

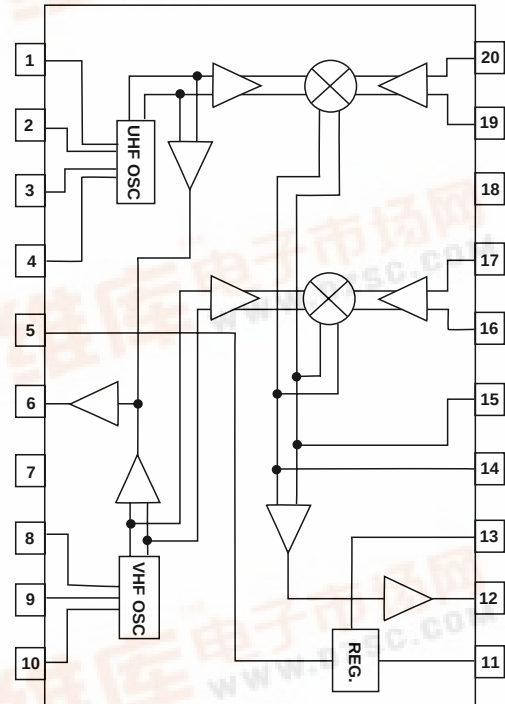
NEC**SILICON MMIC UHF/VHF
DUAL DOWNCONVERTER****UPC2743GS
UPC2744GS****FEATURES**

- **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** ($T_A = 25^\circ\text{C}$, $V_{CC} = 9\text{ V}$, $f_{IF} = 45\text{ MHz}$)

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	
PSAT 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		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

UPC2743GS, UPC2744GS

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
Posc ⁴	Power at OSC Output (Pin 6) f _{LO} = 100 to 900 MHz f _{LO} = 100 MHz f _{LO} = 405 MHz f _{LO} = 445 MHz f _{LO} = 845 MHz	dBm dBm dBm dBm dBm	-20		0	-20		0	-20		0	-20		0
NF ³	Noise Figure f _{RF} = 55 MHz f _{RF} = 200 MHz f _{RF} = 470 MHz f _{RF} = 890 MHz	dB dB dB dB		13	16					11	14			
				13	16		12	15		11	14		10	13
NF ⁴	Noise Figure f _{RF} = 55 MHz f _{RF} = 360 MHz f _{RF} = 400 MHz f _{RF} = 800 MHz	dB dB dB dB		12.3						9.2				
				13.4			11.0			9.4			8.3	
							12.7						10.0	
CM ⁵	1% Cross Modulation f _{des} = 55 MHz f _{des} = 360 MHz f _{des} = 400 MHz f _{des} = 800 MHz	dBμ dBμ dBμ dBμ		97						92				
				94			92			90			82	
							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 (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{CC}	Supply Voltage	V	11.0
P _T	Total Power Dissipation ²	mW	750
T _{OP}	Operating Temperature	°C	-20 to +75
T _{STG}	Storage Temperature	°C	-55 to +150

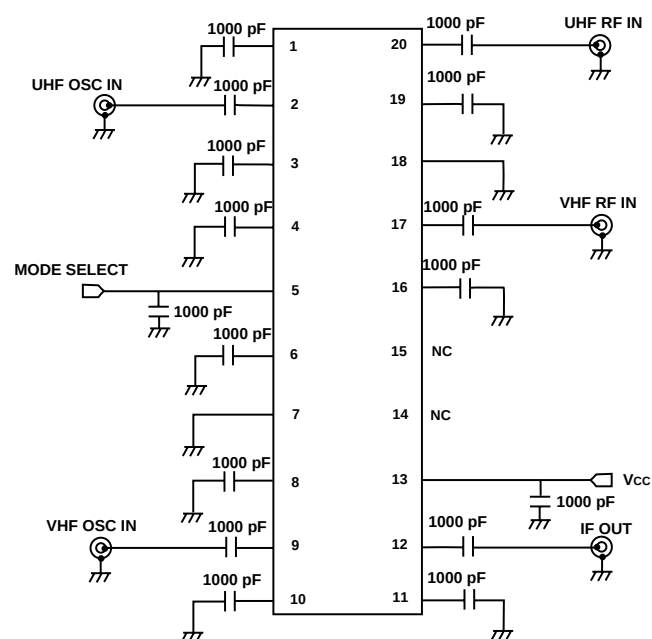
Notes:

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 (T_A = +75°C).

RECOMMENDED OPERATING CONDITIONS

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V _{CC}	Supply Voltage	V	8.0	9.0	10.0

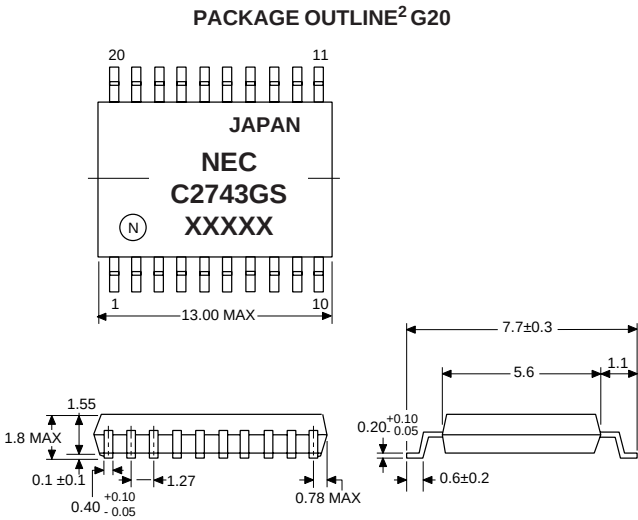
TEST CIRCUIT - EXTERNAL OSCILLATOR



MODE	V _{CC}	MODE SELECT
VHF	9V	Open
UHF	9V	9V

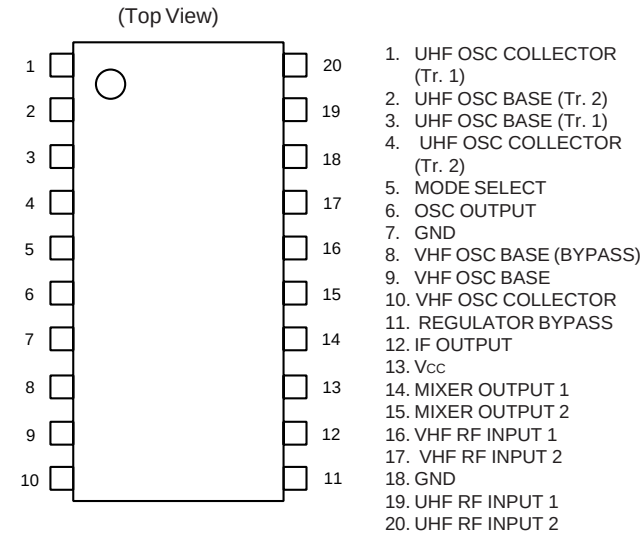
UPC2743GS, UPC2744GS

OUTLINE DIMENSIONS¹ (Units in mm)



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

LEAD CONNECTIONS



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

