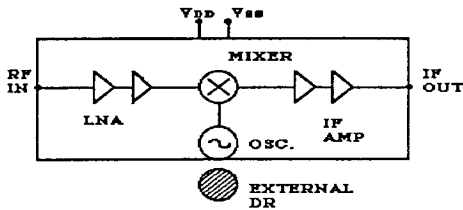


FEATURES	FUNCTIONAL BLOCK DIAGRAM
• Integrated Monolithic Downconverter • 6 dB Noise Figure • 35 dB Conversion Gain • Small Size • Low Cost • High Reliability • Covers Japanese BS Band	

The ANADIGICS Ku-Band MMIC Downconverter is the world's first low-cost, hi-volume GaAs MMIC which is suitable for use in the field of consumer electronics.

AKD12030 offers a high degree of functionality in a very small and user friendly configuration. The MMIC provides LNB manufacturers the ability to produce in high volumes LNBs with low component count, high reliability, and exceptional price-performance ratios.

The AKD12030 is specifically suitable for the Japanese BS market.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN.	MAX.	UNITS
V _{DD}	0	+ 8	V
V _{SS}	- 8	0	V
V _{LO}	- 5	+ 0.5	V
V _{RF} /V _{IF}	- 10	+ 10	V
Case Temperature	- 55	+ 85	° C
Storage Temperature	- 55	+100	° C
Soldering Temperature		+ 260*	° C
Soldering Time		15	Sec.
Input Power RF		+ 10	dBm
Input Power LO		+ 17	dBm

OPERATING RANGES

PARAMETER	MIN	NOMINAL	MAX	UNITS
Frequency				
RF	11.7		12.01	GHz
IF	1022		1332	MHz
LO		10.67		GHz
Power Supplies				
V _{DD}	5	6	7	V
V _{SS}	- 3.5	- 5	- 6	V
Case Temperature	- 55	25	85	° C
Input Power	- 80	- 50	- 30	dBm
Input Impedance		50		ohms
Output Impedance		75		ohms

* The device may be held at a temperature of 230 °C for 3 minutes

6/91

Anadigics reserves the right to make changes in specifications without notice.

ANADIGICS, INC. • 35 Technology Drive • Warren, New Jersey 07059 • (908) 668-5000 • Telex: 510-600-5741 • FAX: (908) 668-5068

ELECTRICAL SPECIFICATIONS

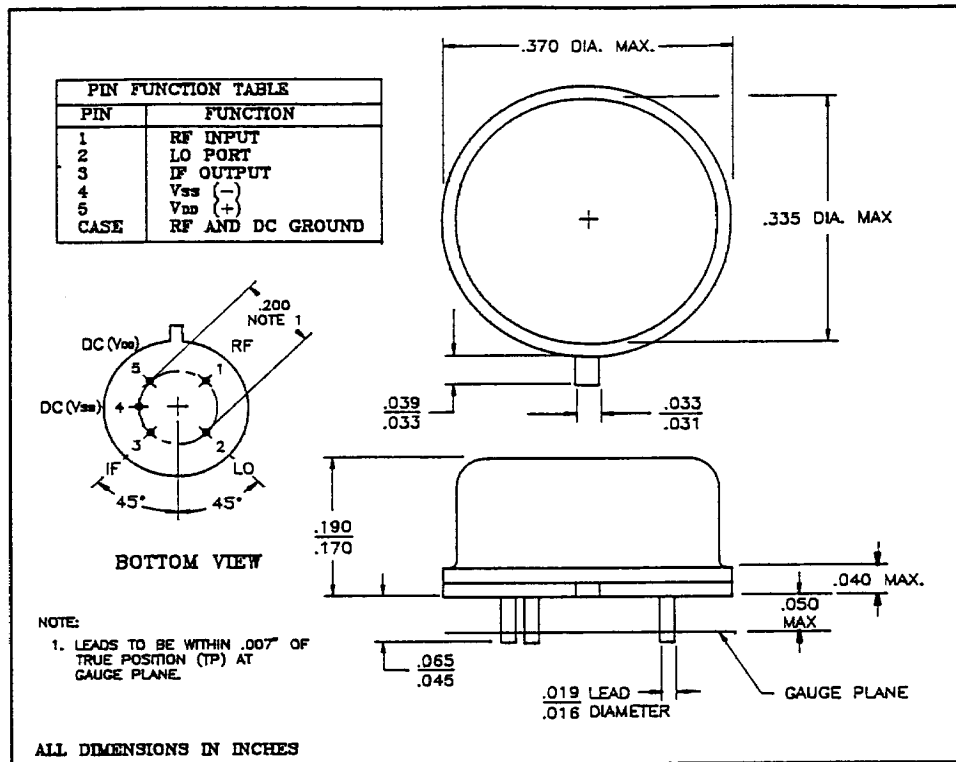
(Packaged unit, $T_A = 25^\circ\text{C}$, $V_{DD} = +6\text{V}$, $V_{SS} = -5\text{V}$) LO Port Terminated in 50 ohms.

PARAMETER	MIN.	TYP.	MAX.	UNITS
Conversion Gain ¹				
$F_{RF} = 11.7\text{ GHz}$	31.75	35		dB
$F_{RF} = 12.01\text{ GHz}$	31.75	35		dB
SSB Noise Figure ¹				
$F_{RF} = 11.7\text{ GHz}$		5.8	6.75	dB
$F_{RF} = 12.01\text{ GHz}$		5.8	6.75	dB
Gain Flatness ¹		± 0.75	± 1.5	dB
Gain Ripple over any 30 MHz band		0.2	0.6	dB
LO - RF Leakage		- 25	- 10	dBm
LO - IF Leakage		- 5	0	dBm
LO Phase Noise ²				
10 KHz Offset		- 70	- 50	dBc/Hz
100 KHz Offset		- 100	- 70	dBc/Hz
Temperature Stability ³ of LO		± 1.5		MHz
Image Rejection	0	5		dB
Output power @ 1dB Gain Compression	0	+ 6		dBm
Output Third Order IP	+ 10	+ 16		dBm
Power Supply Current				
I_{DD}	75	120	150	mA
I_{SS}	1	3.5	4	mA
Spurious Output any Band Non-harmonically related			- 60	dBm
Input VSWR with Respect to 50 ohms Over RF Band		2:1		
Output VSWR with Respect to 75 ohms over IF Band		1.5:1		

NOTES:

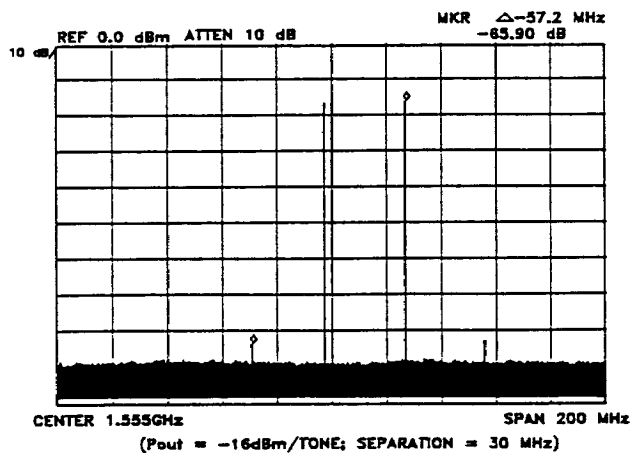
1. As measured in ANADIGICS test fixture , $F_{LO} = 10.678\text{ GHz}$
(Test procedure available upon request)
2. Using an appropriate dielectric resonator and spacer.
3. Variation of LO frequency with temperature is largely a function of the dielectric resonator and its coupling.
4. LO port must be terminated with 50 ohms DC coupled resistor.

akd1203011/90



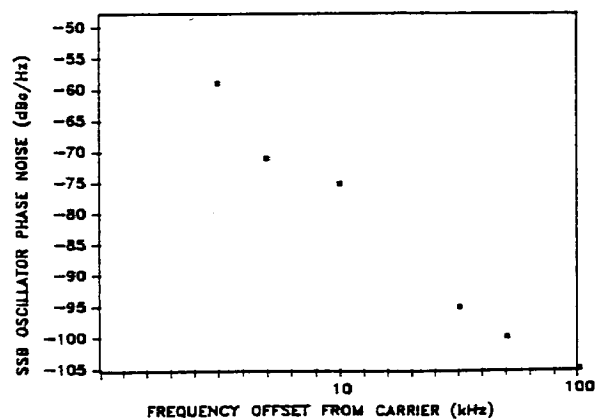
AKD12030

THIRD ORDER INTERMODULATION DISTORTION

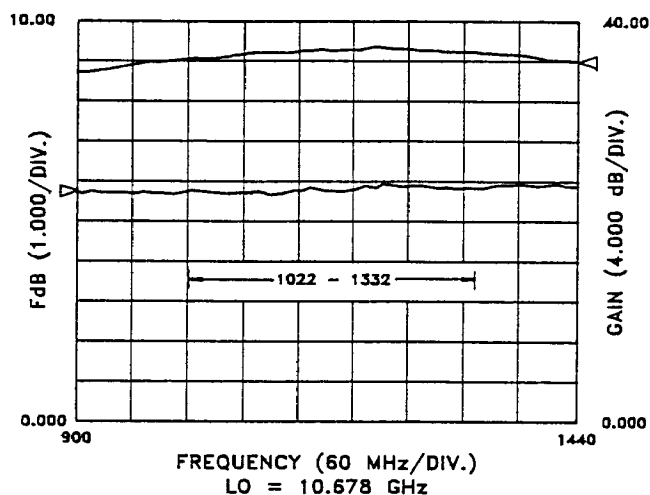


AKD12030

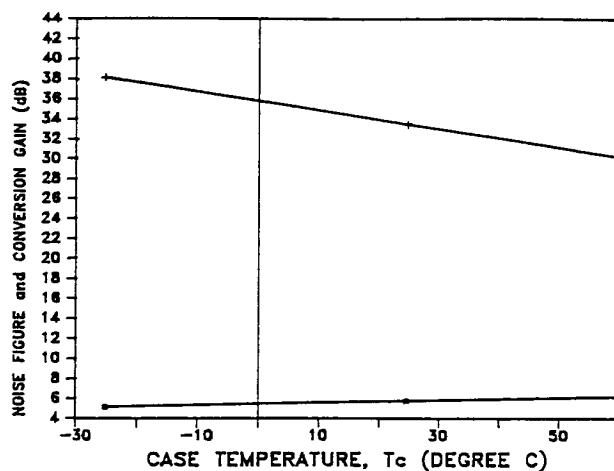
SSB LO PHASE NOISE vs FREQUENCY



NOISE FIGURE AND GAIN vs FREQUENCY

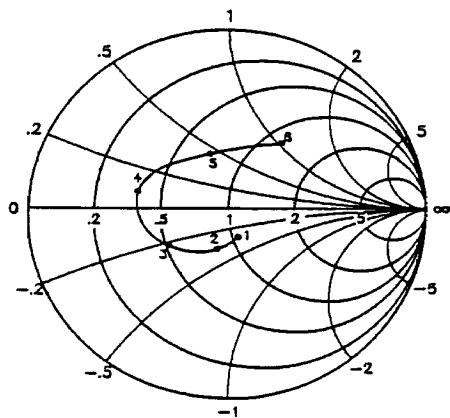


GAIN AND NOISE FIGURE vs TEMPERATURE

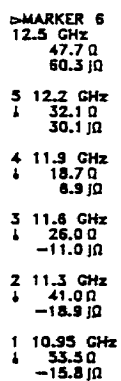


S11 OVER RF BAND

START: 10.95 GHz
STOP: 12.50 GHz

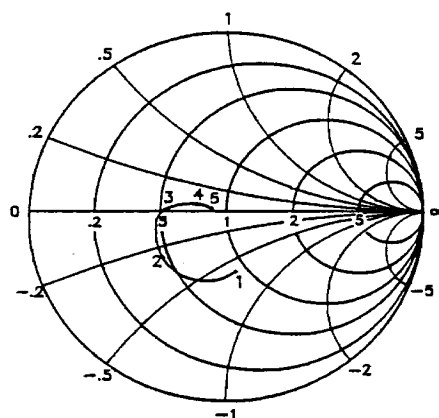


NORMALIZED TO 50 OHMS



S22 OVER IF BAND

START: 0.8 GHz
STOP: 2.0 GHz



NORMALIZED TO 75 OHMS

