To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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NEC

Phase-out/Discontinued

Evaluation Board Information

DM-μPG2214TK/μPG2314T5N
2.4 GHz Range Extender Demo Board
[SW: μPG2214TK (x 2), AMP: μPG2314T5N]

- **Demo Board Schematics**
- **Evaluation Circuit**
- **The Summary of Electrical Characteristics**
- **P_{out}, I_{CC}, PAE vs. P_{in} Characteristics**
- **P_{out}, PAE, I_{CC} vs. V_{cont} Characteristics**
- **Small Signal Characteristics**

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Date Published May 2008 NS

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The characteristics of high-frequency devices in particular vary depending on the external components and mounting pattern used.
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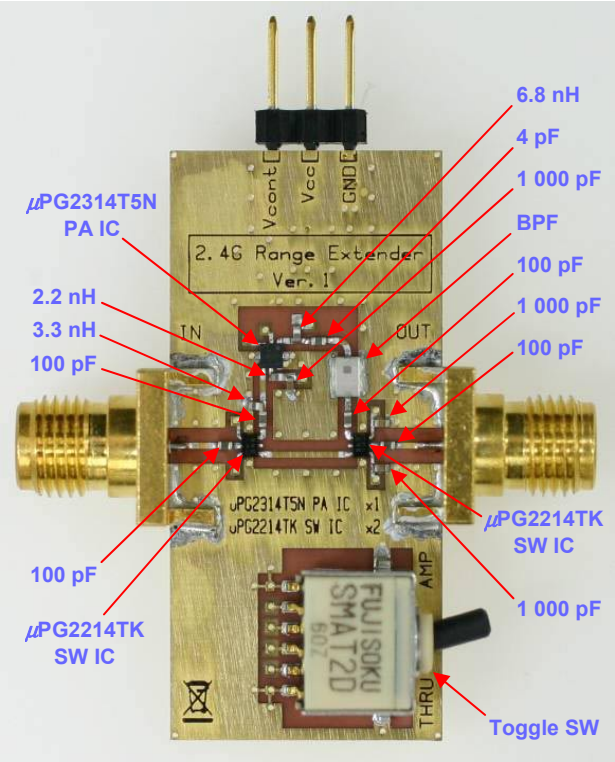
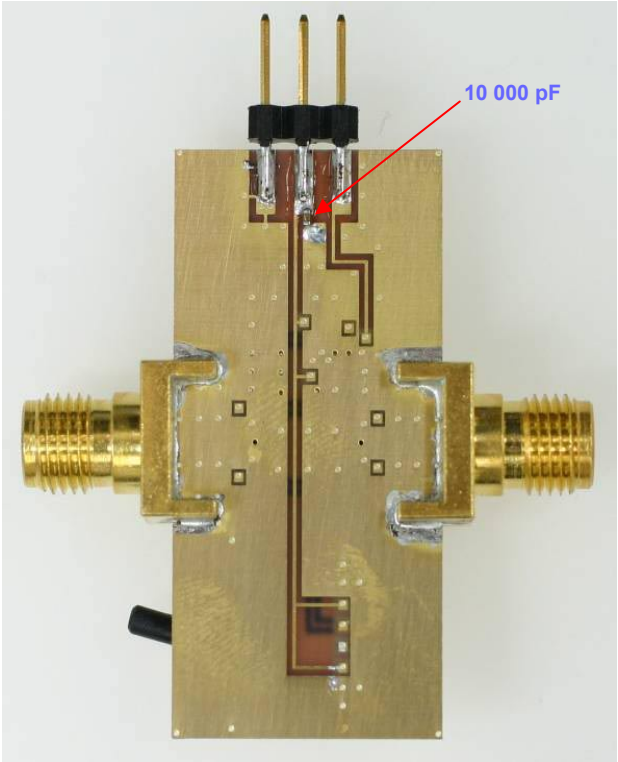
Phase-out/Discontinued

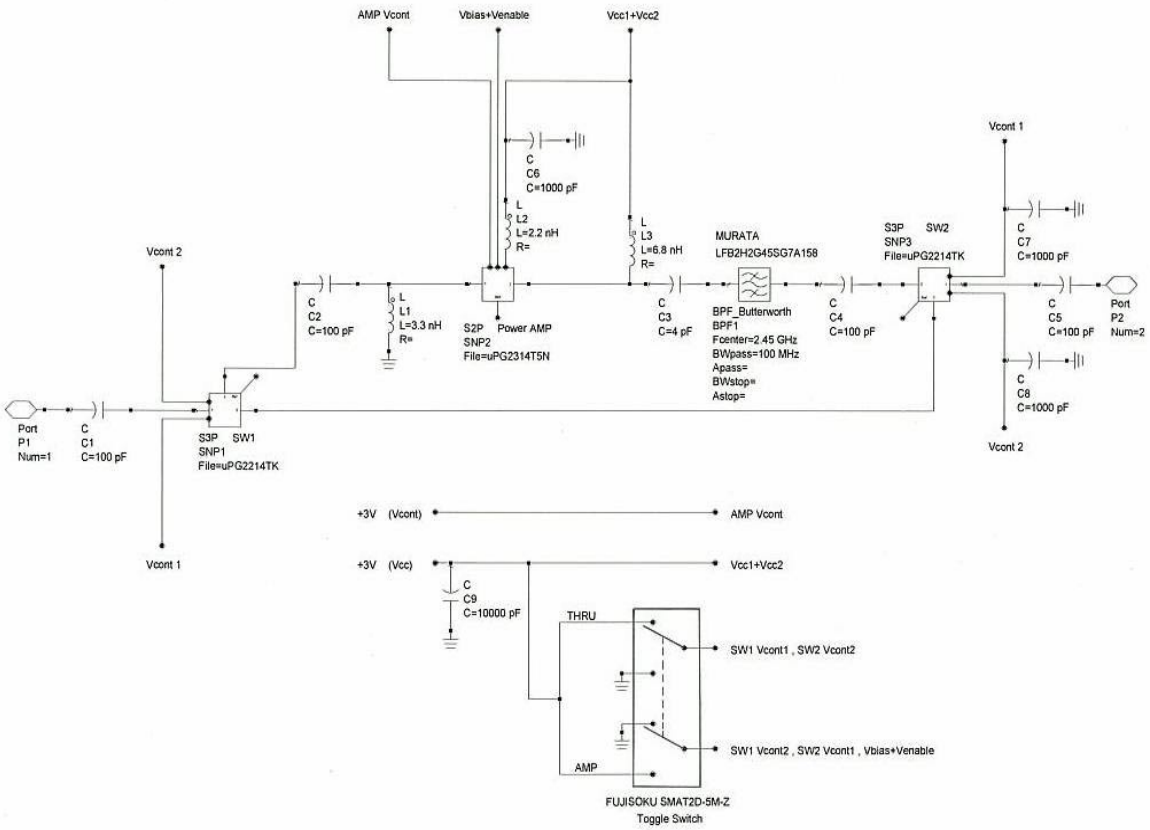
Demo Board Schematics





Phase-out/Discontinued

Evaluation Circuit



Components List

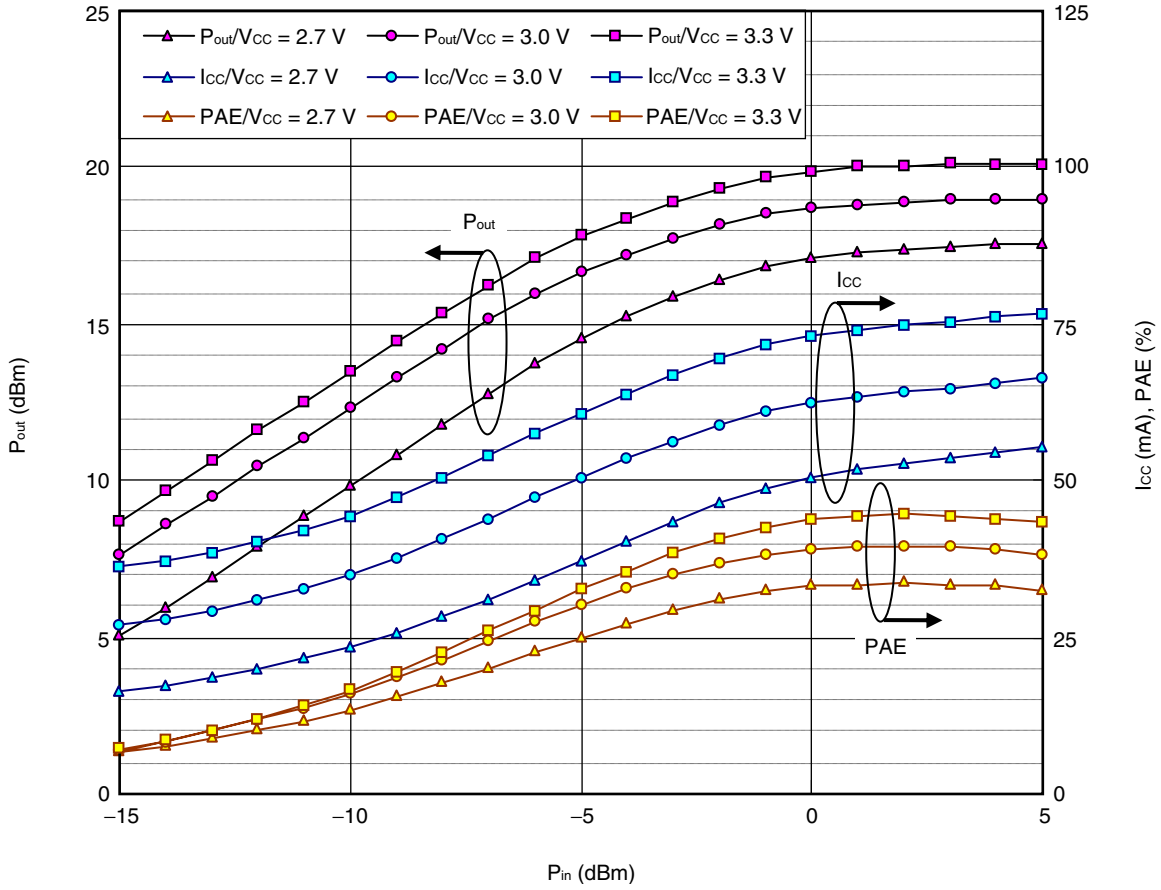
Parts	Part Number	Maker	Symbol	Value	Unit
Chip Capacitor	GRM1552C1H101JZ01	Murata	C1, C2, C4, C5	100	pF
Chip Capacitor	GRM1552C1H4R0CZ01	Murata	C3	4	pF
Chip Capacitor	GRM155B11H102KA01	Murata	C6, C7, C8	1 000	pF
Chip Capacitor	GRM155B11H103KA01	Murata	C9	10 000	pF
Chip Inductor	AML1005H3R3S	FDK	L1	3.3	nH
Chip Inductor	AML1005H2R2S	FDK	L2	2.2	nH
Chip Inductor	AML1005H6R8S	FDK	L3	6.8	nH
BPF	LFB2H2G45SG7A158	Murata			
Toggle Switch	SMAT2D-5M-Z	Fujisoku			
RF Connector	01K2266-00	Waka			
Substrate	4 Layer PCB (TOP: t = 0.2 mm FR4)	Sumitomo			

The Summary of Electrical Characteristics

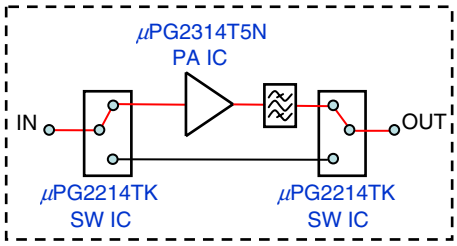
Item	Symbol	Data	Unit	Test Conditions	
Circuit Current	I_{CC}	62.4	mA	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = 0 dBm	Toggle SW "AMP"
Output Power 1	$P_{out}1$	18.7	dBm	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = 0 dBm	
Output Power 2	$P_{out}2$	−0.8	dBm	f = 2.45 GHz, V_{CC} = 3 V, V_{cont} = 0 V, P_{in} = 0 dBm	
Efficiency	PAE	39.1	%	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = 0 dBm	
2nd Harmonics	$2f_0$	48.9	dBc	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = 0 dBm	
Input Return Loss	RL_{in}	19.2	dB	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = −30 dBm	
Output Return Loss	RL_{out}	14.4	dB	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = −10 dBm	
Insertion Loss	L_{ins}	1.0	dB	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = −30 dBm	Toggle SW "THRU"
Input Return Loss	RL_{in}	28.4	dB	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = −30 dBm	
Output Return Loss	RL_{out}	30.2	dB	f = 2.45 GHz, V_{CC} = V_{cont} = 3 V, P_{in} = −10 dBm	

Pout, ICC, PAE vs. Pin Characteristics

(f = 2.45 GHz, Vcont = +3.0 V, Toggle SW = "AMP")



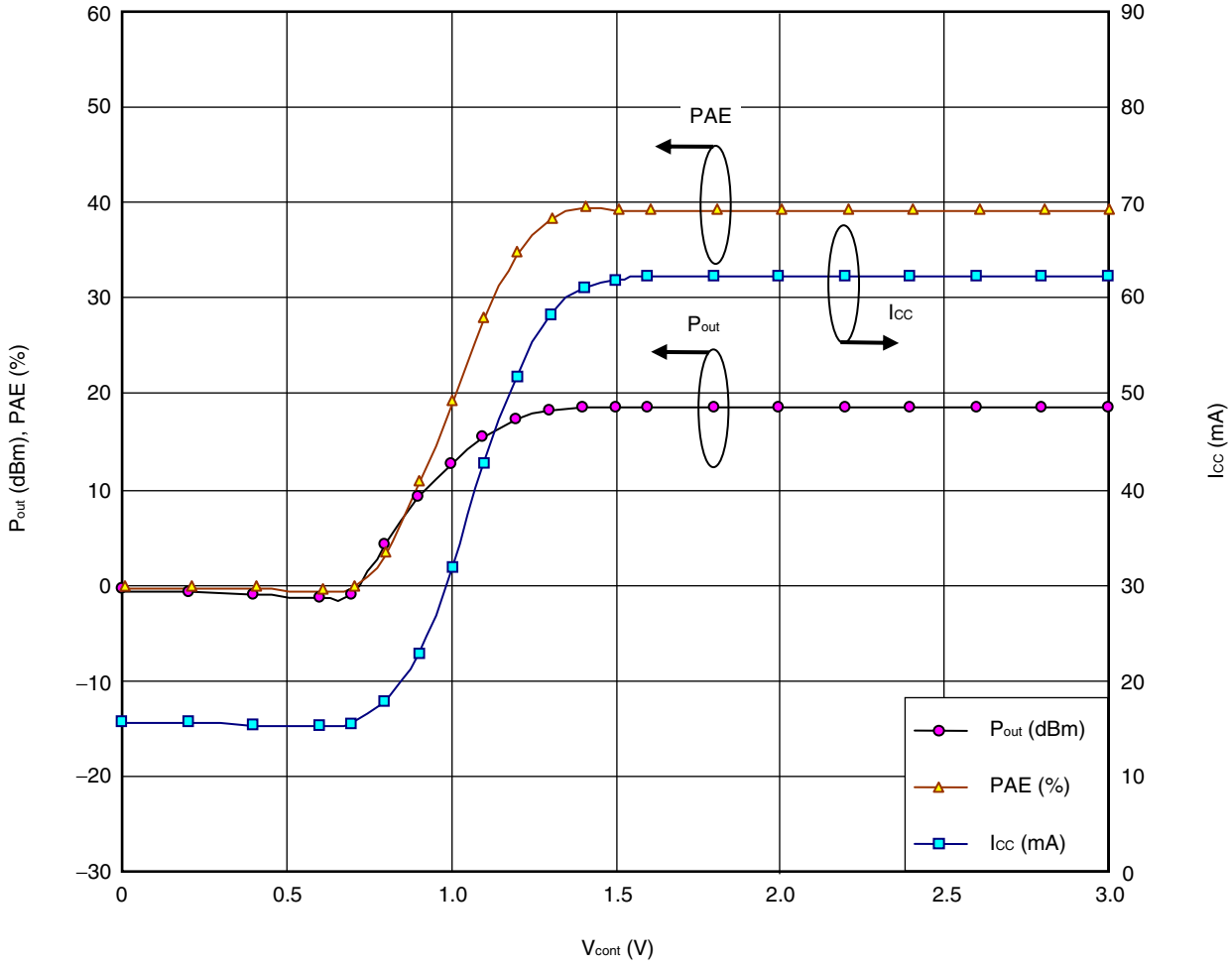
[Toggle SW = "AMP"]



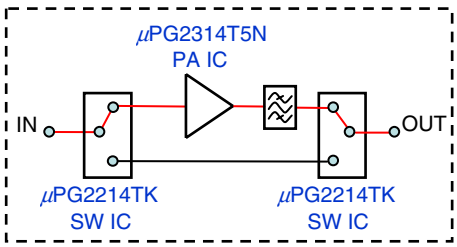
Phase-out/Discontinued

P_{out}, PAE, I_{CC} vs. V_{cont} Characteristics

(f = 2.45 GHz, V_{CC} = +3.0 V, P_{in} = 0 dBm, Toggle SW = “AMP”)



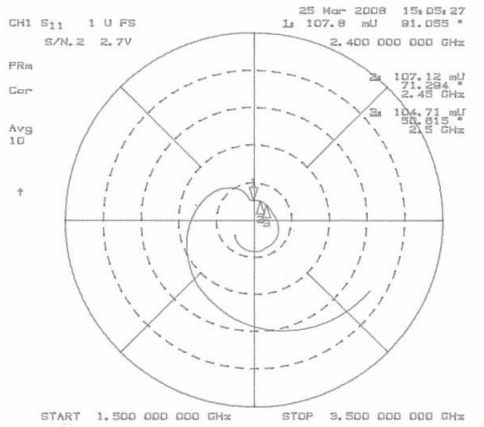
[Toggle SW = “AMP”]



Small Signal Characteristics

(V_{CC} = +2.7 V, V_{cont} = +3.0 V, P_{in} = –30 dBm, Toggle SW = “AMP”)

S11



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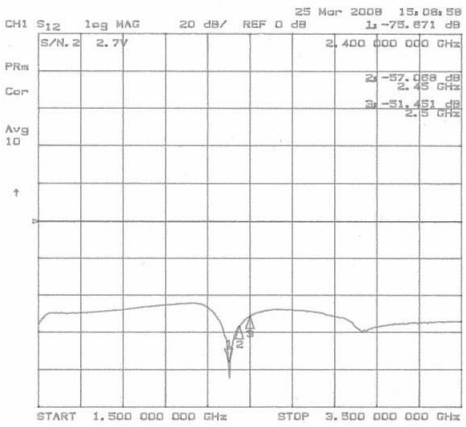

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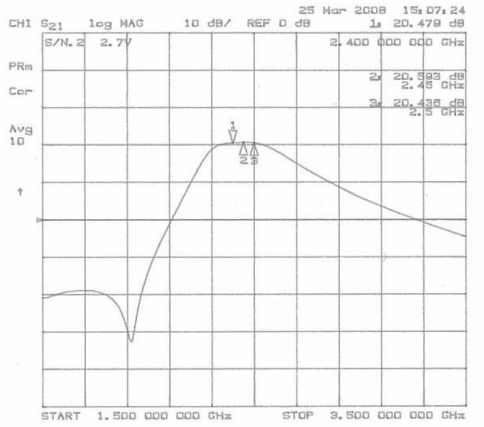

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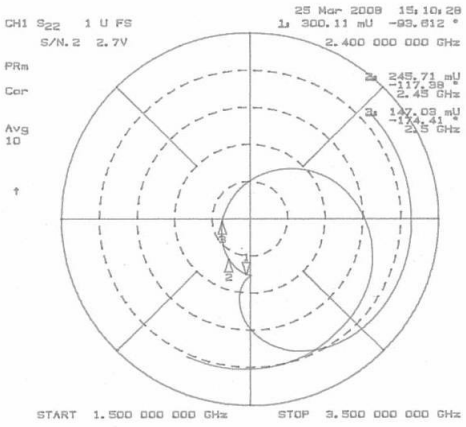

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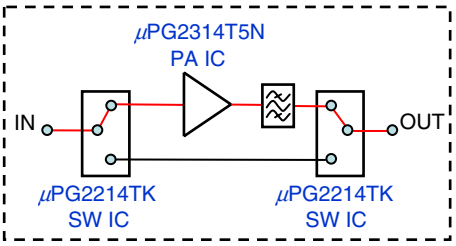
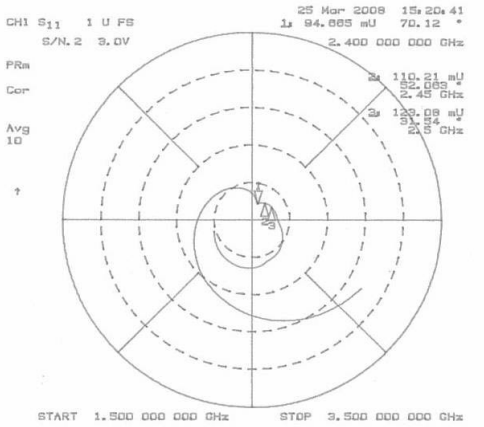


Small Signal Characteristics

(V_{CC} = +3.0 V, V_{cont} = +3.0 V, P_{in} = –30 dBm, Toggle SW = “AMP”)

S11



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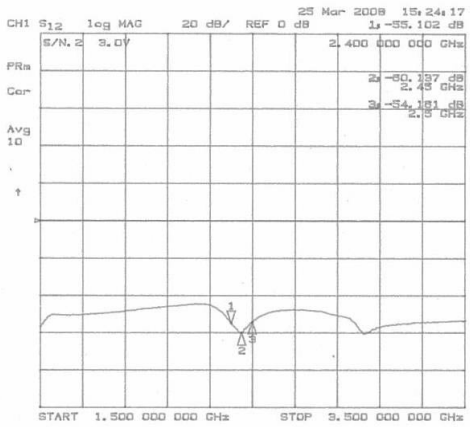

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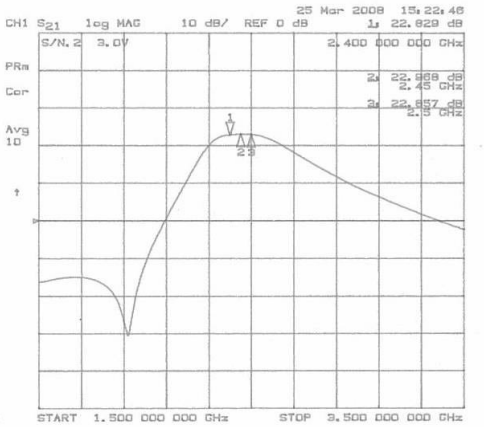

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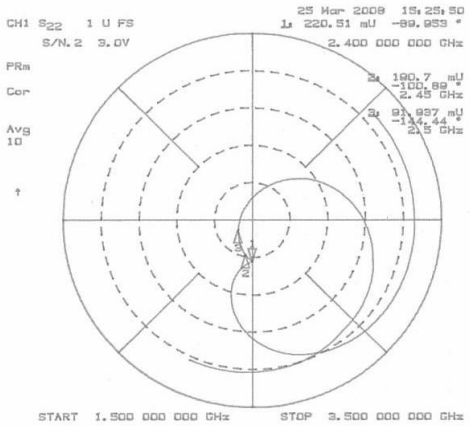

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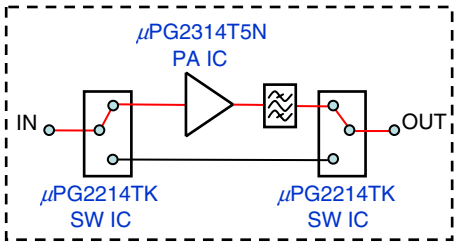
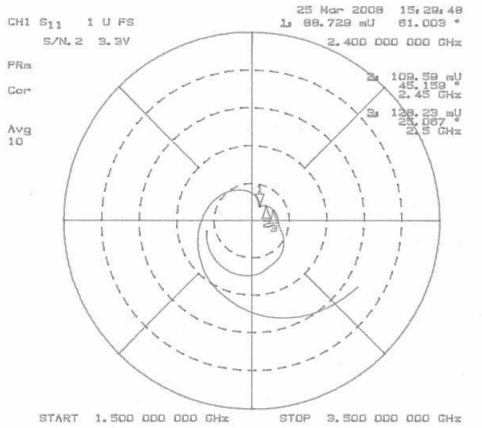


Small Signal Characteristics

(V_{CC} = +3.3 V, V_{cont} = +3.0 V, P_{in} = –30 dBm, Toggle SW = “AMP”)

S11



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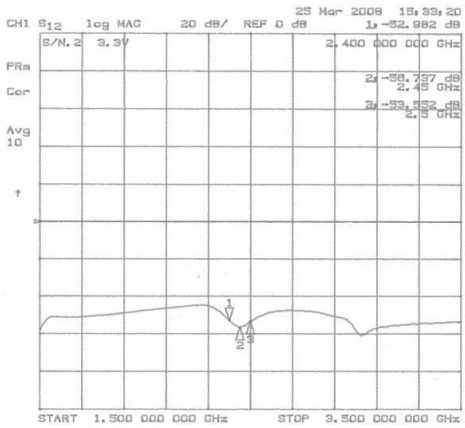

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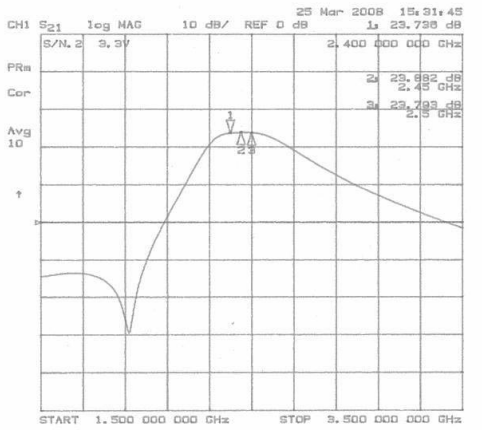

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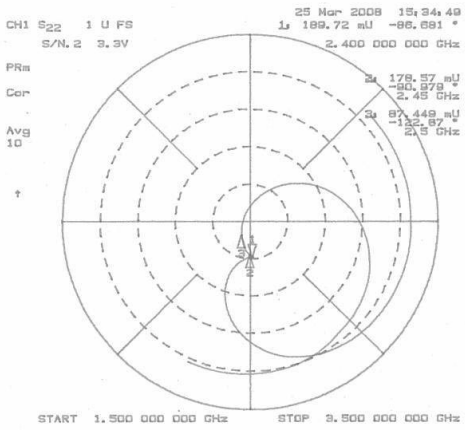

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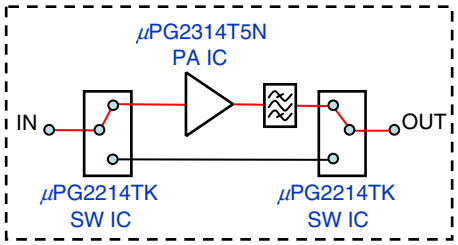
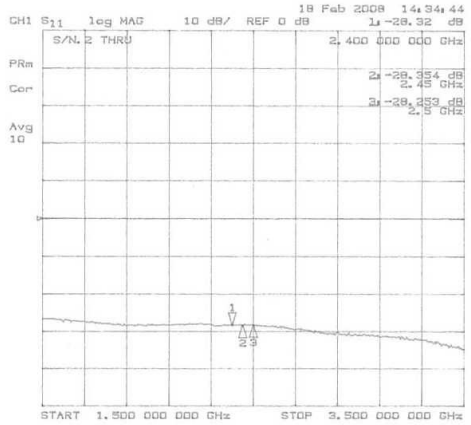


Small Signal Characteristics

(V_{CC} = V_{cont} = +3.0 V, P_{in} = –30 dBm, Toggle SW = “THRU”)

S11



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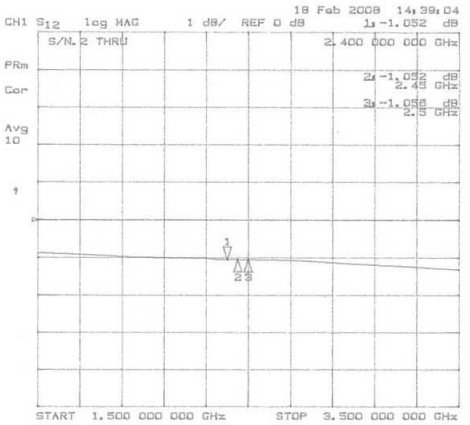

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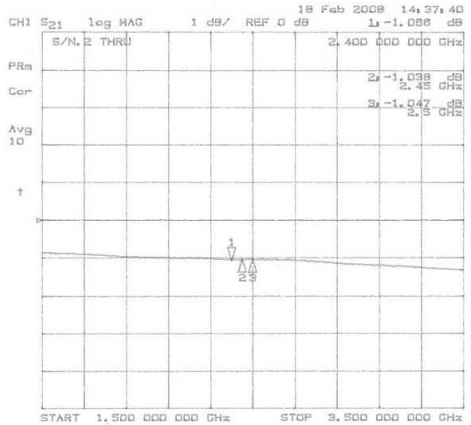

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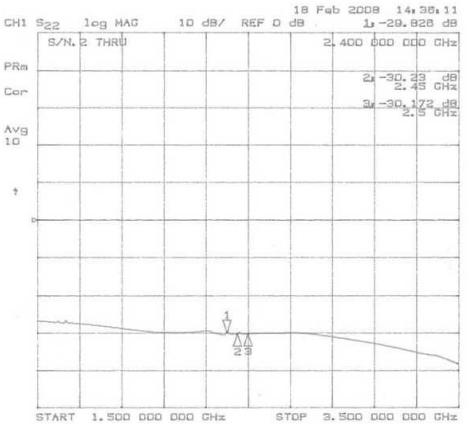

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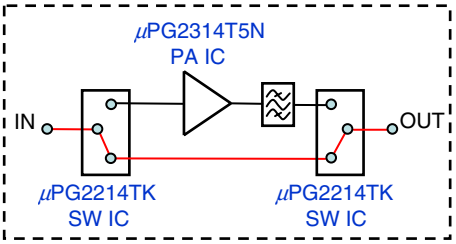

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