

MITSUBISHI SEMICONDUCTOR <GaAs FET>

# MGFC40V4450

4.4 ~ 5.0GHz BAND 10 W INTERNALLY MATCHED GaAs FET

## DESCRIPTION

The MGFC40V4450 is an internally impedance-matched GaAs power FET especially designed for use in 4.4 ~ 5.0 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 = 10W (TYP.) @ f=4.4~5.0GHz
- High power gain  
GLP = 11 dB (TYP.) @ f=4.4~5.0GHz
- High power added efficiency  
P.A.E. = 32 % (TYP.) @ f=4.4~5.0GHz
- Low distortion [ item -51 ]  
IM3= -45 dBc(TYP.) @Po=29dBm S.C.L.

## APPLICATION

- item 01 : 4.4~5.0 GHz band power amplifier
- item 51 : 4.4~5.0 GHz band digital radio communication

## QUALITY GRADE

IG

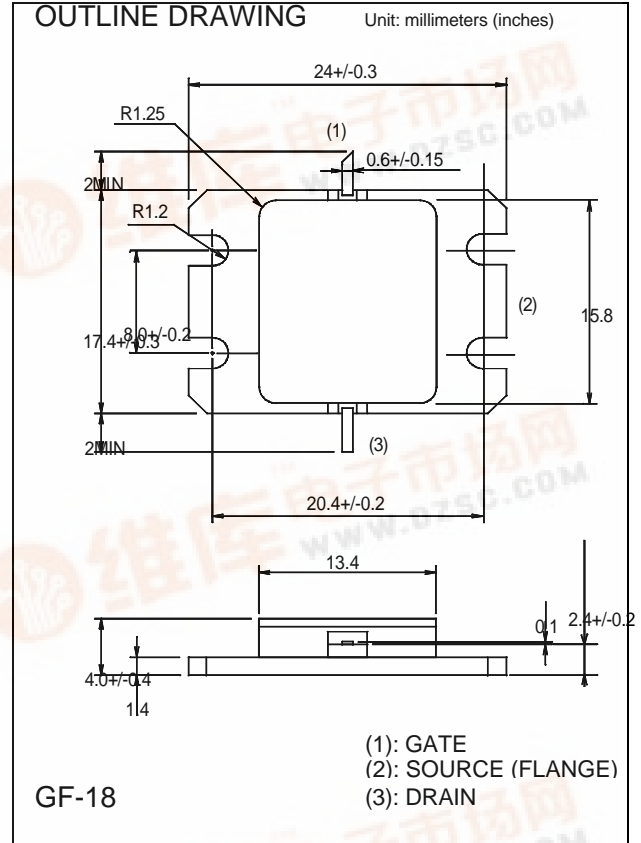
## RECOMMENDED BIAS CONDITIONS

- VDS = 10 (V)
- ID = 2.4(A) Refer to Bias Procedure
- RG= 50 (ohm)

## ABSOLUTE MAXIMUM RATINGS (Ta=25 deg.C)

| Symbol | Parameter                  | Ratings    | Unit  |
|--------|----------------------------|------------|-------|
| VGDO   | Gate to drain voltage      | -15        | V     |
| VGSO   | Gate to source voltage     | -15        | V     |
| ID     | Drain current              | 7.5        | A     |
| IGR    | Reverse gate current       | -20        | mA    |
| IGF    | Forward gate current       | 42         | mA    |
| PT     | Total power dissipation *1 | 42.8       | W     |
| Tch    | Channel temperature        | 175        | deg.C |
| Tstg   | Storage temperature        | -65 / +175 | deg.C |

\*1 : Tc=25 deg.C



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## ELECTRICAL CHARACTERISTICS (Ta=25 deg.C)

| Symbol    | Parameter                            | Test conditions                        | Limits |      |      | Unit    |
|-----------|--------------------------------------|--|--------|------|------|---------|
|           |                                      |  | Min.   | Typ. | Max. |         |
| IDSS      | Saturated drain current              | VDS=3V, VGS=0V                         | -      | 4.5  | 6    | A       |
| gm        | Transconductance                     | VDS=3V, ID=2.2 A                       | -      | 2    | -    | S       |
| VGS(off)  | Gate to source cut-off voltage       | VDS=3V, ID=40mA                        | -      | -3   | -4   | V       |
| P1dB      | Output power at 1dB gain compression | VDS=10V, ID(RF off)=2.4A, f=4.4~5.0GHz | 39.5   | 40.5 | -    | dBm     |
| GLP       | Linear power gain                    |  | 9      | 11   | -    | dB      |
| ID        | Drain current                        |  | -      | 2.4  | -    | A       |
| P.A.E.    | Power added efficiency               |  | -      | 32   | -    | %       |
| IM3       | 3rd order IM distortion *1           |  | -42    | -45  | -    | dBc     |
| Rth(ch-c) | Thermal resistance *2                | Delta Vf method                        | -      | -    | 3.5  | deg.C/W |

\*1 : item -51, 2 tone test, Po=29dBm Single Carrier Level, f=5GHz, Delta f=10MHz

\*2 : Channel to case



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