
HA22033

GaAs MMIC Low Noise Amplifier for Micro Wave Application

HITACHI

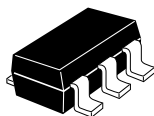
ADE-207-266 (Z)
1st. Edition
October 1998

Features

- Suitable for low noise amplifier of Micro Wave Application(1.5 to 1.9GHz)
- Low voltage and low current operation (2.7V, 1.7mA typ.)
- Low noise (1.4 dB typ. @1.5GHz)
- High power gain (14 dB typ. @1.5GHz)
- Built-in matching circuits (50Ω)
- Small surface mount package (MPAK-5)

Outline

MPAK-5



This document may, wholly or partially, be subject to change without notice.

This Device is sensitive to Electro Static Discharge.
An Adequate handling procedure is requested.

CAUTION

This product uses GaAs. Since dust or fume of GaAs is highly poisonous to human body, please do not treat them mechanically in the manner which might expose to the Air. And it should never be thrown

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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Supply voltage	Vdd	5	V
Maximum current	Idd	6	mA
Power dissipation	Pd	100	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +125	°C
Operation temperature	Topr	-20 to +70	°C
Maximum input power	Pin max	+15	dBm

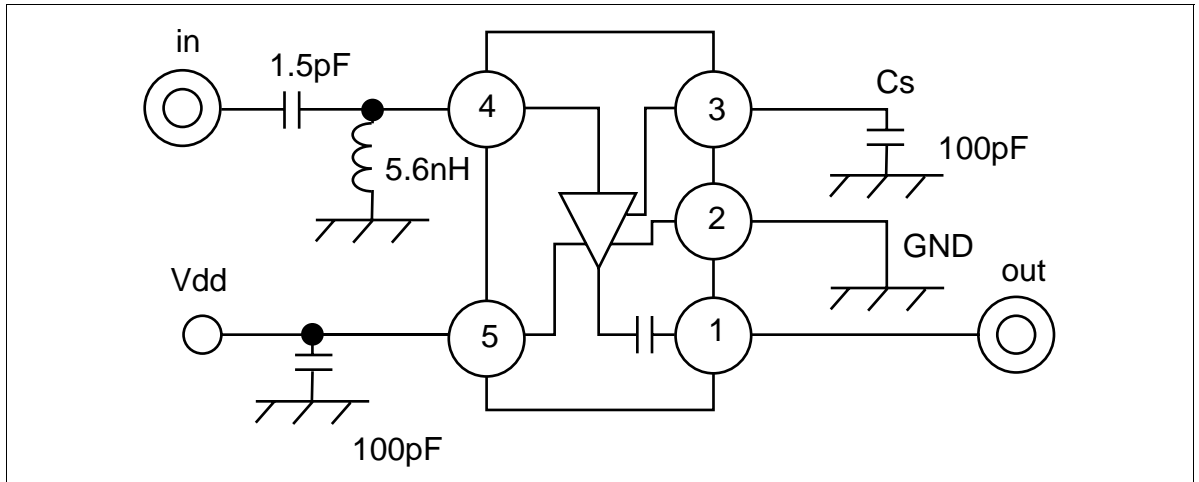
Electrical Characteristics (Ta = 25°C, Vdd = 2.7V)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions	Pin
Quiescent current	Idd	—	1.7	2.5	mA	No signal	
Power gain	PG	12	14	—	dB	f = 1.5 GHz	
Noise figure	NF	—	1.4	2	dB	f = 1.5 GHz	

Typical Performance (Ta = 25°C, Vdd = 2.7V)

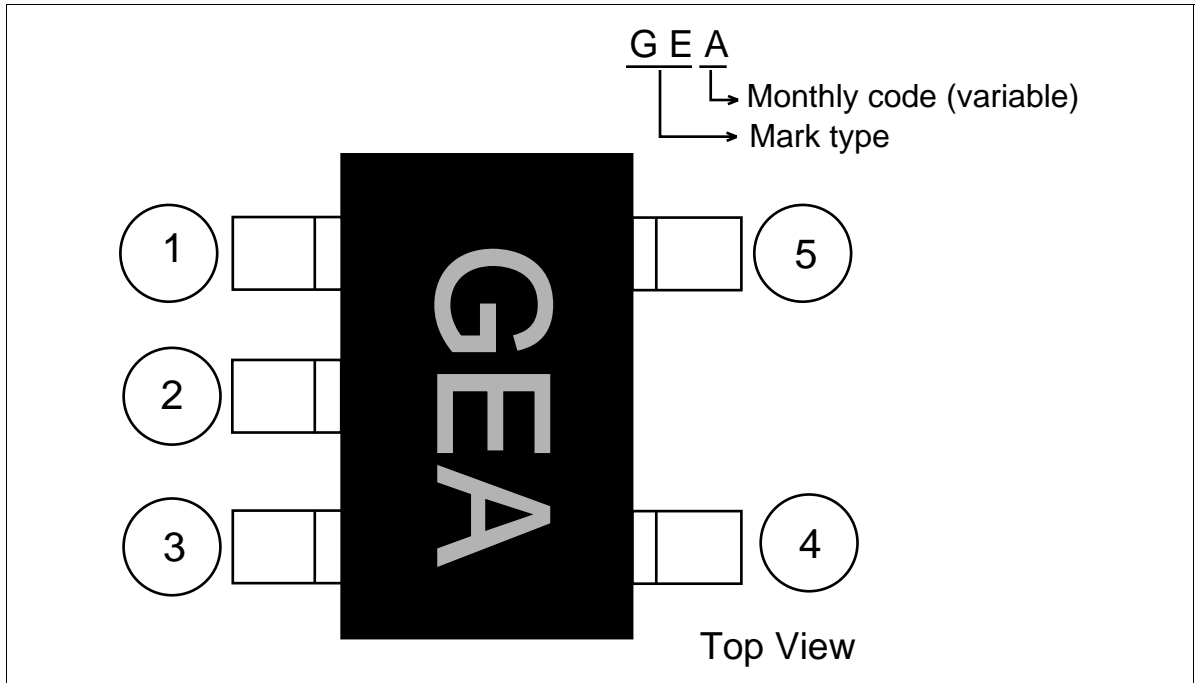
Item	Symbol	Typ	Unit	Test Conditions	Pin
VSWR (input)	VSWR in	1.5	—	f = 1.5 GHz	4
VSWR (output)	VSWR out	2.2	—	f = 1.5 GHz	1
3rd order intermodulation distortion	IM3	50	dB	f = 1.5 GHz, Pin = -30 dBm	

Block Diagram



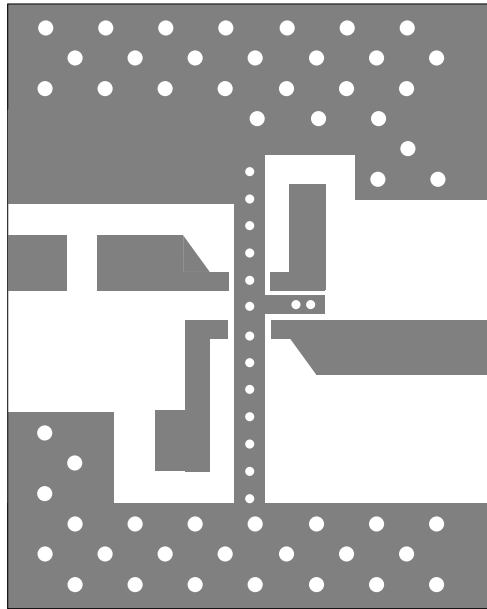
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Pin Arrangement



Pin No.	Pin name	Function
1	RF out	RF output
2	GND	Ground
3	Cs	Bypass capacitor (>100 pF)
4	RF in	RF input
5	Vdd	Power supply

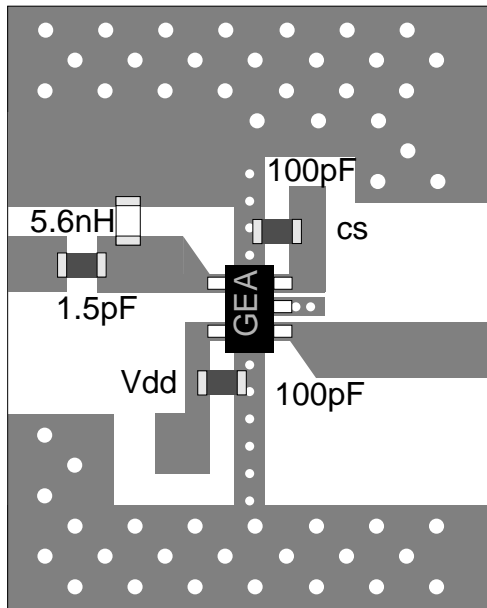
Pattern Layout



Front Side view of PCB Pattern

scale 4/1

- : $\phi 0.5\text{mm}$
- : $\phi 0.3\text{mm}$



Front Side view of Part Layout(1.5GHz)

scale 4/1

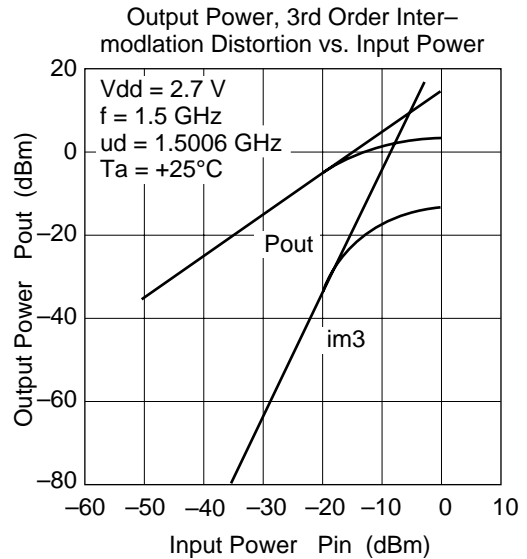
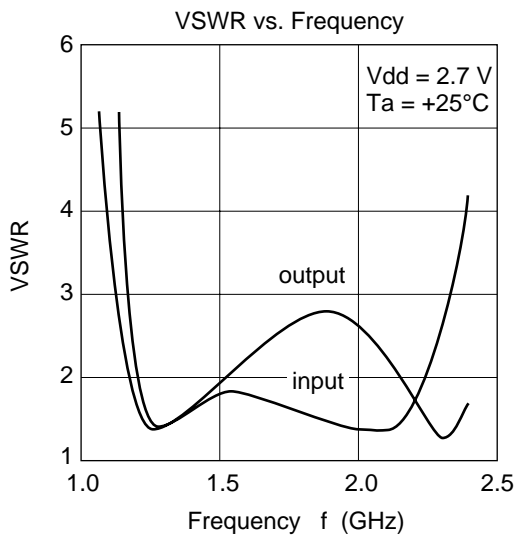
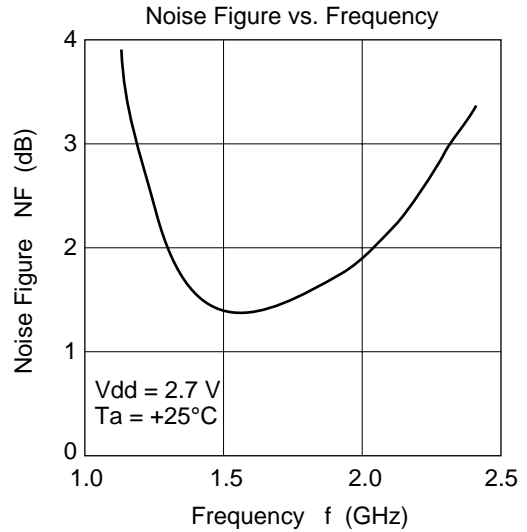
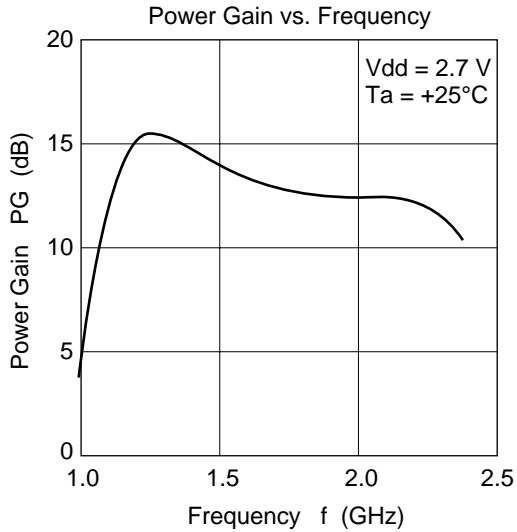
■ : Capacitor

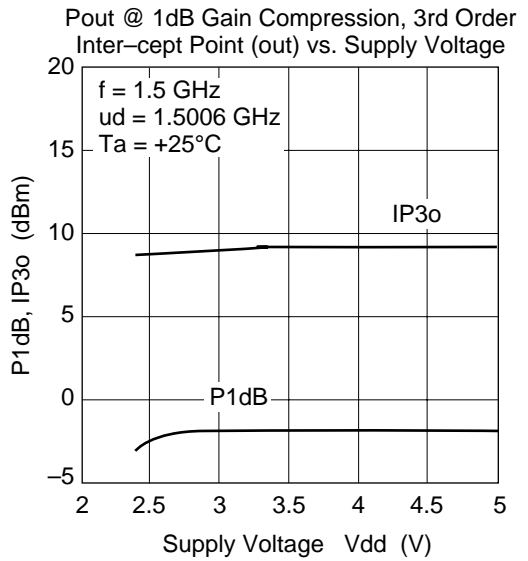
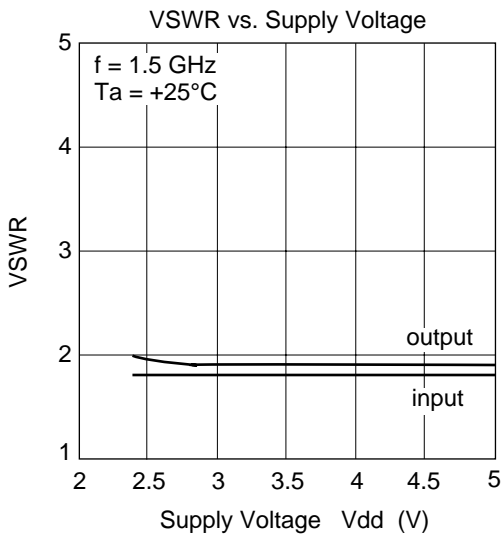
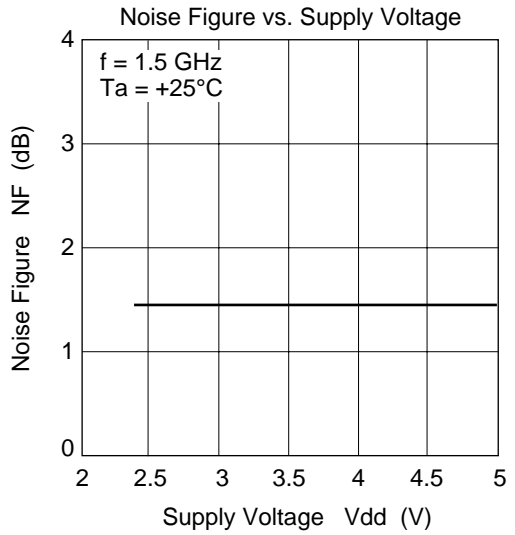
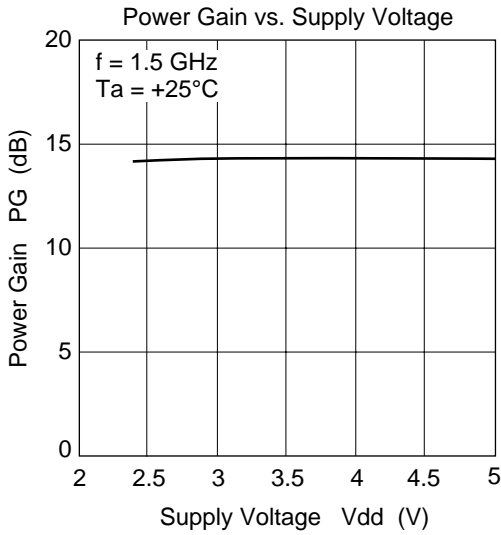
□ : Inductor

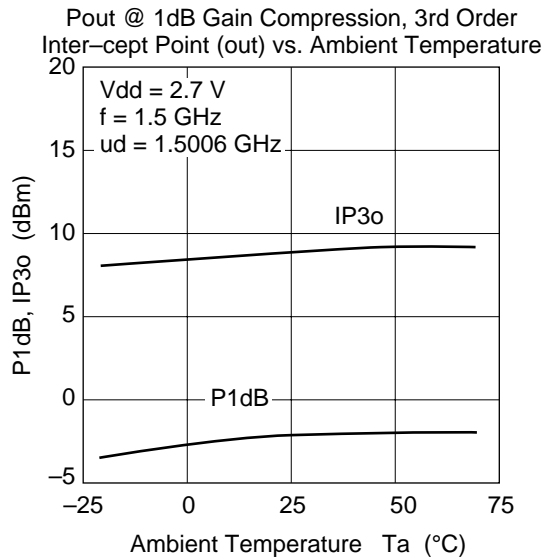
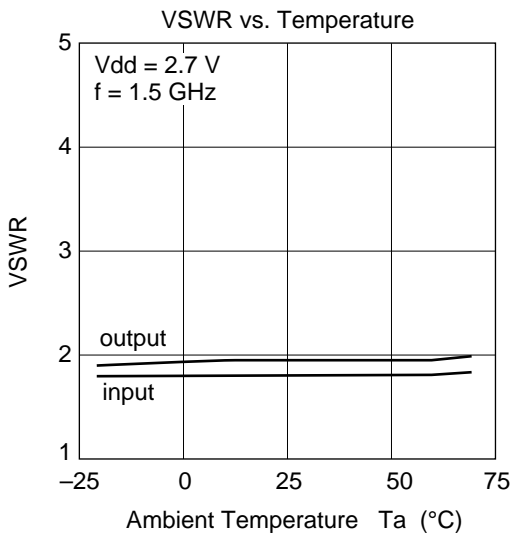
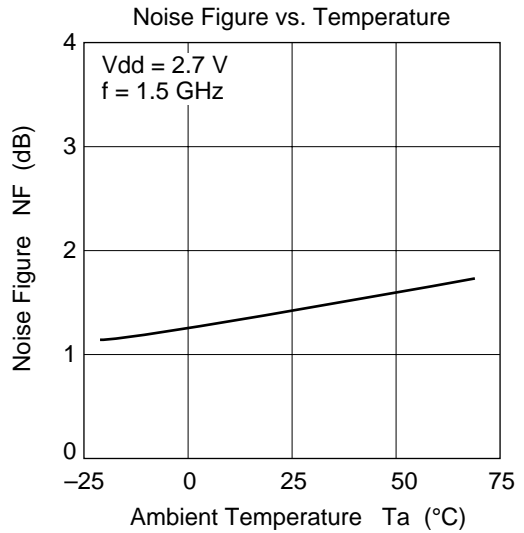
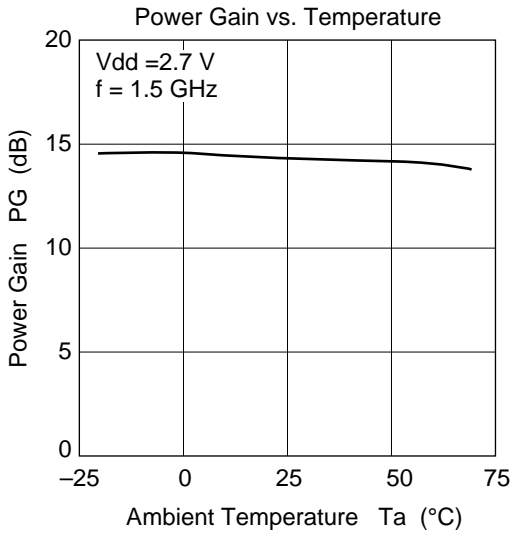
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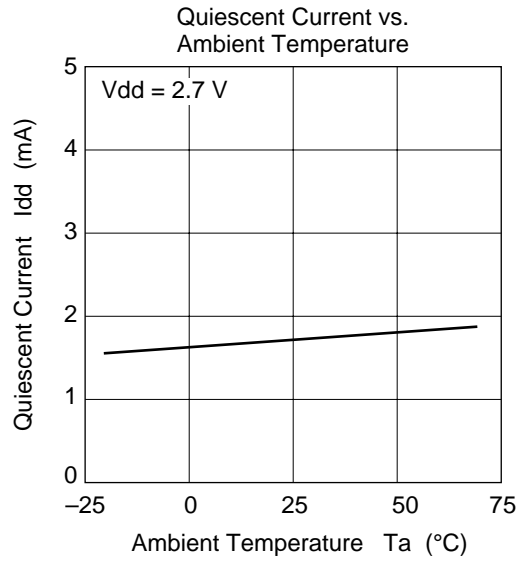
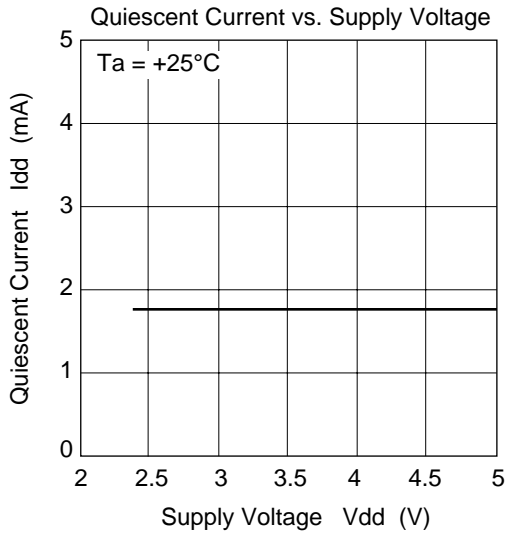
H=1mm

Main Characteristics





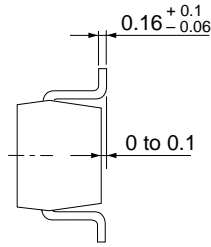
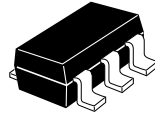
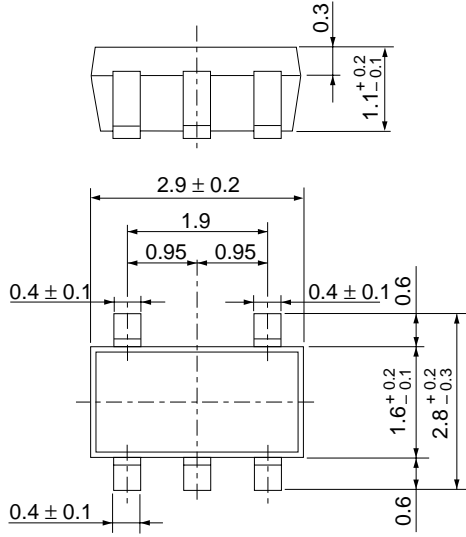




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Package Dimentions

Unit: mm



Hitachi code	MPAK-5
EIAJ	—
JEDEC	—

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