

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

MITSUBISHI SEMICONDUCTOR <GaAs FET>

# MGFK39V4045

14.0~14.5GHz BAND 8W INTERNALLY MATCHD GaAs FET

## DESCRIPTION

The MGFK39V4045 is an internally impedance matched GaAs power FET especially designed for use in 14.0~14.5 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

- Internally impedance matched
- High output power  
 $P_{1dB}=8W$  (TYP.) @f=14.0~14.5GHz
- High linear power gain  
 $GLP=5.5dB$  (TYP.) @f=14.0~14.5GHz
- High power added efficiency  
 $\eta_{add}=20\%$ (TYP.) @f=14.0~14.5GHz,  $P_{1dB}$

## APPLICATION

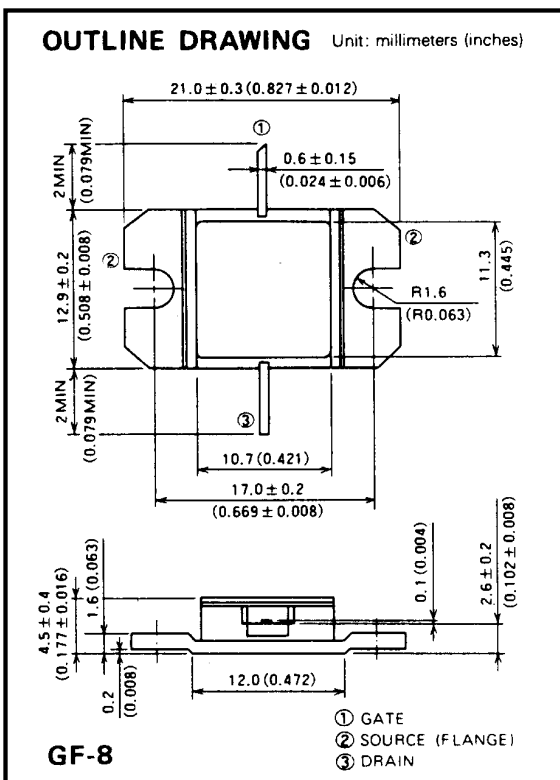
For use in 14.0~14.5GHz band amplifiers

## QUALITY GRADE

- IG

## RECOMMENDED BIAS CONDITIONS

- $V_{DS}=10V$
- $I_D=2.4A$
- Refer to Bias Procedure



## ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| Symbol    | Parameter                  | Ratings    | Unit |
|-----------|----------------------------|------------|------|
| $V_{GDO}$ | Gate to drain voltage      | -15        | V    |
| $V_{GSO}$ | Gate to source voltage     | -15        | V    |
| $I_D$     | Drain current              | 6.0        | A    |
| $I_{GR}$  | Reverse gate current       | -18        | mA   |
| $I_{GF}$  | Forward gate current       | 36         | mA   |
| $P_T$     | Total power dissipation *1 | 42.8       | W    |
| $T_{ch}$  | Channel temperature        | 175        | °C   |
| $T_{stg}$ | Storage temperature        | -65 ~ +175 | °C   |

\*1 :  $T_c=25^\circ C$

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| Symbol          | Parameter                            | Test conditions                            | Limits |      |     | Unit |
|-----------------|--------------------------------------|--------------------------------------------|--------|------|-----|------|
|                 |                                      |                                            | Min.   | Typ. | Max |      |
| $I_{DSS}$       | Saturated drain current              | $V_{DS}=3V, V_{GS}=0V$                     | —      | 4.0  | 6.0 | A    |
| $g_m$           | Transconductance                     | $V_{DS}=3V, I_D=2.4A$                      | 1.2    | 2.0  | —   | S    |
| $V_{GS} (off)$  | Gate to source cut-off voltage       | $V_{DS}=3V, I_D=20mA$                      | -2     | —    | -5  | V    |
| $P_{1dB}$       | Output power at 1dB gain compression | $V_{DS}=10V, I_D=2.4A, f=14.0\sim 14.5GHz$ | 38.5   | 39.0 | —   | dBm  |
| $GLP$           | Linear power gain                    |                                            | 4.5    | 5.5  | —   | dB   |
| $\eta_{add}$    | Power added efficiency               |                                            | —      | 20   | —   | %    |
| $R_{th} (ch-c)$ | Thermal resistance *1                | $\Delta V_f$ method                        | —      | —    | 3.5 | °C/W |

\*1 : Channel to case



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