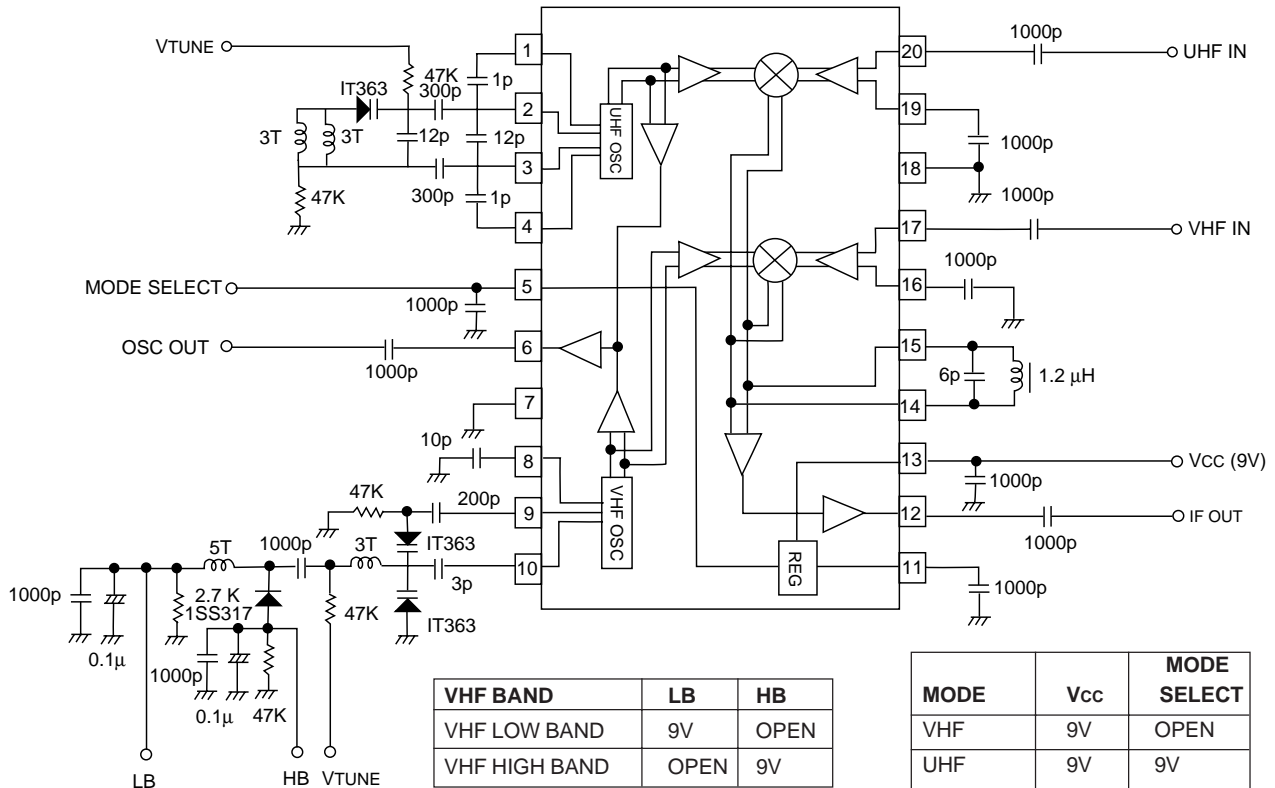
ORDERING INFORMATION

PART NUMBER	QTY
UPC2743GS-E1	2500 per Reel
UPC2744GS-E1	2500 per Reel

Note:

Embossed Tape, 24 mm wide,
Pins 1-10 are in tape pull-out direction.

TEST CIRCUIT - INTERNAL OSCILLATOR



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PRINTED IN USA ON RECYCLED PAPER -11/97