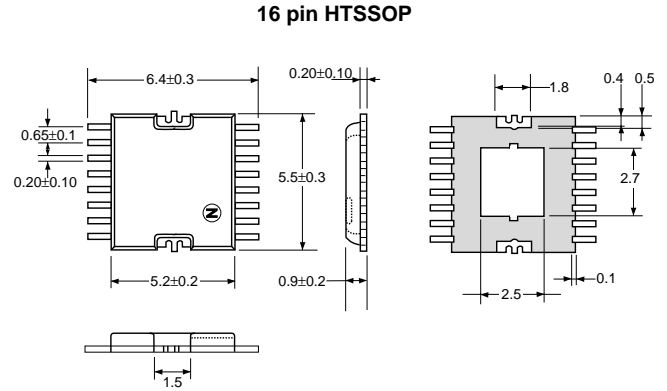


**FEATURES**

- TWO INDEPENDENT IF CHANNELS
- INTEGRAL SWITCHING TO CHANNEL INPUT TO EITHER CHANNEL OUTPUT
- INSERTION LOSS PER CHANNEL:  
5.0 dB TYP ( $Z_0 = 50 \Omega$ )
- FREQUENCY RANGE:  
950 MHz to 2150 MHz
- CHANNEL TO CHANNEL ISOLATION:  
33 dB TYP
- SMALL 16 PIN HTSSOP PACKAGE
- AVAILABLE ON TAPE AND REEL

**OUTLINE DIMENSIONS** (Units in mm)



**DESCRIPTION**

The UPG181GR is intended for use in Direct Broadcast Satellite (DBS) applications within the Low Noise Block (LNB) down-converter for systems where at least two LNB outputs are required. It offers two intermediate frequency amplifier channels that can independently select 1 of 2 IF inputs. It is housed in a very small 16 pin plastic HTSSOP package and is available on tape-and-reel. The UPG181GR is easy to install and contributes to miniaturizing the systems.

**ELECTRICAL CHARACTERISTICS**

( $T_A = +25^\circ\text{C}$ , unless otherwise specified,  $V_{\text{CONT}1}$  to  $V_{\text{CONT}4} = 0/+5 \text{ V}$ ,  $Z_0 = 50 \Omega$ , LL, LR, RL, RR Each Port)

PART NUMBER PACKAGE OUTLINE			UPG181GR 16 pin HTSSOP		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
LINS	Insertion Loss, $f = 0.95 \text{ GHz}$ to $2.15 \text{ GHz}$	dB	—	5.0	7.0
$\Delta\text{LINS}$	Insertion Loss Flatness, $ \text{LINS}(0.95 \text{ GHz}) - \text{LINS}(1.7 \text{ GHz}) $	dB	—	0.5	1.2
$\Delta\text{LINS}$	Insertion Loss Flatness, $ \text{LINS}(0.95 \text{ GHz}) - \text{LINS}(2.15 \text{ GHz}) $	dB	—	0.8	1.5
ISOL	Channel Isolation, $f = 0.95 \text{ GHz}$ to $1.7 \text{ GHz}$	dB	30	33	—
ISOL	Channel Isolation, $f = 1.7 \text{ GHz}$ to $2.15 \text{ GHz}$	dB	25	30	—
RLOUT	Output Return Loss, $f = 0.95 \text{ GHz}$ to $2.15 \text{ GHz}$	dB	13	16	—
I <sub>CONT</sub>	Control Current, $V_{\text{CONT}} = +5 \text{ V}/0 \text{ V}$ , RF OFF	$\mu\text{A}$	—	—	200

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

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CONT1,2,3,4</sub>	Control Voltage 1, 2, 3, 4 <sup>2</sup>	V	-1 to +6
P <sub>TOT</sub>	Total Power Dissipation <sup>3</sup>	W	2
T <sub>A</sub>	Operating Ambient Temp.	°C	-40 to +85
T <sub>STG</sub>	Storage Temperature	°C	-65 to +150

Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2.  $|V_{CONT(H)} - V_{CONT(L)}| \leq 6.0$  V
3. Mounted on a 50x50x1.6 mm double copper clad epoxy glass PWB, T<sub>c</sub> = +85°C.

## RECOMMENDED OPERATING CONDITIONS (T<sub>A</sub> = +25°C)

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V <sub>CONT(H)</sub>	Control Voltage (High)	V	+4.5	+5	+5.5
V <sub>CONT(L)</sub>	Control Voltage (Low)	V	-0.5	0	+0.5

## ORDERING INFORMATION

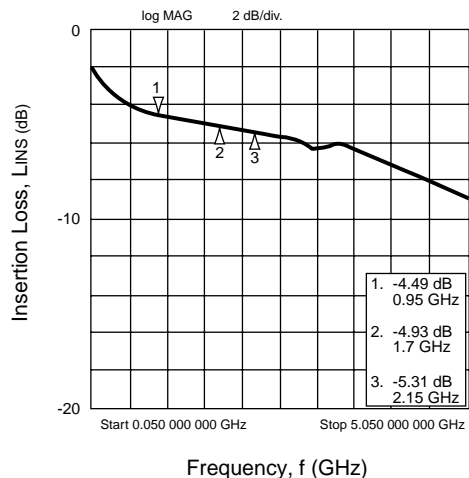
PART NUMBER	PACKAGE	QUANTITY
UPG181GR-E1	16-pin Plastic HTSSOP	2500/Reel

Notes:

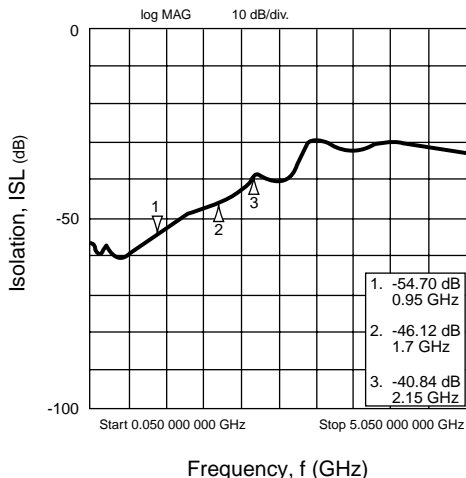
1. Embossed tape, 12 mm wide.

## TYPICAL PERFORMANCE CURVES (T<sub>A</sub> = +25°C, unless otherwise specified)

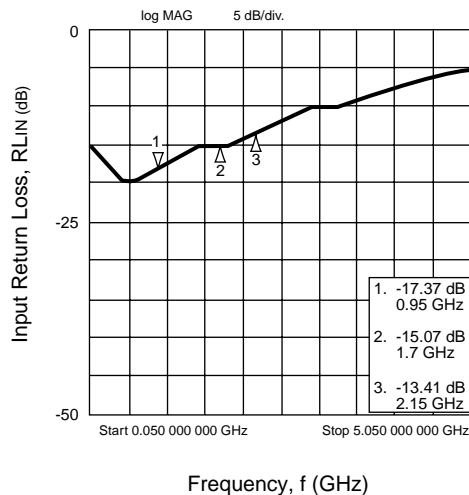
### INSERTION LOSS vs. FREQUENCY



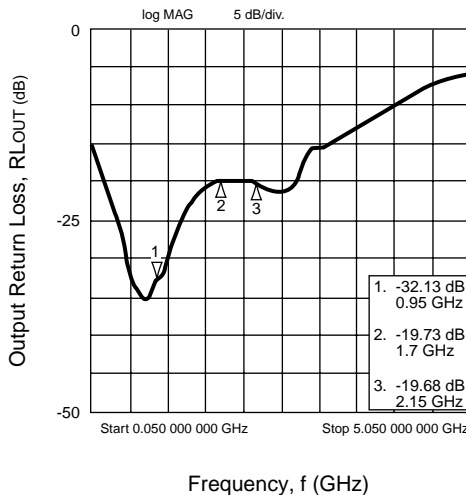
### ISOLATION vs. FREQUENCY



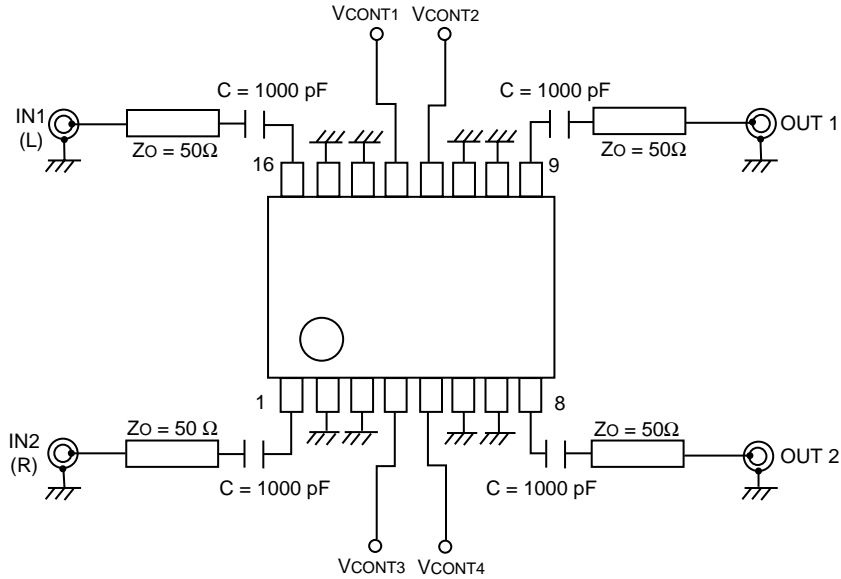
### INPUT RETURN LOSS vs. FREQUENCY



### OUTPUT RETURN LOSS vs. FREQUENCY



**EVALUATION CIRCUIT** ( $V_{CONT1}$  to  $V_{CONT4} = 0/+5$  V,  $Z_o = 50 \Omega$ , DC Blocking Capacitor = 1000 pF)



**CHANNEL SELECT TRUTH TABLE**

OUTPUT		On-Channel	CONTROL PIN			
OUT1	OUT2		VCONT1	VCONT2	VCONT3	VCONT4
L	L	IN1—OUT1 IN1—OUT2	Low	High	High	Low
L	R	IN1—OUT1 IN2—OUT2	Low	High	Low	High
R	L	IN2—OUT1 IN1—OUT2	High	Low	High	Low
R	R	IN2—OUT1 IN2—OUT2	High	Low	Low	High

**PIN CONNECTION AND INTERNAL BLOCK DIAGRAM**

PIN NO.	CONNECTION	PIN NO.	CONNECTION
1	IN2	9	OUT1
2	GND	10	GND
3	GND	11	GND
4	VCONT3	12	VCONT2
5	VCONT4	13	VCONT1
6	GND	14	GND
7	GND	15	GND
8	OUT2	16	IN1

**TOP VIEW**

