

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

MITSUBISHI SEMICONDUCTOR <GaAs FET>

MGFS45V2527

2.5~2.7GHz BAND 30W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFS45V2527 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 () system
- High output power
 $P_{1dB}=30W$ (TYP.) @ $f=2.5\sim 2.7GHz$
- High power gain
 $GLP=12dB$ (TYP.) @ $f=2.5\sim 2.7GHz$
- High power added efficiency
 $\text{add}=45\%$ (TYP.) @ $f=2.5\sim 2.7GHz$
- Low distortion [item -51]
 $IM3= -45dBc$ (TYP.) @ $P_o=34.5dBm$ S.C.L.

APPLICATION

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

QUALITY GRADE

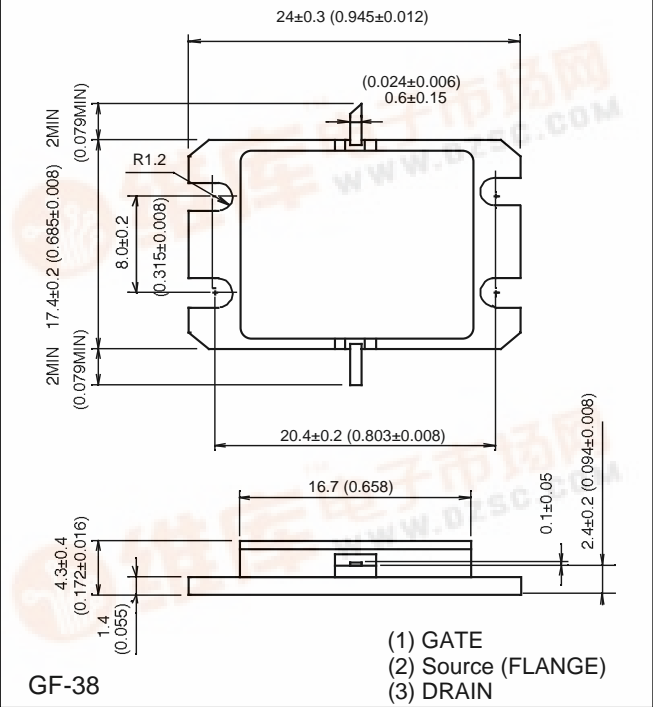
- IG

RECOMMENDED BIAS CONDITIONS

- $V_{DS}=10V$
- $I_D=6.5A$
- $RG=25$

OUTLINE DRAWING

Until : millimeters (inches)



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
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	-65 ~ +175	°C

*1 : T_c=25°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

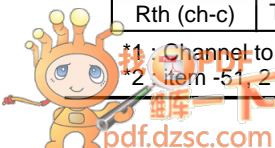
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max	
V _{GS} (off)	Saturated drain current	V _{DS} =3V, I _D =60mA	—	—	-5	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} =10V, I _D (RF off)=6.5A, f=2.5~2.7GHz	44	45	—	dBm
GLP	Linear power gain		11	12	—	dB
I _D	Drain current		—	7.5	—	A
add	Power added efficiency		—	45	—	%
IM3	3rd order IM distortion *2		-42	-45	—	dBc
R _{th} (ch-c)	Thermal resistance *1	V _f method	—	—	1.7	°C/W

*1 : Channel to case

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

< 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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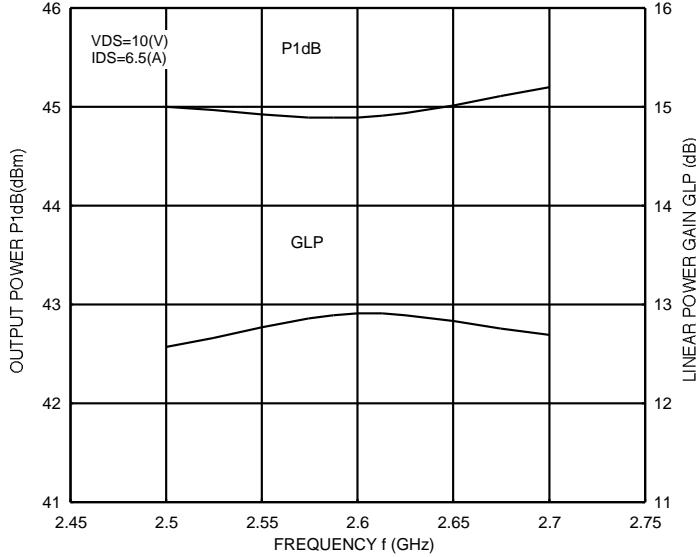
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MGFS45V2527

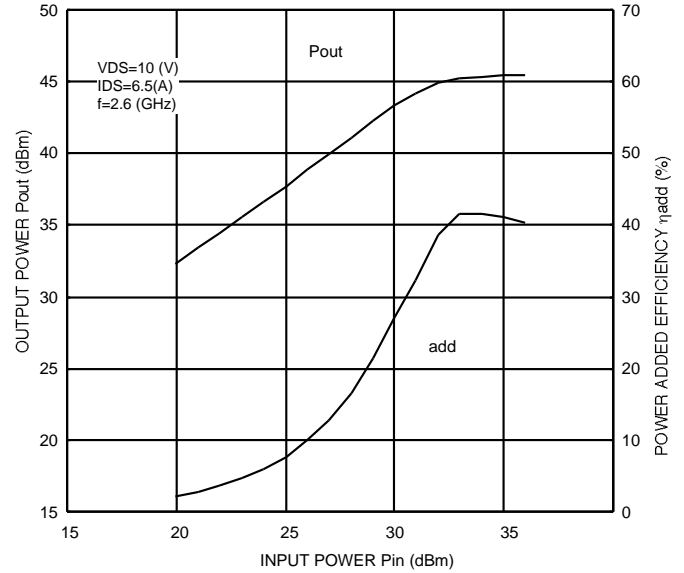
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TYPICAL CHARACTERISTICS

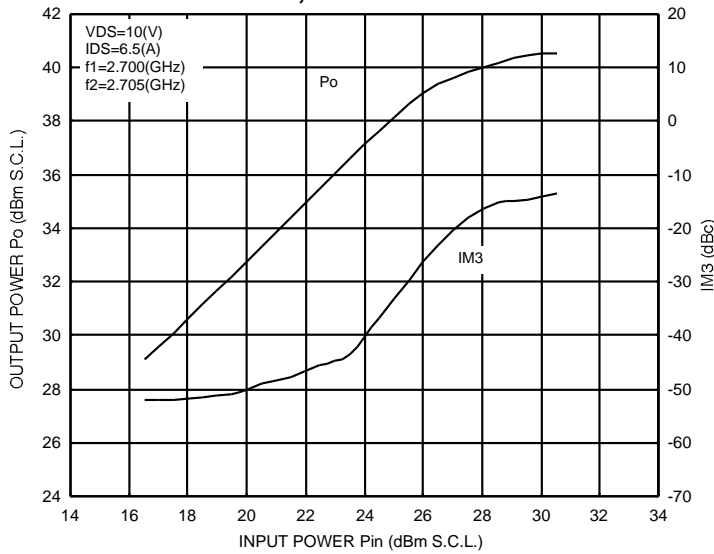
P1dB, GLP vs. f



Po, add 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)
2.40	0.57	165	4.25	50	0.03	15	0.15	-24
2.45	0.54	152	4.35	36	0.04	0	0.13	-37
2.50	0.52	138	4.40	21	0.04	-21	0.12	-60
2.55	0.45	123	4.49	6	0.04	-35	0.12	-82
2.60	0.39	106	4.60	-10	0.04	-60	0.12	-111
2.65	0.30	82	4.68	-28	0.04	-73	0.13	-134
2.70	0.19	37	4.68	-47	0.04	-89	0.12	-156
2.75	0.18	-25	4.57	-66	0.05	-117	0.13	176
2.80	0.30	-73	4.29	-86	0.04	-133	0.10	160



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