

Plan for production  
discontinue

# MGFC36V4450

## 4.4~5.0GHZ BAND 4W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFC36V4450 is an internally impedance-matched GaAs power FET especially designed for use in 4.4 ~ 5.0 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

### FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power  
 $P_{1dB} = 4\text{ W (TYP) @ }4.4 \sim 5.0\text{ GHz}$
- High power gain  
 $G_{LP} = 10\text{ dB (TYP) @ }4.4 \sim 5.0\text{ GHz}$
- High power added efficiency  
 $\eta_{add} = 32\% \text{ (TYP) @ }4.4 \sim 5.0\text{ GHz}$ ,  $P_{1dB}$
- Hermetically sealed metal-ceramic package

### APPLICATION

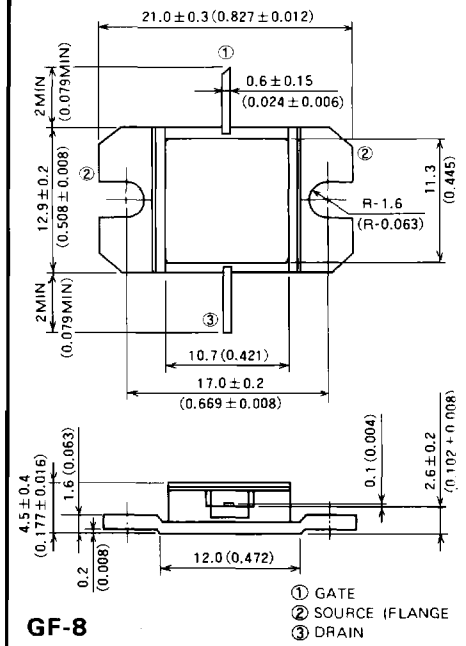
Item-01: 4.4~5.0 GHz band power amplifier  
Item-51: Digital radio communication

### QUALITY GRADE

- IG

### OUTLINE DRAWING

Unit: millimeters (inches)



GF-8

- ① GATE
- ② SOURCE (FLANGE)
- ③ DRAIN

### ABSOLUTE MAXIMUM RATINGS (Ta = 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

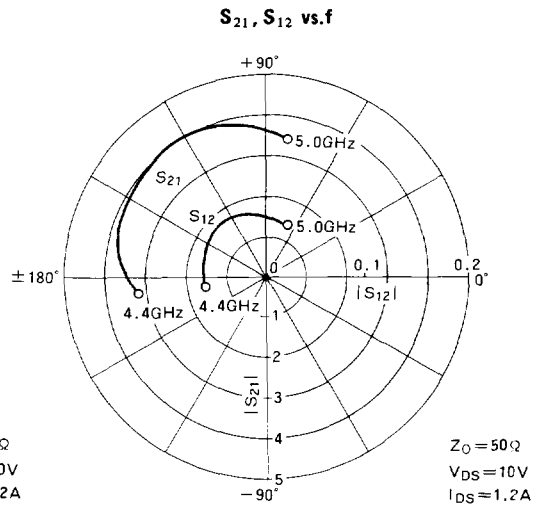
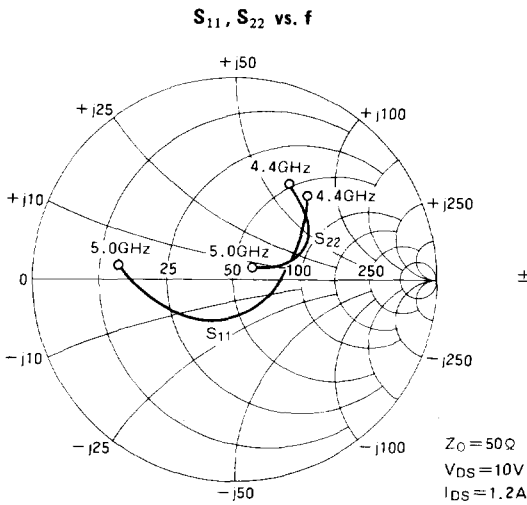
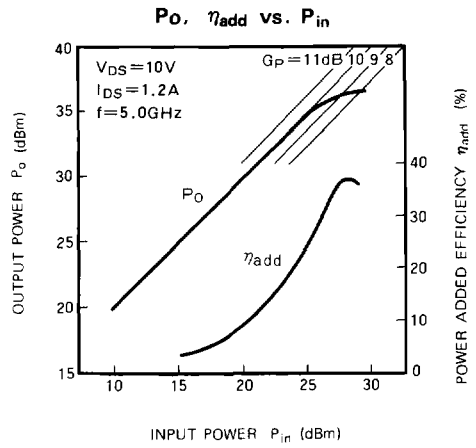
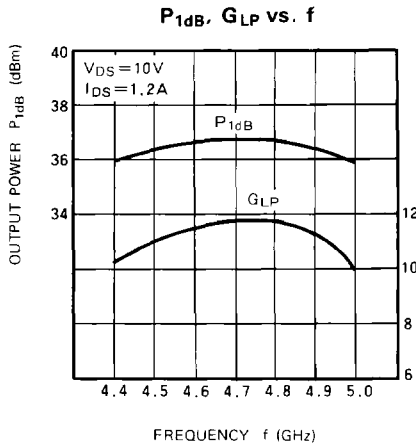
### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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 = 4.4~5.0GHz	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		—	32	—	%	
IM <sub>3</sub>	3rd order IM distortion *1		-42	-45	—	dBc	
R <sub>th(ch-c)</sub>	Thermal resistance *2		ΔV <sub>f</sub> method	—	—	6	°C/W

\*1: Item-51, 2-tone test P<sub>o</sub> = 25 dBm Single Carrier Level Δf = 10 MHz \*2: Channel to case

**4.4~5.0GHz 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.)
4.4	0.53	49	3.19	-171	0.061	-171	0.52	59
4.5	0.32	32	3.71	171	0.061	170	0.50	49
4.6	0.19	-2	3.80	155	0.063	151	0.45	38
4.7	0.17	-88	3.89	137	0.064	132	0.39	28
4.8	0.31	-142	3.85	118	0.064	111	0.28	19
4.9	0.45	-171	3.73	101	0.059	89	0.17	15
5.0	0.59	173	3.40	82	0.056	66	0.11	42