MGFS45V2123

2.1~2.3GHz BAND 30W INTERNALLY MATCHD GaAs FET

DESCRIPTION

The MGFS45V2123 is an internally impedance matched GaAs power FET especially designed for use in 2.1~2.3 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=2.1~2.3GHz
- High power gain
  G_{LP}=12dB (TYP.) @f=2.1~2.3GHz
- High power added efficiency
  ηadd=45% (TYP.) @f=2.1~2.3GHz
- Loe distortion [item -51]
  IM3= -45dBc (TYP.) @Po=34.5dBm S.C.L.

APPLICATION

item 01 : 2.1~2.3GHz band power amplifier
item 51 : 2.1~2.3GHz band digital radio communication

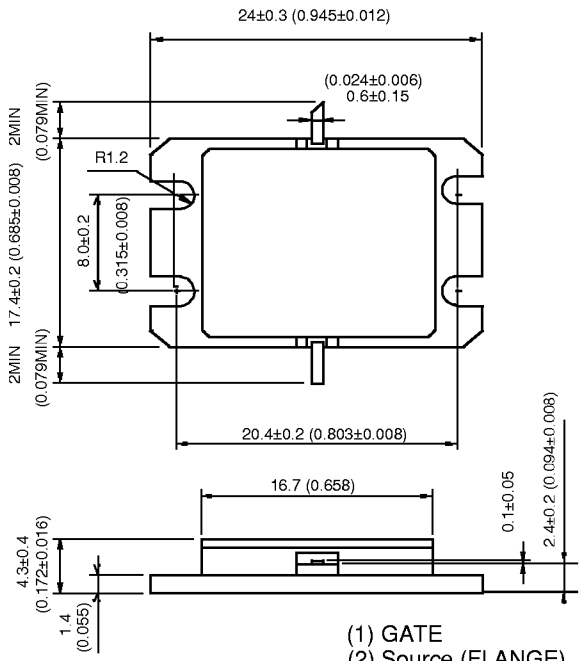
QUALITY GRADE

- IG

RECOMMENDED BIAS CONDITIONS

- V_{DS}=10V
- I_D=6.5A
- RG=25Ω

OUTLINE DRAWING Until : millimeters (inches)



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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	22	A
I_{GR}	Reverse gate current	-61	mA
I_{GF}	Forward gate current	76	mA
P_T	Total power dissipation *1	88	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 ~ +175	°C

*1 : Tc=25°C

< 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.

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max	
VGS (off)	Saturated drain current	V_{DS}=3V, I_D=60mA	—	—	-5	V
P_{1dB}	Output power at 1dB gain compression	V_{DS}=10V, I_D(RF off)=6.5A, f=2.1~2.3GHz	44	45	—	dBm
G_{LP}	Linear power gain		11	12	—	dB
ID	Drain current		—	7.5	—	A
ηadd	Power added efficiency		—	45	—	%
IM3	3rd order IM distortion *1		-42	-45	—	dBc
Rth (ch-c)	Thermal resistance *2	ΔVf method	—	—	1.7	°C/W

*1 : item -51, 2 tone test, Po=34.5dBm Single Carrier Level, f=2.1, 2.2, 2.3GHz,Δf=5MHz
*2 : Channel to case

PRELIMINARY
Notice : This is not a final specification
Some parameters are subject to change

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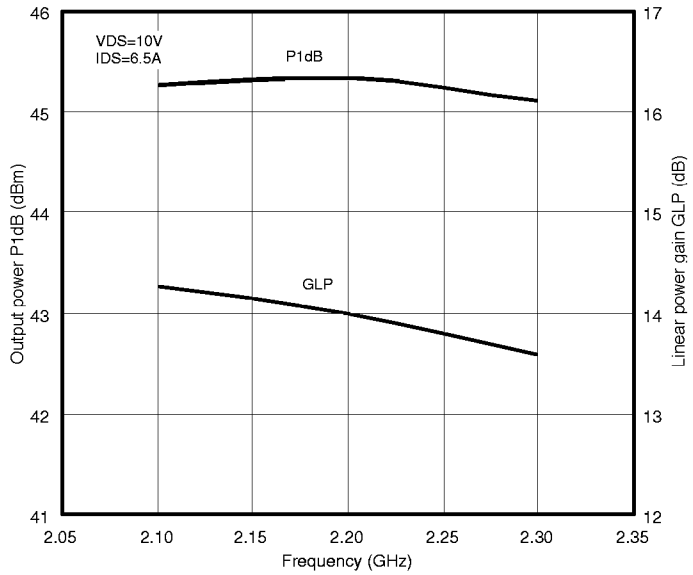
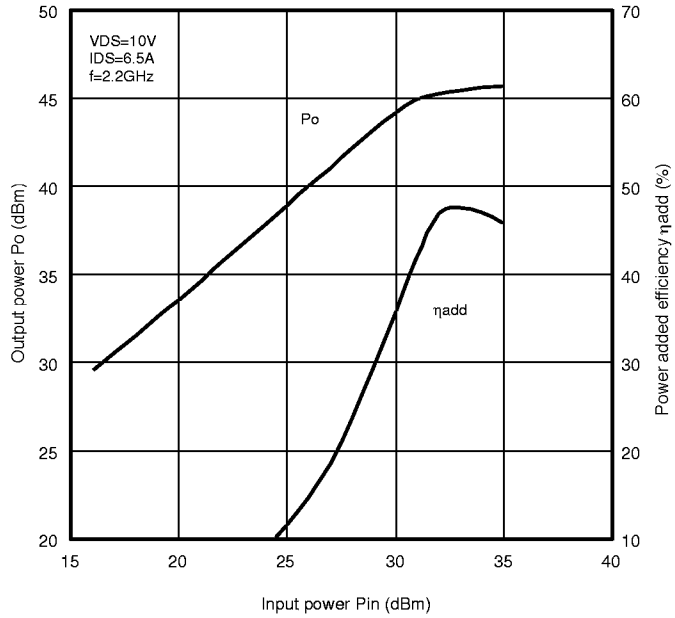
TYPICAL CHARACTERISTICS

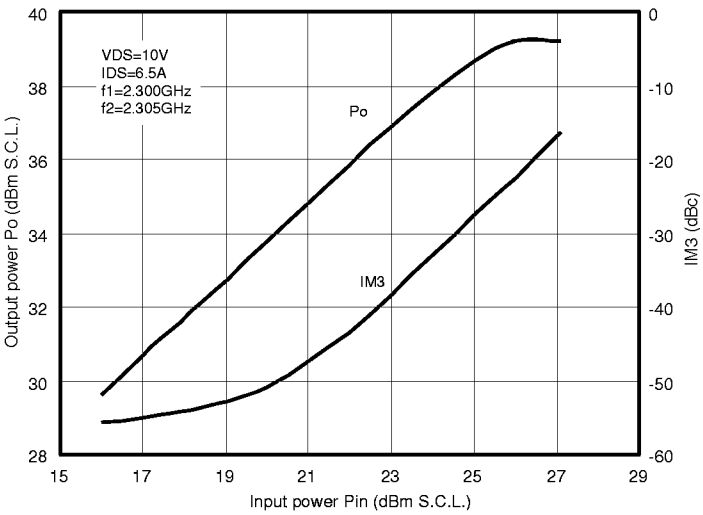
P1dB,GLP vs. Freq.



Po, ηadd vs. Pin



Po,IM3 vs. Pin



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)
2.00	0.31	-34	4.76	148	0.031	123	0.39	17
2.05	0.26	-77	4.96	129	0.032	99	0.34	-2
2.10	0.27	-120	5.02	109	0.035	76	0.30	-26
2.15	0.31	-153	4.99	90	0.035	53	0.28	-51
2.20	0.35	-178	4.88	73	0.034	31	0.29	-72
2.25	0.37	161	4.79	56	0.034	17	0.30	-92
2.30	0.38	143	4.69	39	0.035	-4	0.33	-109
2.35	0.36	126	4.62	22	0.036	-22	0.36	-123
2.40	0.32	107	4.56	5	0.037	-39	0.40	-134