

MGFL45V1920A

1.9 - 2.0GHz BAND 32W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFL45V1920A is an internally impedance-matched GaAs power FET especially designed for use in 1.9 - 2.0 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class A operation
- Internally matched to 50(ohm) system
- High output power
P1dB = 32W (TYP.) @ f=1.9 - 2.0 GHz
- High power gain
GLP = 13 dB (TYP.) @ f=1.9 - 2.0GHz
- High power added efficiency
P.A.E. = 45 % (TYP.) @ f=1.9 - 2.0GHz
- Low distortion [item -51]
IM3=-45dBc(TYP.) @ Po=34.5dBm S.C.L.

APPLICATION

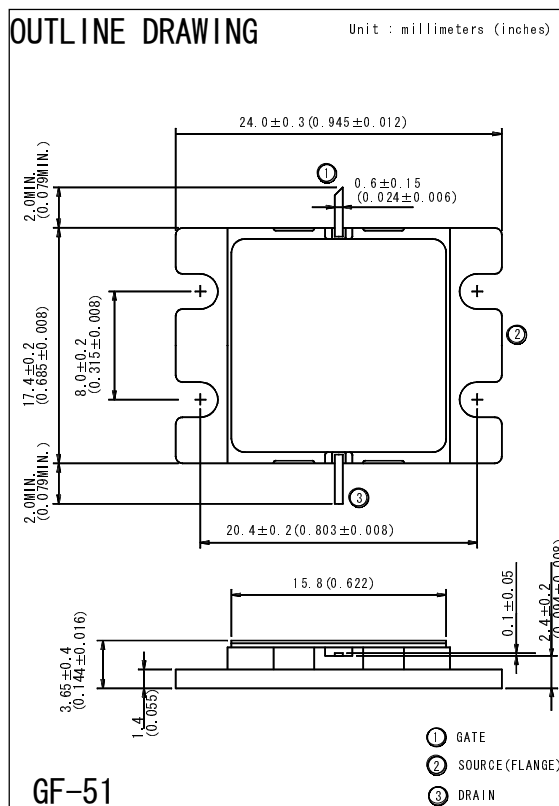
- item 01 : 1.9 - 2.0 GHz band power amplifier
- item 51 : 1.9 - 2.0 GHz band digital radio communication

QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

- VDS = 10 (V)
- ID = 6.5 (A)
- RG=25 (ohm)



ABSOLUTE MAXIMUM RATINGS

(Ta=25deg.C)

| Symbol | Parameter | Ratings | Unit |
|--------|-------------------------|------------|-------|
| VGDO | Gate to drain voltage | -15 | V |
| VGSO | Gate to source voltage | -15 | V |
| ID | Drain current | 22 | A |
| IGR | Reverse gate current | -61 | mA |
| IGF | Forward gate current | 76 | mA |
| PT *1 | Total power dissipation | 100 | W |
| Tch | Channel temperature | 175 | deg.C |
| Tstg | Storage temperature | -65 / +175 | deg.C |

*1 : Tc=25deg.C

< 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 measures such as (1) placement of substitutive, auxiliary circuits, (2) use of non-flammable material or (3) prevention against any malfunction or mishap.

ELECTRICAL CHARACTERISTICS

(Ta=25deg.C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|--------------|--------------------------------------|--|--------|------|------|---------|
| | | | Min. | Typ. | Max. | |
| VGS(off) | Saturated drain current | VDS = 3V , ID = 60mA | - | - | -5 | V |
| P1dB | Output power at 1dB gain compression | VDS=10V, ID(RF off)=6.5A, f=1.9 - 2.0GHz | 44 | 45 | - | dBm |
| GLP | Linear power gain | | 12 | 13 | - | dB |
| ID | Drain current | | - | 7.5 | - | A |
| P.A.E. | Power added efficiency | | - | 45 | - | % |
| IM3 *2 | 3rd order IM distortion | | -42 | -45 | - | dBc |
| Rth(ch-c) *3 | Thermal resistance | delta Vf method | - | - | 1.5 | deg.C/W |

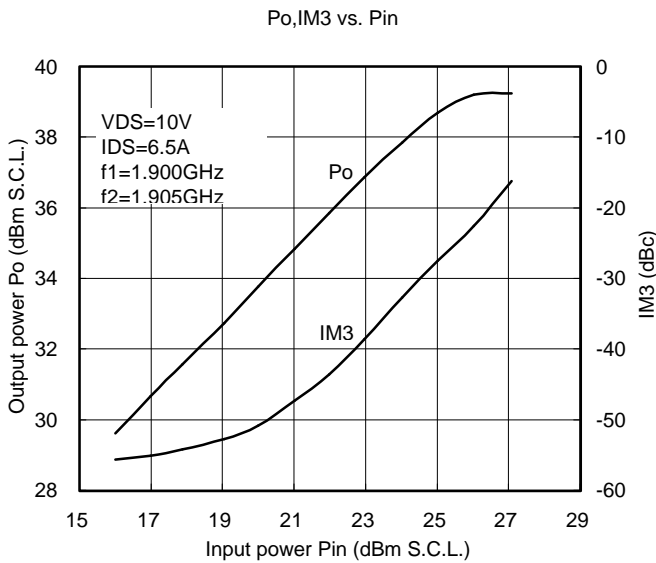
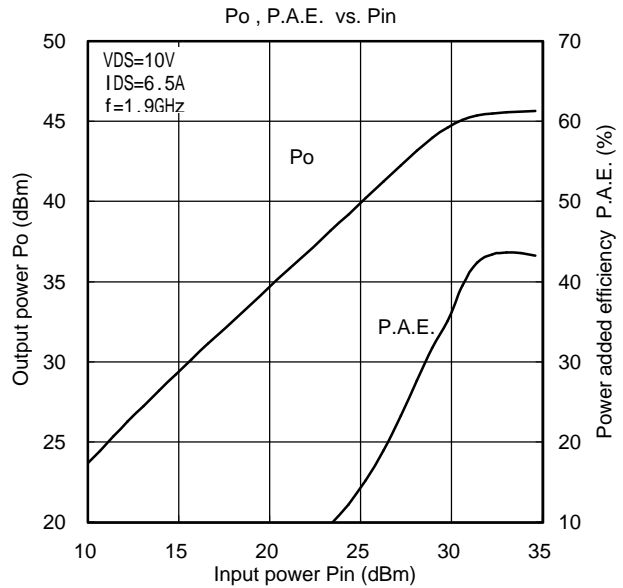
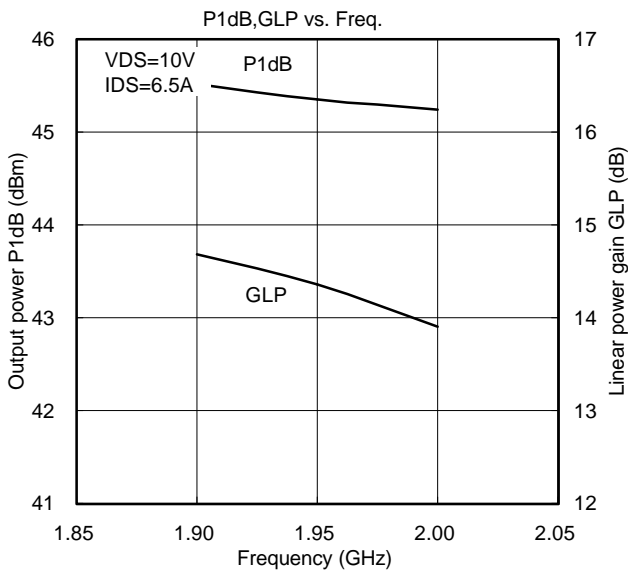
*2 : item -51, 2 tone test, Po=34.5dBm Single Carrier Level, f=1.9, 2.0GHz, delta f=5MHz

*3 : Channel-case

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TYPICAL CHARACTERISTICS



S parameters

(Ta=25deg.C , VDS=10(V),IDS=6.5(A))

| f (GHz) | S-Parameter (TYP.) | | | | | | | |
|------------|--------------------|------------|-------|------------|-------|------------|-------|------------|
| | S11 | | S21 | | S12 | | S22 | |
| | Magn. | Angle(deg) | Magn. | Angle(deg) | Magn. | Angle(deg) | Magn. | Angle(deg) |
| 1.70 | 0.55 | 53 | 4.18 | -151 | 0.03 | -176 | 0.49 | 66 |
| 1.75 | 0.41 | 27 | 4.76 | -170 | 0.03 | 161 | 0.44 | 51 |
| 1.80 | 0.29 | -16 | 5.21 | 167 | 0.03 | 135 | 0.37 | 33 |
| 1.85 | 0.28 | -78 | 5.43 | 145 | 0.04 | 108 | 0.28 | 11 |
| 1.90 | 0.38 | -124 | 5.34 | 122 | 0.04 | 84 | 0.20 | -21 |
| 1.95 | 0.49 | -152 | 5.07 | 102 | 0.04 | 59 | 0.16 | -61 |
| 2.00 | 0.57 | -170 | 4.74 | 84 | 0.04 | 41 | 0.16 | -98 |
| 2.05 | 0.62 | 178 | 4.48 | 70 | 0.03 | 25 | 0.19 | -120 |
| 2.10 | 0.65 | 166 | 4.23 | 54 | 0.03 | 7 | 0.23 | -136 |
| 2.15 | 0.66 | 156 | 4.05 | 40 | 0.03 | -10 | 0.26 | -147 |
| 2.20 | 0.66 | 146 | 3.95 | 26 | 0.03 | -24 | 0.30 | -154 |

MGFL45V1920A**1.9 - 2.0GHz BAND 32W INTERNALLY MATCHED GaAs FET****Requests Regarding Safety Designs**

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