

MGFC39V5258

5.2~5.8GHz BAND 8W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC39V5258 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

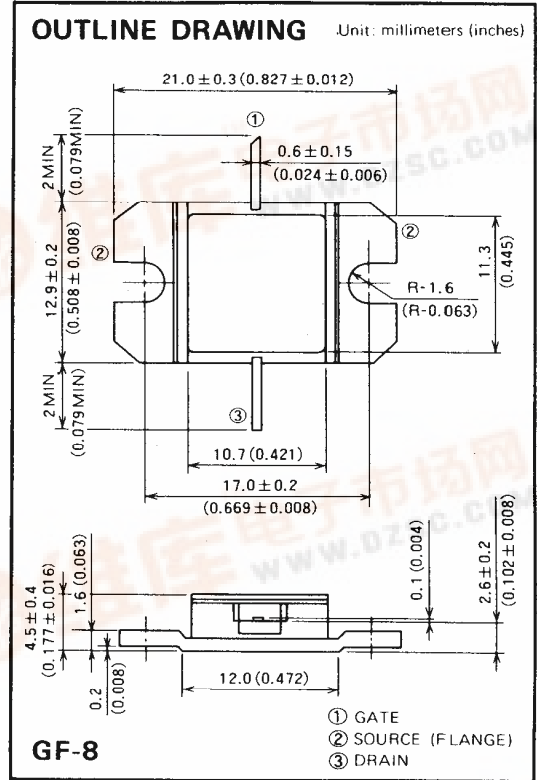
- Class A operation
- Internally matched to 50Ω system
- High output power
 $P_{1dB} = 8\text{ W (TYP) @ } 5.2 \sim 5.8\text{ GHz}$
- High power gain
 $G_{LP} = 9\text{ dB (TYP) @ } 5.2 \sim 5.8\text{ GHz}$
- High power added efficiency
 $\eta_{add} = 30\% \text{ (TYP) @ } 5.2 \sim 5.8\text{ GHz, } P_{1dB}$
- Hermetically sealed metal-ceramic package

APPLICATION

5.2 ~ 5.8 GHz band power amplifiers.

QUALITY GRADE

- IG



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	5.6	A
I _{GR}	Reverse gate current	-20	mA
I _{GF}	Forward gate current	+42	mA
P _T	Total power dissipation * 1	42.8	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 = 2.4A
- R_g = 50Ω
- Refer to Bias Procedure

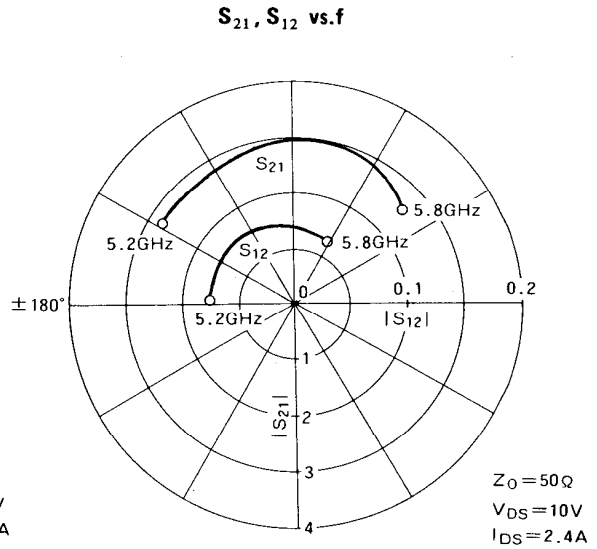
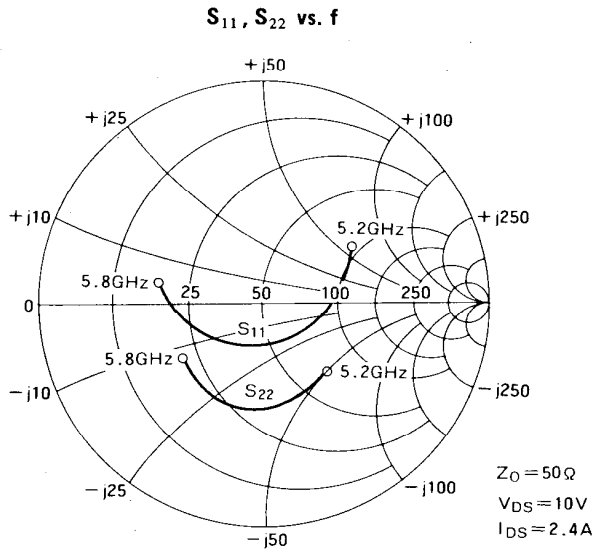
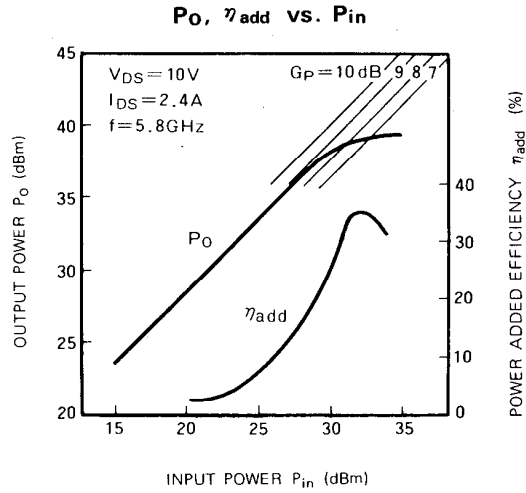
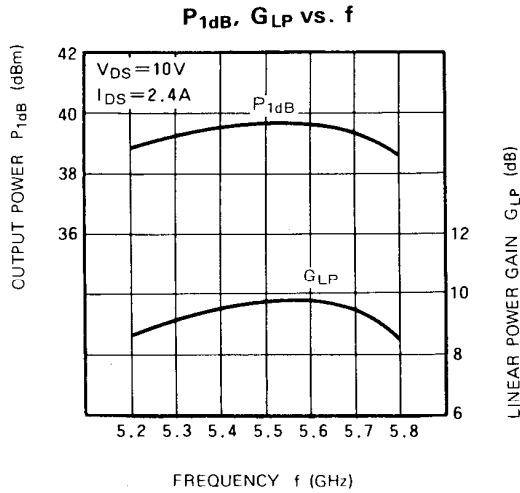
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{DSS}	Saturated drain current	V _{DS} = 3V, V _{GS} = 0V	—	4.0	5.6	A
g _m	Transconductance	V _{DS} = 3V, I _D = 2.2A	—	2.0	—	S
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} = 3V, I _D = 20mA	-2	-3	-4	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} = 10V, I _D = 2.4A, f = 5.2 ~ 5.8GHz	38	39	—	dBm
G _{LP}	Linear power gain		8	9	—	dB
I _D	Drain current		—	2.2	1.4	A
η _{add}	Power added efficiency		—	30	—	%
R _{th(ch-c)}	Thermal resistance * 1		ΔV _f method	—	—	3.5

* 1: Channel to case

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



S PARAMETERS ($T_a=25^\circ\text{C}$, $V_{DS}=10\text{V}$, $I_{DS}=2.4\text{A}$)

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	0.48	32	2.69	148	0.076	178	0.42	-47
5.3	0.36	11	2.80	133	0.077	164	0.43	-61
5.4	0.26	-19	2.79	114	0.077	146	0.45	-77
5.5	0.19	-71	2.99	99	0.076	127	0.47	-95
5.6	0.26	-139	2.98	81	0.070	105	0.48	-113
5.7	0.38	-170	2.95	62	0.068	84	0.46	-130
5.8	0.49	169	2.70	41	0.065	61	0.45	-146