

### FEATURES

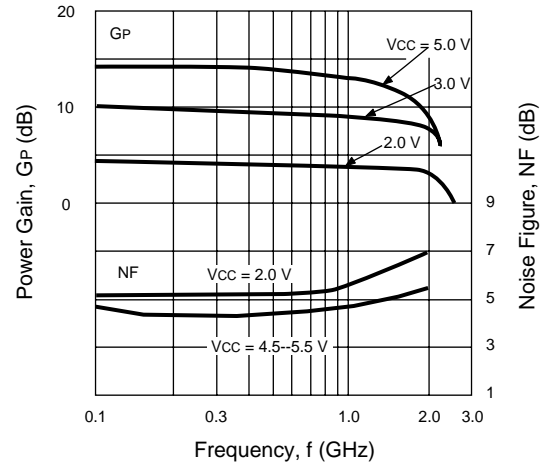
- **HIGH GAIN:** 15 dB Typical at 400 MHz
- **WIDEBAND FREQUENCY RESPONSE:** 1.6 GHz TYP
- **SINGLE POSITIVE DC SUPPLY**
- **SUPER SMALL PACKAGE**
- **TAPE AND REEL PACKAGING OPTION AVAILABLE**

### DESCRIPTION

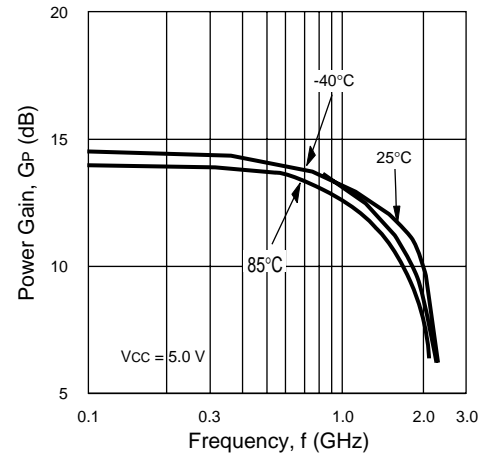
The UPC2726T is a Silicon RF Integrated Circuit which is manufactured using the NESAT III process. The NESAT III process produces transistors with  $f_T$  approaching 20 GHz. This amplifier was designed as a buffer amplifier for circuits requiring differential inputs and outputs for increased common-mode rejection.

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

**NOISE FIGURE AND GAIN vs. FREQUENCY AND VOLTAGE**



**GAIN vs. FREQUENCY AND TEMPERATURE**



### ELECTRICAL CHARACTERISTICS (TA = 25°C, ZL = ZS = 50 Ω, f = 400 MHz)

PART NUMBER PACKAGE OUTLINE			UPC2726T					
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	VCC = 5 V			VCC = 2 V		
			MIN	TYP	MAX	MIN	TYP	MAX
I <sub>CC</sub>	Circuit Current, (No Signal)	mA	8	11.5	15		2.5	
G <sub>s</sub>	Small Signal Gain	dB	11	15	17		4.5	
NF	Noise Figure	dB		4.5	6		5.1	
f <sub>u</sub>	Upper limit Operating Frequency <sup>1</sup>	GHz	1.0	1.6			2.4	
P <sub>SAT</sub>	Saturated Output Power	dBm	-5	-2			-14	
RL <sub>IN</sub>	Input Return Loss	dB		2			1	
RL <sub>OUT</sub>	Output Return Loss	dB		4			4	
ISOL	Isolation	dB		60			58	
OIP <sub>3</sub>	Output 3rd Order Intercept Point <sup>2</sup>	dBm		-2.5			-10	

Notes:

1. The Gain at f<sub>u</sub> is 3 dB down from the gain at 400 MHz.
2. f<sub>1</sub> = 400 MHz, f<sub>2</sub> = 402 MHz, single side band.

**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>** (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CC</sub>	Supply Voltage	V	6.0
P <sub>IN</sub>	Input Power	dBm	0
P <sub>T</sub>	Total Power Dissipation <sup>2</sup>	mW	280
T <sub>OP</sub>	Operating Temperature	°C	-40 to +85
T <sub>STG</sub>	Storage Temperature	°C	-55 to +150

Notes:

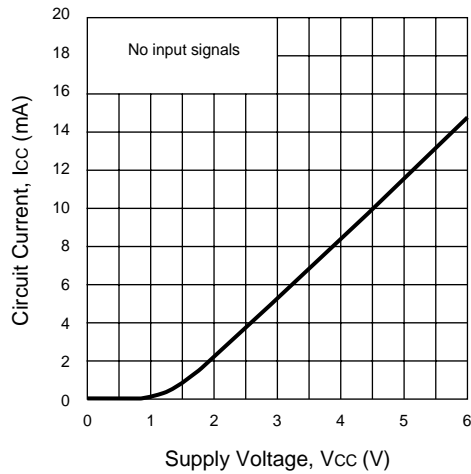
1. Operation in excess of any one of these parameters may result in permanent damage.
2. Mounted on a 50 x 50 x 1.6 mm epoxy glass PWB (T<sub>A</sub> = +85°C).

**RECOMMENDED OPERATING CONDITIONS**

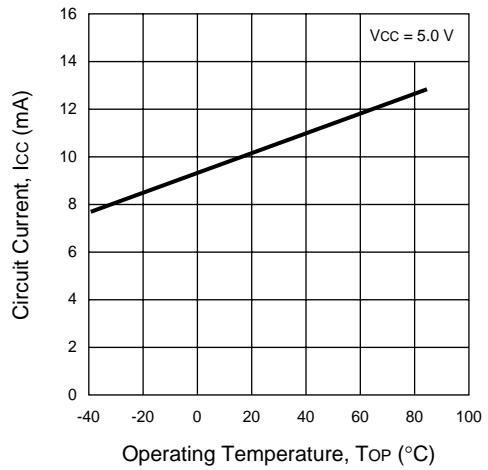
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V <sub>CC</sub>	Supply Voltage	V	4.5	5.0	5.5
T <sub>OP</sub>	Operating Temperature	°C	-40	25	85

**TYPICAL PERFORMANCE CURVES** (T<sub>A</sub> = 25°C)

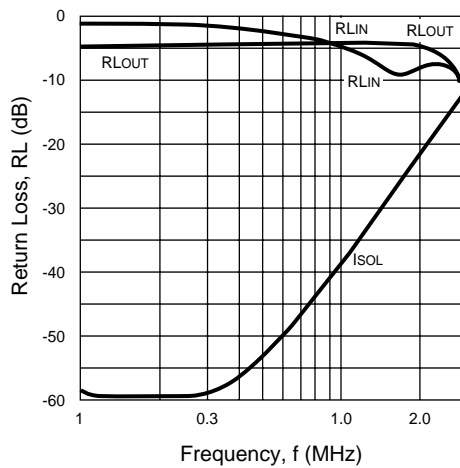
**CIRCUIT CURRENT vs. VOLTAGE**



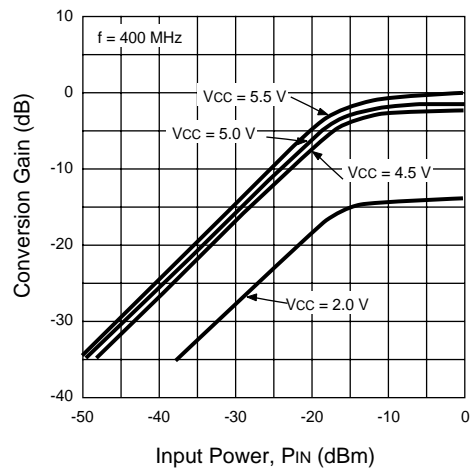
**CIRCUIT CURRENT vs. OPERATING TEMPERATURE**



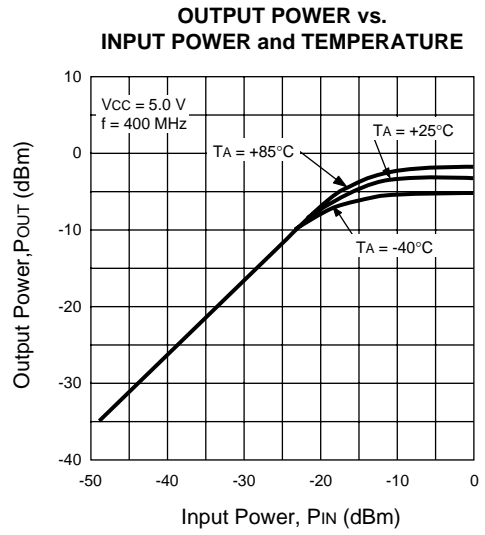
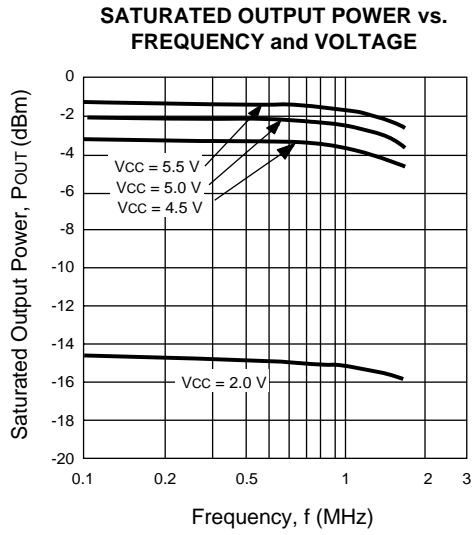
**RETURN LOSS vs. FREQUENCY**



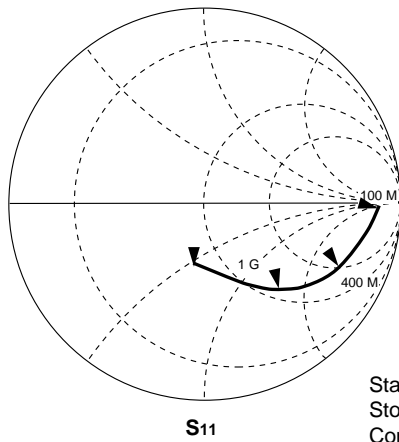
**OUTPUT POWER vs. INPUT POWER and VOLTAGE**



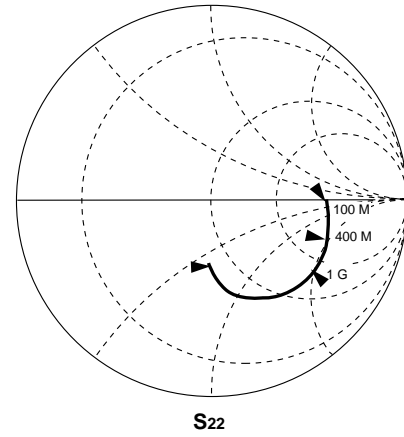
**TYPICAL PERFORMANCE CURVES** (TA = 25°C)



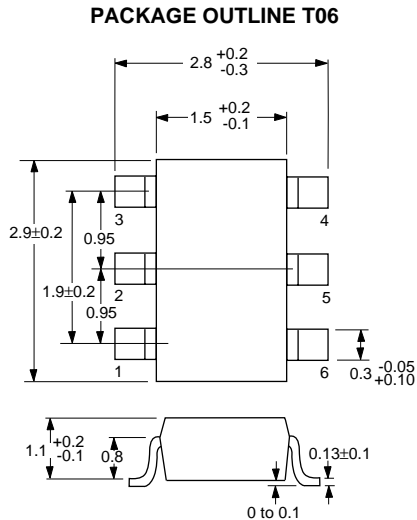
**S PARAMETERS**



Start: 100 MHz  
 Stop: 2 GHz  
 Conditions: TA = 25°C, VCC = 5 V

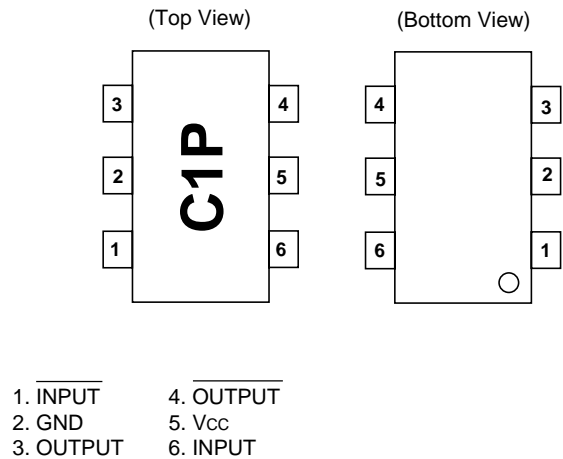


**OUTLINE DIMENSIONS** (Units in mm)

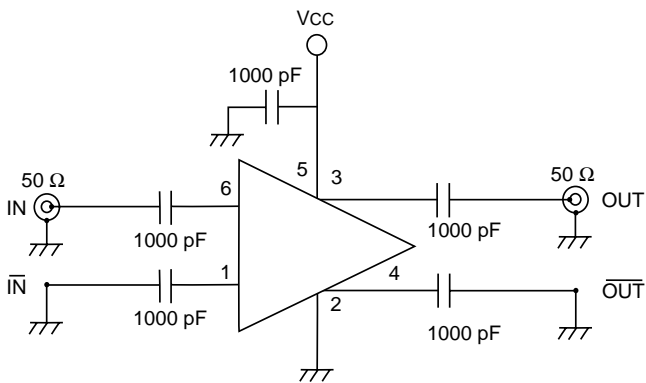


Note:  
 All dimensions are typical unless otherwise specified.

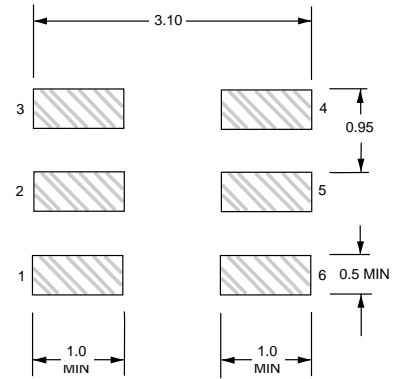
**LEAD CONNECTIONS**



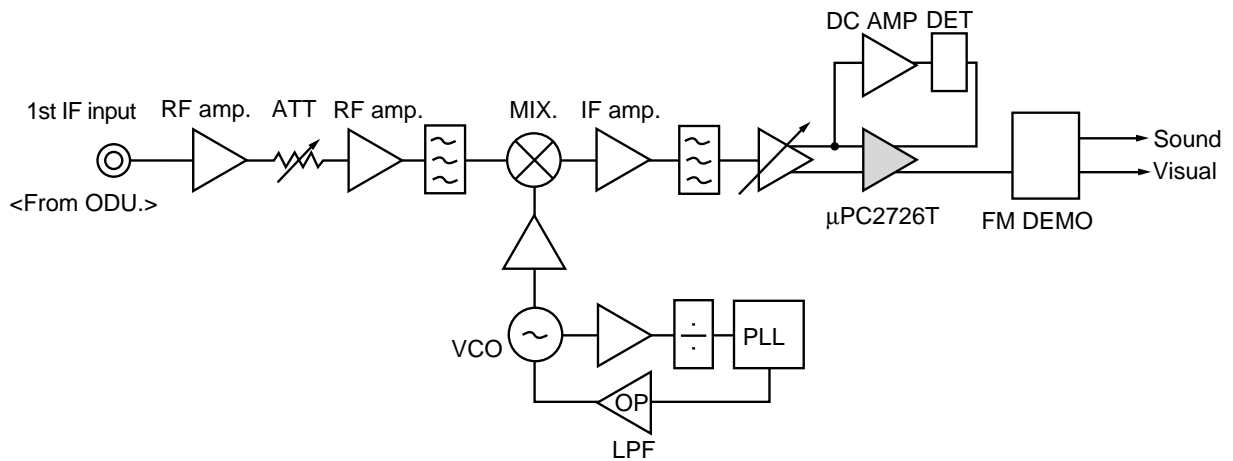
TEST CIRCUIT



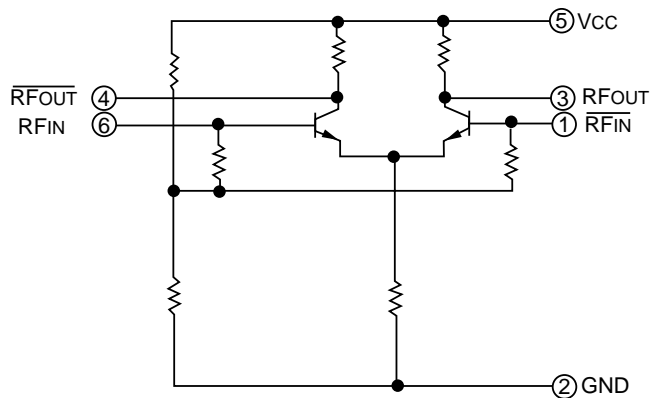
RECOMMENDED P.C.B. LAYOUT (Units in mm)



EXAMPLE OF SYSTEM APPLICATION



EQUIVALENT CIRCUIT



ORDERING INFORMATION

PART NUMBER	QTY
UPC2726T-E3	3K/Reel

Note:  
Embossed Tape, 8 mm wide,

EXCLUSIVE NORTH AMERICAN AGENT FOR **NEC** RF, MICROWAVE & OPTOELECTRONIC SEMICONDUCTORS

**CEL** CALIFORNIA EASTERN LABORATORIES • Headquarters • 4590 Patrick Henry Drive • Santa Clara, CA 95054-1817 • (408) 988-3500 • Telex 34-6393 • FAX (408) 988-0279  
24-Hour Fax-On-Demand: 800-390-3232 (U.S. and Canada only) • Internet: <http://WWW.CEL.COM>

DATA SUBJECT TO CHANGE WITHOUT NOTICE

09/21/2000