MGFS45V2527

PRELIMINARY

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

2.5~2.7GHz BAND 28W 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 25Ω system
- High output power
  P_{1dB} = 28W (TYP) @ 2.5~2.7GHz
- High power gain
  G_{LP} = 12dB (TYP) @ 2.5~2.7GHz
- High power added efficiency
  η_{add} = 40% (TYP) @ 2.5~2.7GHz, P_{1dB}
- Hermetically sealed metal-ceramic package
- Low distortion (Item: −51)
  IM3 = −45dBc (TYP) @ Po = 34 (dBm) S.C.L.

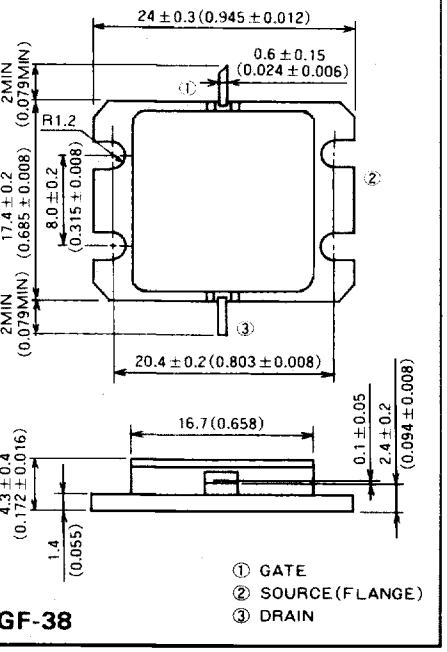
APPLICATION

Item-01: 2.5~2.7 GHz band power amplifiers.
Item-51: Digital radio communication.

QUALITY GRADE

- IG

OUTLINE DRAWING Unit: 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	24	A
I_{GR}	Reverse gate current	−60	mA
I_{GF}	Forward gate current	126	mA
P_T	Total power dissipation *1	100	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	−65~+175	°C

*1 T_C = 25°C

RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 6.4A
- Rg = 25Ω
- Refer to Bias Procedure

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS} = 3V, V_{GS} = 0V	—	20	—	A
g_m	Transconductance	V_{DS} = 3V, I_D = 6.4A	—	6	—	S
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS} = 3V, I_D = 120mA	—	—	−4.5	V
P_{1dB}	Output power at 1dB gain compression	V_{DS} = 10V, I_D = 6.4A, f = 2.5~2.7GHz	44	45	—	dBm
G_{LP}	Linear power gain		11	12	—	dB
I_D	Drain current		—	7	—	A
η_{add}	Power added efficiency		—	40	—	%
IM_3	3rd order IM distortion *1		−42	−45	—	dBc
$R_{th(ch-c)}$	Thermal resistance *2	ΔV_f method	—	—	1.6	°C/W

*1: Item-51, 2-tone test Po = 34dBm Single Carrier Level f = 2.7GHz Δf = 5MHz, *2: Channel to case

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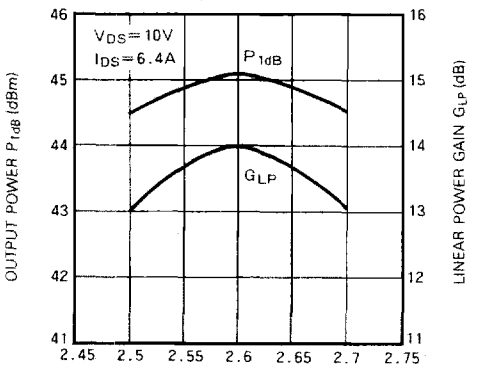
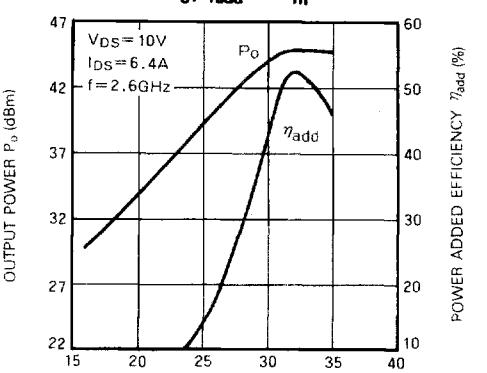
2.5~2.7GHz BAND 28W INTERNALLY MATCHED GaAe FET

TYPICAL CHARACTERISTICS (T_a = 25°C)

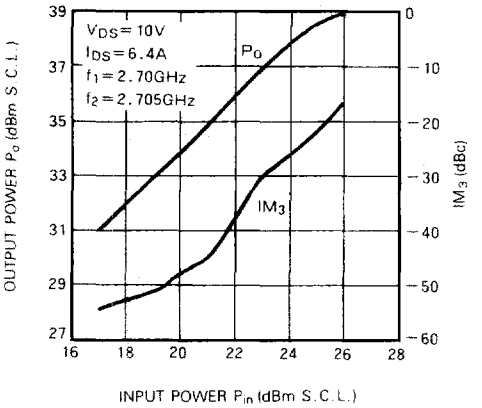
P_{1dB}, G_{LP} vs. f



P_o, η_{add} vs. P_{in}



P_o, IM_3 vs. P_{in}



S PARAMETERS (T_a = 25°C, V_{DS} = 10V, I_{DS} = 6.4A)

f (GHz)	S Parameter (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
2.40	0.580	7	3.69	179	0.026	135	0.61	73
2.45	0.486	− 10	4.01	165	0.029	123	0.55	67
2.50	0.380	− 37	4.36	148	0.035	103	0.47	60
2.55	0.310	− 71	4.49	130	0.037	92	0.41	47
2.60	0.300	−112	4.61	112	0.043	69	0.29	41
2.65	0.320	−150	4.63	95	0.042	52	0.22	32
2.70	0.370	−179	4.56	78	0.039	33	0.14	29
2.75	0.410	157	4.43	62	0.042	15	0.07	21
2.80	0.440	138	4.29	47	0.037	−2	0.02	87