

315MHz BAND APPLICATION

The characteristics of 315MHz band have evaluated as follows. The evaluation circuit structure and measured data are reviewed.

3-1 MEASURED DATA1 (DC)

General conditions: $V_{DD}=3.0V$, $T_a=+25^{\circ}C$, $Z_s=Z_l=50\Omega$

PARAMETERS	SYMBOL	CONDITIONS	DATA	UNITS
Supply Voltage	V_{DD}		3.0	V
Operating Current	I_{DD}	RF OFF	3.89	mA

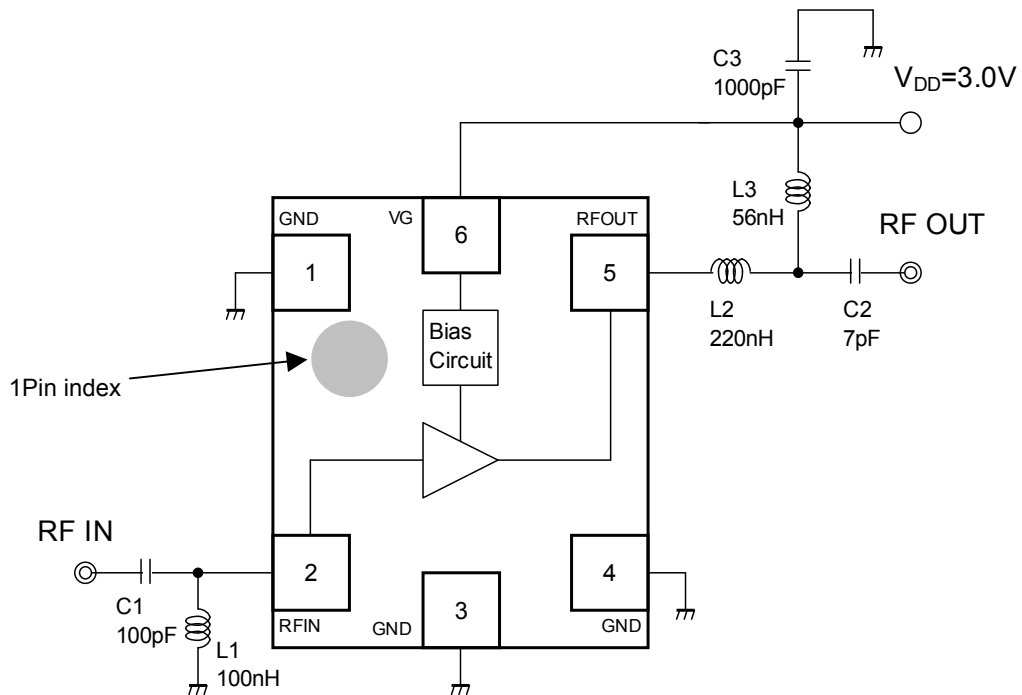
3-2 MEASURED DATA2 (RF)

General conditions: $V_{DD}=3.0$, $f_{RF}=315MHz$, $T_a=+25^{\circ}C$, $Z_s=Z_l=50\Omega$

PARAMETERS	SYMBOL	CONDITIONS	DATA	UNITS
Frequency	f_{RF}		315	MHz
Small Signal Gain	Gain	Exclude PCB, Connector Losses (0.053dB)	12.03	dB
Noise Figure	NF	Exclude PCB, Connector Losses (0.026dB)	0.98	dB
Input Power 1dB Compression	P-1dB(IN)		-7.3	dBm
Input 3rd Order Intercept Point	IIP3	$f1=f_{RF}$, $f2=f_{RF}+100kHz$, Pin=-28dBm	+5.2	dBm
RF IN VSWR	VSWR _i		1.70	-
RF OUT VSWR	VSWR _o		1.34	-

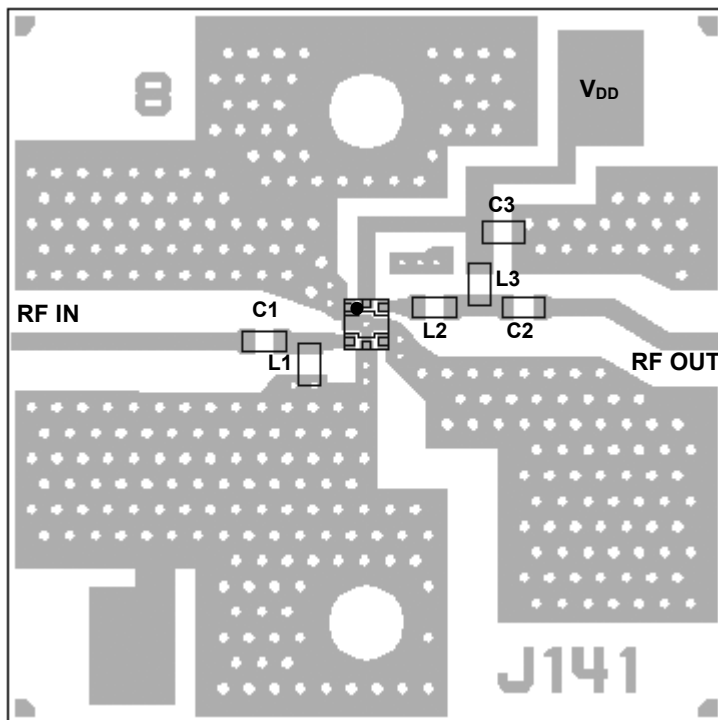
3-3 APPLICATION CIRCUIT

Top View



3-4 PCB DESIGN

Top View



PARTS LIST

Parts ID	Comment
L1~L3	TAIYO-YUDEN (HK1005 Series)
C1~C3	MURATA (GRM15 Series)

PCB (FR-4) :

t=0.2mm

MICROSTRIP LINE WIDTH

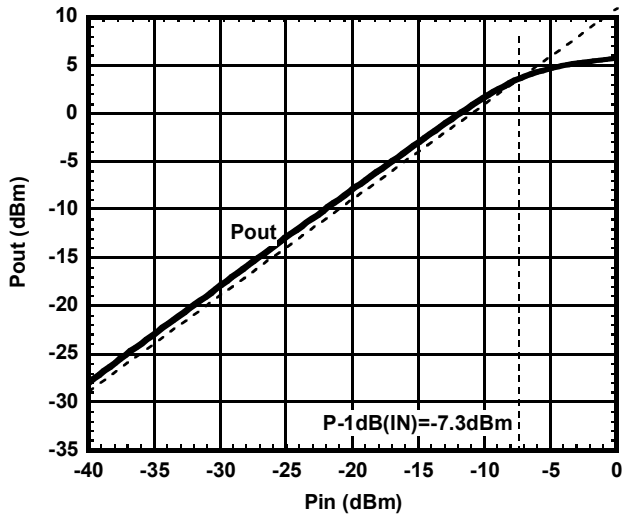
=0.4mm ($Z_0=50\Omega$)

PCB SIZE=16.8mm × 16.8mm

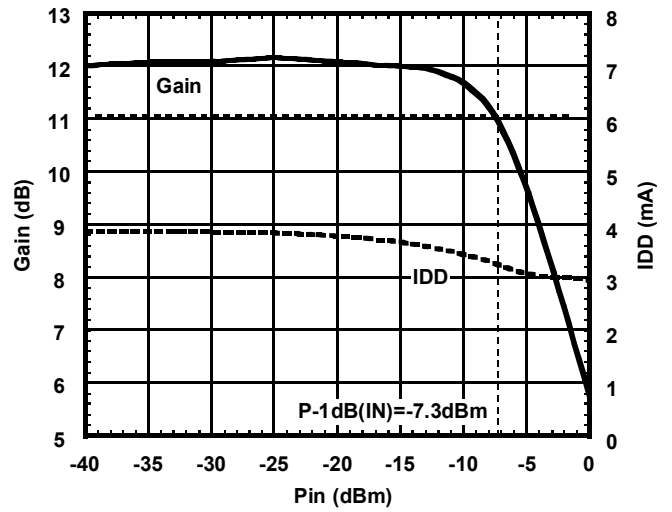
3-5-1 CHARACTERISTICS

General conditions: $V_{DD}=3.0V$, $f_{RF}=315MHz$, $T_a=+25^{\circ}C$, $Z_s=Z_l=50\Omega$

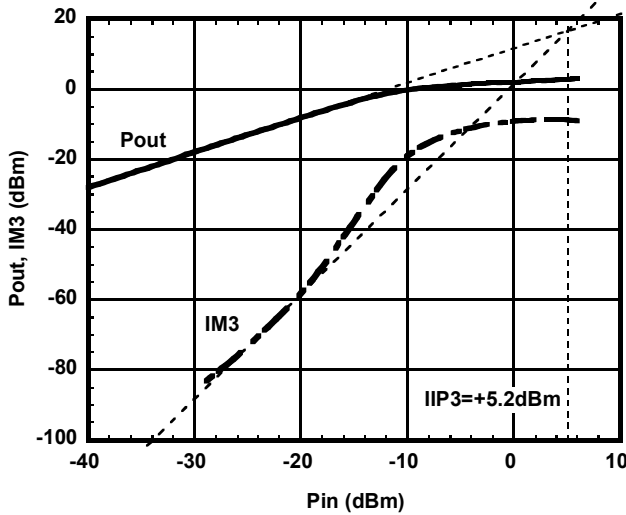
Pout vs. Pin at 315MHz



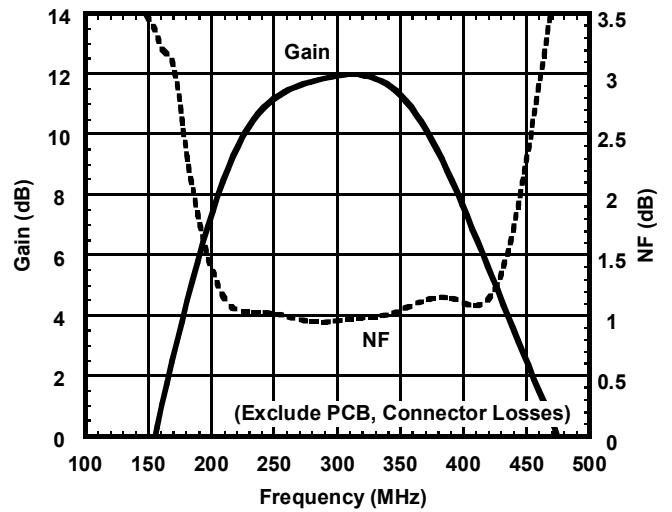
Gain, IDD vs. Pin at 315MHz



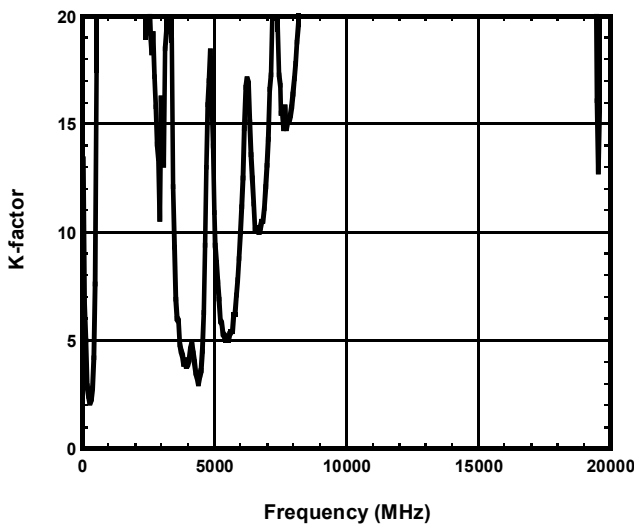
Pout, IM3 vs. Pin at 315MHz
f1=315MHz, f2=315.1MHz



Gain, NF vs. Frequency

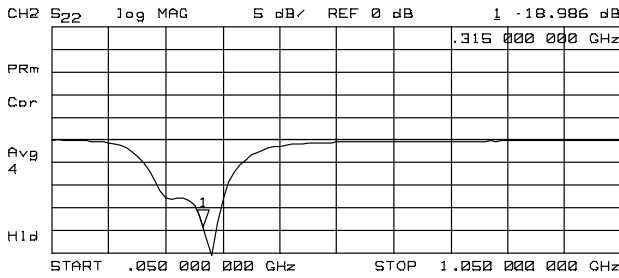
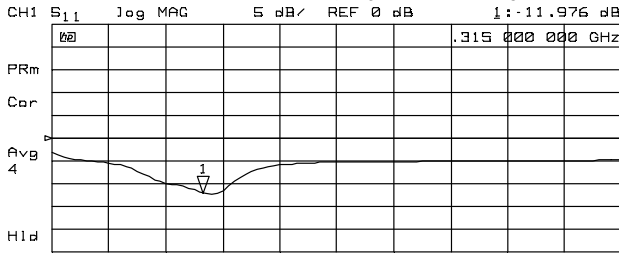


K-factor vs. Frequency

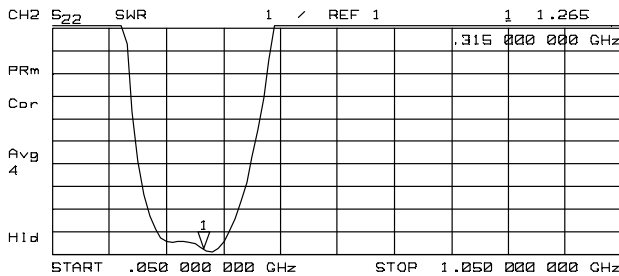
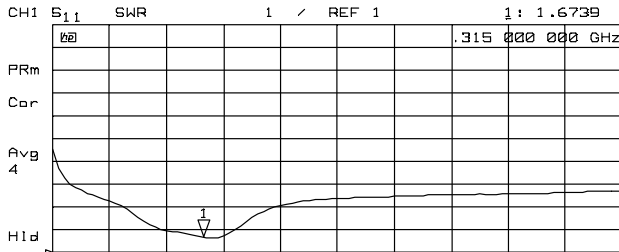


3-5-2 CHARACTERISTICS

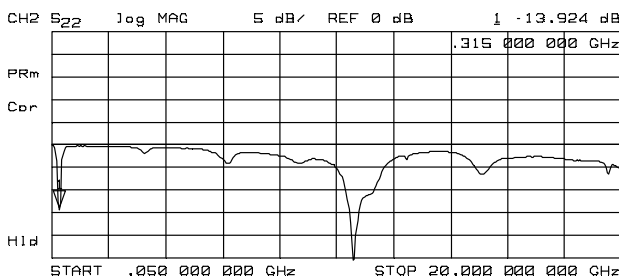
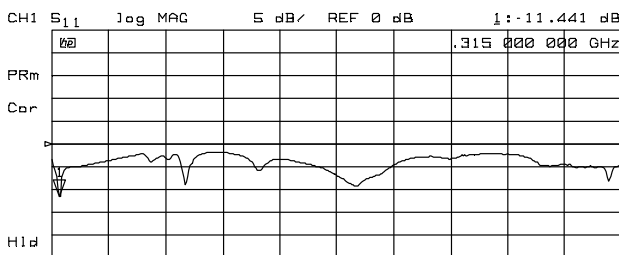
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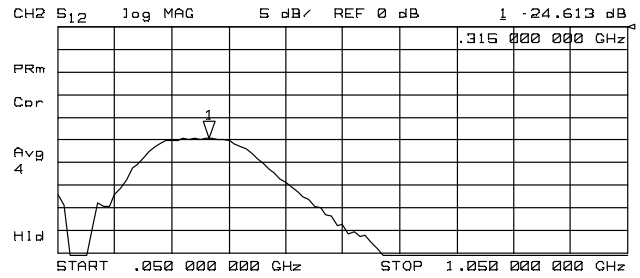
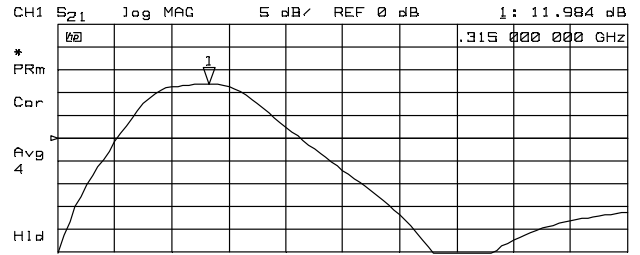
S₁₁, S₂₂



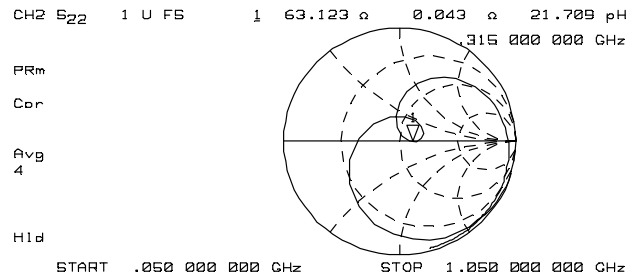
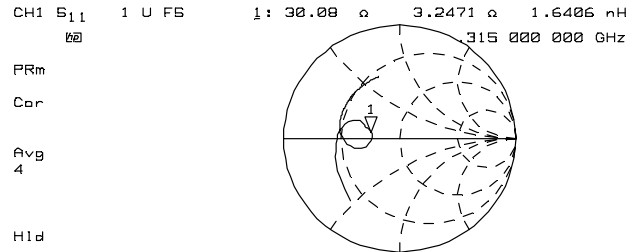
VSWR



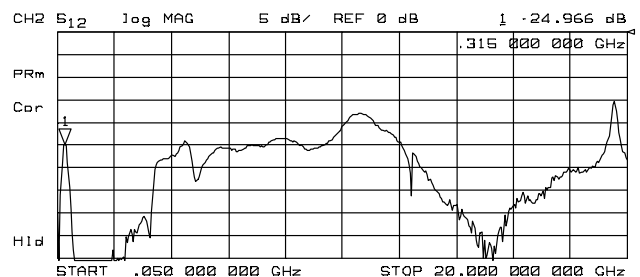
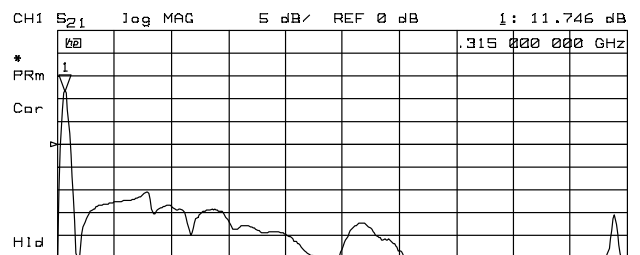
S₁₁, S₂₂ (~20GHz)



S₂₁, S₁₂



Z_{in}, Z_{out}



S₂₁, S₁₂ (~20GHz)