

< C band internally matched power GaAs FET >

# MGFC39V7785A

7.7 – 8.5 GHz BAND / 8W

## DESCRIPTION

The MGFC39V7785A is an internally impedance-matched GaAs power FET especially designed for use in 7.7 – 8.5 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=7.7 – 8.5GHz
- High power gain  
GLP= 7.5dB (TYP.) @f=7.7 – 8.5GHz
- High power added efficiency  
P.A.E.=27% (TYP.) @f=7.7 – 8.5GHz
- Low distortion [item -51]  
IM3=-45dBc (TYP.) @Po=28dBm S.C.L

## APPLICATION

- item 01 : 7.7 – 8.5 GHz band power amplifier
- item 51 : 7.7 – 8.5 GHz band digital radio communication

## QUALITY

- IG

## RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=2.4A Refer to Bias Procedure • 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   |

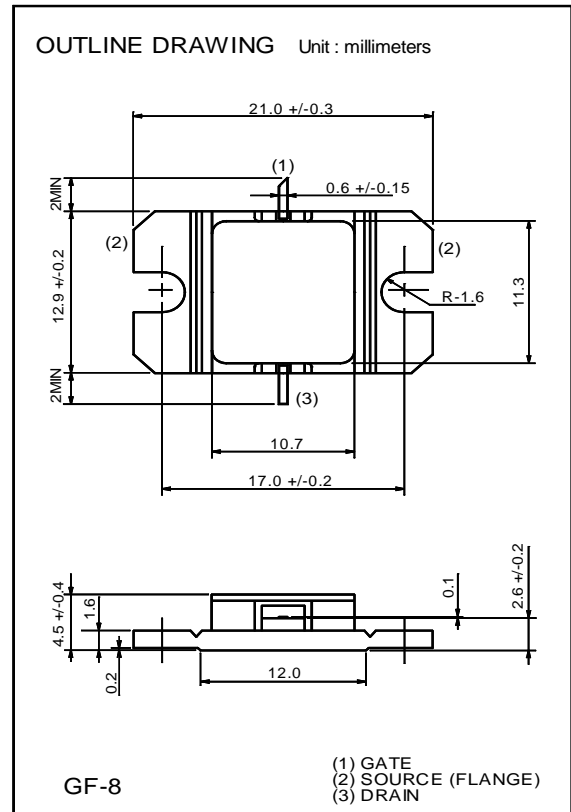
\*1 : Tc=25°C

## 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=7.7 – 8.5GHz | 38              | 39.5 | -    | dBm  |      |
| GLP          | Linear Power Gain                    |  | 6               | 7.5  | -    | dB   |      |
| ID           | Drain current                        |  | -               | -    | 3    | A    |      |
| P.A.E.       | Power added efficiency               |  | -               | 27   | -    | %    |      |
| IM3 *2       | 3rd order IM distortion              |  | -42             | -45  | -    | dBc  |      |
| Rth(ch-c) *3 | Thermal resistance                   |  | delta Vf method | -    | -    | 3.5  | °C/W |

\*2 : item -51 , 2 tone test, Po=28dBm Single Carrier Level , f=8.5GHz, delta f=10MHz

\*3 : Channel-case



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