

# 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

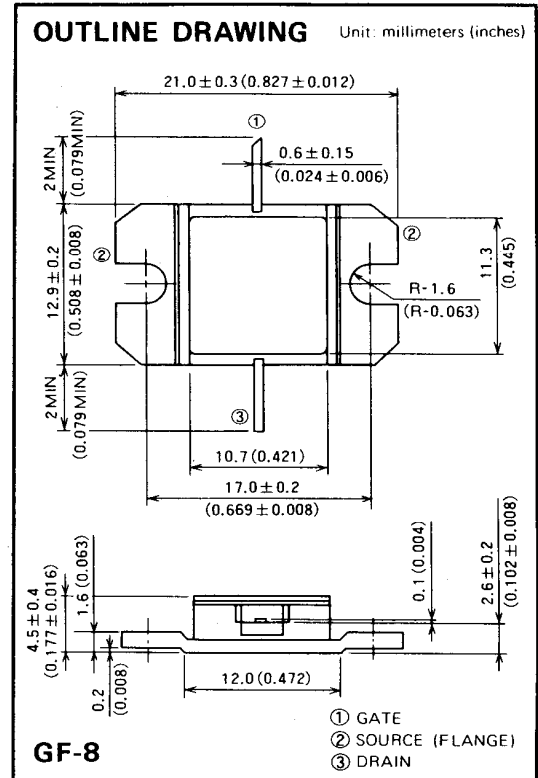
- Class A operation
- Internally matched to 50Ω system
- High output power  
 $P_{1dB} = 4 \text{ W (TYP) @ 5.2 ~ 5.8 GHz}$
- High power gain  
 $G_{LP} = 10 \text{ dB (TYP) @ 5.2 ~ 5.8 GHz}$
- High power added efficiency  
 $\eta_{add} = 32\% \text{ (TYP) @ 5.2 ~ 5.8 GHz, } P_{1dB}$
- Hermetically sealed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

### APPLICATION

5.2 ~ 5.8 GHz band power amplifiers.

### QUALITY GRADE

- IG



### ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25°C)

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

\*1: T<sub>C</sub> = 25°C

### RECOMMENDED BIAS CONDITIONS

- V<sub>DS</sub> = 10V
- I<sub>D</sub> = 1.2A
- R<sub>g</sub> = 100Ω
- Refer to Bias Procedure

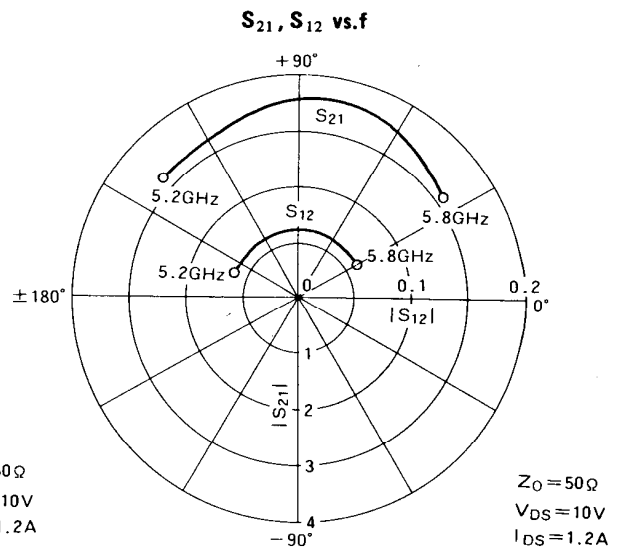
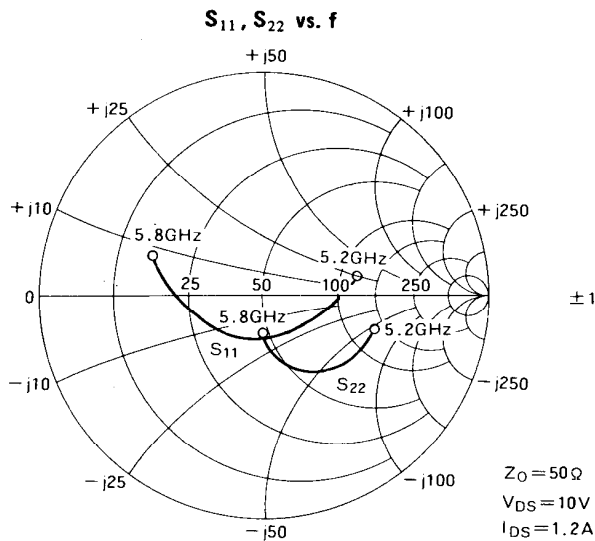
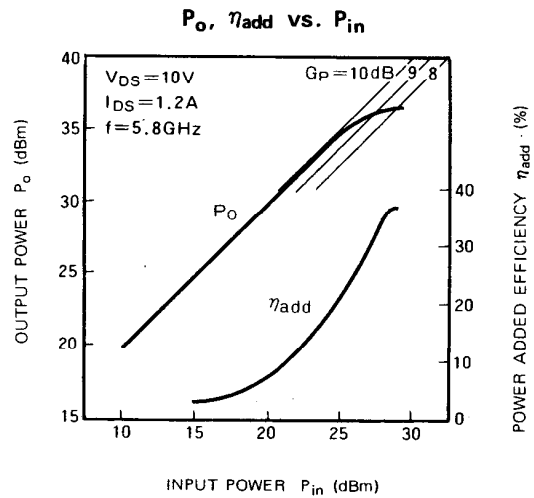
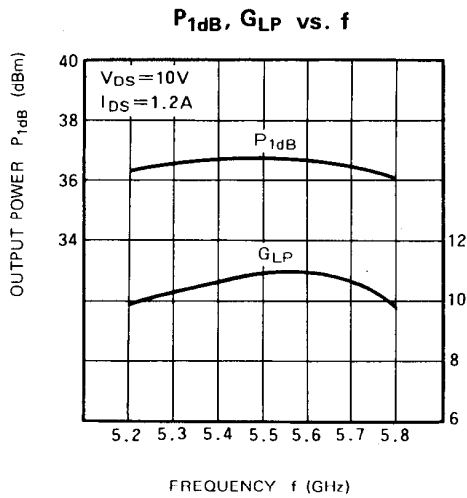
### ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)

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

\*1: Channel to case

**5.2~5.8GHz BAND 4W INTERNALLY MATCHED GaAs FET**

**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