## DESCRIPTION

The MGF4934AM super-low noise HEMT (High Electron Mobility Transistor) is designed for use in S to Ku band amplifiers.

The 4pin flat lead package is small-thin size, and offers high cost performance.

## FEATURES

Low noise figure @ f=12GHz
NFmin. = 0.60dB (Typ.)

High associated gain @ f=12GHz
Gs = 12.5dB (Typ.)

## APPLICATION

S to Ku band low noise amplifiers

## QUALITY GRADE

GG

## RECOMMENDED BIAS CONDITIONS

$V_{DS}$=2V , $I_D$=10mA

## ORDERING INFORMATION

Tape & reel 3000pcs/reel

## Outline Drawing

Fig.1



### Keep Safety first in your circuit designs!

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable , but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury , fire or property damage. Remember to give due consideration to safety when making your circuit designs , with appropriate measure such as (I) placement of substitutive , auxiliary circuits , (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

## ABSOLUTE MAXIMUM RATINGS (Ta=25°C )

| Symbol | Parameter | Ratings | Unit |
|---|---|---|---|
| $V_{GDO}$ | Gate to drain voltage | -4 | V |
| $V_{GSO}$ | Gate to source voltage | -4 | V |
| $I_D$ | Drain current | IDSS | mA |
| PT | Total power dissipation | 50 | mW |
| $T_{ch}$ | Channel temperature | 125 | °C |
| $T_{stg}$ | Storage temperature | -55 to +125 | °C |

## ELECTRICAL CHARACTERISTICS (Ta=25°C )

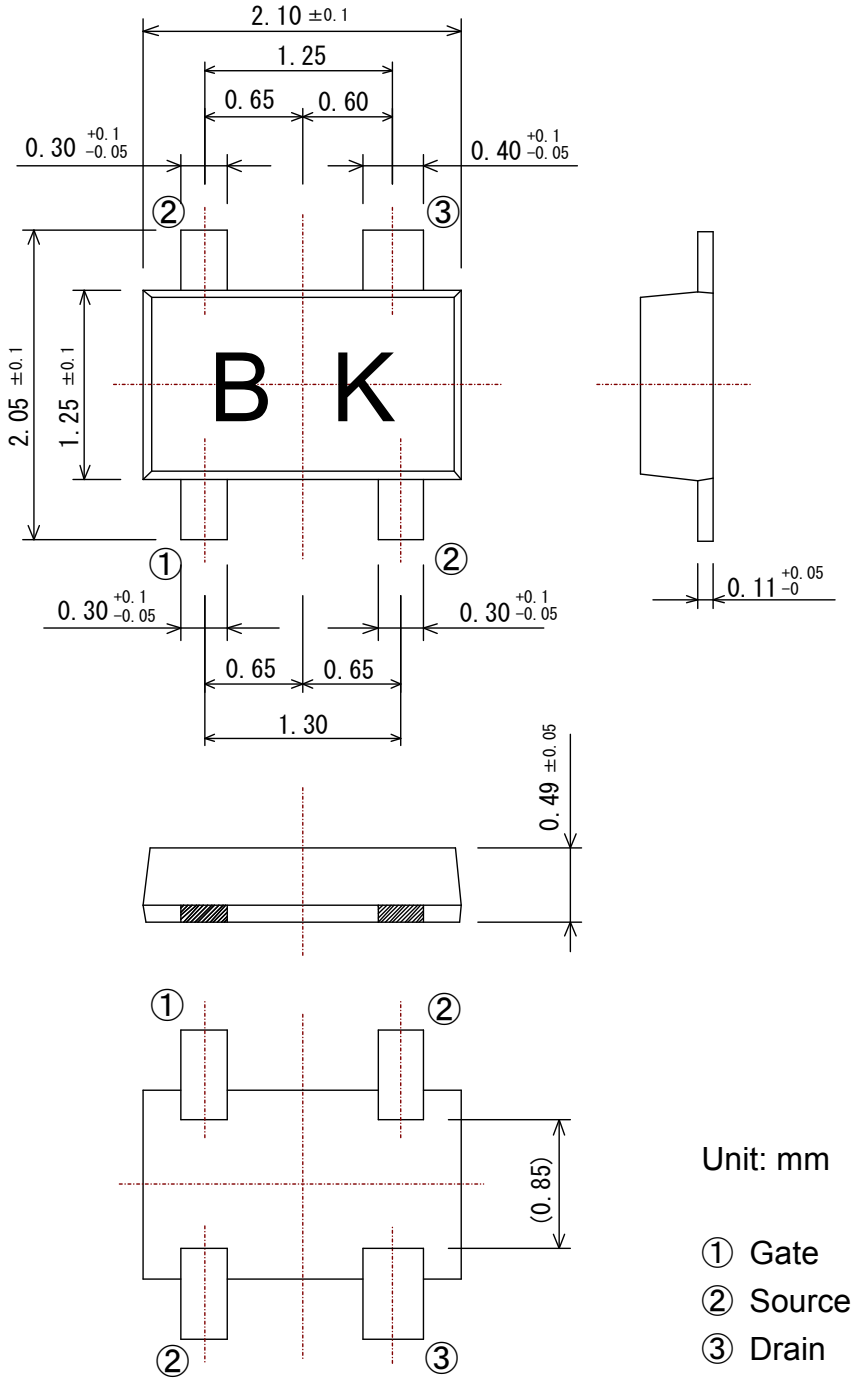
| Symbol | Parameter | Test conditions | Limits | | | Unit |
|---|---|---|---|---|---|---|
| | | | MIN. | TYP. | MAX | |
| $V_{(BR)GDO}$ | Gate to drain breakdown voltage | $I_G$=-10μA | -3.5 | -- | -- | V |
| $I_{GSS}$ | Gate to source leakage current | $V_{GS}$=-2V,$V_{DS}$=0V | -- | -- | 50 | μA |
| $I_{DSS}$ | Saturated drain current | $V_{GS}$=0V,$V_{DS}$=2V | 12 | -- | 60 | mA |
| $V_{GS(off)}$ | Gate to source cut-off voltage | $V_{DS}$=2V,$I_D$=500μA | -0.1 | -- | -1.5 | V |
| Gs | Associated gain | $V_{DS}$=2V, | 11.5 | 12.5 | -- | dB |
| NFmin. | Minimum noise figure | $I_D$=10mA,f=12GHz | -- | 0.60 | 0.80 | dB |

Fig.1

Top

Side

Bottom



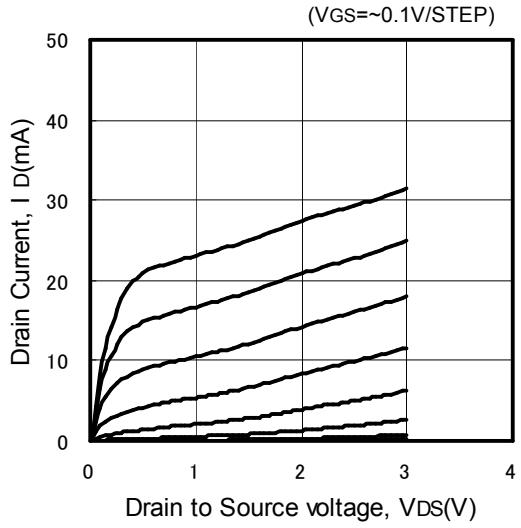

Unit: mm

① Gate
② Source
③ Drain

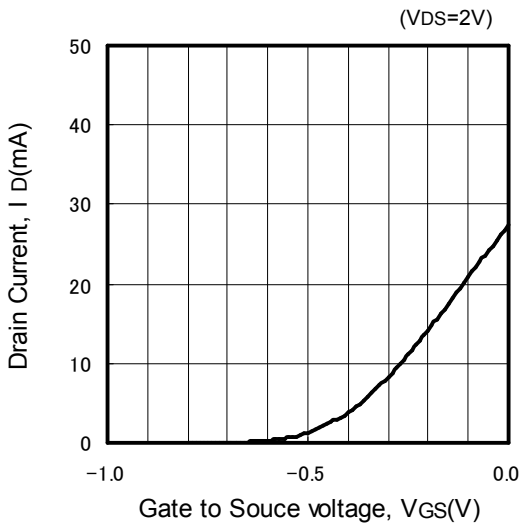
(GD-30)

TYPICAL CHARACTERISTICS (Ta=25°C)

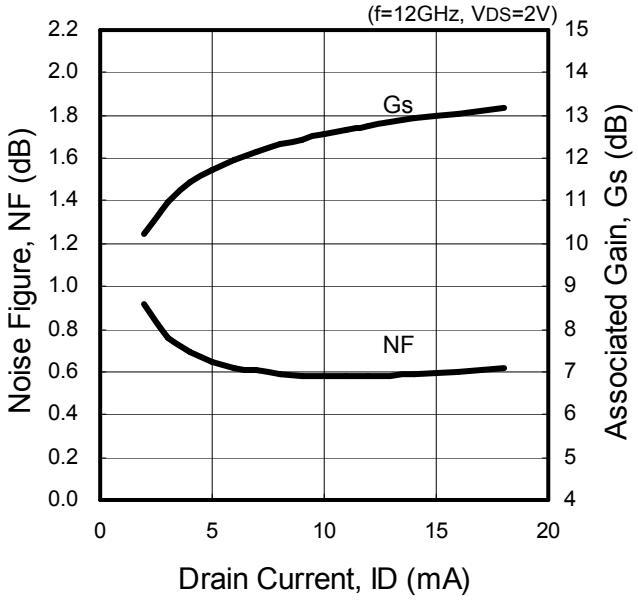
**ID vs. VDS**




**ID vs. VGS**




**NF & Gs vs. ID**



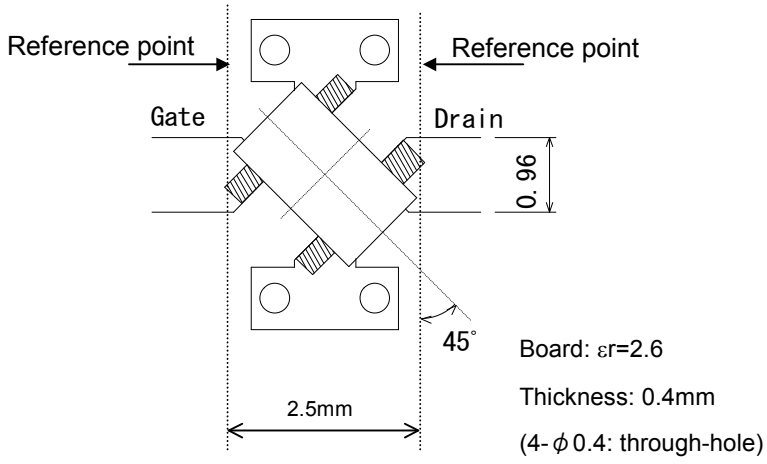
## S PARAMETERS

(VDS=2V,ID=10mA,Ta=room temperature)

| Freq. | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| (GHz) | (mag) | (ang) | (mag) | (ang) | (mag) | (ang) | (mag) | (ang) |
| 1 | 0.993 | -14.3 | 4.422 | 163.3 | 0.014 | 77.5 | 0.710 | -11.8 |
| 2 | 0.965 | -29.0 | 4.400 | 147.4 | 0.028 | 69.1 | 0.688 | -22.9 |
| 3 | 0.919 | -42.9 | 4.401 | 132.3 | 0.041 | 59.8 | 0.654 | -32.5 |
| 4 | 0.851 | -56.0 | 4.330 | 117.8 | 0.050 | 51.7 | 0.601 | -41.2 |
| 5 | 0.792 | -67.7 | 4.299 | 104.4 | 0.059 | 46.0 | 0.556 | -49.9 |
| 6 | 0.702 | -85.4 | 4.208 | 88.1 | 0.069 | 39.7 | 0.519 | -61.0 |
| 7 | 0.626 | -101.5 | 4.131 | 73.5 | 0.077 | 34.3 | 0.488 | -70.6 |
| 8 | 0.560 | -114.2 | 4.064 | 61.7 | 0.084 | 29.7 | 0.461 | -78.7 |
| 9 | 0.503 | -132.2 | 3.902 | 48.3 | 0.090 | 24.4 | 0.433 | -84.7 |
| 10 | 0.470 | -153.3 | 3.706 | 33.7 | 0.095 | 18.5 | 0.392 | -95.5 |
| 11 | 0.459 | -174.9 | 3.465 | 19.0 | 0.099 | 12.8 | 0.337 | -111.3 |
| 12 | 0.460 | 166.7 | 3.231 | 5.5 | 0.104 | 8.0 | 0.297 | -131.0 |
| 13 | 0.457 | 151.3 | 3.044 | -6.6 | 0.111 | 4.2 | 0.277 | -149.8 |
| 14 | 0.456 | 136.6 | 2.965 | -18.7 | 0.123 | -0.1 | 0.276 | -166.6 |

## Noise Parameter ($V_{DS}$=2V,$I_D$=10mA, Ta=room temperature))

| f | Γ opt | | Rn | NFmin |
|---|---|---|---|---|
| (GHz) | Magn. | Angle(deg.) | (Ω) | (dB) |
| 12 | 0.326 | 162.2 | 3.0 | 0.56 |




Board: εr=2.6

Thickness: 0.4mm

(4-φ0.4: through-hole)

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