

# MGFK37V4045

## 14.0~14.5GHz BAND 5W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFK37V4045 is an internally impedance matched GaAs power FET especially designed for use in 14.0 ~ 14.5 GHz-band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

### FEATURES

- Internally impedance matched
- High output power  
 $P_{1dB} = 5.5 \text{ W (TYP.) @ } f = 14 \sim 14.5 \text{ GHz}$
- High linear power gain  
 $G_{LP} = 5.5 \text{ dB (TYP.) @ } f = 14 \sim 14.5 \text{ GHz}$
- High power added efficiency  
 $\eta_{add} = 17\% \text{ (TYP.) @ } f = 14 \sim 14.5 \text{ GHz, } P_{1dB}$

### APPLICATION

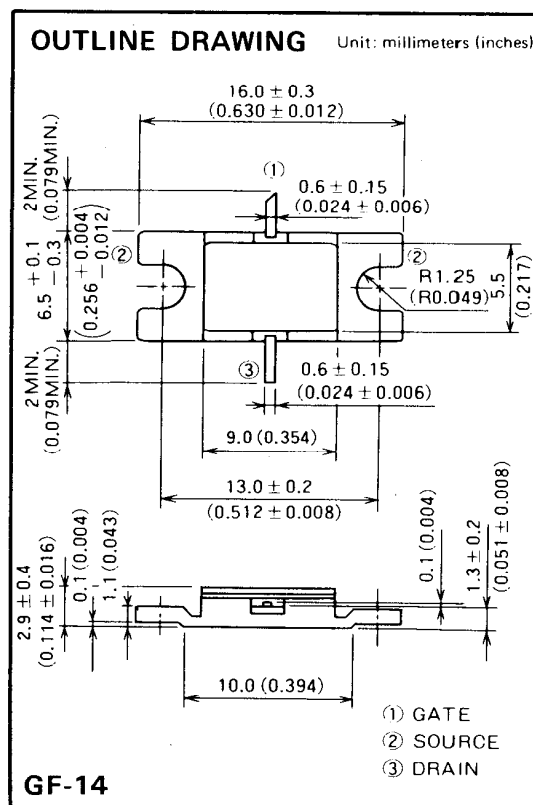
For use in 14.0 ~ 14.5 GHz-band amplifiers

### QUALITY GRADE

- IG

### RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10\text{V}$
- $I_D = 2.4\text{A}$
- Refer to Bias Procedure



### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Symbol	Parameter	Ratings	Unit
$V_{GDO}$	Gate to drain voltage	-15	V
$V_{GSO}$	Gate to source voltage	-15	V
$I_D$	Drain current	6600	mA
$I_{GR}$	Reverse gate current	-17.5	mA
$I_{GF}$	Forward gate current	35	mA
$P_T$	Total power dissipation *1	42.8	W
$T_{ch}$	Channel temperature	175	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-65 ~ +175	$^\circ\text{C}$

\*1:  $T_c = 25^\circ\text{C}$

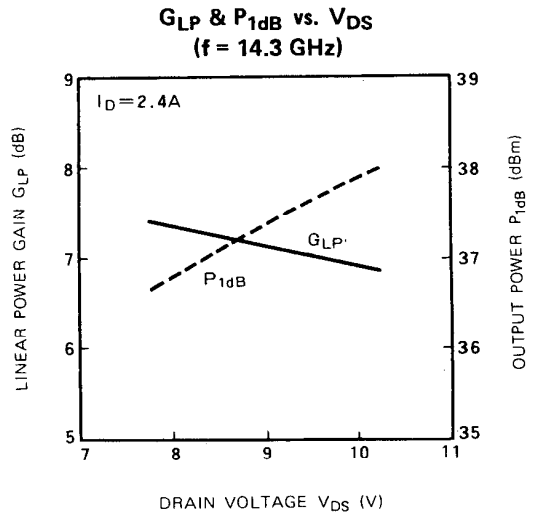
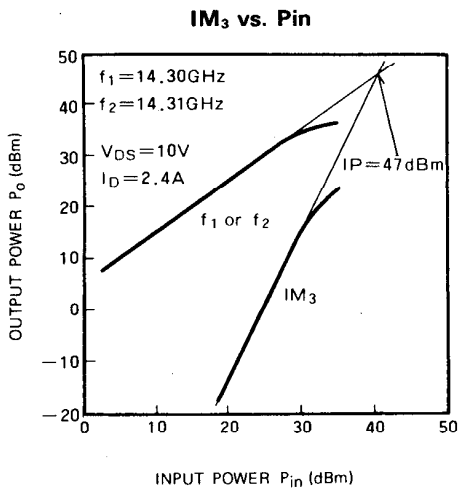
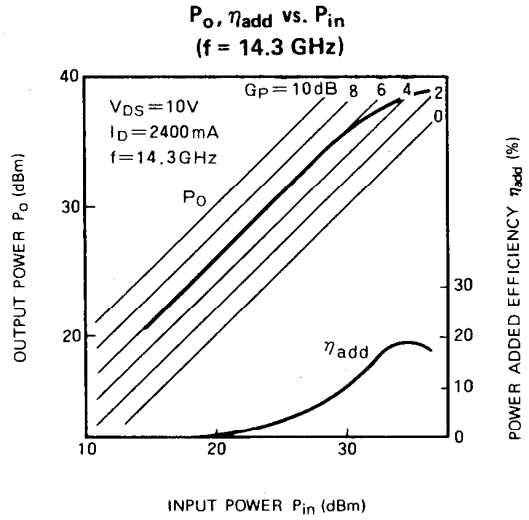
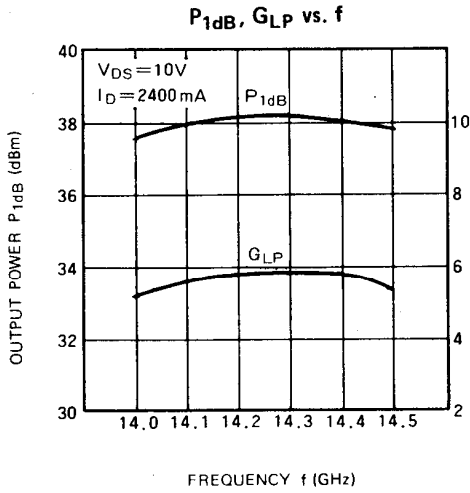
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{DSS}$	Saturated drain current	$V_{DS} = 3\text{V}, V_{GS} = 0\text{V}$	3600	5200	6600	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3\text{V}, I_D = 20\text{mA}$	-2	—	-5	V
$g_m$	Transconductance	$V_{DS} = 3\text{V}, I_D = 2400\text{mA}$	1200	1700	—	mS
$P_{1dB}$	Output power at 1dB gain compression	$V_{DS} = 10\text{V}, I_D = 2400\text{mA}, f = 14.0 \sim 14.5 \text{ GHz}$	36.5	37.4	—	dBm
$G_{LP}$	Linear power gain		4.5	5.5	—	dB
$\eta_{add}$	Power added efficiency		—	17	—	%
$R_{th(ch-c)}$	Thermal resistance *1	$\Delta V_f$ method	—	—	3.5	$^\circ\text{C/W}$

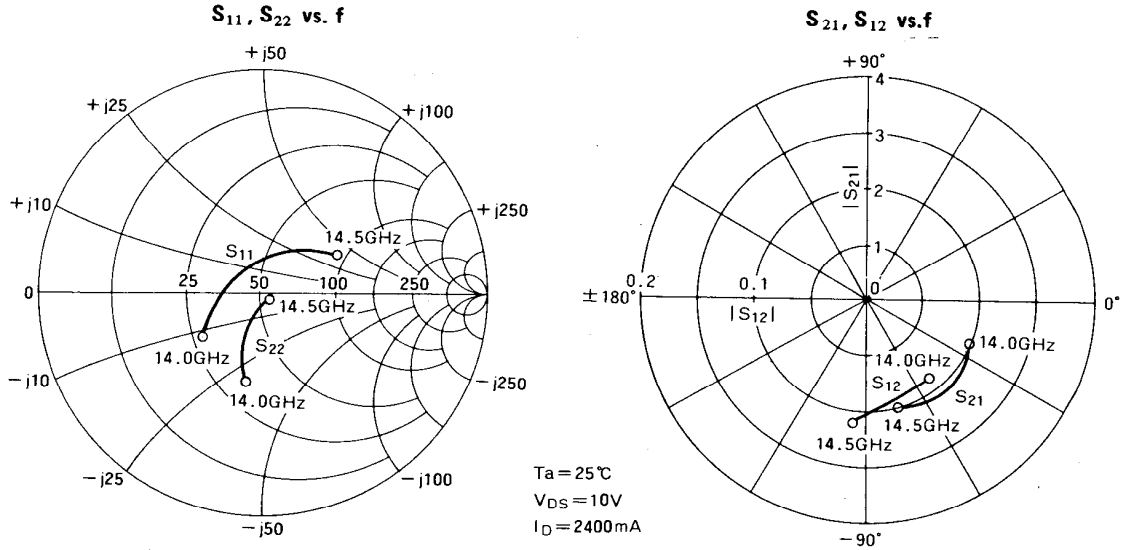
\*1: Channel to case

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



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**S PARAMETERS** ( $T_a = 25^\circ\text{C}$ ,  $V_{DS} = 10\text{V}$ ,  $I_D = 2400\text{mA}$ )

f (GHz)	S Parameters (TYP.)							
	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
14.0	0.336	-143	1.950	-24	0.074	-52	0.396	-99
14.1	0.201	-168	2.018	-34	0.081	-64	0.314	-104
14.2	0.128	145	2.042	-43	0.083	-72	0.228	-103
14.3	0.132	87	2.065	-54	0.094	-83	0.167	-99
14.4	0.247	47	2.018	-64	0.099	-90	0.096	-100
14.5	0.398	26	1.950	-75	0.109	-98	0.053	-49