

< C band internally matched power GaAs FET >

# MGFC39V5867

5.8 – 6.75 GHz BAND / 8W

## DESCRIPTION

The MGFC39V5867 is an internally impedance-matched GaAs power FET especially designed for use in 5.8 – 6.75 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

Class A operation

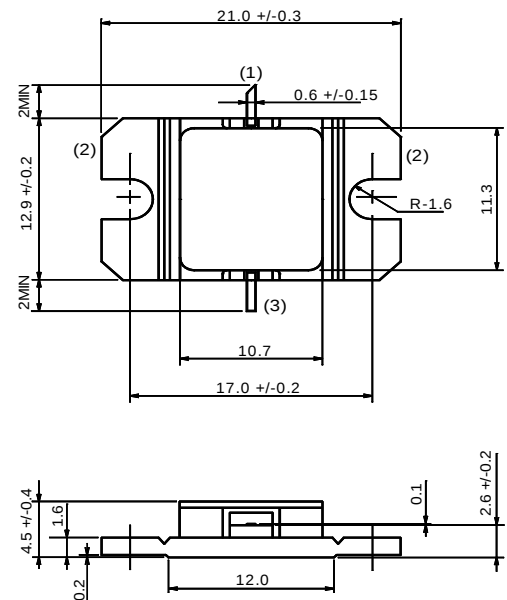
Internally matched to 50(ohm) system

- High output power  
P1dB=8W (TYP.) @f=5.8 – 6.75GHz
- High power gain  
GLP=9dB (TYP.) @f=5.8 – 6.75GHz

## APPLICATION

- VSAT

OUTLINE DRAWING Unit : millimeters



GF-8

- (1) GATE  
(2) SOURCE (FLANGE)  
(3) DRAIN

## RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=2.4A • RG=50ohm

## Absolute maximum ratings (Ta=25°C)

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

\*1 : Tc=25°C

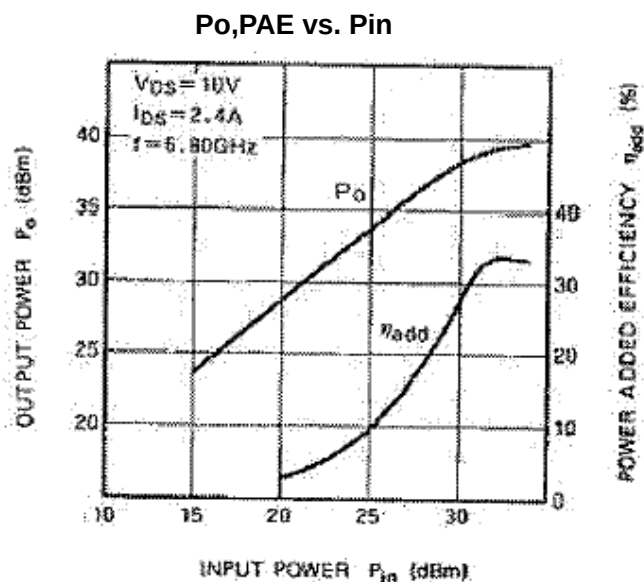
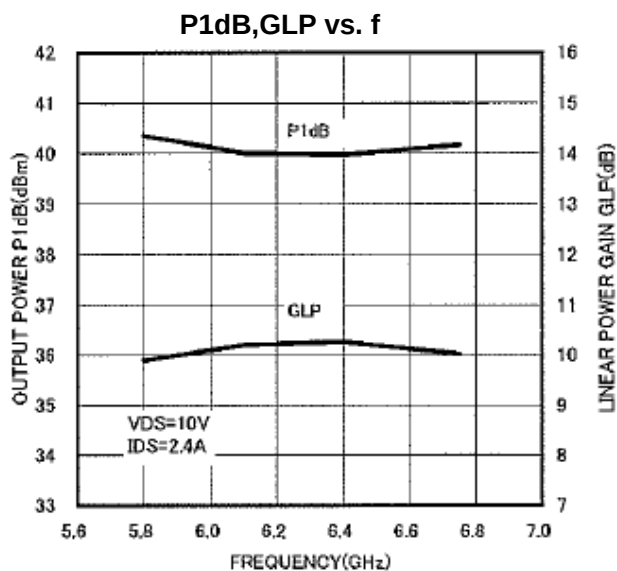
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## Electrical characteristics (Ta=25°C)

| Symbol       | Parameter                            | Test conditions                             | Limits |      |      | Unit |
|--------------|--------------------------------------|---------------------------------------------|--------|------|------|------|
|              |                                      |                                             | Min.   | Typ. | Max. |      |
| IDSS         | Saturated drain current              | VDS=3V, VGS=0V                              | -      | -    | 7.5  | A    |
| gm           | Transconductance                     | VDS=3V, ID=2.2A                             | -      | 2    | -    | S    |
| VGS(off)     | Gate to source cut-off voltage       | VDS=3V, ID=20mA                             | -      | -    | -4.5 | V    |
| P1dB         | Output power at 1dB gain compression | VDS=10V, ID(RF off)=2.4A<br>f=5.8 – 6.75GHz | 38     | 39   | -    | dBm  |
| GLP          | Linear Power Gain                    |                                             | 8      | 9    | -    | dB   |
| ID           | Drain current                        |                                             | -      | -    | 3    | A    |
| P.A.E.       | Power added efficiency               |                                             | -      | 30   | -    | %    |
| Rth(ch-c) *2 | Thermal resistance                   | delta Vf method                             | -      | -    | 3.5  | °C/W |

\*2 : Channel-case

**MGFC39V5867 TYPICAL CHARACTERISTICS**( Ta=25deg.C )**MGFC39V5867 S-parameters**( Ta=25deg.C , VDS=10(V),IDS=2.4(A) )

| f<br>(GHz) | S Parameters(Typ.) |             |       |             |       |             |       |             |
|------------|--------------------|-------------|-------|-------------|-------|-------------|-------|-------------|
|            | S11                |             | S21   |             | S12   |             | S22   |             |
|            | Magn.              | Angle(deg.) | Magn. | Angle(deg.) | Magn. | Angle(deg.) | Magn. | Angle(deg.) |
| 5.8        | 0.669              | -173        | 2.927 | 13          | 0.043 | -28         | 0.188 | -100        |
| 5.9        | 0.658              | 171         | 2.916 | -1          | 0.050 | -16         | 0.155 | -130        |
| 6.0        | 0.645              | 156         | 2.937 | -14         | 0.055 | -69         | 0.148 | -160        |
| 6.1        | 0.632              | 143         | 2.948 | -28         | 0.055 | -76         | 0.166 | 176         |
| 6.2        | 0.618              | 130         | 2.933 | -42         | 0.058 | -90         | 0.201 | 154         |
| 6.3        | 0.598              | 119         | 2.928 | -55         | 0.060 | -104        | 0.241 | 139         |
| 6.4        | 0.574              | 108         | 2.909 | -68         | 0.063 | -117        | 0.282 | 126         |
| 6.5        | 0.543              | 98          | 2.903 | -81         | 0.066 | -131        | 0.320 | 115         |
| 6.6        | 0.502              | 87          | 2.927 | -94         | 0.070 | -143        | 0.353 | 104         |
| 6.7        | 0.450              | 76          | 2.945 | -107        | 0.071 | -156        | 0.380 | 94          |
| 6.8        | 0.384              | 65          | 2.995 | -121        | 0.076 | -168        | 0.398 | 84          |

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