HA31005ANP

SiGe MMIC
High Frequency Power Amplifier

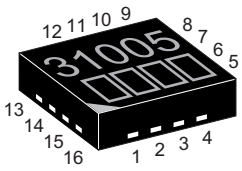
REJ03F0173-0200
Rev.2.00
Jul 31, 2007

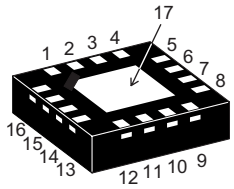
Features

- Ideal for IEEE802.11a / b / g / n applications. e.g. Wireless LAN FEM
- High Gain (24 dB @ 5.2 GHz, 30dB @ 2.4 GHz)
- Small footprint package.
  (HWQFN-16 : 3.0 x 3.0 x 0.8 mm)
- RoHS Compliant

Outline

RENESAS Package code: PWQN0016KA-B
(Package name: HWQFN-16)





1. GND	10. GND
2. RFout	11. RFin
3. RFout	12. GND
4. GND	13. VC1
5. GND	14. GND
6. VB3	15. VC2
7. VB2	16. GND
8. VB1	
9. VCC	17. GND

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Supply Voltage	V_{CC}	4	V
Maximum Current	I_{CC}	400	mA
Maximum Input Power	$P_{in\ max}$	+10	dBm
Total Power Dissipation	P_t	1.4[note]	W
Operating Case Temperature	Tc(op)	-10 to +85	°C
Storage Temperature	Tstg	–55 to +150	°C

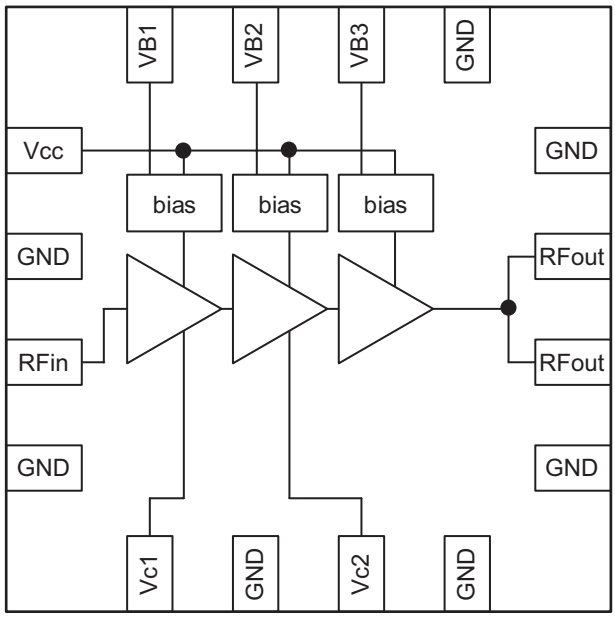
Notes: Value on PCB (FR-4 : 20 x 20 x 0.4 mm double side)

Electrical Characteristics

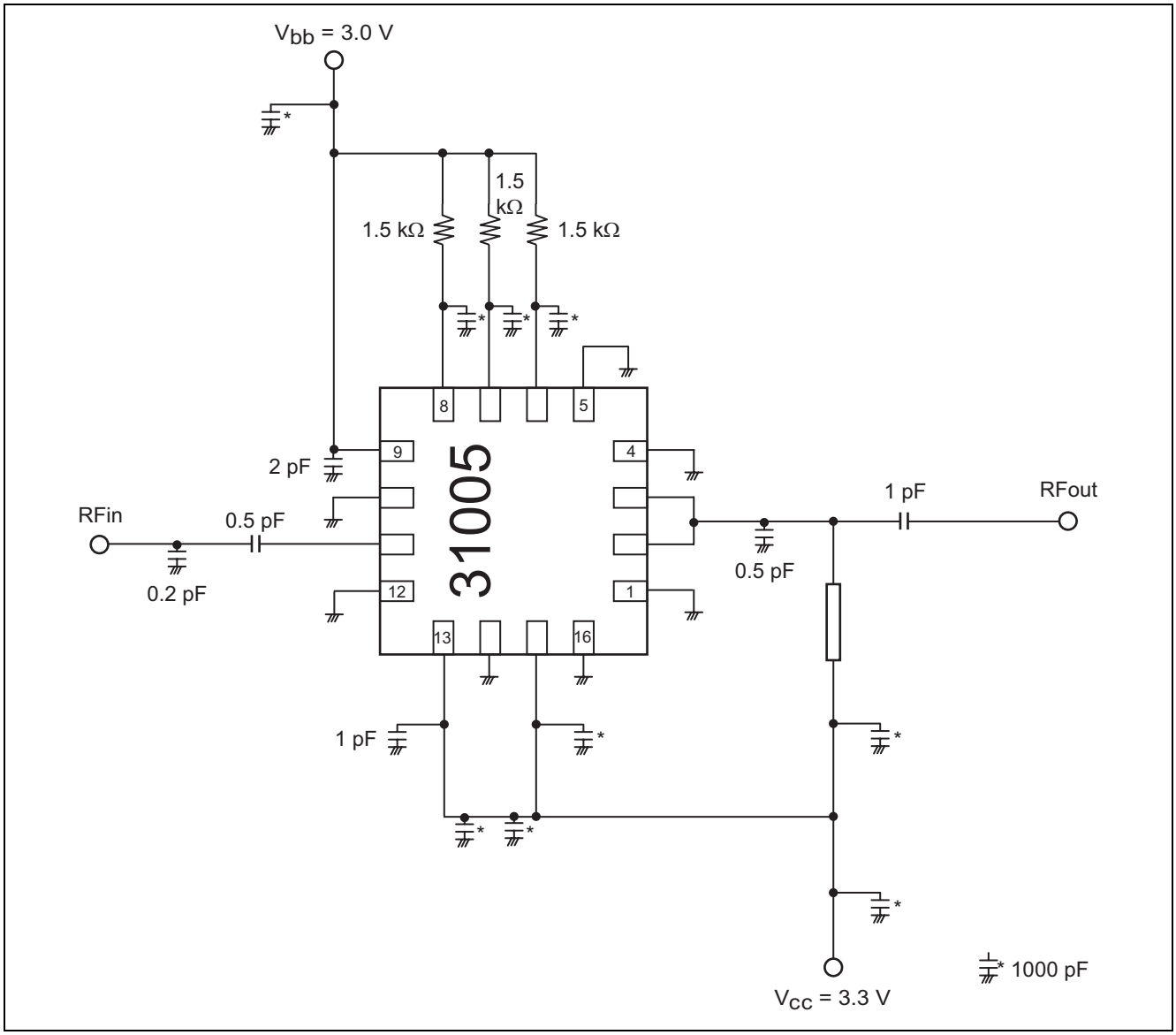
(Ta = 25°C)

Item	Symbol	Min.	Typ	Max.	Unit	Test Conditions
Supply Voltage	V_{CC}	3	3.3	3.6	V	
Power Gain	PG1	—	24	—	dB	f = 5.15 to 5.35 GHz
Circuit Current	Icc1	—	160	—	mA	Pout = +18 dBm, Icq = 130 mA
Output Power	Pout1	—	+18	—	dBm	f = 5.15 GHz , EVM = 4%, 54 Mbps, 64 QAM_OFDM, Icq = 130 mA
Power Gain	PG2	—	30	—	dB	f = 2.484 GHz
Circuit Current	Icc2	—	110	—	mA	Pout = +18 dBm, Icq = 90 mA
Output Power	Pout2	—	+18	—	dBm	f = 2.484 GHz, EVM = 4%, 54 Mbps, 64 QAM_OFDM, Icq = 90 mA
Power Gain	PG3	—	30	—	dB	f = 2.484 GHz, .11 b 11 Mbps
Circuit Current	Icc3	—	170	—	mA	Vcc = 3.3 V, Icq = 90 mA
Output Power	Pout3	—	+22	—	dBm	

Function Block Diagram



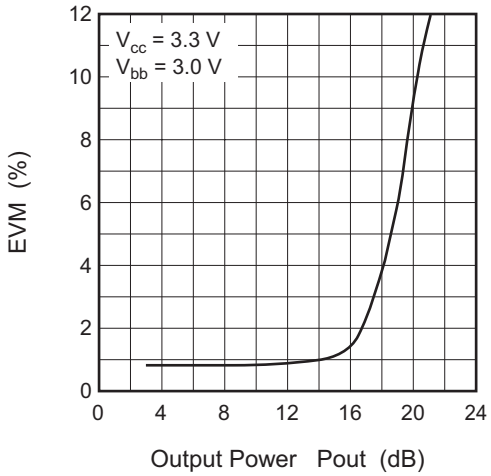
Evaluation Circuit for IEEE 802.11a



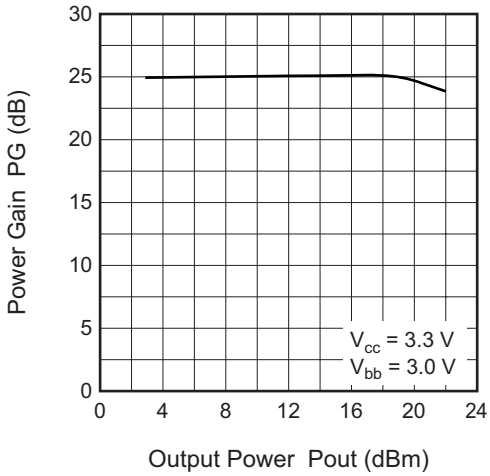
Characteristics for IEEE 802.11a

f = 5.15 GHz
64 QAM / OFDM, Encode rate ¾, 54 Mbps, idle interval = 110 µs, 1024 + 34 byte / frame

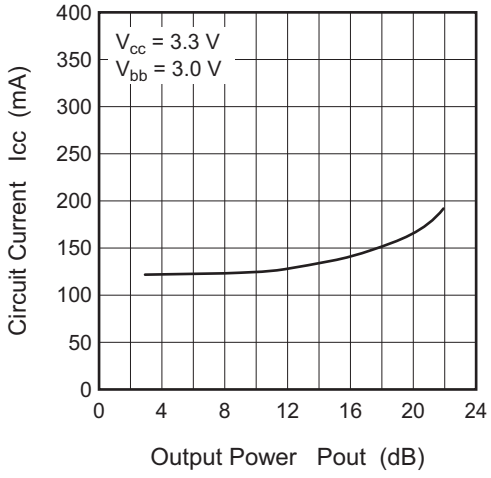
EVM vs. Pout



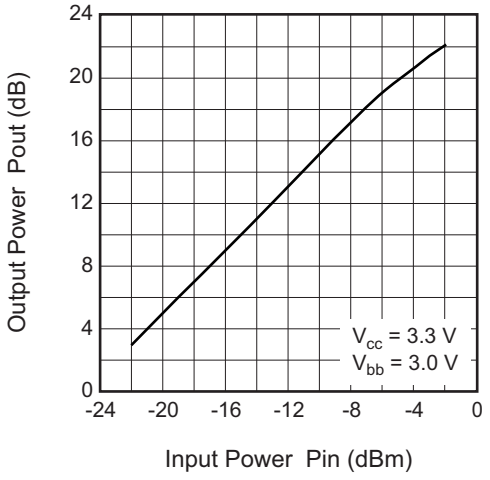
Power Gain vs. Output Power



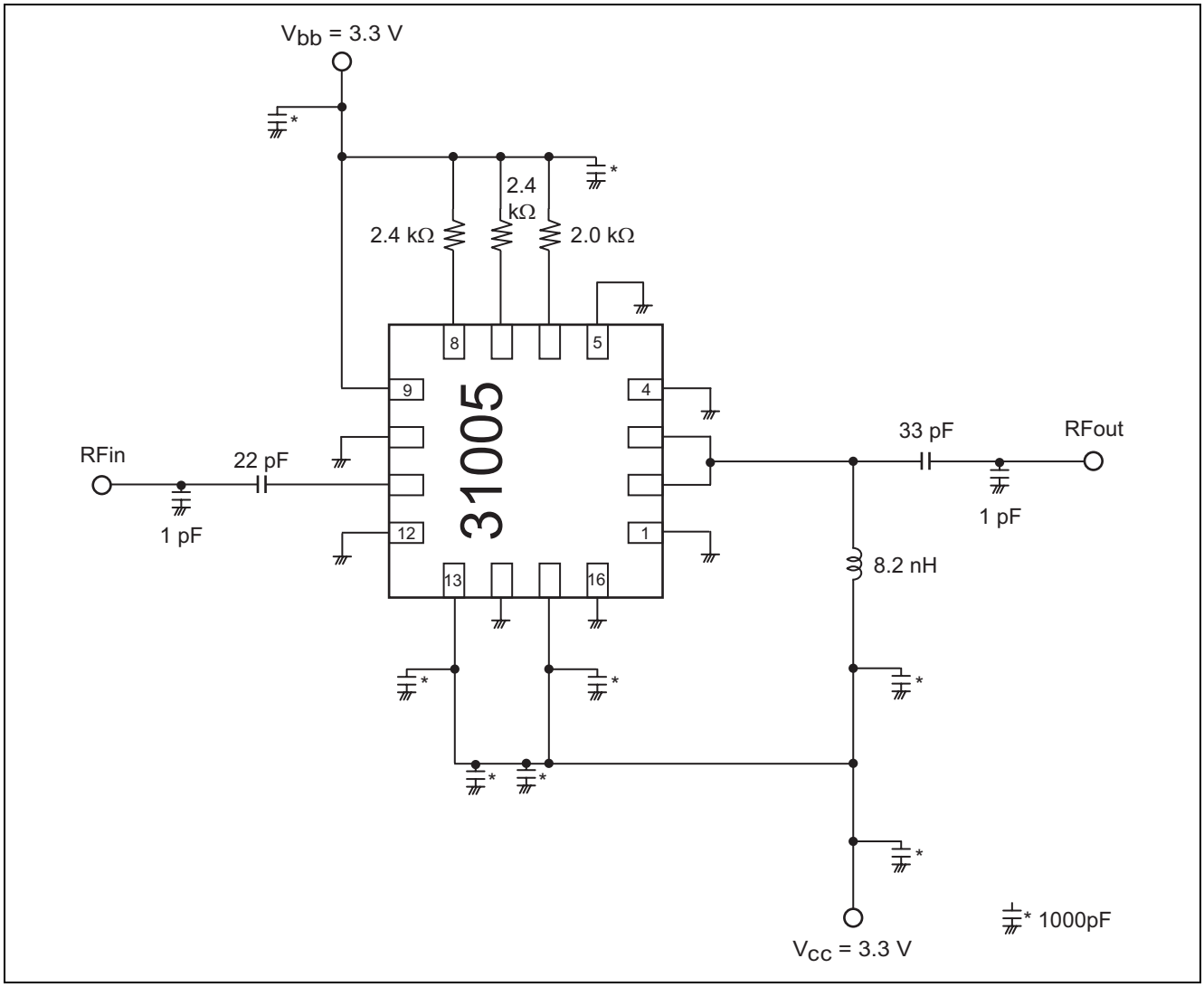
Circuit Current vs. Output Power



Output Power vs. Input Power



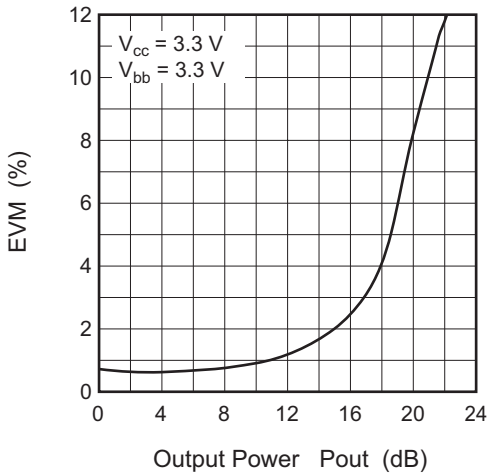
Evaluation Circuit for IEEE 802.11g



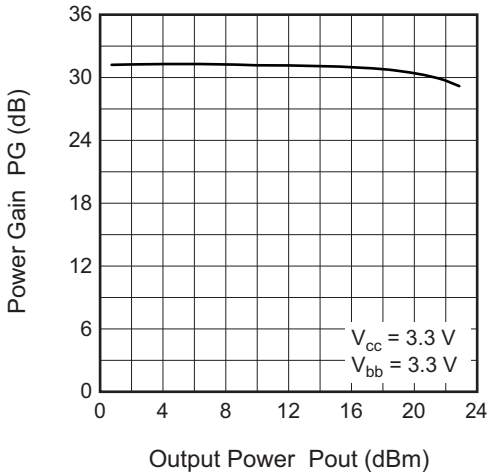
Characteristics for IEEE 802.11g

f = 2.484 GHz
64 QAM / OFDM, Encode rate ¾, 54 Mbps, idle interval = 110 µs, 1024 + 34 byte / frame

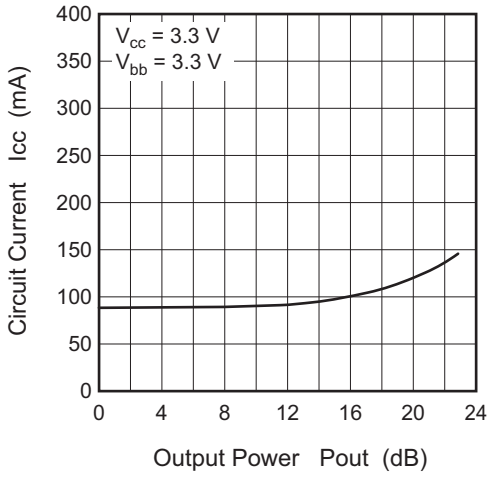
EVM vs. Pout



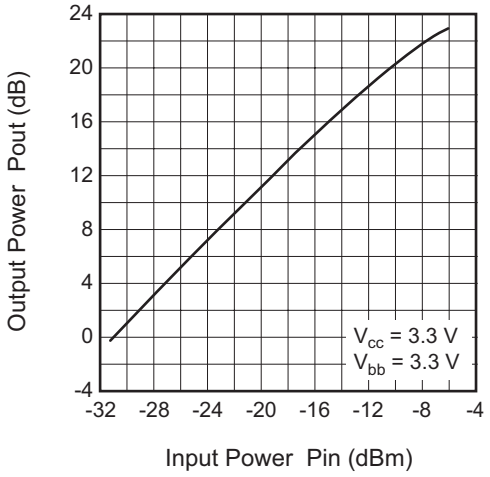
Power Gain vs. Output Power



Circuit Current vs. Output Power

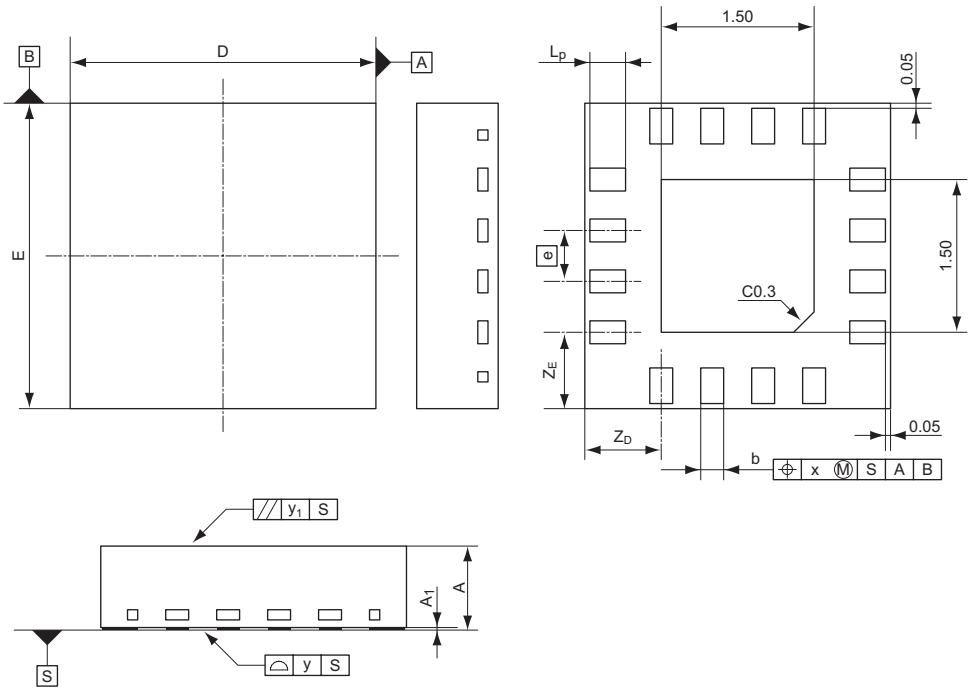


Output Power vs. Input Power



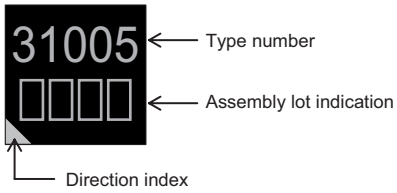
Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
HWQFN-16	P-HWQFN16-3x3-0.50	PWQN0016KA-B	—	0.020g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	2.90	3.00	3.10
E	2.90	3.00	3.10
A	0.70	0.75	0.80
A_1	0	—	0.05
A_2	—	—	—
b	—	0.23	—
e	—	0.50	—
L_p	—	0.35	—
x	—	—	0.10
y	—	—	0.08
y_1	—	—	0.10
Z_D	—	0.75	—
Z_E	—	0.75	—

Marking



Ordering Information

Part No.	Quantity	Shipping Container
HA31005ANPTL-E	2000 pcs.	ϕ178 mm reel, 12 mm emboss taping

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http://www.renesas.com

Refer to "**http://www.renesas.com/en/network**" for the latest and detailed information.

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Colophon .7.0