NEC®

ULTRA WIDE-BAND AMPLIFIER

UPG102 SERIES

FEATURES

- **ULTRA WIDE-BAND AMPLIFIER**
  f = 1 to 20 GHz, G_L = 7 dB TYP
- **CASCADABLE**
- **INPUT/OUTPUT MATCHED TO 50 Ω**
- **HERMETICALLY SEALED PACKAGE ASSURES HIGH RELIABILITY**

DESCRIPTION AND APPLICATIONS

The UPG102 is an ultra wide-band amplifier for applications requiring the widest operating frequency band presently available. Designed for high-rel and commercial applications, it is available in a hermetically sealed ceramic package, leadless carrier and chip form.

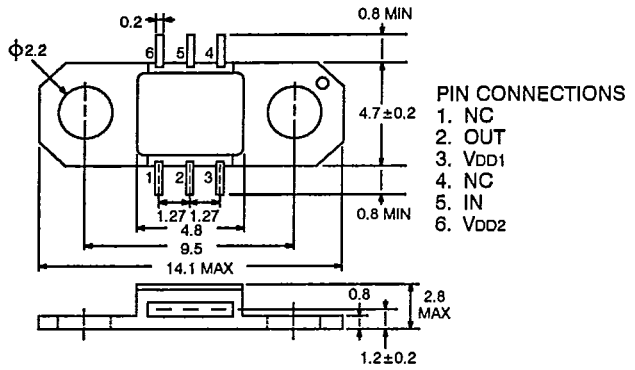
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
$V_{DD1, 2}$	Drain Voltage	V	+10
P_{IN}	Input Power Level	dBm	+15
P_T*	Power Dissipation	W	1
T_{STG}	Storage Temperature	°C	-65 to +175
$T_{C(OP)}$	Case Operating Temperature	°C	-65 to +125

*T_C = 125°C

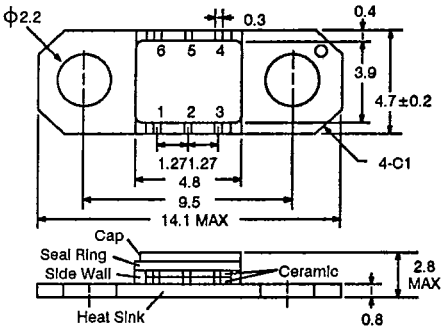
OUTLINE DIMENSIONS (Units in mm)

OUTLINE B06



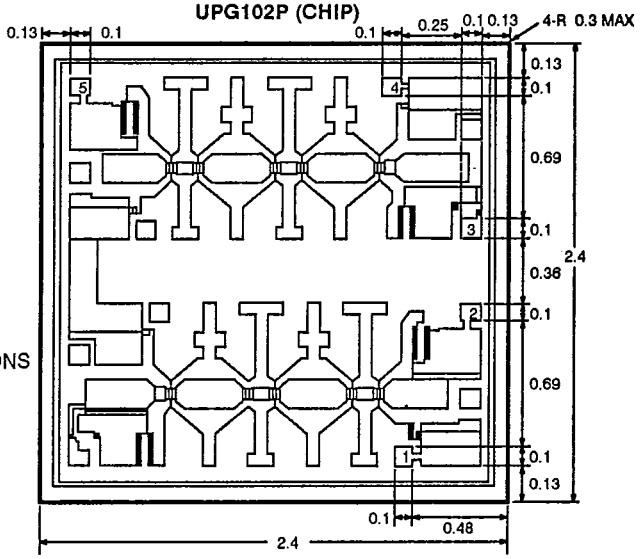
PIN CONNECTIONS
1. NC
2. OUT
3. V_{DD1}
4. NC
5. IN
6. V_{DD2}

OUTLINE L06
(Leadless)



PIN CONNECTIONS
1. NC
2. OUT
3. V_{DD1}
4. NC
5. IN
6. V_{DD2}

UPG102P (CHIP)

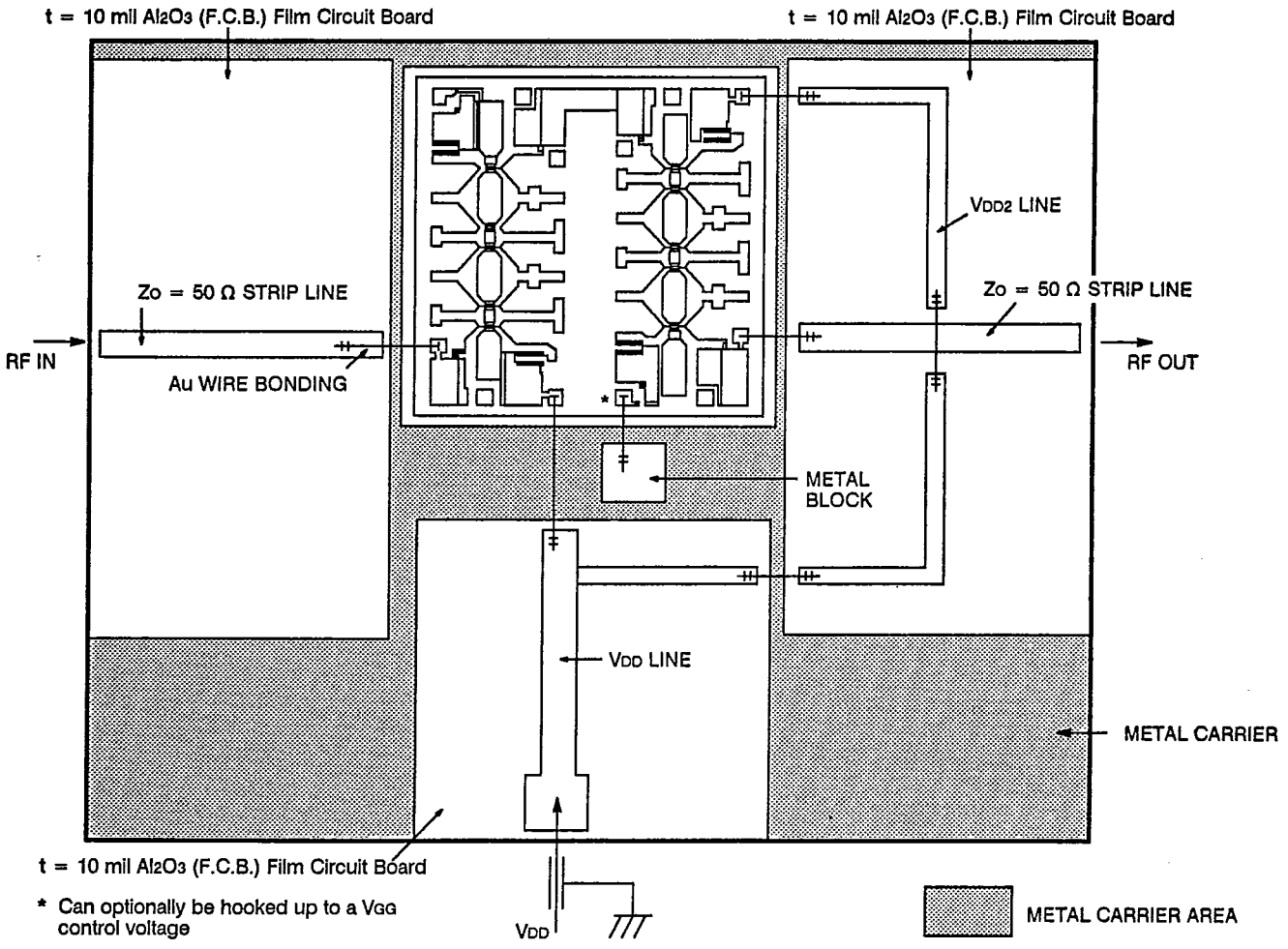


PAD CONNECTIONS
1. IN
2. V_{DD1}
3. GND
4. OUT
5. V_{DD2}

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER			UPG102B-1 UPG102K-1 UPG102P-1			UPG102B-2 UPG102K-2 UPG102P-2		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX
I_{DD}	Drain Current, $V_{DD1,2}$ = 4 V	mA	50	70	100	50	70	100
G_L	Linear Gain, $V_{DD1,2}$ = 4 V f = 18 GHz f = 20 GHz	 dB dB	 7 6			 5 4		
ΔG_L	Gain Variation, $V_{DD1,2}$ = 4 V, f = 1 to 18 GHz f = 12 to 20 GHz f = 1 to 20 GHz	 dB dB dB			 ±1.5 ±1.5 ±2.0			 ±1.5 ±1.5 ±2.0
NF	Noise Figure, $V_{DD1,2}$ = 4 V, f = 1 to 20 GHz	dB		8	9		8	9
R_{LIN}	Input Return Loss, $V_{DD1,2}$ = 4 V, f = 1 to 20 GHz	dB	7	10		7	10	
R_{LOUT}	Output Return Loss, $V_{DD1,2}$ = 4 V, f = 1 to 20 GHz	dB	7	10		7	10	
L_{ISO}	Input/Output Isolation, $V_{DD1,2}$ = 4 V, f = 1 to 20 GHz	dB	20			20		
P_{1dB}	Output Power at 1 dB Compression, $V_{DD1,2}$ = 4 V, f = 1 to 20 GHz	dBm	7	10		7	10	

ASSEMBLY EXAMPLE FOR UPG102P



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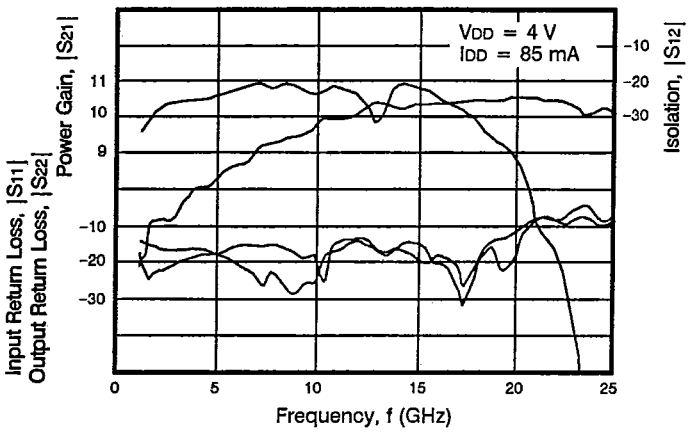
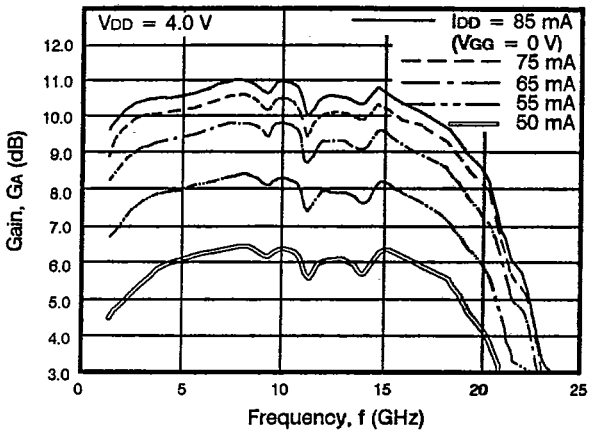
TYPICAL PERFORMANCE CHARACTERISTICS (T_A = 25°C)

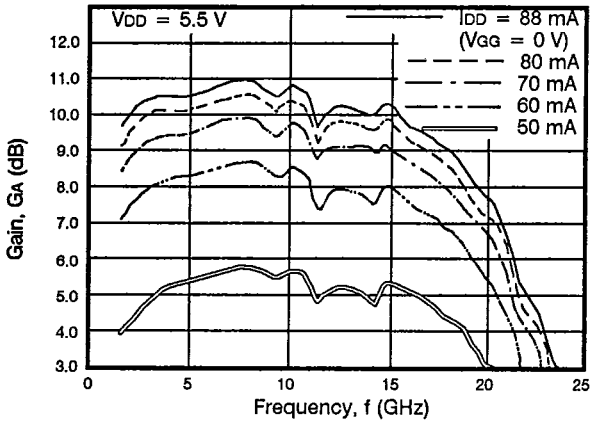
S-PARAMETERS vs. FREQUENCY



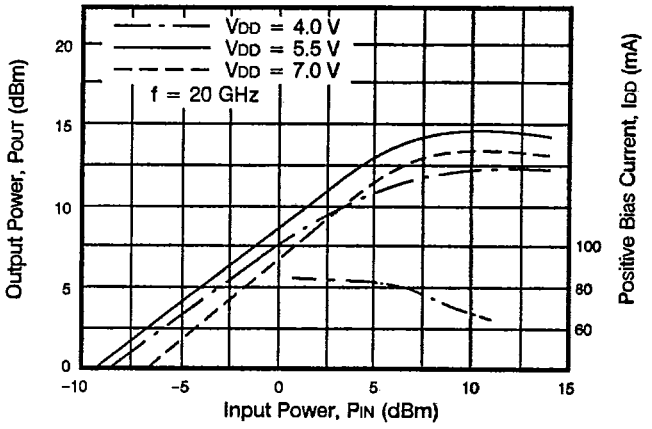
GAIN vs. FREQUENCY FOR CHIP



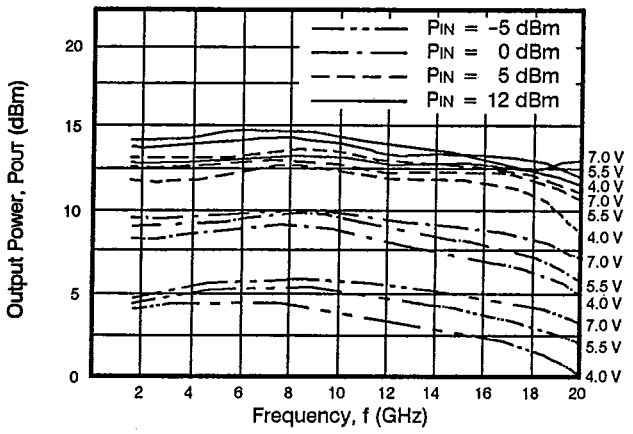
GAIN vs. FREQUENCY FOR CHIP



OUTPUT POWER vs. INPUT POWER



OUTPUT POWER vs. FREQUENCY



GAIN AND INPUT RETURN LOSS vs. FREQUENCY AND TEMPERATURE