

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

MITSUBISHI SEMICONDUCTOR <GaAs FET>

# MGFS45V2325

2.3~2.5GHz BAND 30W INTERNALLY MATCHED GaAs FET

## DESCRIPTION

The MGFS45V2325 is an internally impedance matched GaAs power FET especially designed for use in 2.3~2.5 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

- Class A operation
- Internally matched to 50 (Ω) system
- High output power  
 $P_{1dB}=30W$  (TYP.) @ $f=2.3\sim 2.5GHz$
- High power gain  
 $GLP=12dB$  (TYP.) @ $f=2.3\sim 2.5GHz$
- High power added efficiency  
 $\eta_{add}=45\%$  (TYP.) @ $f=2.3\sim 2.5GHz$
- Loe distortion [item -51]  
 $IM3=-45dBc$  (TYP.) @ $P_o=34.5dBm$  S.C.L.

## APPLICATION

item 01 : 2.3~2.5GHz band power amplifier  
 item 51 : 2.3~2.5GHz band digital radio communication

## QUALITY GRADE

- IG

## RECOMMENDED BIAS CONDITIONS

- $V_{DS}=10V$
- $I_D=6.5A$
- $R_G=25\Omega$

## ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V <sub>GD0</sub>	Gate to drain voltage	-15	V
V <sub>GSO</sub>	Gate to source voltage	-15	V
I <sub>D</sub>	Drain current	22	A
I <sub>GR</sub>	Reverse gate current	-61	mA
I <sub>GF</sub>	Forward gate current	76	mA
P <sub>T</sub>	Total power dissipation *1	88	W
T <sub>ch</sub>	Channel temperature	175	°C
T <sub>stg</sub>	Storage temperature	-65 ~ +175	°C

\*1 : T<sub>c</sub>=25°C

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

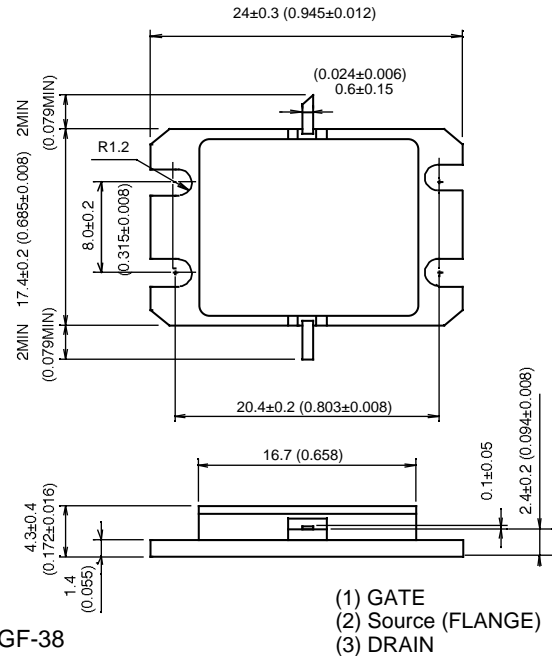
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max	
V <sub>GS</sub> (off)	Saturated drain current	V <sub>DS</sub> =3V, I <sub>D</sub> =60mA	—	—	-5	V
P <sub>1dB</sub>	Output power at 1dB gain compression	V <sub>DS</sub> =10V, I <sub>D</sub> (RF off)=6.5A, f=2.3~2.5GHz	44	45	—	dBm
GLP	Linear power gain		11	12	—	dB
I <sub>D</sub>	Drain current		—	7.5	—	A
η <sub>add</sub>	Power added efficiency		—	45	—	%
IM3	3rd order IM distortion *1		-42	-45	—	dBc
R <sub>th</sub> (ch-c)	Thermal resistance *2		ΔV <sub>t</sub> method	—	—	1.7

\*1 : item -51, 2 tone test, P<sub>o</sub>=34.5dBm Single Carrier Level, f=2.3, 2.4, 2.5GHz, Δf=5MHz

\*2 : Channel to case

## OUTLINE DRAWING

Until : millimeters (inches)



< Keep safety first in your circuit designs! >

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

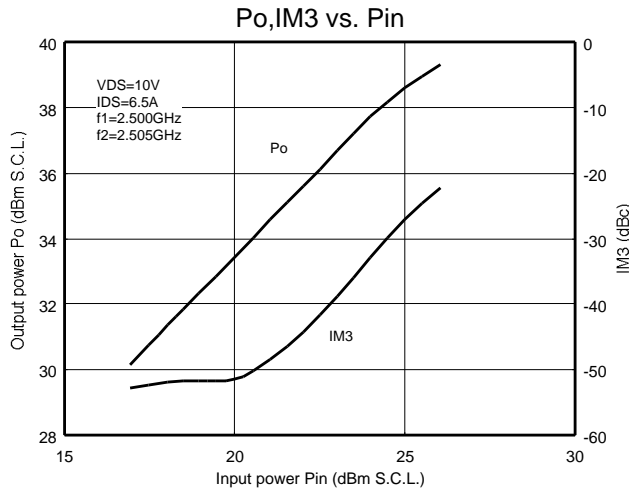
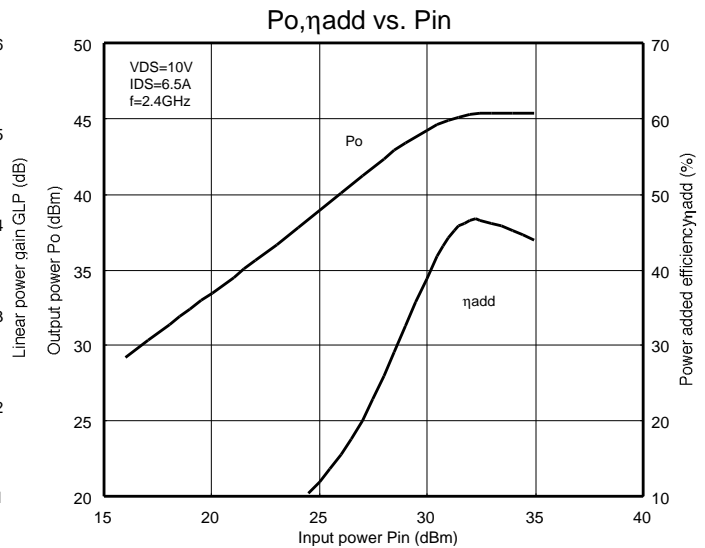
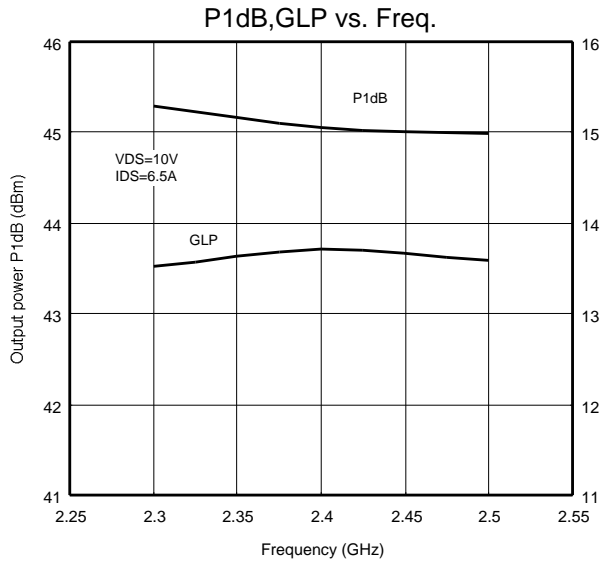
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## TYPICAL CHARACTERISTICS



S Parameters ( Tc=25°C, VDS=10V, IDS=6.5A )

f (GHz)	S-Parameter (TYP.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)
2.20	0.36	-168	4.71	88	0.036	47	0.30	-10
2.25	0.39	170	4.70	71	0.037	29	0.26	-27
2.30	0.40	150	4.68	54	0.038	10	0.23	-45
2.35	0.39	132	4.68	38	0.040	-7	0.22	-66
2.40	0.36	112	4.68	21	0.041	-26	0.22	-86
2.45	0.30	87	4.68	3	0.041	-45	0.23	-105
2.50	0.24	53	4.64	-14	0.043	-63	0.24	-125
2.55	0.21	1	4.52	-34	0.044	-85	0.25	-141
2.60	0.28	-48	4.28	-54	0.043	-103	0.25	-158



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