

MGFC36V5258

5.2~5.8GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V5258 is an internally impedance-matched GaAs power FET especially designed for use in 5.2 ~ 5.8 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

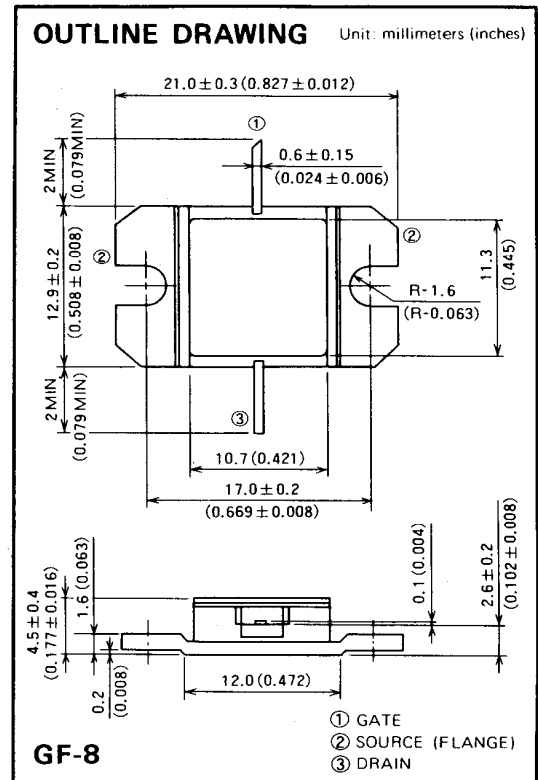
- Class A operation
- Internally matched to 50Ω system
- High output power
 $P_{1dB} = 4 \text{ W (TYP) @ 5.2 ~ 5.8 GHz}$
- High power gain
 $G_{LP} = 10 \text{ dB (TYP) @ 5.2 ~ 5.8 GHz}$
- High power added efficiency
 $\eta_{add} = 32\% \text{ (TYP) @ 5.2 ~ 5.8 GHz, } P_{1dB}$
- Hermetically sealed metal-ceramic package

APPLICATION

5.2 ~ 5.8 GHz band power amplifiers.

QUALITY GRADE

- IG



ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Symbol	Parameter	Ratings	Unit
V _{GD0}	Gate to drain voltage	-15	V
V _{GS0}	Gate to source voltage	-15	V
I _D	Drain current	2.8	A
I _{GR}	Reverse gate current	-10	mA
I _{GF}	Forward gate current	+21	mA
P _T	Total power dissipation *1	25	W
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	-65 ~ +175	°C

*1: T_C = 25°C

RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 1.2A
- R_g = 100Ω
- Refer to Bias Procedure

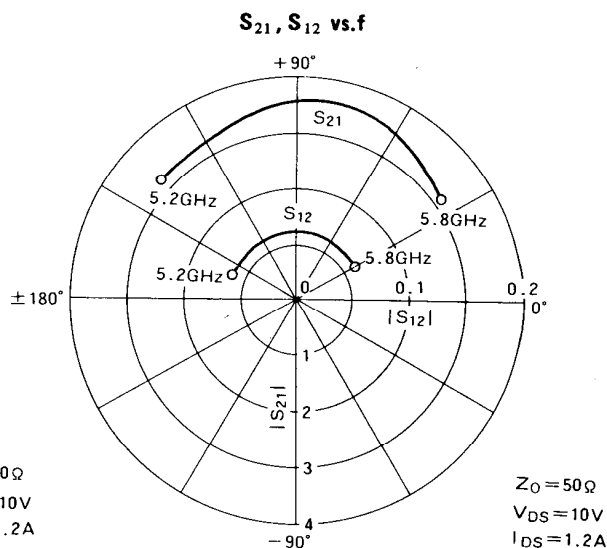
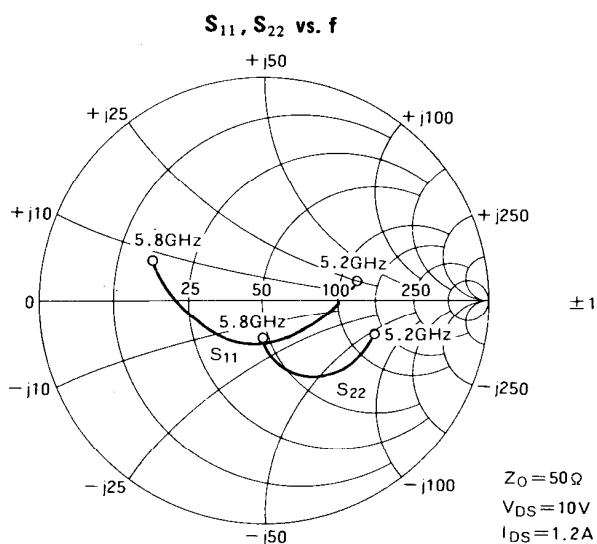
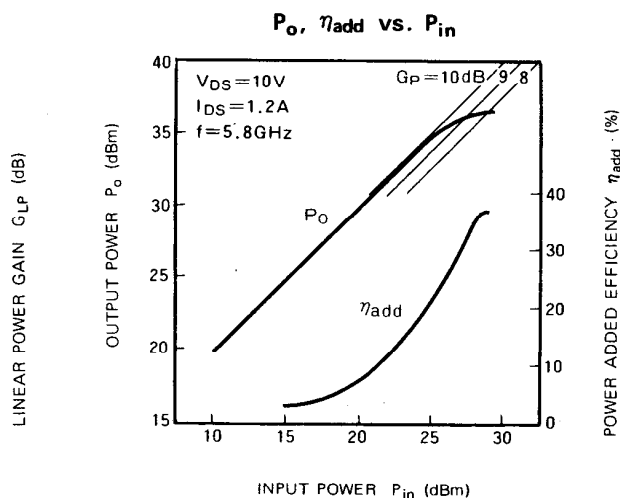
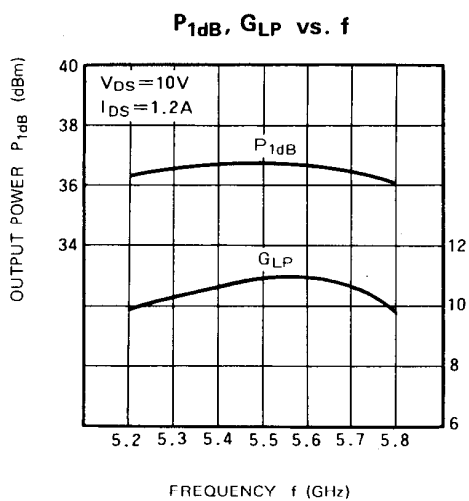
ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{DSS}	Saturated drain current	V _{DS} = 3V, V _{GS} = 0V	—	2.0	2.8	A
g _m	Transconductance	V _{DS} = 3V, I _D = 1.1A	—	1.0	—	S
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} = 3V, I _D = 10mA	-2	-3	-4	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} = 10V, I _D = 1.2A, f = 5.2 ~ 5.8GHz	35	36	—	dBm
G _{LP}	Linear power gain		9	10	—	dB
I _D	Drain current		—	1.1	1.4	A
η _{add}	Power added efficiency		—	33	—	%
R _{th(ch-c)}	Thermal resistance *1	ΔV _f method	—	—	6	°C/W

*1: Channel to case

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TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



S PARAMETERS ($T_a = 25^\circ\text{C}$, $V_{DS} = 10\text{V}$, $I_{DS} = 1.2\text{A}$)

f (GHz)	S Parameters (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
5.2	0.43	13	3.27	138	0.062	156	0.51	-17
5.3	0.30	-3	3.30	122	0.062	138	0.48	-28
5.4	0.19	-41	3.45	105	0.062	120	0.46	-39
5.5	0.18	-99	3.61	89	0.060	102	0.41	-51
5.6	0.28	-152	3.61	73	0.061	78	0.34	-66
5.7	0.39	179	3.45	55	0.059	56	0.26	-80
5.8	0.51	161	3.19	36	0.058	32	0.17	-98