MGFS52BN2122A

2.1 - 2.2 GHz BAND 160W GaAs FE

DESCRIPTION

The MGFS52BN2122A is a 160W push-pull type GaAs Power FET especially designed for use in 2.1 - 2.2GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Push-pull configuration
- High output power
  Pout = 160W (TYP.) @ f=2.17 GHz
- High power gain
  GLP = 12 dB (TYP.) @ f=2.17GHz
- High power added efficiency
  P.A.E. = 48 % (TYP.) @ f=2.17GHz

APPLICATION

2.1-2.2GHz band power amplifier for W-CDMA Base Station

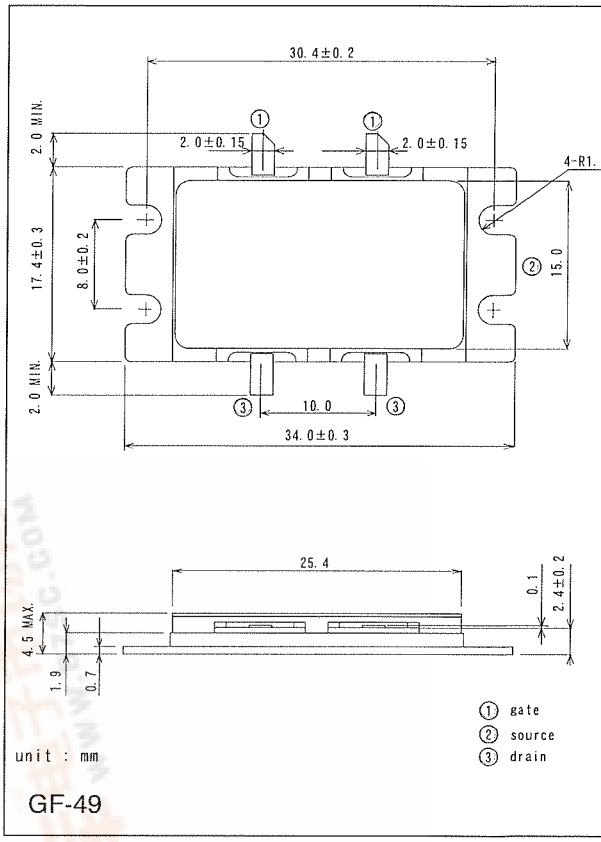
QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

VDS = 12 (V)
ID = 4.0 (A)
RG=5 (ohm) for each gate

OUTLINE



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ABSOLUTE MAXIMUM RATINGS (Ta=25deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-20	V
VGSO	Gate to source voltage	-10	V
PT *1	Total power dissipation	187.5	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

*1 : Tc=25deg.C

< Keep safety first in your circuit designs! >

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1)placement of substitutive, auxiliary circuits, (2)use of non-flammable material or (3)prevention against any malfunction or mishap.

ELECTRICAL CHARACTERISTICS (Ta=25deg.C)

Symbol	Parameter	Test conditions		Limits			Unit
				Min.	Typ.	Max.	
GLP	Linear power gain	Pin=32dBm	VDS=12V, ID(RF off)=4.0A, f=2.17GHz	11	12	-	dB
Pout	Output power	Pin=43dBm		50.8	51.8	-	dBm
ID(RF)	Drain current			-	23	30	A
P.A.E.	Power added efficiency			-	48	-	%
Rth (ch-c)	Thermal resistance	Channel to Case		-	0.55	0.8	deg.C/W

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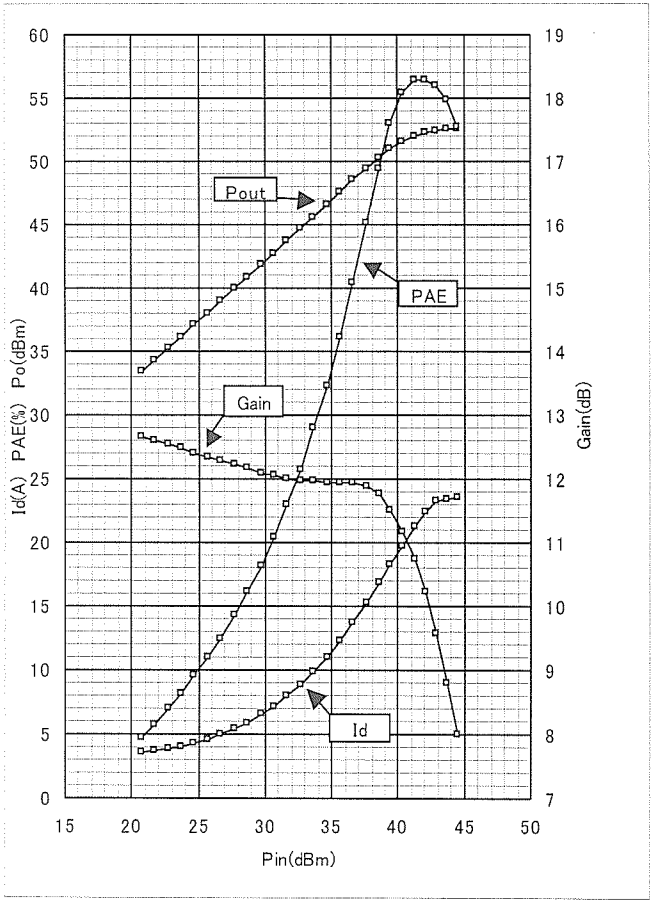
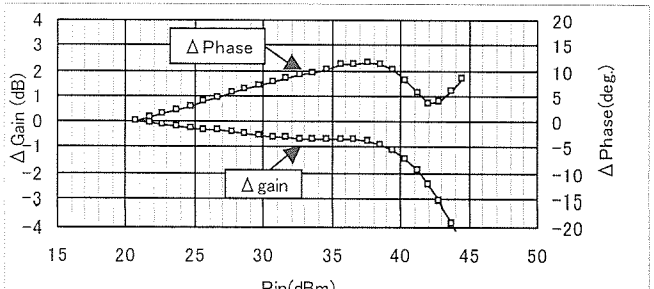
MGFS52BN2122A RF TEST DATA (CW)

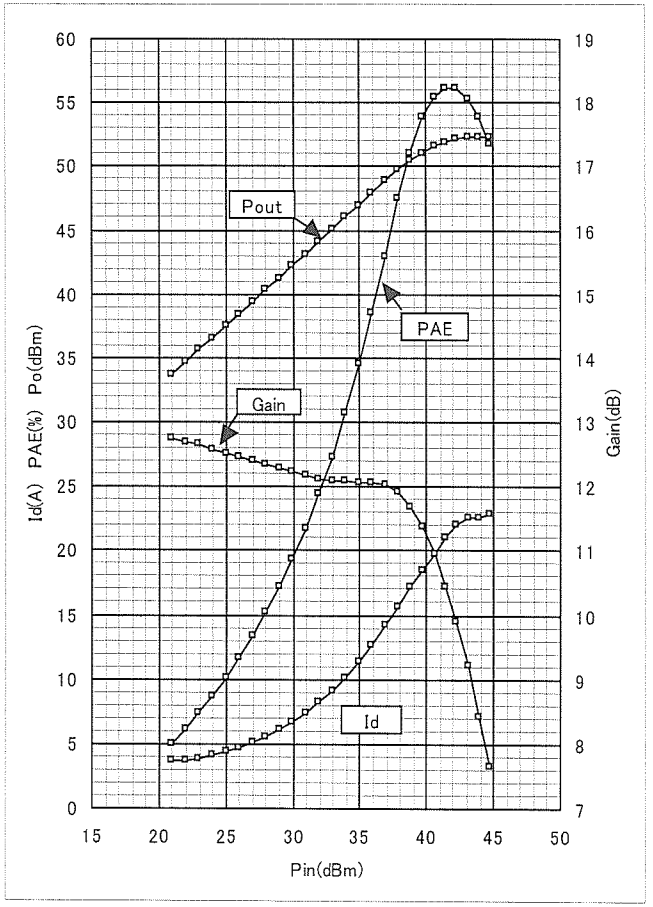
Fig.1 Pin vs. Pout , Id , PAE , Gain , Δgain , Δphase (CW 1-tone)
Bias conditions Vd=12V , Idq=4A

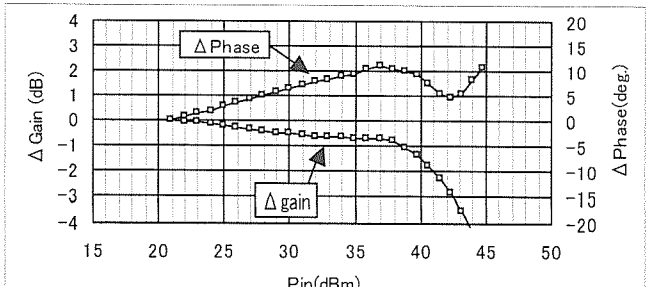
f=2.11GHz



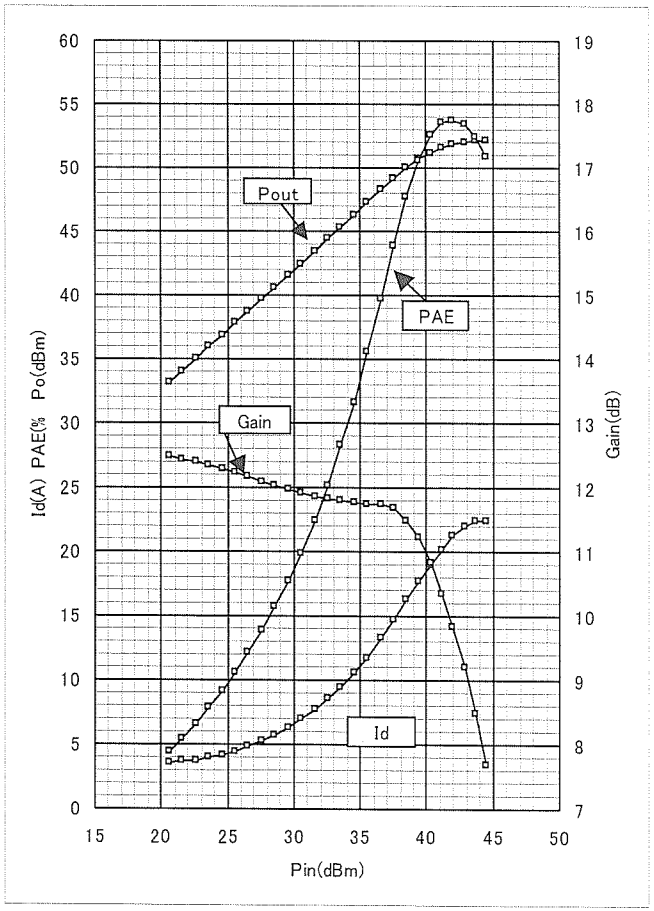


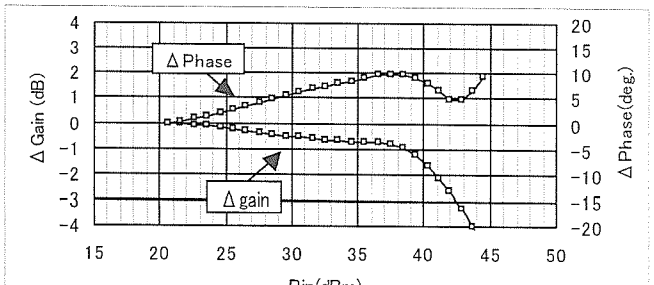
f=2.14GHz





f=2.17GHz

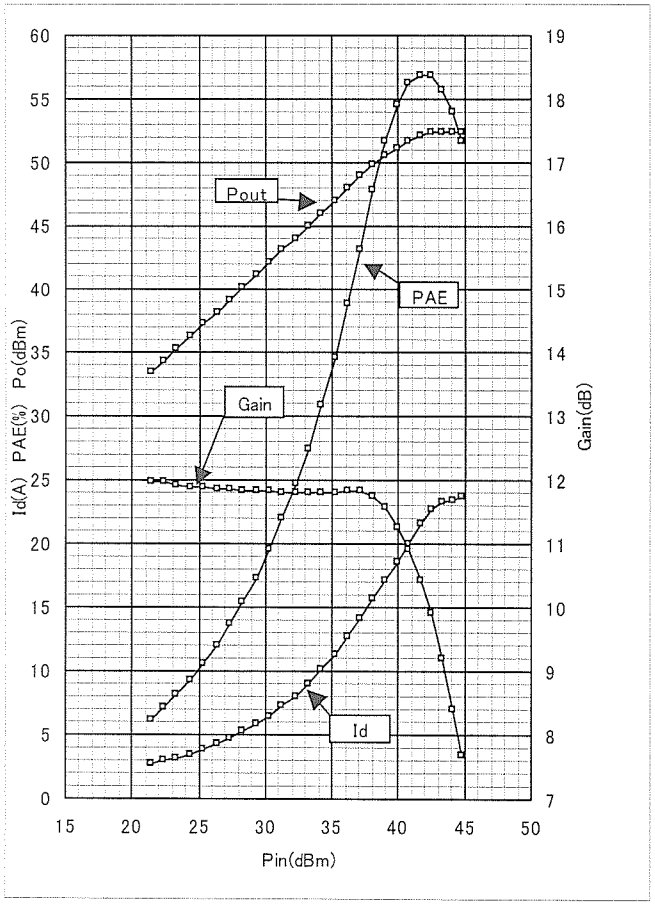


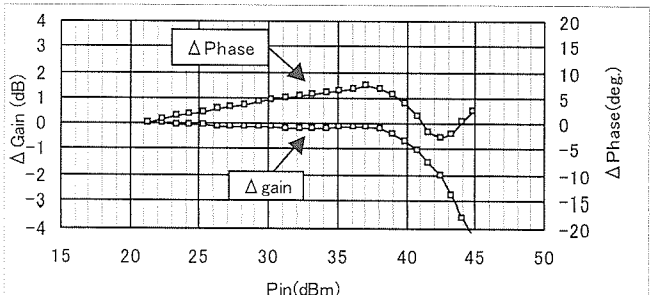


MGFS52BN2122A RF TEST DATA (CW)

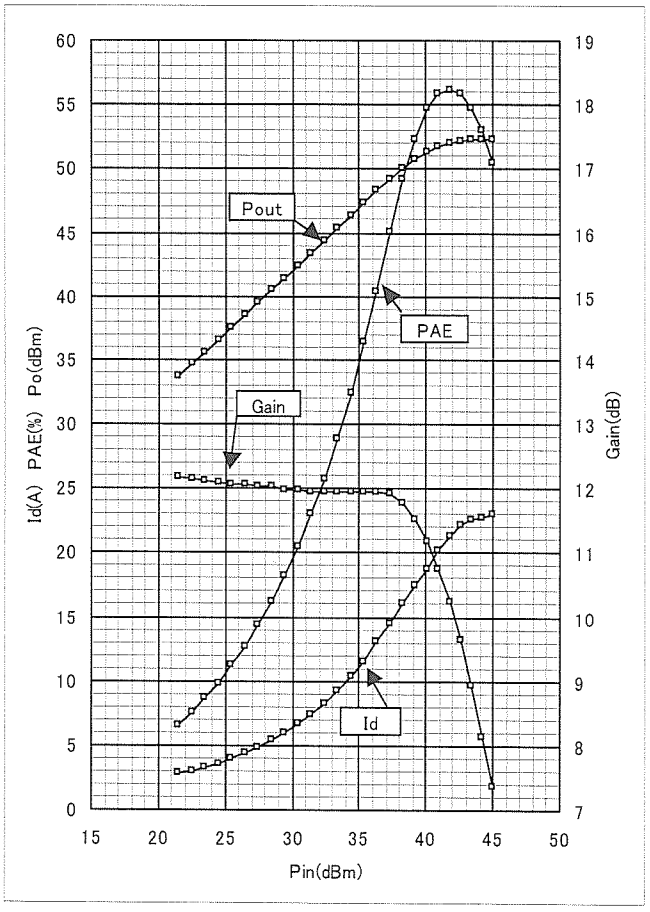
Fig.2 MGFS52BN2122A Pin vs. Pout , Id , PAE , Gain , Δgain , Δphase (CW 1-tpne)
Bias conditions Vd=12V , Idq=2A

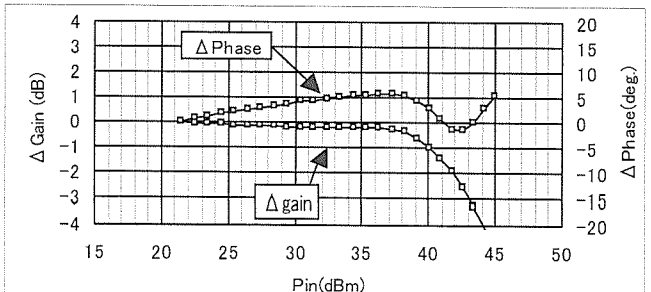
f=2.11GHz



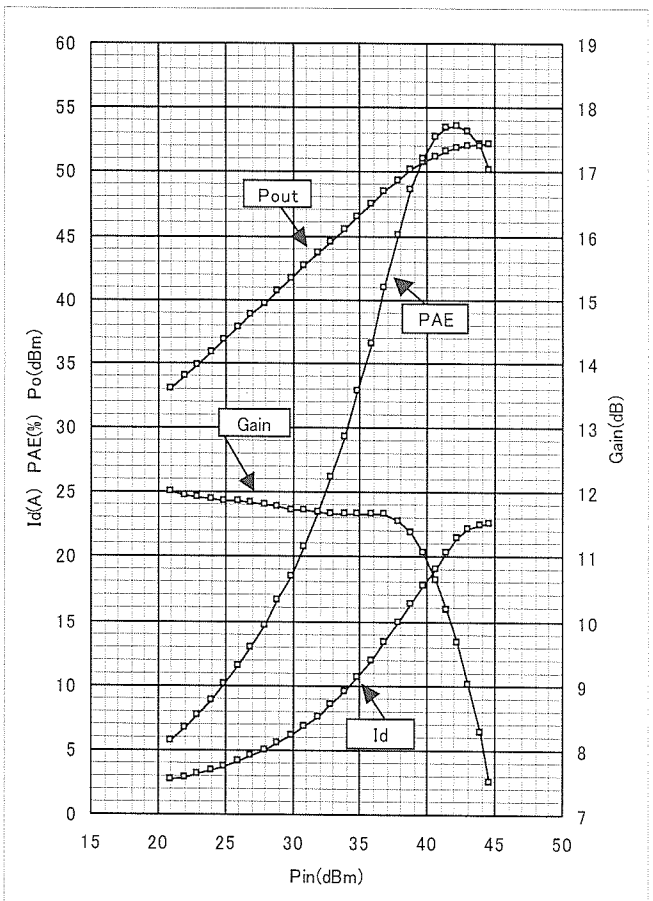


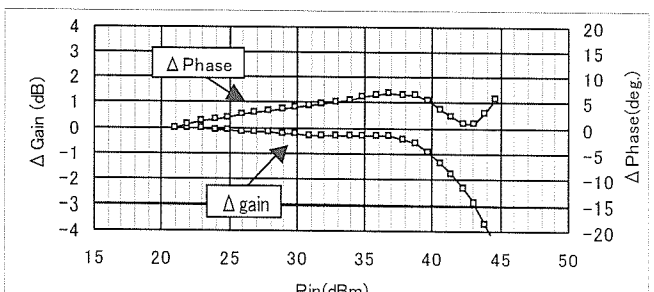
f=2.14GHz





f=2.17GHz

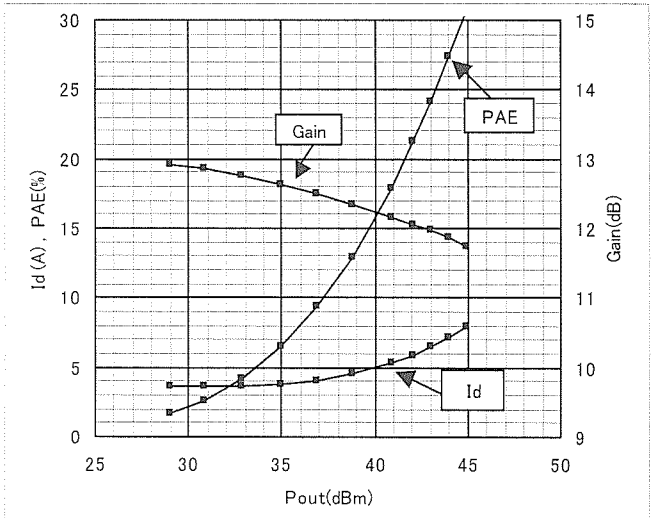


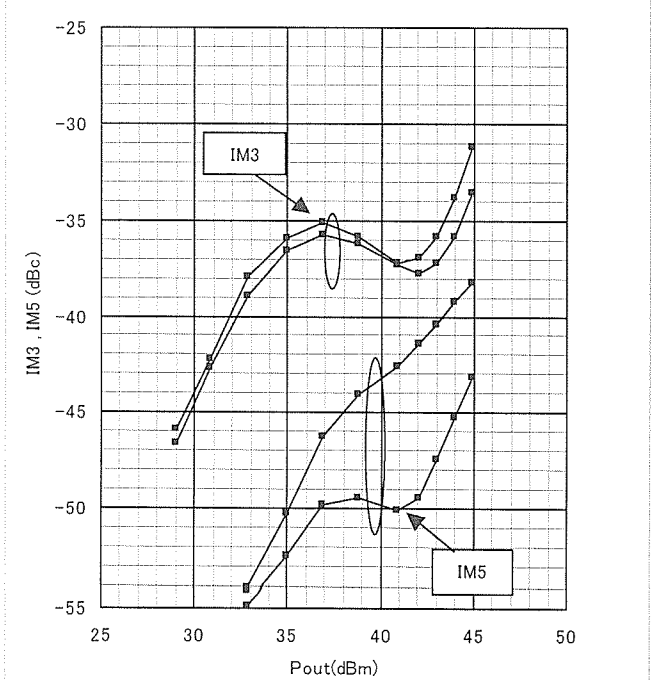


MGFS52BN2122A RF TEST DATA (W-CDMA signal ,2-tone)

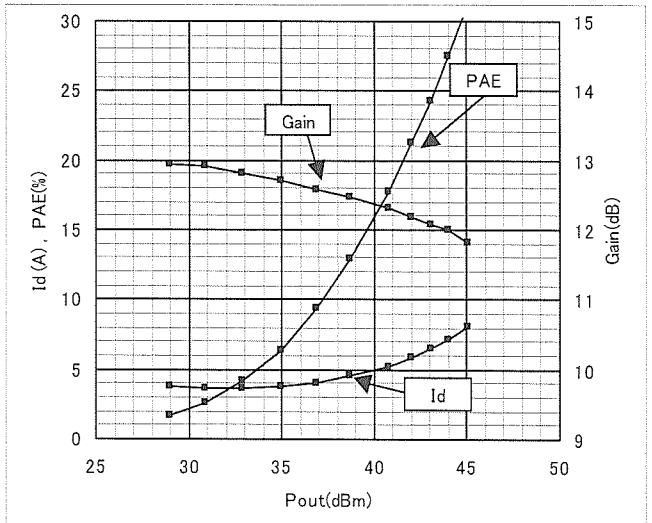
Fig.3 Pout vs. IM3,IM5,Id,PAE,Gain (W-CDMA signal , 2-tone 3GPP test model 1 w/64DPCH)
Bias conditions Vd=12V , Idq=4A

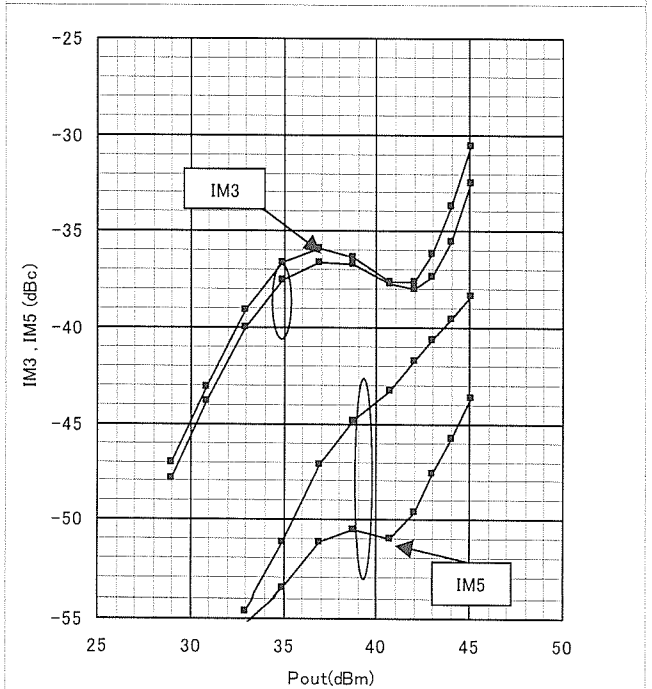
f=2.11GHz



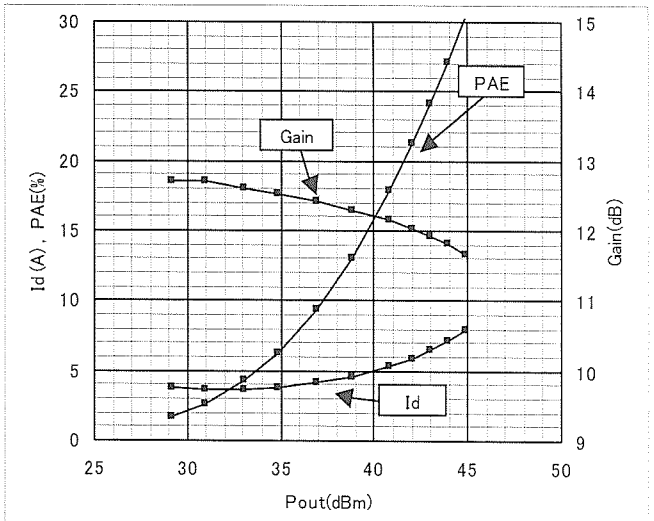


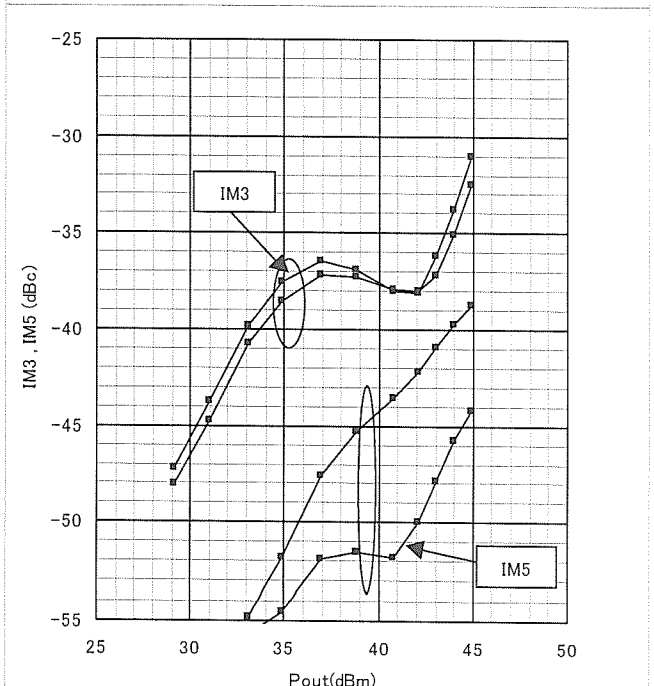
f=2.14GHz





f=2.17GHz

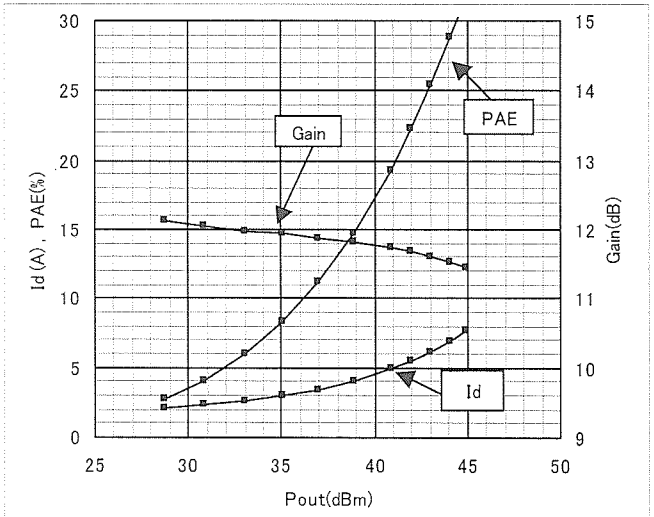




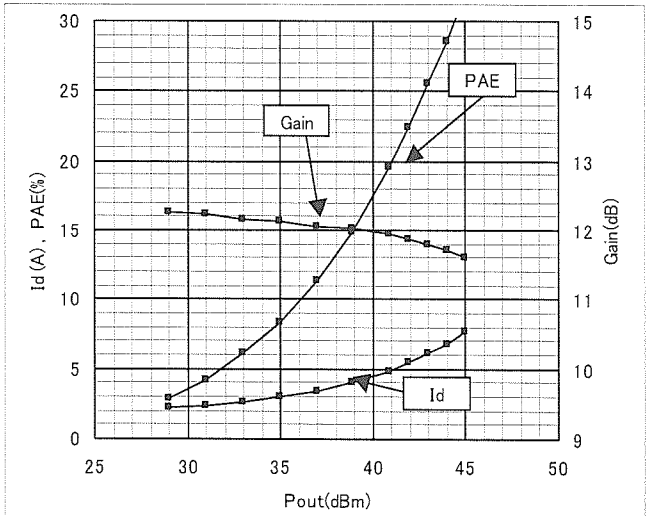
MGFS52BN2122A RF TEST DATA (W-CDMA signal ,2-tone)

Fig.4 Pout vs. IM3,IM5,Id,PAE,Gain (W-CDMA signal , 2-tone 3GPP test model 1 w/64DPCH)
Bias conditions Vd=12V , Idq=2A

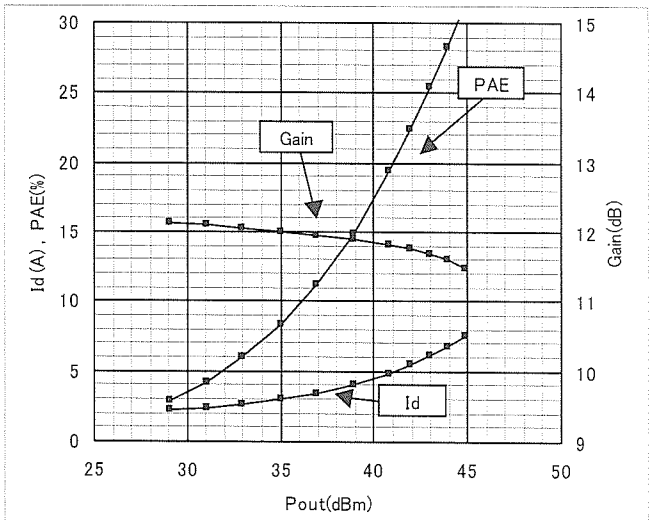
f=2.11GHz

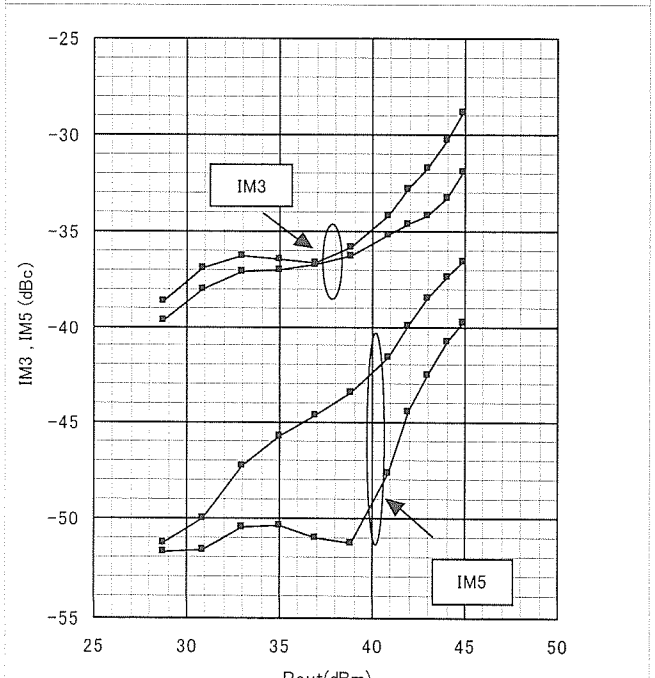


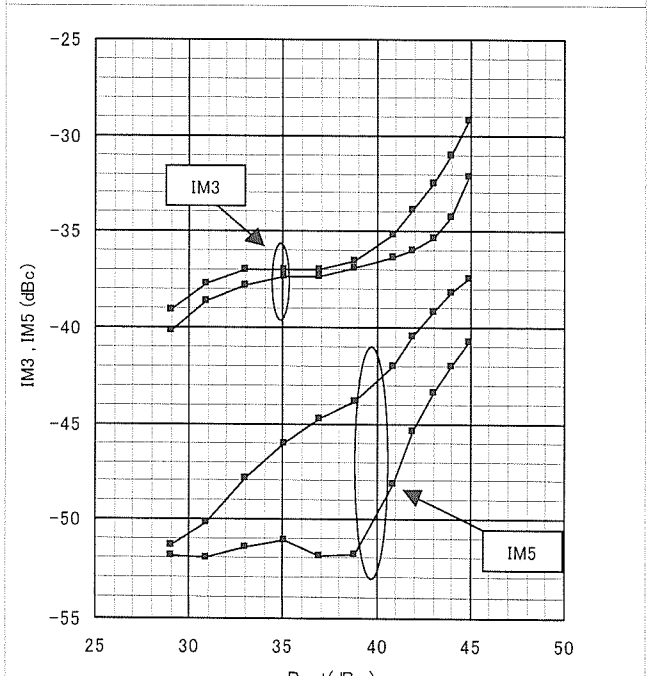
f=2.14GHz



f=2.17GHz







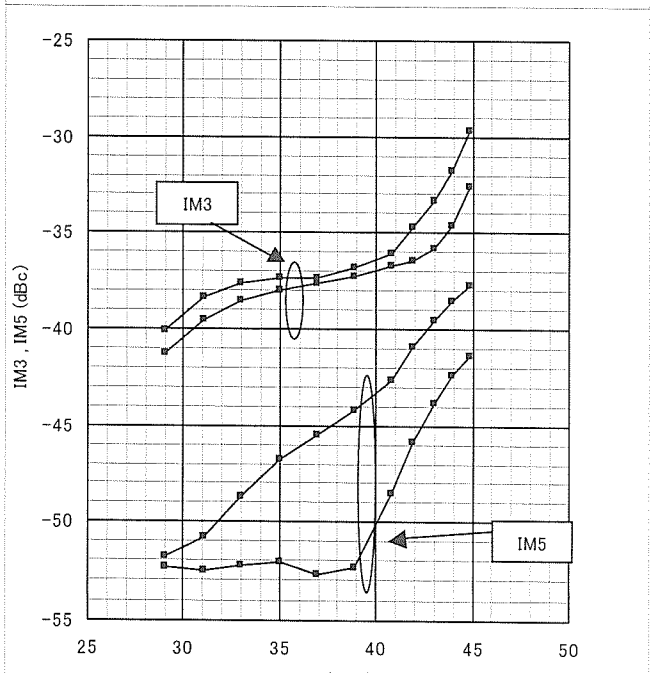
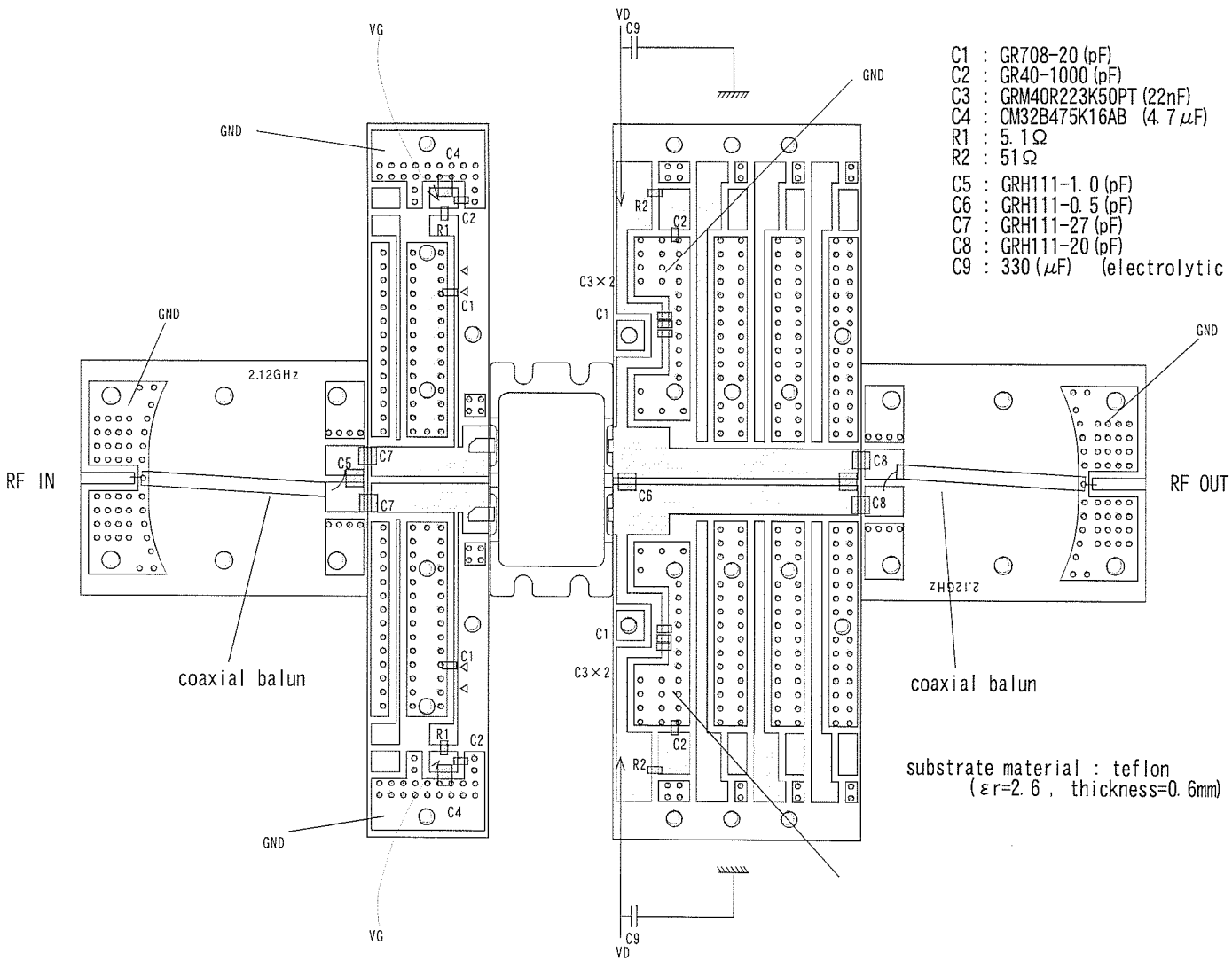
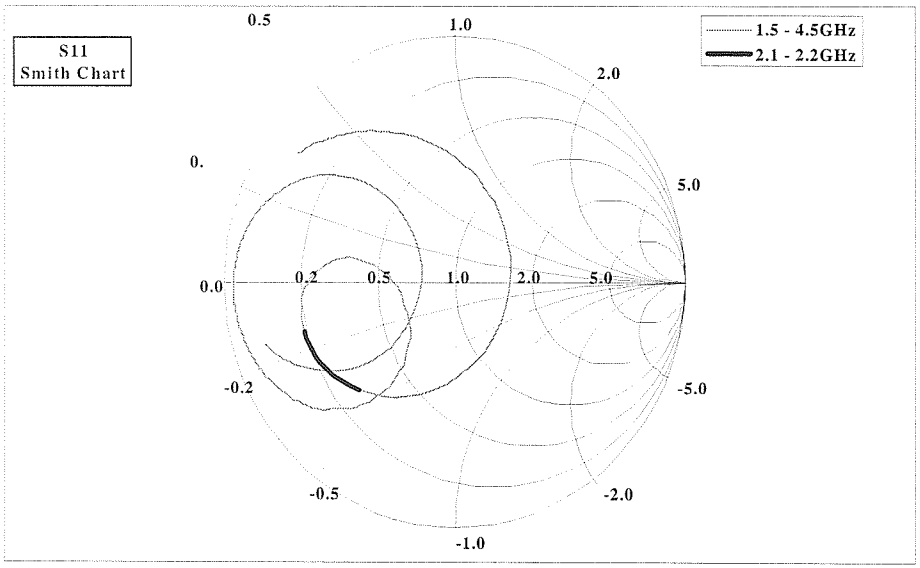


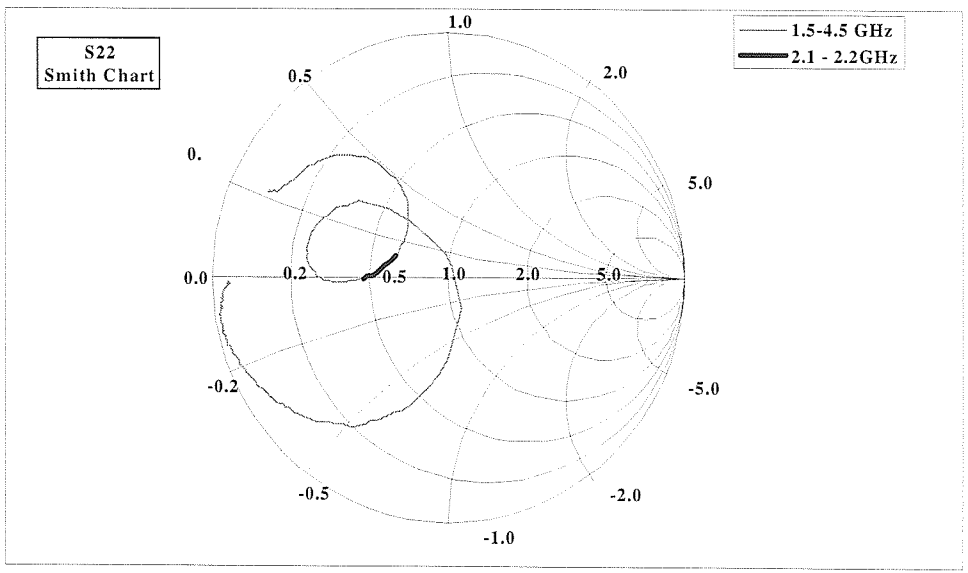
Fig.5 RF TEST FIXTURE



MGFS52BN2122A small signal S-parameters

Fig.6 MGFS52BN2122A S11 , S22 (small signal)
Vd=12V , Idq=2A for one side FET





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