

# MGFS45V2735

## 2.7 - 3.5GHz BAND 30W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFS45V2735 is an internally impedance-matched GaAs power FET especially designed for use in 2.7 - 3.5 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 = 30W (TYP.) @ f=2.7 - 3.5 GHz
- High power gain  
GLP = 12 dB (TYP.) @ f=2.7 - 3.5GHz
- High power added efficiency  
P.A.E. = 36 % (TYP.) @ f=2.7 - 3.5GHz
- Low distortion [item -51]  
IM3=-45dBc(TYP.) @ Po=34.5dBm S.C.L.

### APPLICATION

- item 01 : 2.7 - 3.5 GHz band power amplifier
- item 51 : 2.7 - 3.5 GHz band digital radio 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

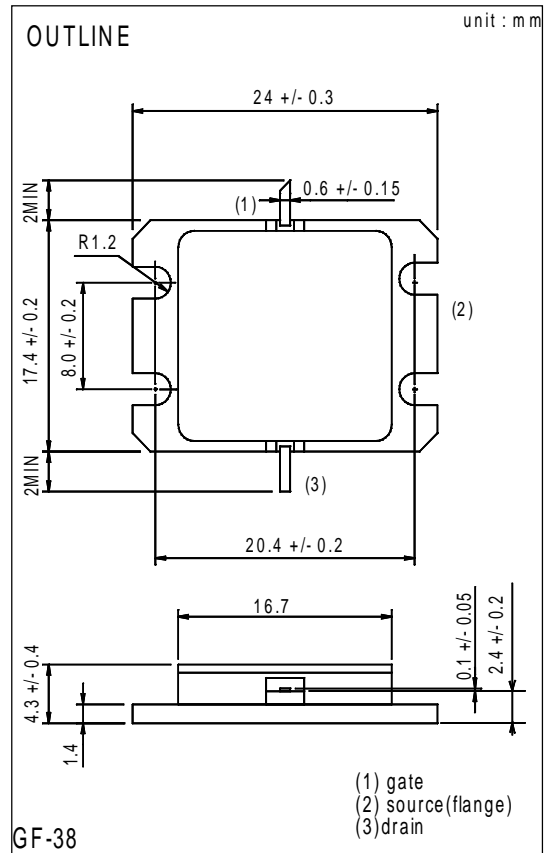
### ELECTRICAL CHARACTERISTICS

(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)     | Saturated drain current              | VDS = 3V , ID = 160mA                  | -2     | -    | -5   | V       |
| P1dB         | Output power at 1dB gain compression | VDS=10V, ID(RF off)=8A, f=2.7 - 3.5GHz | 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    | deg.C/W |

\*2 : item -51,2 tone test,Po=34.5dBm Single Carrier Level,f=2.7,3.1,3.5GHz,delta f=10MHz

\*3 : Channel-case

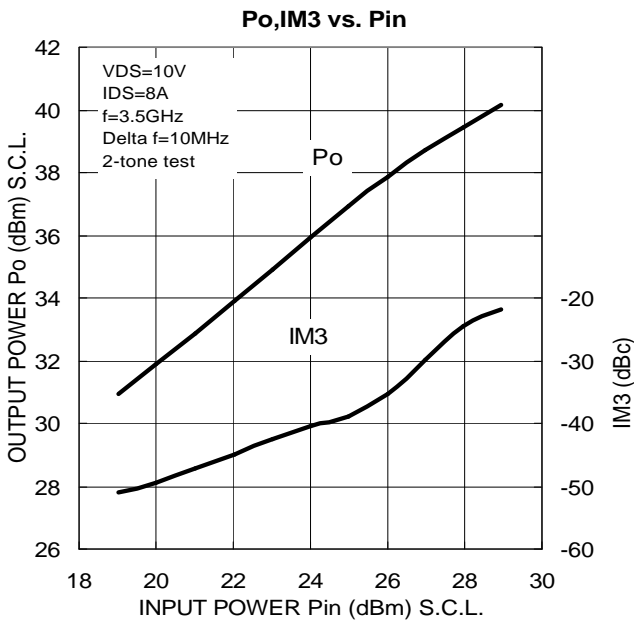
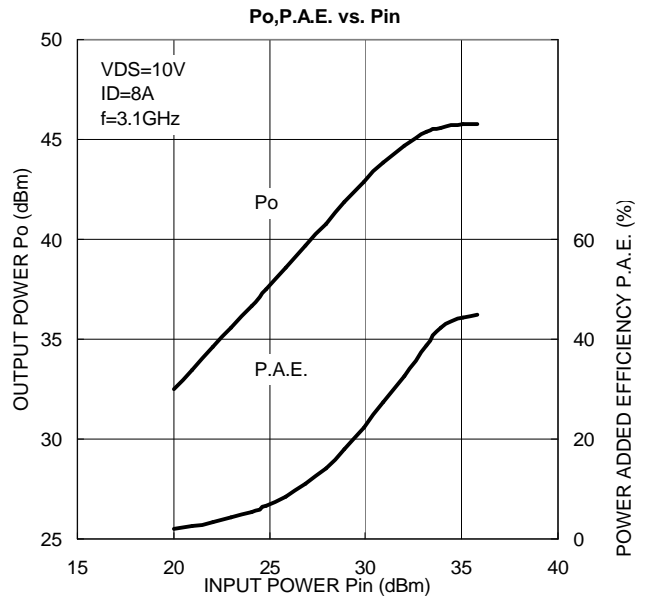
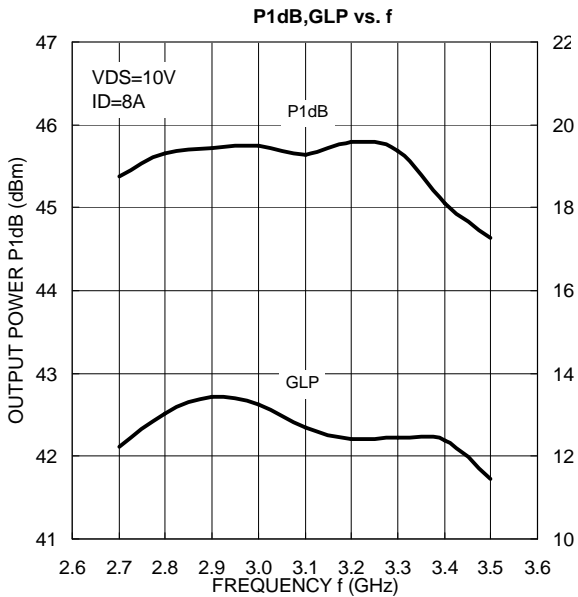


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## 2.7 - 3.5GHz BAND 30W INTERNALLY MATCHED GaAs FET

### TYPICAL CHARACTERISTICS



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

| f<br>(GHz) | S-Parameter (TYP.) |            |       |            |       |            |       |            |
|------------|--------------------|------------|-------|------------|-------|------------|-------|------------|
|            | S11                |            | S21   |            | S12   |            | S22   |            |
|            | Magn.              | Angle(deg) | Magn. | Angle(deg) | Magn. | Angle(deg) | Magn. | Angle(deg) |
| 2.60       | 0.63               | 88         | 3.39  | 38         | 0.03  | -17        | 0.59  | 26         |
| 2.70       | 0.58               | 47         | 3.90  | 3          | 0.04  | -52        | 0.49  | -1         |
| 2.80       | 0.51               | 1          | 4.30  | -31        | 0.05  | -86        | 0.41  | -30        |
| 2.90       | 0.47               | -51        | 4.52  | -66        | 0.06  | -122       | 0.32  | -67        |
| 3.00       | 0.47               | -105       | 4.51  | -101       | 0.06  | -157       | 0.27  | -106       |
| 3.10       | 0.50               | -152       | 4.33  | -135       | 0.06  | 166        | 0.24  | -137       |
| 3.20       | 0.51               | 166        | 4.15  | -168       | 0.05  | 134        | 0.23  | -165       |
| 3.30       | 0.49               | 123        | 4.04  | 159        | 0.06  | 100        | 0.21  | 174        |
| 3.40       | 0.45               | 61         | 3.92  | 117        | 0.06  | 49         | 0.15  | 149        |
| 3.50       | 0.48               | -11        | 3.60  | 76         | 0.06  | 8          | 0.05  | 165        |
| 3.60       | 0.64               | -75        | 2.86  | 33         | 0.05  | -40        | 0.16  | -115       |

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