

# HA31005ANP

SiGe MMIC  
High Frequency Power Amplifier

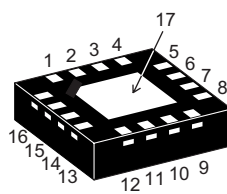
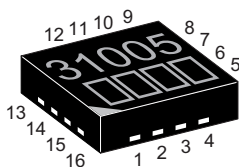
REJ03F0173-0200  
Rev.2.00  
Jul 31, 2007

## 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 <sub>CC</sub>	4	V
Maximum Current	I <sub>CC</sub>	400	mA
Maximum Input Power	P <sub>in max</sub>	+10	dBm
Total Power Dissipation	P <sub>t</sub>	1.4 <sup>note</sup>	W
Operating Case Temperature	T <sub>c(op)</sub>	-10 to +85	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

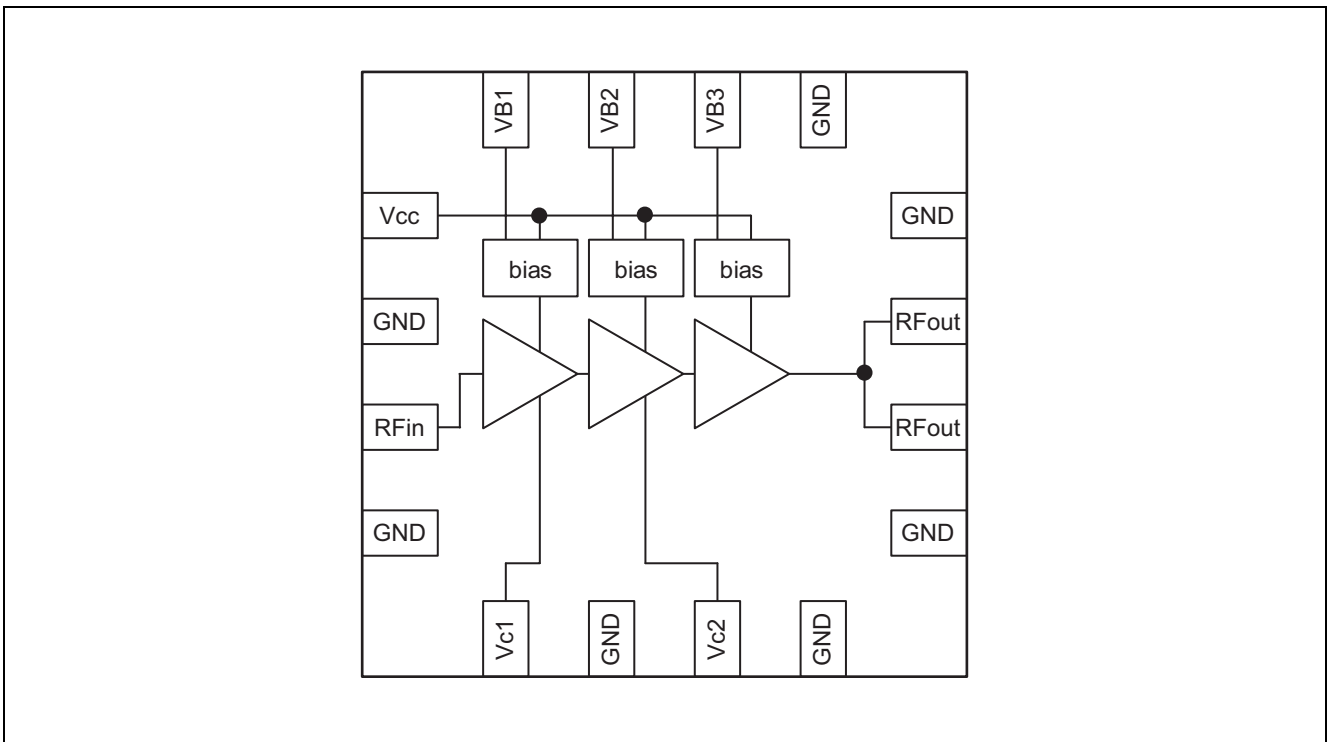
Notes: Value on PCB (FR-4 : 20 x 20 x 0.4 mm double side)

**Electrical Characteristics**

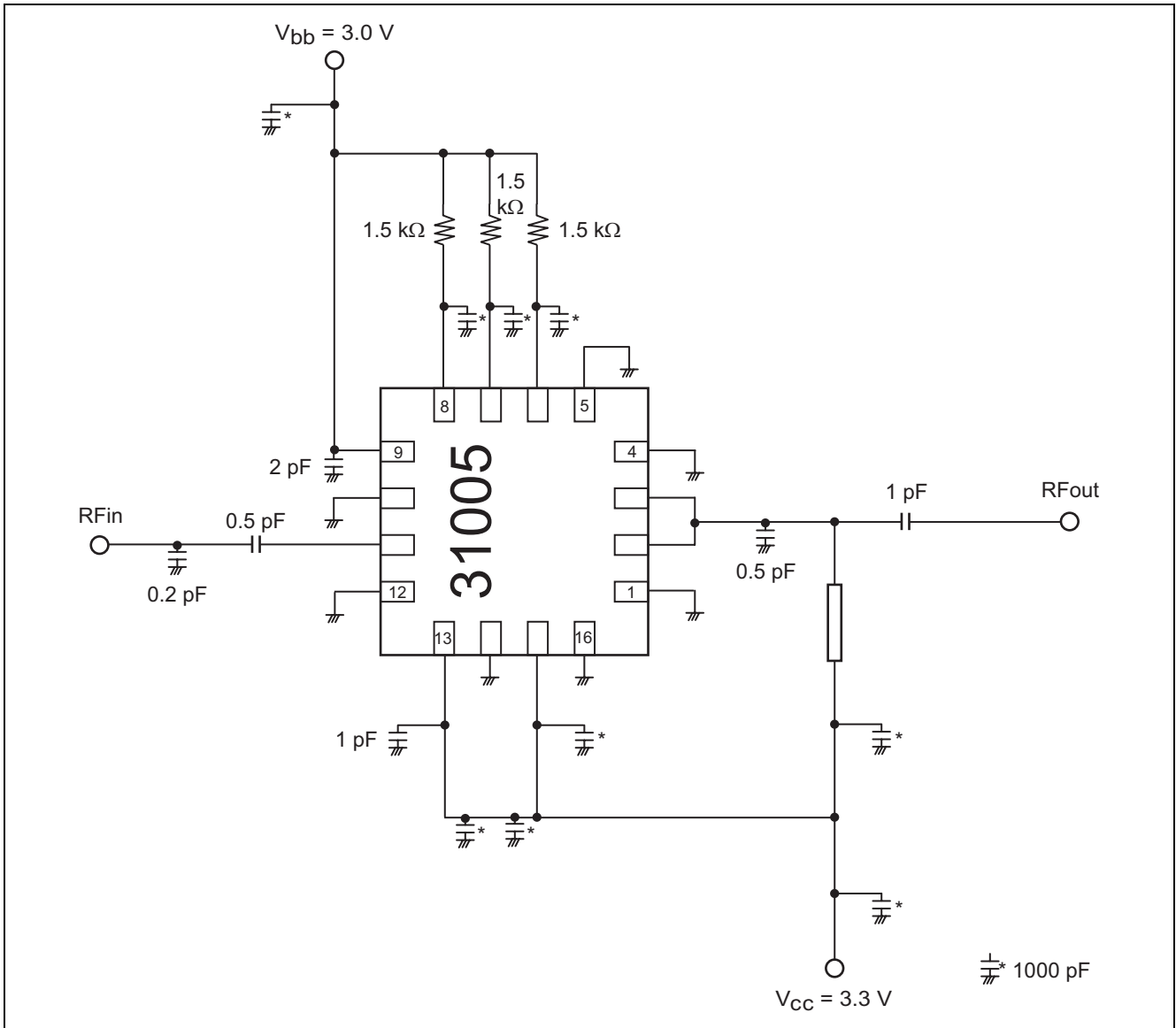
(Ta = 25°C)

Item	Symbol	Min.	Typ	Max.	Unit	Test Conditions
Supply Voltage	V <sub>CC</sub>	3	3.3	3.6	V	
Power Gain	PG1	—	24	—	dB	f = 5.15 to 5.35 GHz
Circuit Current	I <sub>CC1</sub>	—	160	—	mA	P <sub>out</sub> = +18 dBm, I <sub>cq</sub> = 130 mA
Output Power	P <sub>out1</sub>	—	+18	—	dBm	f = 5.15 GHz, EVM = 4%, 54 Mbps, 64 QAM_OFDM, I <sub>cq</sub> = 130 mA
Power Gain	PG2	—	30	—	dB	f = 2.484 GHz
Circuit Current	I <sub>CC2</sub>	—	110	—	mA	P <sub>out</sub> = +18 dBm, I <sub>cq</sub> = 90 mA
Output Power	P <sub>out2</sub>	—	+18	—	dBm	f = 2.484 GHz, EVM = 4%, 54 Mbps, 64 QAM_OFDM, I <sub>cq</sub> = 90 mA
Power Gain	PG3	—	30	—	dB	f = 2.484 GHz, .11 b 11 Mbps
Circuit Current	I <sub>CC3</sub>	—	170	—	mA	V <sub>CC</sub> = 3.3 V, I <sub>cq</sub> = 90 mA
Output Power	P <sub>out3</sub>	—	+22	—	dBm	

**Function Block Diagram**



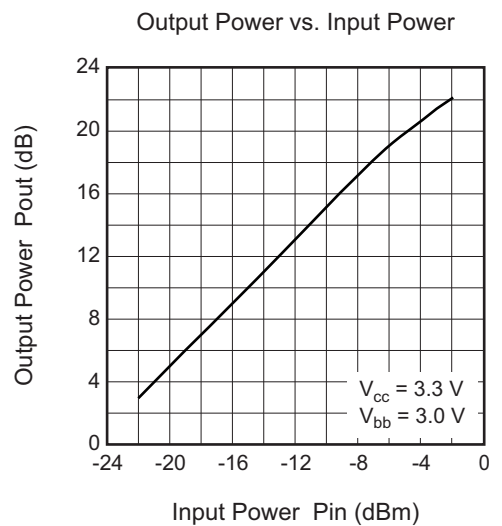
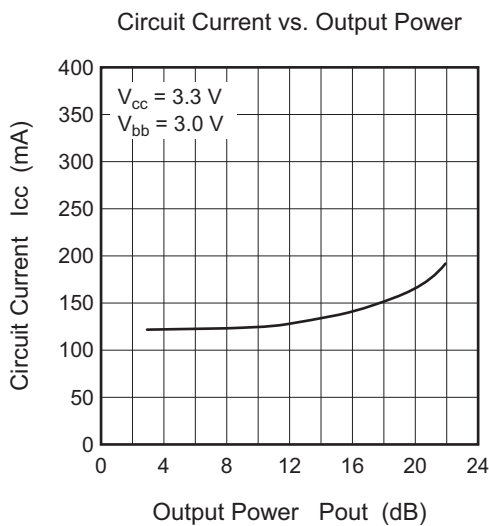
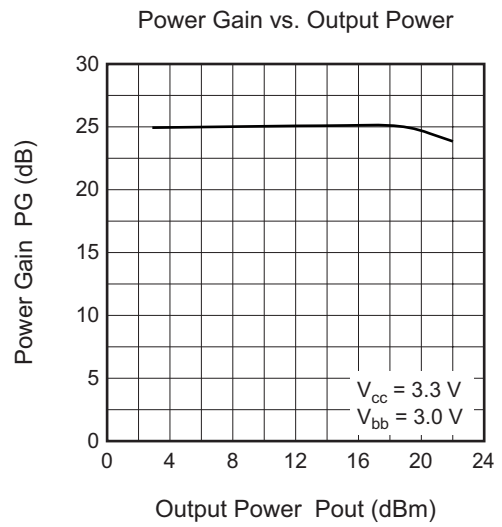
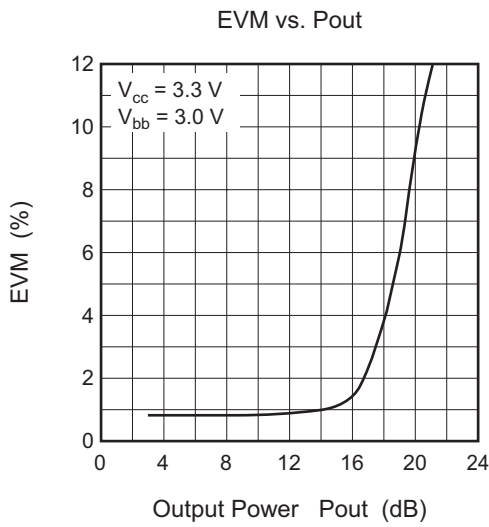
Evaluation Circuit for IEEE 802.11a



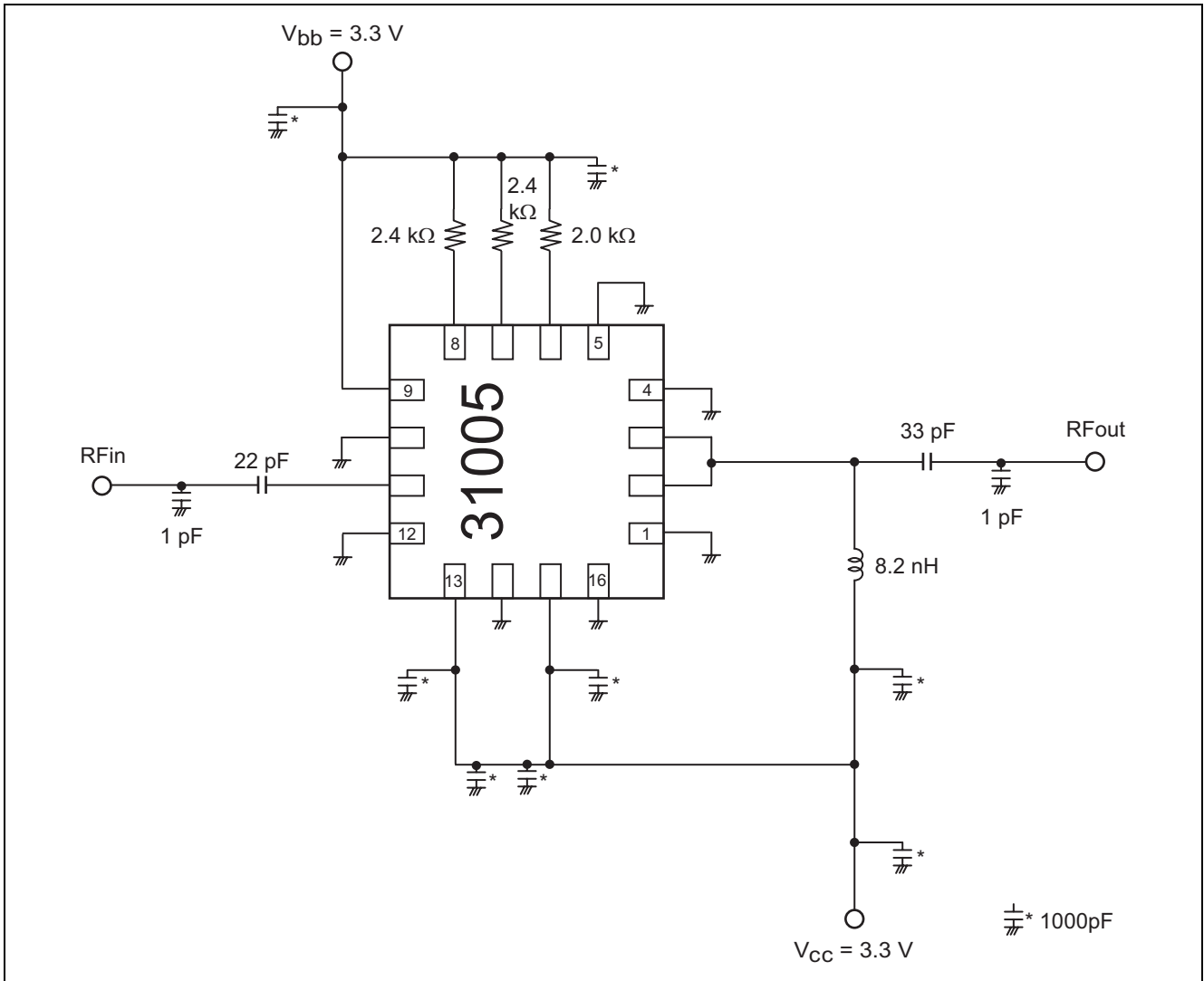
Characteristics for IEEE 802.11a

f = 5.15 GHz

64 QAM / OFDM, Encode rate 3/4, 54 Mbps, idle interval = 110 μs, 1024 + 34 byte / frame



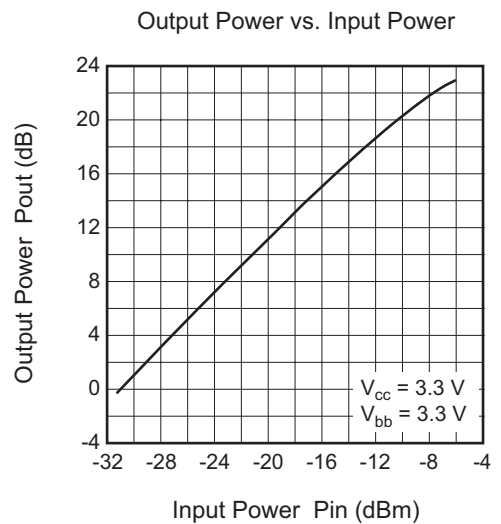
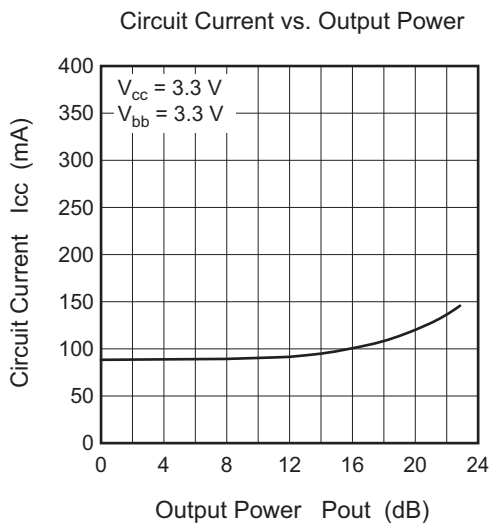
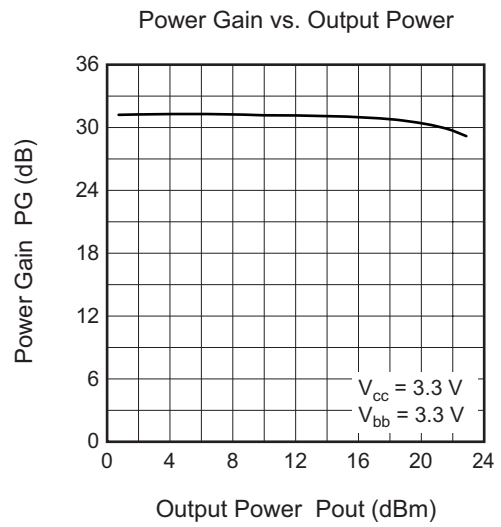
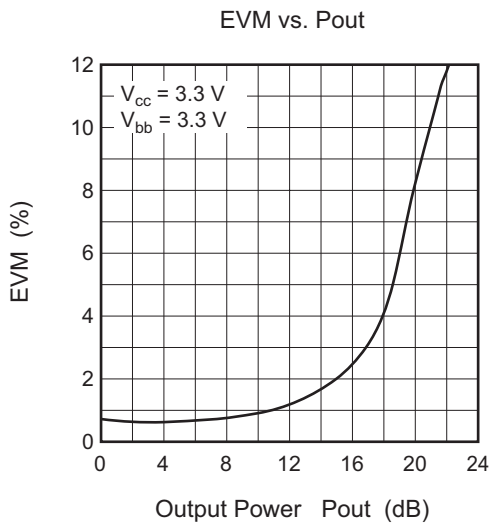
Evaluation Circuit for IEEE 802.11g



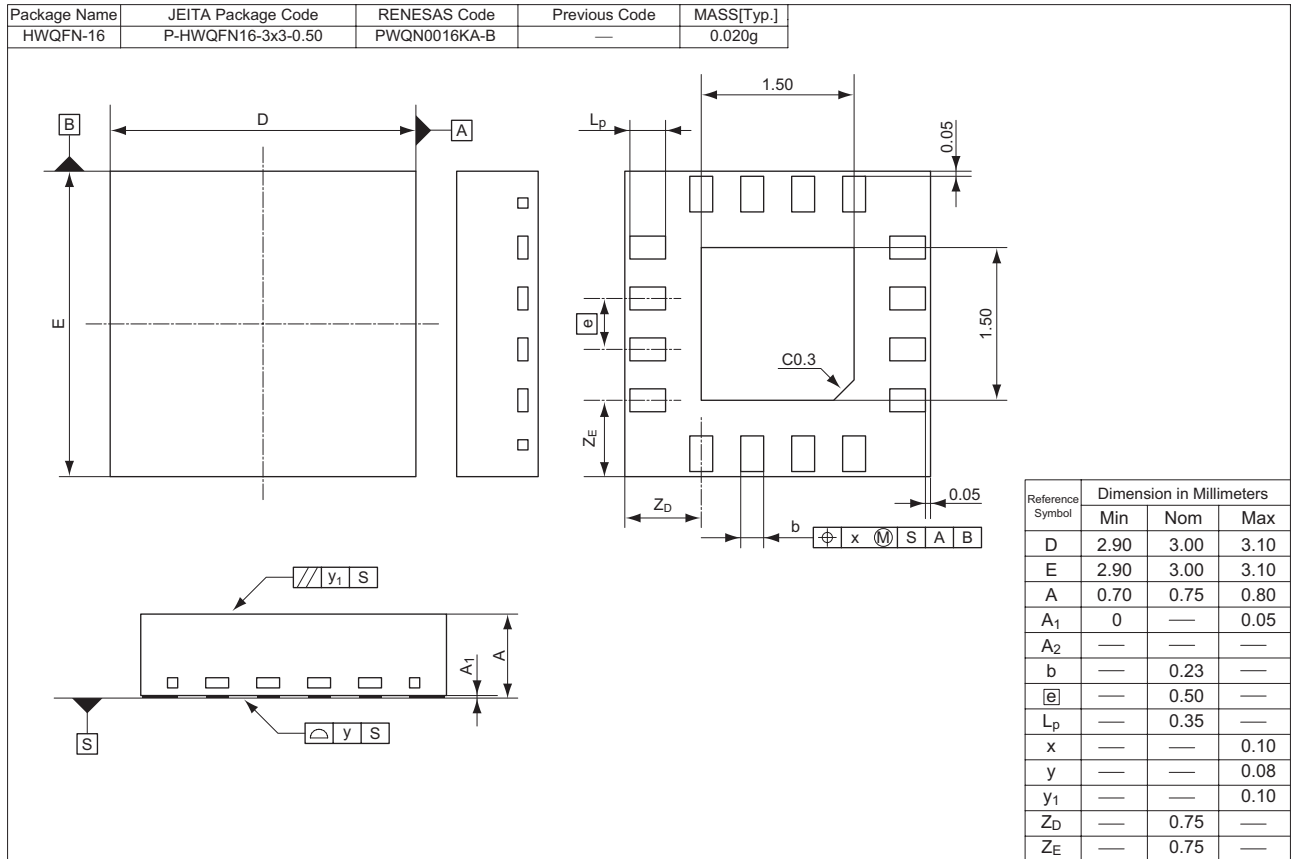
Characteristics for IEEE 802.11g

f = 2.484 GHz

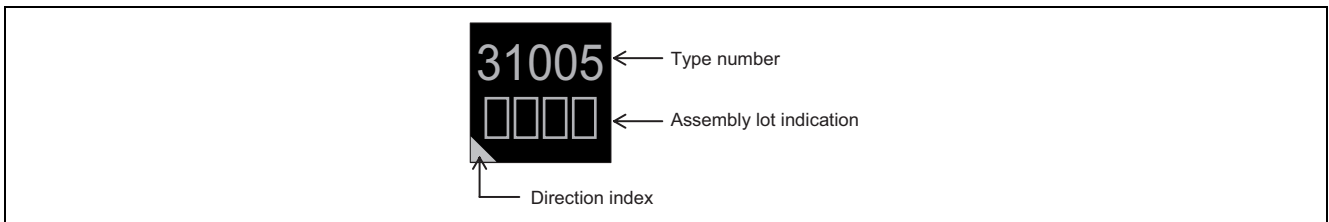
64 QAM / OFDM, Encode rate 3/4, 54 Mbps, idle interval = 110 μs, 1024 + 34 byte / frame



### Package Dimensions



### Marking



### Ordering Information

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

Notes:

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