

PRELIMINARY

Notice: This is not a final specification.
Some parametric limits are subject to change.

MGFC45V3436A

3.4 - 3.6GHz BAND 32W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC45V3436A is an internally impedance-matched GaAs power FET especially designed for use in 3.4 - 3.6 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=3.4 - 3.6 GHz
- High power gain
GLP = 12 dB (TYP.) @ f=3.4 - 3.6GHz
- High power added efficiency
P.A.E. = 36 % (TYP.) @ f=3.4 - 3.6GHz
- Low distortion [item -51]
IM3=-45dBc(TYP.) @Po=34.5dBm S.C.L.

APPLICATION

- item 01 : 3.4 - 3.6 GHz band power amplifier
- item 51 : 3.4 - 3.6 GHz band digital ratio communication

QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

- VDS = 10 (V)
- ID = 8 (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 | 20 | A |
| IGR | Reverse gate current | -80 | mA |
| IGF | Forward gate current | 168 | mA |
| PT *1 | Total power dissipation | 150 | W |
| Tch | Channel temperature | 175 | deg.C |
| Tstg | Storage temperature | -65 / +175 | deg.C |

*1 : Tc=25deg.C

ELECTRICAL CHARACTERISTICS

(Ta=25deg.C)

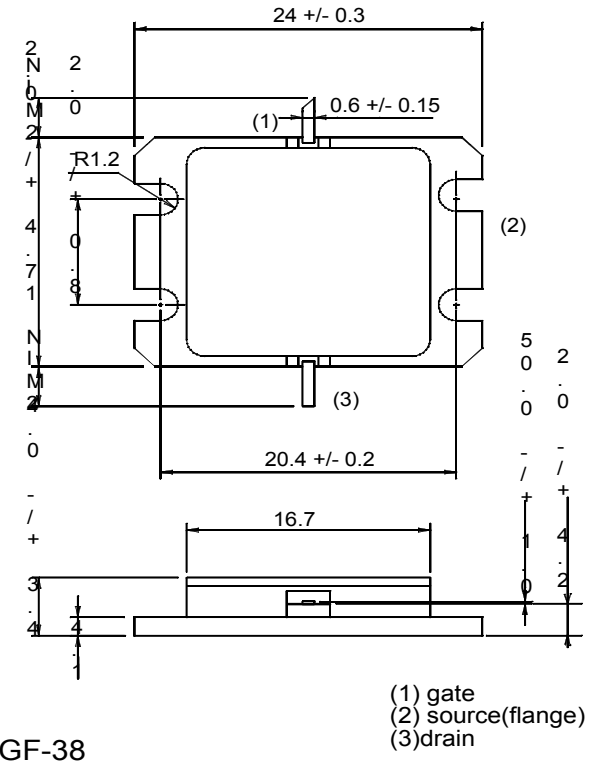
| Symbol | Parameter | Test conditions | Limits | | | Unit |
|--------------|--------------------------------------|--|-----------------|------|------|------|
| | | | Min. | Typ. | Max. | |
| IDSS | Saturated drain current | VDS = 3V , VGS = 0V | - | 24 | - | A |
| gm | Transconductance | VDS = 3V , ID = 8A | - | 8 | - | S |
| VGS(off) | Gate to source cut-off voltage | VDS = 3V , ID = 160mA | -2 | - | -5 | V |
| P1dB | Output power at 1dB gain compression | VDS=10V, ID(RF off)=8A, f=3.4 - 3.6GHz | 44 | 45 | - | dBm |
| GLP | Linear power gain | | 11 | 12 | - | dB |
| ID | Drain current | | - | 8 | - | A |
| P.A.E. | Power added efficiency | | - | 36 | - | % |
| IM3 *2 | 3rd order IM distortion | | -42 | -45 | - | dBc |
| Rth(ch-c) *3 | Thermal resistance | | delta Vf method | - | 0.8 | 1 |

*2 : item -51, 2 tone test, Po=34.5dBm Single Carrier Level, f=3.4, 3.5, 3.6GHz, delta f=10MHz

*3 : Channel-case

OUTLINE

unit : mm



GF-38

< 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.



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ELECTRIC**

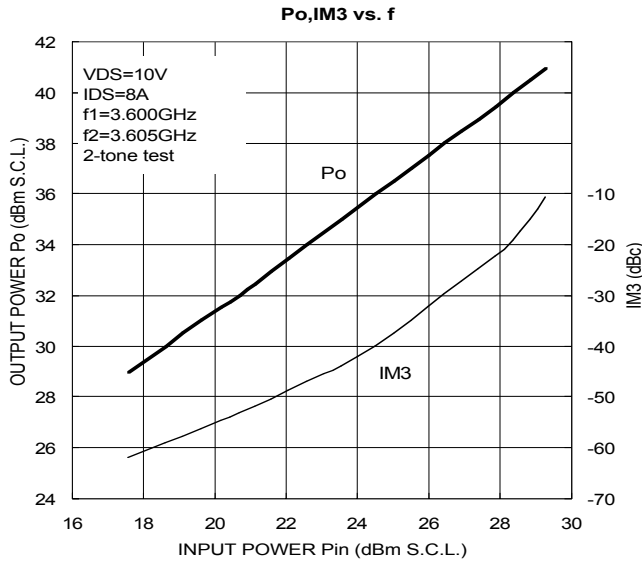
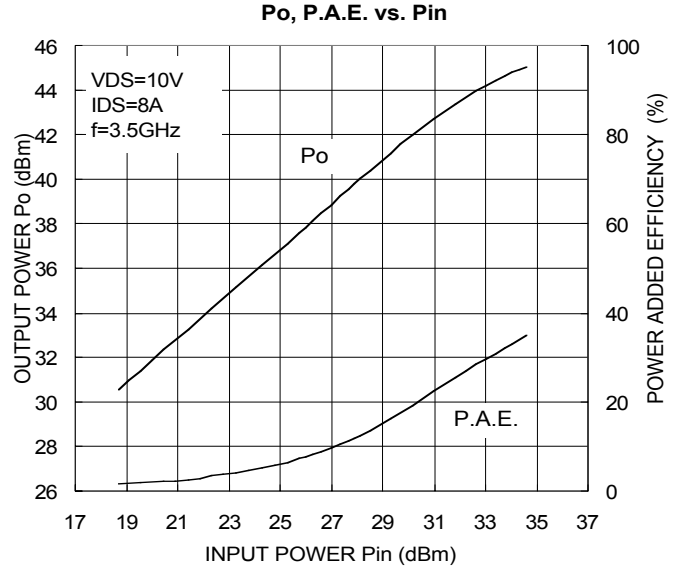
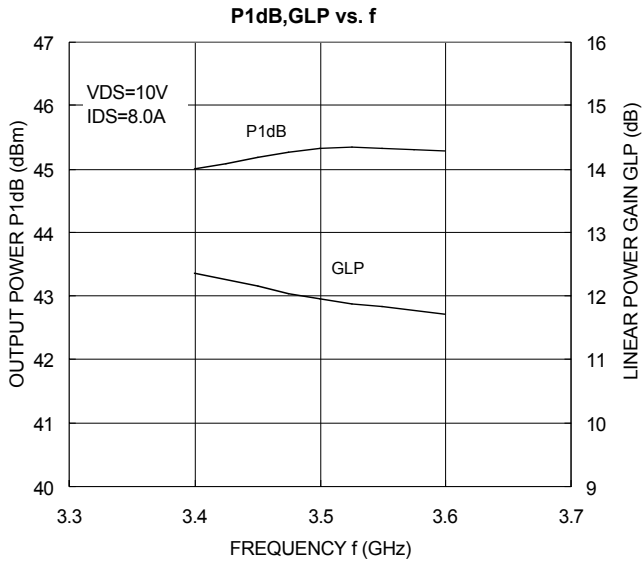
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TYPICAL CHARACTERISTICS



S parameters

(Ta=25deg.C , VDS=10(V),IDS=8(A))

| f (GHz) | S-Parameter (TYP.) | | | | | | | |
|------------|--------------------|------------|-------|------------|-------|------------|-------|------------|
| | S11 | | S21 | | S12 | | S22 | |
| | Magn. | Angle(deg) | Magn. | Angle(deg) | Magn. | Angle(deg) | Magn. | Angle(deg) |
| 3.30 | 0.54 | -95 | 3.01 | 104 | 0.03 | 43 | 0.60 | 13 |
| 3.35 | 0.51 | -121 | 3.27 | 87 | 0.03 | 29 | 0.56 | 3 |
| 3.40 | 0.49 | -146 | 3.45 | 73 | 0.04 | 13 | 0.50 | -6 |
| 3.45 | 0.50 | -171 | 3.58 | 59 | 0.04 | -12 | 0.44 | -17 |
| 3.50 | 0.51 | 165 | 3.71 | 42 | 0.05 | -21 | 0.39 | -29 |
| 3.55 | 0.53 | 144 | 3.80 | 27 | 0.06 | -37 | 0.34 | -42 |
| 3.60 | 0.55 | 125 | 3.82 | 14 | 0.06 | -52 | 0.29 | -56 |
| 3.65 | 0.56 | 110 | 3.81 | -1 | 0.06 | -69 | 0.24 | -74 |
| 3.70 | 0.56 | 93 | 3.84 | -15 | 0.07 | -80 | 0.22 | -94 |

