
HA22012

GaAs MMIC
Low Noise Amplifier for Micro Wave Application

HITACHI

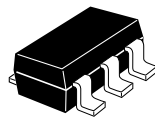
ADE-207-217 (Z)
1st. Edition
July 1996

Features

- Suitable for low noise amplifier of PHS (1.9 GHz)
- Low voltage and low current operation (3V, 3mA typ.)
- Low noise (1.9 dB typ.)
- High power gain (13.5 dB typ.)
- Built-in input and output matching circuits (50Ω)
- Small surface mount package (MPAK-5)

Outline

MPAK-5



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Absolute Maximum Ratings (Ta = 25°C)

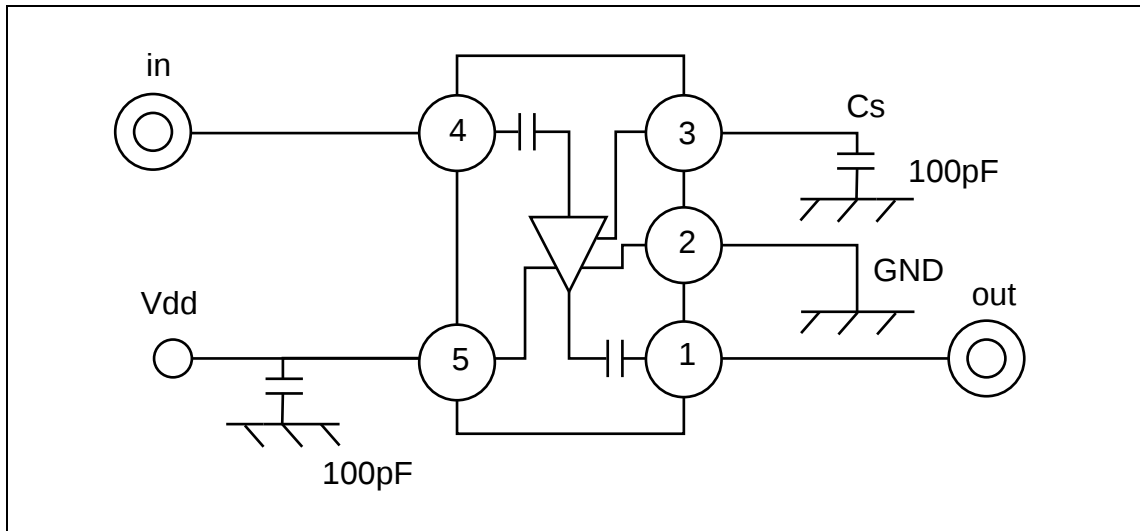
Item	Symbol	Ratings	Unit
Supply voltage	Vdd	5	V
Maximum current	Idd	6	mA
Power dissipation	Pd	100	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C
Operation temperature	Topr	–20 to +70	°C

Electrical Characteristics (Ta = 25°C, Vdd = 3V)

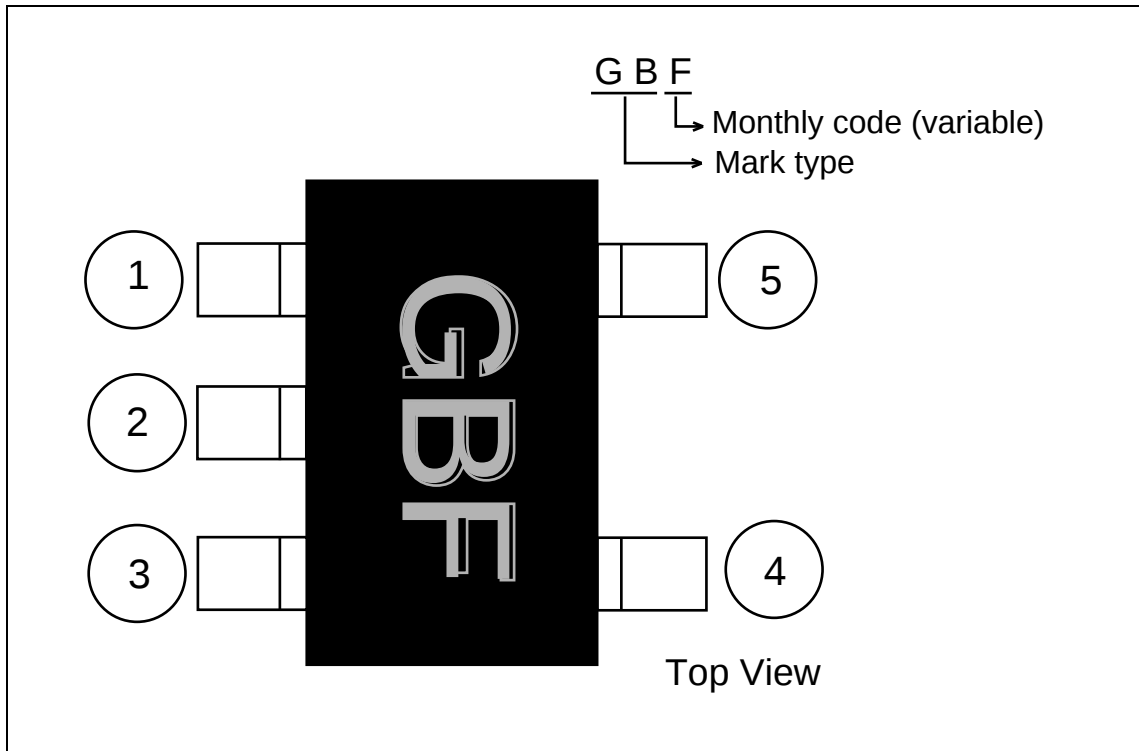
Item	Symbol	Min	Typ	Max	Unit	Test Conditions	Pin
Quiescent current	Idd	1.5	3	5.5	mA	No signal	
Power gain	PG	11.5	13.5	16	dB	f = 1.9 GHz	
Noise figure	NF	—	1.9	2.5	dB	f = 1.9 GHz	

Typical Performance (Ta = 25°C, Vdd = 3V)

Item	Symbol	Typ	Unit	Test Conditions	Pin
VSWR (input)	VSWR in	1.6	—	f = 1.9 GHz	4
VSWR (output)	VSWR out	1.6	—	f = 1.9 GHz	1
3rd order intermodulation distortion	IM3	58	dB	f = 1.9 GHz, UD = 1.9006 GHz Pin = –30 dBm	

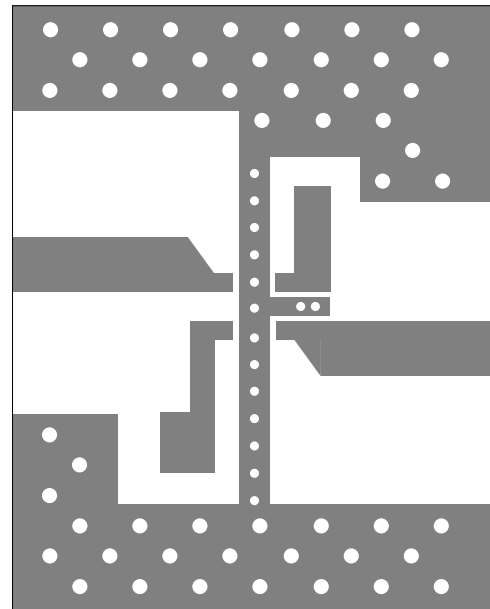
Block Diagram

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

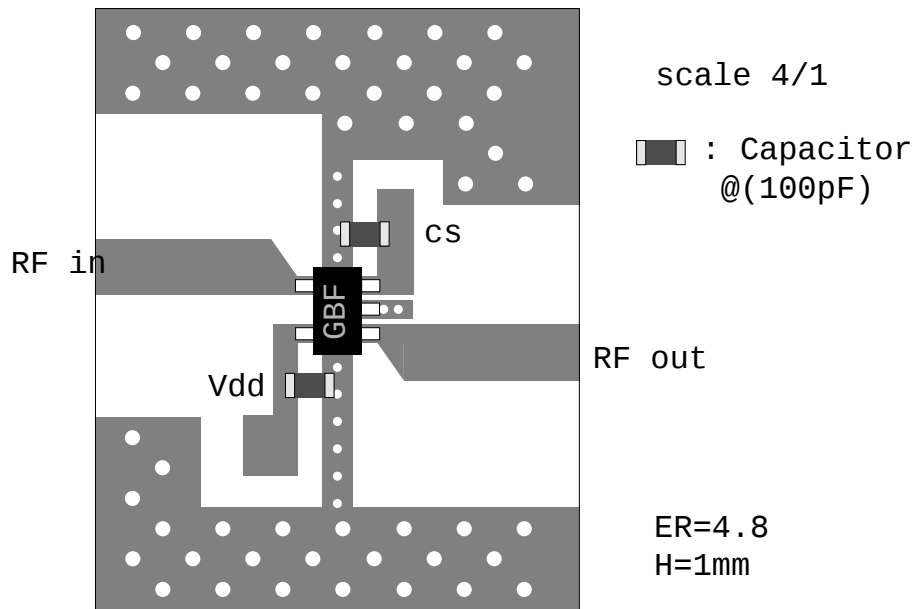
Pattern Layout



Front Side view of PCB Pattern

scale 4/1

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



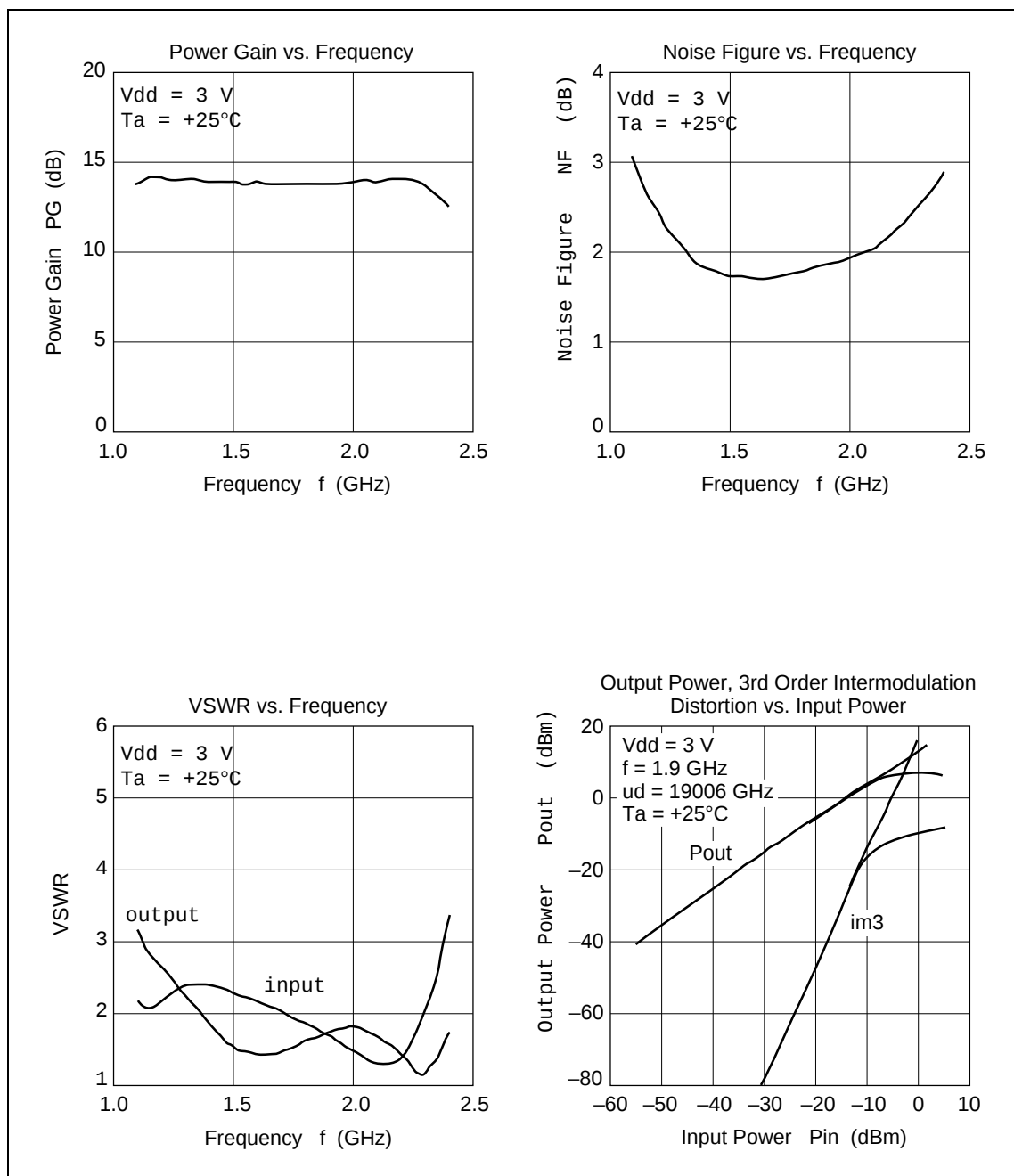
Front Side view of Part Layout

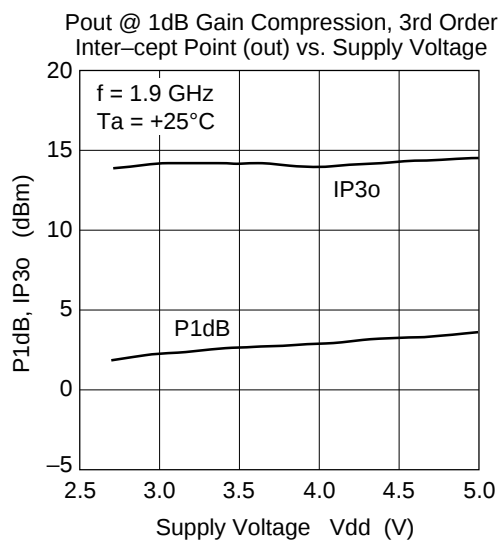
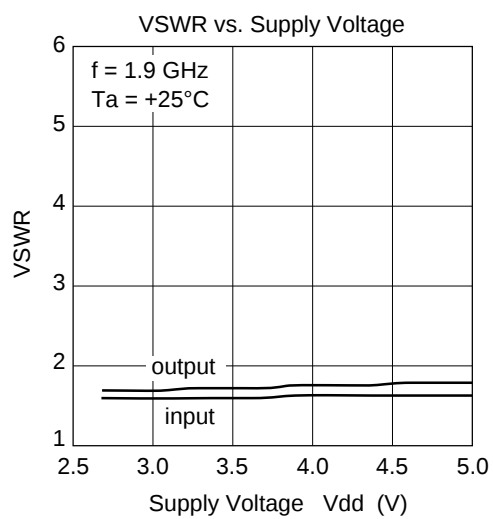
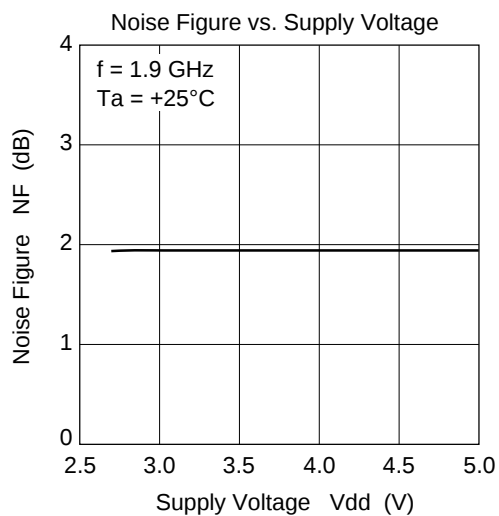
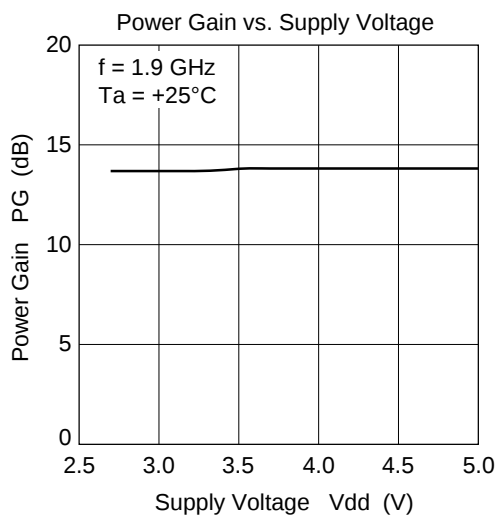
scale 4/1

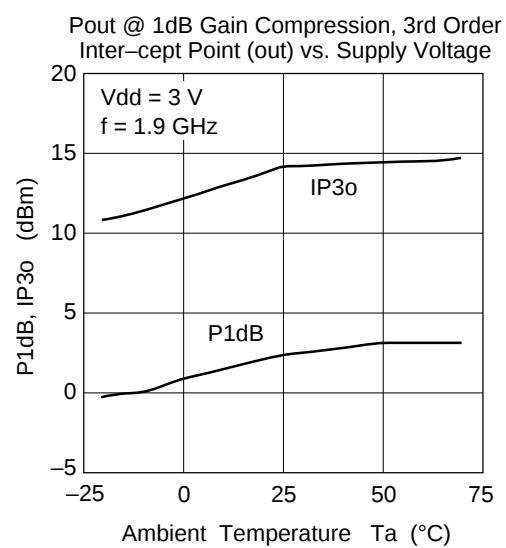
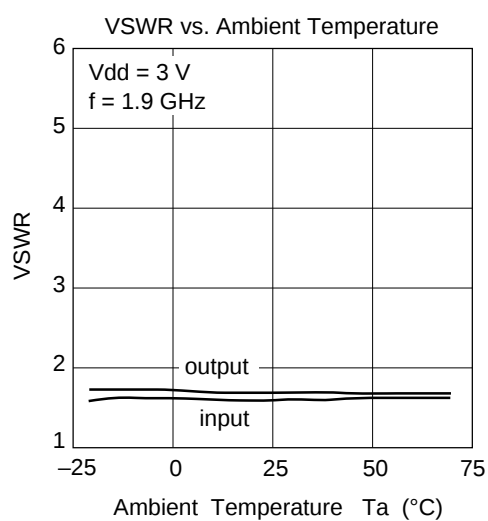
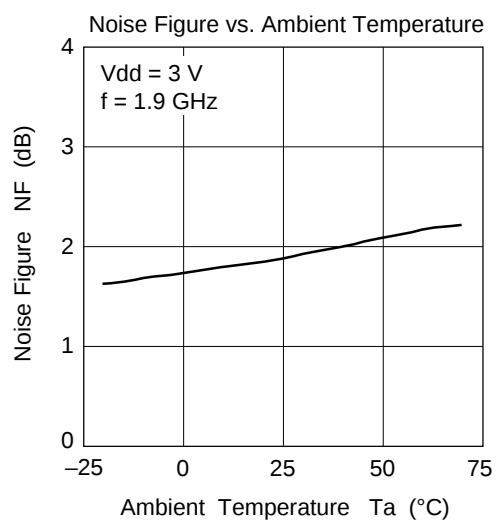
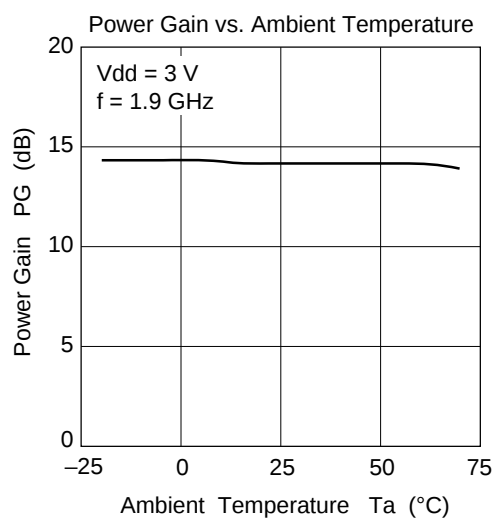
▬ : Capacitor
@ (100pF)

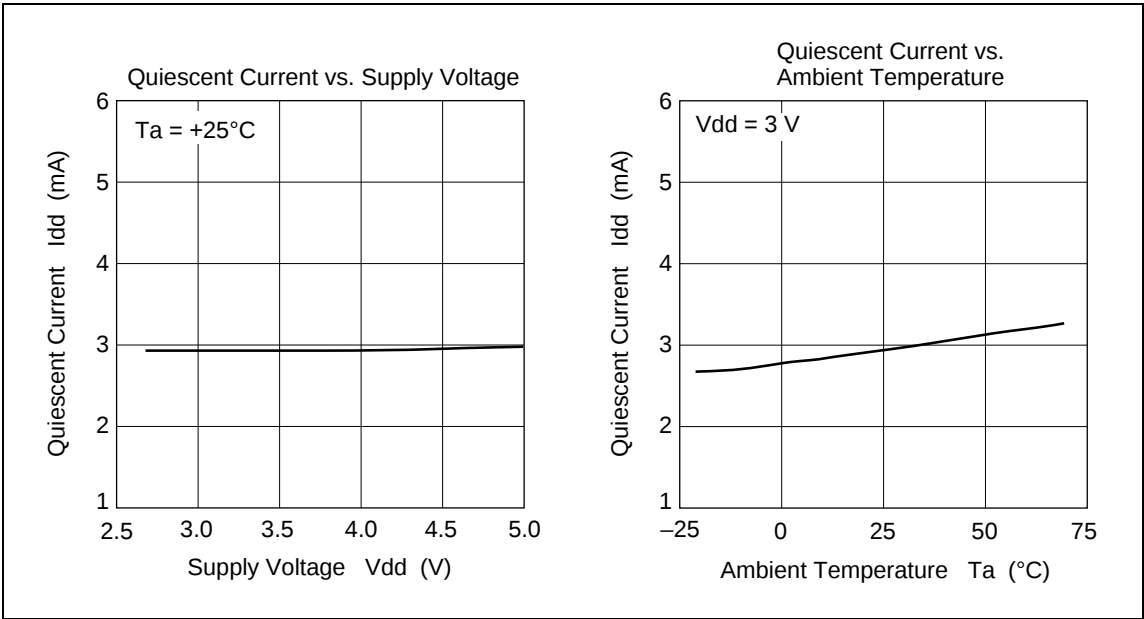
ER=4.8
H=1mm

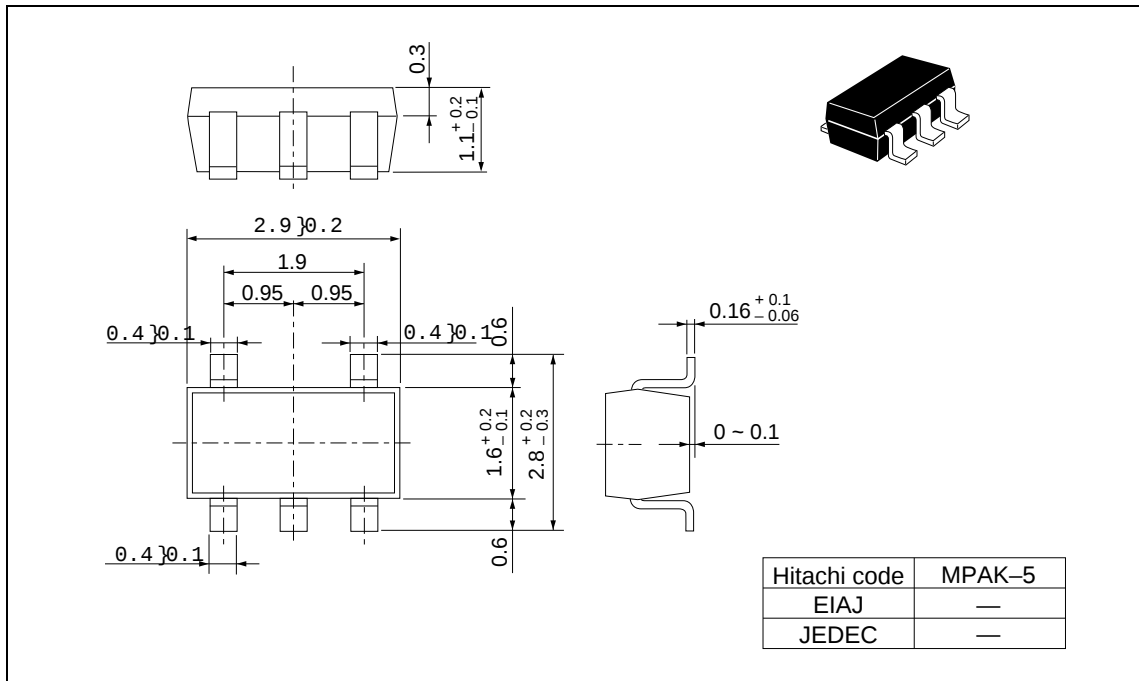
Main Characteristics









Package Dimentions
Unit: mm


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 out with general industrial or domestic wastes.

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