

< L/S band internally matched power GaAs FET >

# MGFS45A2527B

2.5 – 2.7 GHz BAND / 32W

## DESCRIPTION

The MGFS45V2527B is an internally impedance-matched GaAs power FET especially designed for use in 2.5 – 2.7 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=32W (TYP.) @f=2.5 – 2.7GHz
- High power gain  
GLP=12.0dB (TYP.) @f=2.5 – 2.7GHz
- High power added efficiency  
P.A.E.=40% (TYP.) @f=2.5 – 2.7GHz
- Low distortion [item -51]  
IM3=-45dBc (TYP.) @Po=34.5dBm S.C.L

## APPLICATION

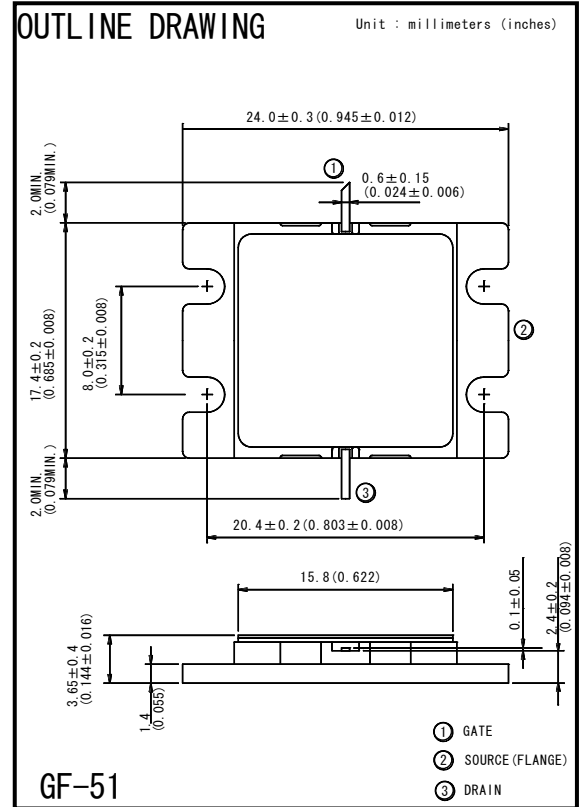
- item 01 : 2.5 – 2.7 GHz band power amplifier
- item 51 : 2.5 – 2.7 GHz band digital radio communication

## QUALITY

- GG

## RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=6.5A • RG=25ohm



## Absolute maximum ratings (Ta=25°C)

| Symbol | Parameter                        | Ratings     | Unit |
|--------|----------------------------------|-------------|------|
| VGDO   | Gate to drain breakdown voltage  | -20         | V    |
| VGSO   | Gate to source breakdown voltage | -10         | V    |
| PT *1  | Total power dissipation          | 107         | 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. |      |
| VGS(off)     | Gate to source cut-off voltage       | VDS=3V, ID=84mA          | -      | -    | -5   | V    |
| P1dB         | Output power at 1dB gain compression | VDS=10V, ID(RF off)=6.5A | 44     | 45   | -    | dBm  |
| GLP          | Linear Power Gain                    | f=2.5 – 2.7GHz           | 11     | 12   | -    | dB   |
| ID           | Drain current                        |                          | -      | 7.5  | -    | A    |
| P.A.E.       | Power added efficiency               |                          | -      | 40   | -    | %    |
| IM3 *2       | 3rd order IM distortion              |                          | -42    | -45  | -    | dBc  |
| Rth(ch-c) *3 | Thermal resistance                   | delta Vf method          | -      | 1.2  | 1.4  | °C/W |

\*2 : item -51 , 2 tone test, Po=34.5dBm Single Carrier Level , f=2.5,2.6,2.7GHz, delta f=5MHz

\*3 : Channel-case

**Keep Safety first in your circuit designs!**

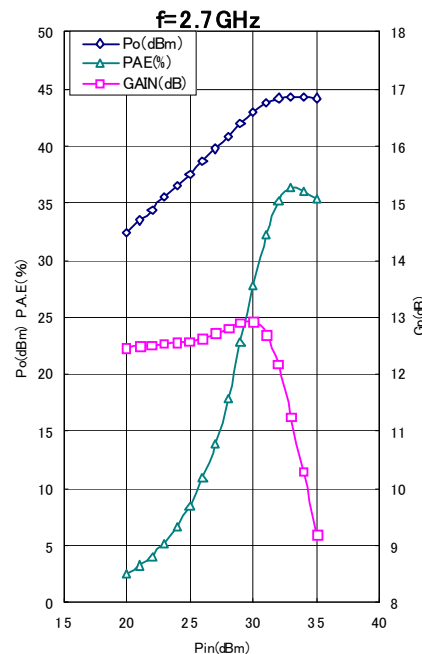
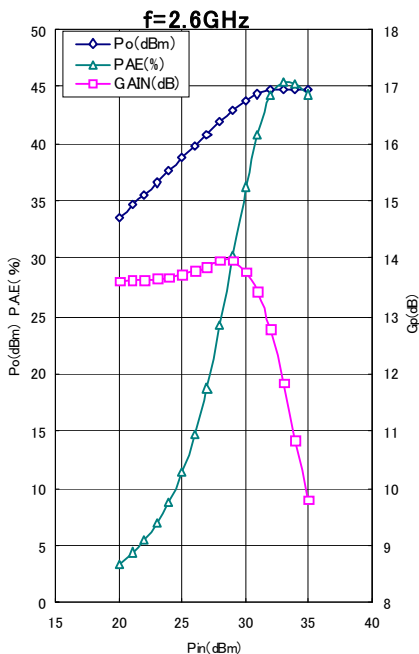
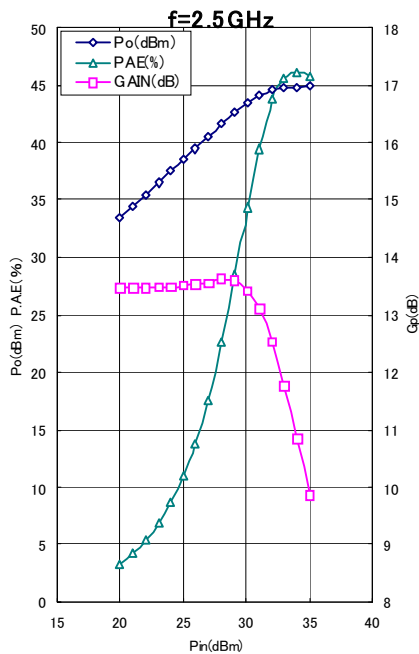
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# MGFS45A2527B

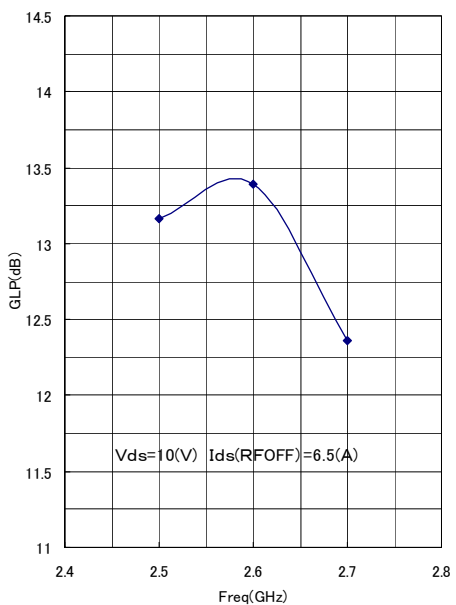
2.5 – 2.7 GHz BAND / 32W

## MGFS45A2527B TYPICAL CHARACTERISTICS

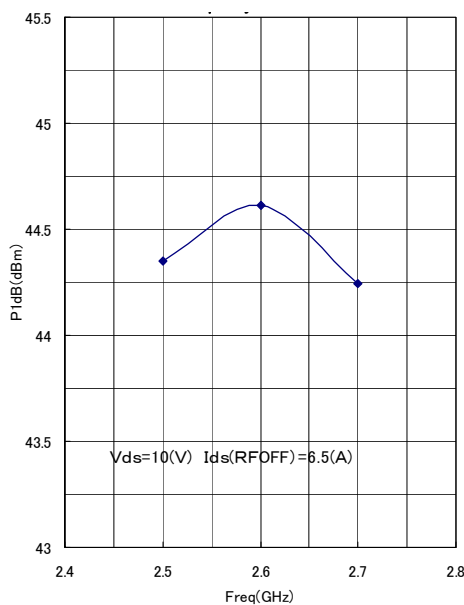
Pout , PAE , GAIN vs. Pin



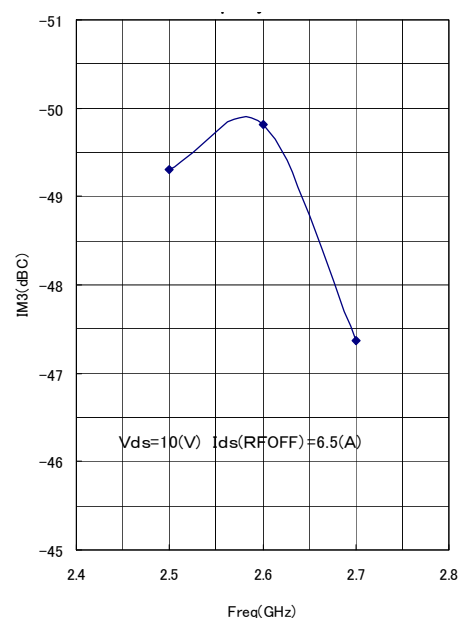
GAIN vs. f



P1dB vs. f



IM3 vs. f



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### MGFS45A2528B S-parameters( Ta=25deg.C , VDS=10(V),IDS=6.5(A) )

| Freq | S11   |         | S21   |         | S12   |         | S22   |         |
|------|-------|---------|-------|---------|-------|---------|-------|---------|
|      | (mag) | (ang)   | (mag) | (ang)   | (mag) | (ang)   | (mag) | (ang)   |
| 2.00 | 0.88  | 74.01   | 1.42  | -115.63 | 0.01  | -79.30  | 0.79  | 101.57  |
| 2.05 | 0.87  | 67.63   | 1.56  | -124.88 | 0.01  | -86.26  | 0.77  | 95.64   |
| 2.10 | 0.85  | 60.94   | 1.72  | -134.47 | 0.01  | -102.29 | 0.75  | 89.25   |
| 2.15 | 0.82  | 53.50   | 1.91  | -144.48 | 0.01  | -111.11 | 0.73  | 83.20   |
| 2.20 | 0.79  | 45.38   | 2.12  | -155.53 | 0.01  | -129.00 | 0.70  | 75.83   |
| 2.25 | 0.76  | 36.25   | 2.38  | -167.27 | 0.01  | -140.42 | 0.67  | 67.92   |
| 2.30 | 0.72  | 26.06   | 2.66  | -179.79 | 0.01  | -159.19 | 0.64  | 58.86   |
| 2.35 | 0.66  | 14.95   | 2.99  | 166.21  | 0.02  | 176.25  | 0.59  | 47.67   |
| 2.40 | 0.59  | 1.86    | 3.34  | 150.86  | 0.02  | 155.14  | 0.54  | 34.08   |
| 2.45 | 0.51  | -13.16  | 3.70  | 133.43  | 0.02  | 126.07  | 0.48  | 16.39   |
| 2.50 | 0.40  | -31.23  | 4.01  | 115.11  | 0.02  | 98.68   | 0.43  | -5.01   |
| 2.55 | 0.28  | -51.53  | 4.24  | 95.76   | 0.02  | 71.43   | 0.39  | -31.79  |
| 2.60 | 0.16  | -78.16  | 4.32  | 75.62   | 0.02  | 43.53   | 0.38  | -61.12  |
| 2.65 | 0.07  | -146.41 | 4.27  | 55.31   | 0.02  | 15.41   | 0.40  | -87.87  |
| 2.70 | 0.12  | 127.83  | 4.09  | 35.45   | 0.03  | -11.45  | 0.45  | -109.18 |
| 2.75 | 0.22  | 95.47   | 3.80  | 16.42   | 0.03  | -33.34  | 0.49  | -125.33 |
| 2.80 | 0.30  | 74.56   | 3.51  | -1.65   | 0.03  | -54.63  | 0.53  | -137.70 |
| 2.85 | 0.38  | 56.47   | 3.18  | -19.06  | 0.03  | -75.33  | 0.57  | -147.32 |
| 2.90 | 0.45  | 40.38   | 2.88  | -35.49  | 0.03  | -94.35  | 0.60  | -154.95 |
| 2.95 | 0.51  | 24.35   | 2.58  | -51.73  | 0.03  | -111.68 | 0.62  | -161.21 |
| 3.00 | 0.58  | 8.80    | 2.30  | -67.16  | 0.03  | -126.90 | 0.64  | -166.56 |

This S-Parameter data show measurements performed on each single-ended FET

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