

FEATURES

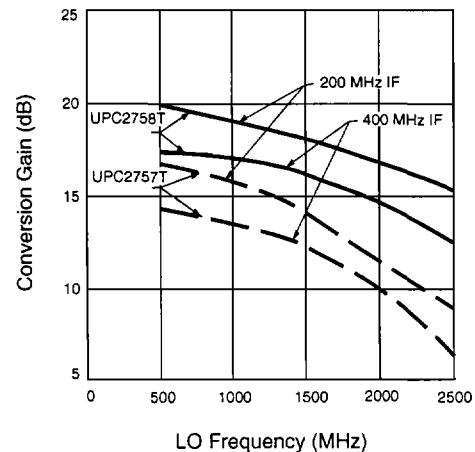
- WIDE BAND OPERATION UP TO 2.5 GHz
- LOW VOLTAGE OPERATION: 2.7 V Minimum
- LOW POWER CONSUMPTION: 15 mW (UPC2757T)
- POWER SAVE FUNCTION
- SUPER SMALL PACKAGE
- TAPE AND REEL PACKAGING OPTION AVAILABLE

DESCRIPTION

The UPC2757T and UPC2758T are L-Band Frequency Converters manufactured using the NESAT III MMIC process. These products consist of a double balanced mixer, IF amplifier and LO buffer amplifier. The UPC2757T is designed for low power consumption while the UPC2758T is designed for low distortion. Both devices operate on a 3 volt supply voltage making them ideal for portable hand held cellular, GPS, PCN and wireless LAN applications.

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

CONVERSION GAIN vs. LO FREQUENCY
Vcc = 3 V, LO Power = -5 dBm
RF Above LO



ELECTRICAL CHARACTERISTICS (TA = 25°C, Vcc = 3 V, Vps = 3 V, PLO = -10 dBm)

PART NUMBER PACKAGE OUTLINE			UPC2757T T06			UPC2758T T06		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX
Icc	Circuit Current, Vps = 3 V Vps = 0.5 V	mA μA	3.7	5.6 0.1	7.7	6.6	11 0.1	14.8
fRF	RF Operating Frequency Range (The conversion gain at fRF is not more than 3 dB down from the gain at fRF = 800 MHz, fIF = 130 MHz)	GHz	0.1		2.0	0.1		2.0
fIF	IF Operating Frequency Range (The conversion gain at fIF is not more than 3 dB down from the gain at fRF = 800 MHz, fIF = 130 MHz)	MHz	20		300	20		300
CG	Conversion Gain ¹ , fRF = 800 MHz, fIF = 130 MHz fRF = 2.0 GHz, fIF = 250 MHz	dB dB	12 10	15 13	18 16	16 14	19 17	22 20
NF	Noise Figure, fRF = 800 MHz, fIF = 130 MHz fRF = 2.0 GHz, fIF = 250 MHz	dB dB		10 13	13 16		9 13	12 15
PSAT	Saturated Output Power ² , fRF = 800 MHz, fIF = 100 MHz	dBm		-3			+1	
P1dB	Output Power at 1dB compression point, fRF = 800 MHz fIF = 100 MHz	dBm		-8			-3.5	
OIP3	Output 3rd Order Intercept Point, (SSB) PLO = -10 dBm fRF = 0.8~2.0 GHz, fIF = 100 MHz	dBm		0			5	
ISO	LO Leakage, fLO = 0.8 ~2.0 GHz at RF pin at IF pin	dBm dBm		-35 -23			-30 -15	
RTH (J-A)	Thermal Resistance (Junction to Ambient) Free Air Mounted on a 50 x 50 x 1.6 mm epoxy glass PWB	°C/W °C/W			620 230			620 230

Notes:

1. PRF = -40 dBm.
2. PRF = -10 dBm.

UPC2757T, UPC2758T

ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{CC} , V _{PS}	Supply Voltage	V	5.5
P _T	Total Power Dissipation ²	mW	280
T _{OP}	Operating Temperature	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-55 to +150

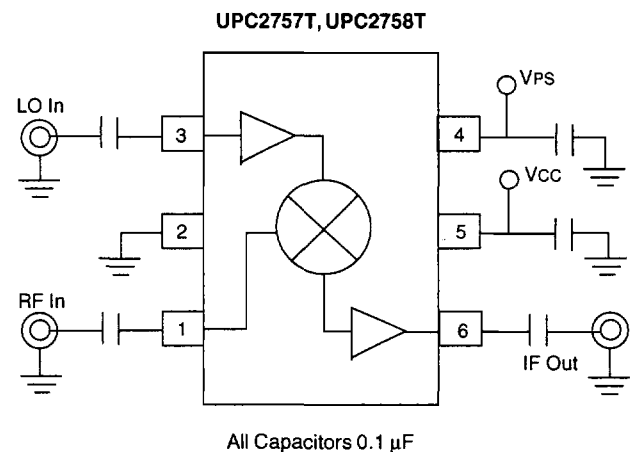
Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. Mounted on a 50 x 50 x 1.6 mm epoxy glass PWB (T_A = +85°C).

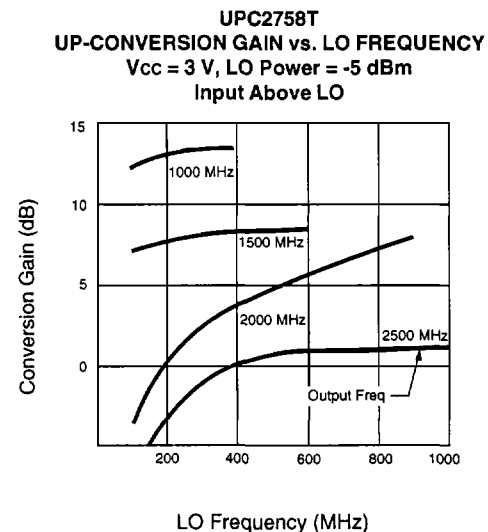
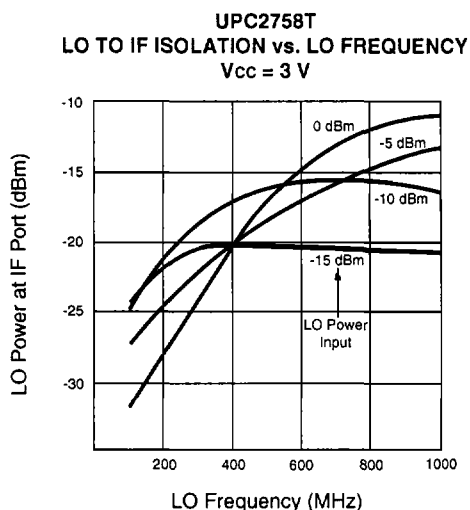
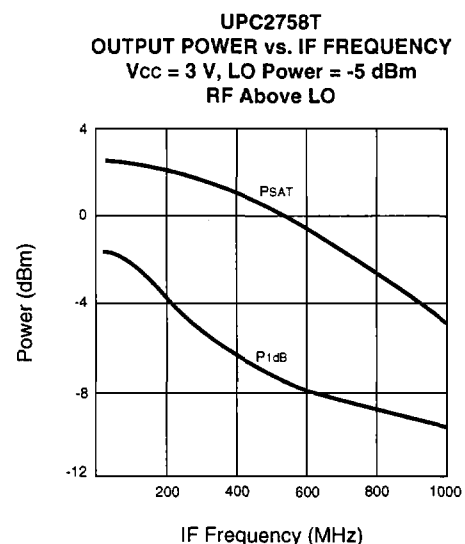
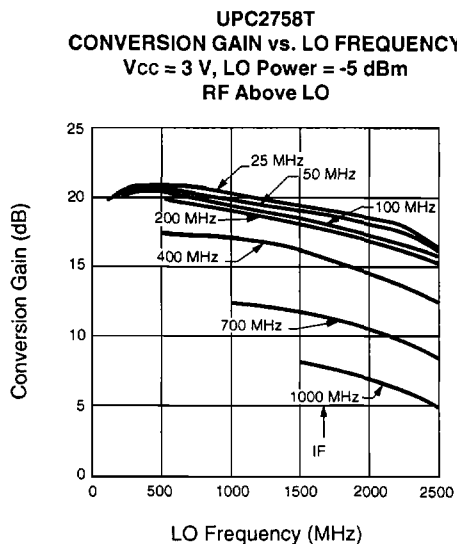
RECOMMENDED OPERATING CONDITIONS

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V _{CC}	Supply Voltage	V	2.7	3.0	3.3
T _{OP}	Operating Temperature	°C	-40	+25	+85
P _{LO}	LO Input Level	dBm	-15	-10	-5

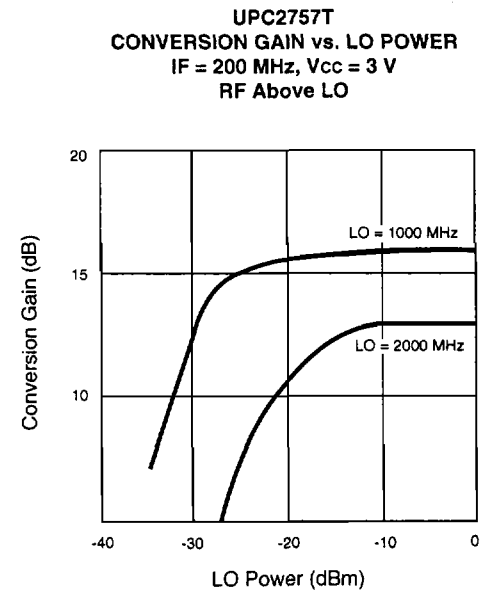
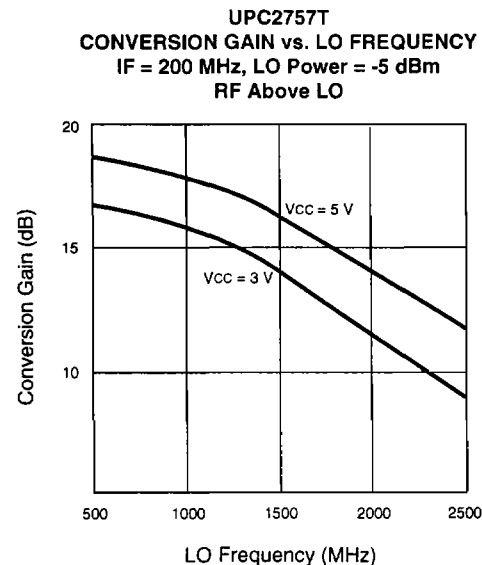
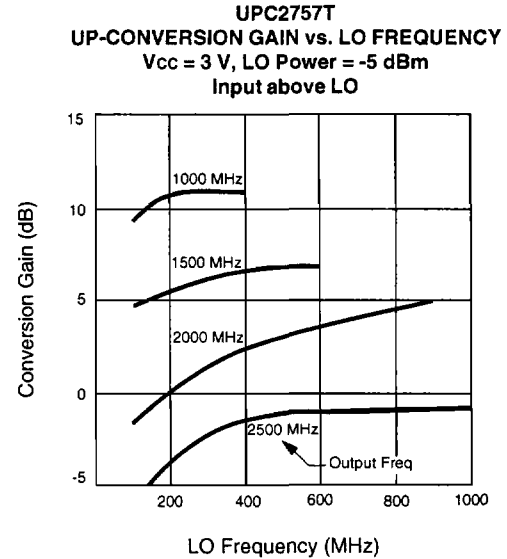
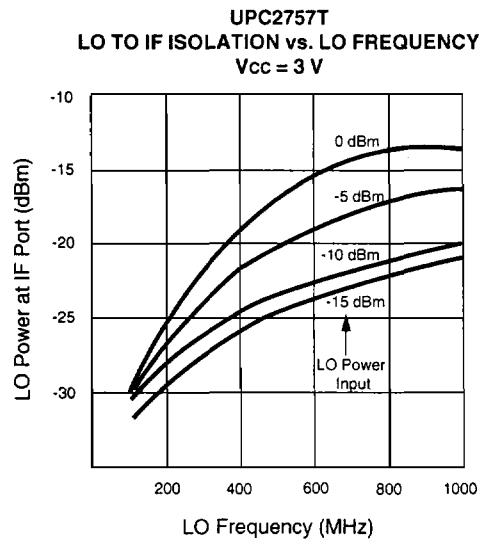
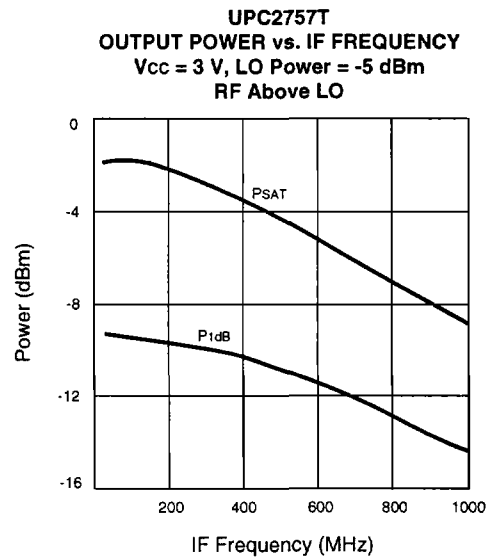
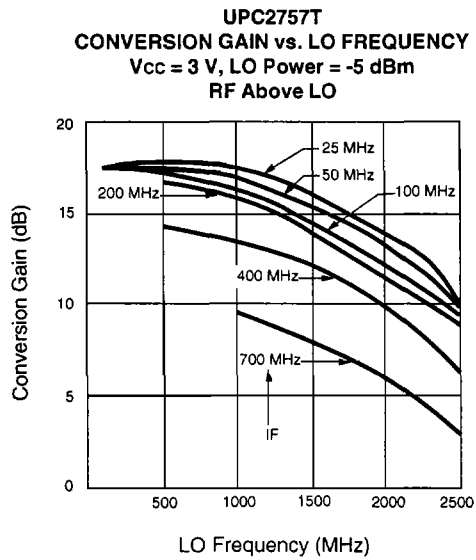
TEST CIRCUIT/BLOCK DIAGRAM



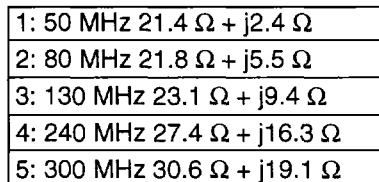
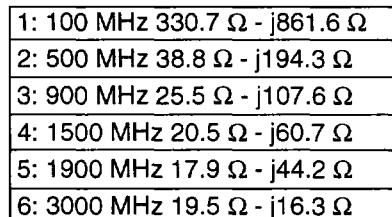
TYPICAL PERFORMANCE CURVES (T_A = 25°C)



TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)



UPC2757T AND UPC2758T PORT IMPEDANCES



RECOMMENDED P.C.B. LAYOUT (Units in mm)

Technical drawing of a mechanical part with dimensions and tolerances:

- Overall width: $2.8^{+0.2}_{-0.3}$
- Inner width: $1.5^{+0.2}_{-0.1}$
- Overall height: 2.9 ± 0.2
- Height of feature 3: 0.95
- Height of feature 2: 1.9 ± 0.2
- Height of feature 1: 0.95
- Feature 1 is located at the bottom left.
- Feature 2 is located in the middle left.
- Feature 3 is located at the top left.
- Feature 4 is located at the top right.
- Feature 5 is located in the middle right.
- Feature 6 is located at the bottom right.
- Feature 6 has a width of 0.3 and a height of 0.05 .
- Feature 6 has a tolerance of ± 0.10 .
- Feature 6 has a tolerance of 0.13 ± 0.1 .
- Feature 6 has a tolerance of 0 to 0.1 .

LEAD CONNECTIONS

Note:
Package Markings:
C1X: UPC2757T
C1Y: UPC2758T

PART NUMBER	QTY
UPC2757T-E3	3K/Reel
UPC2758T-E3	3K/Reel

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