

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

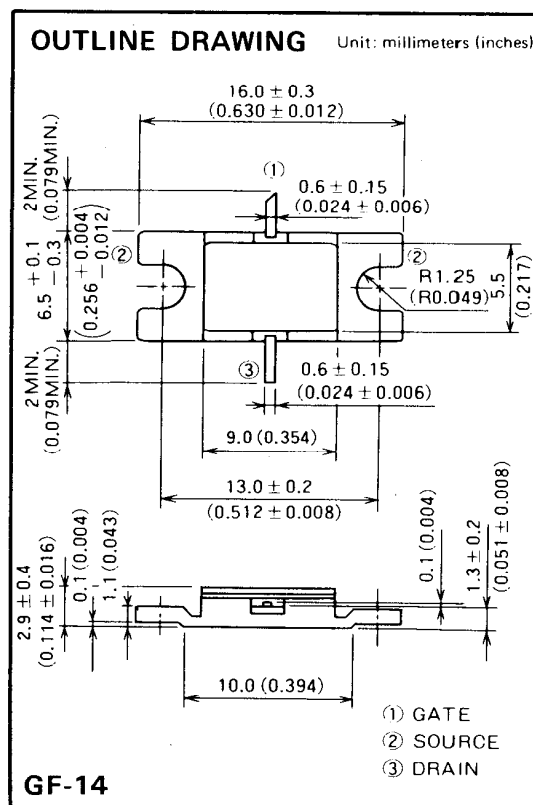
For use in 14.0 ~ 14.5 GHz-band amplifiers

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

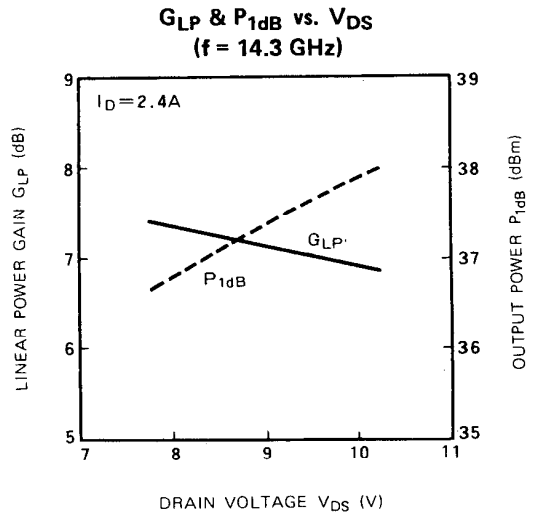
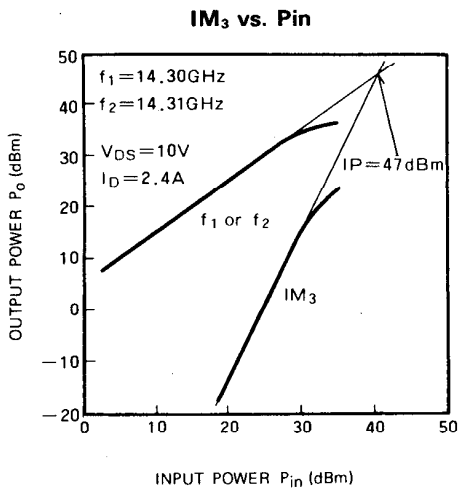
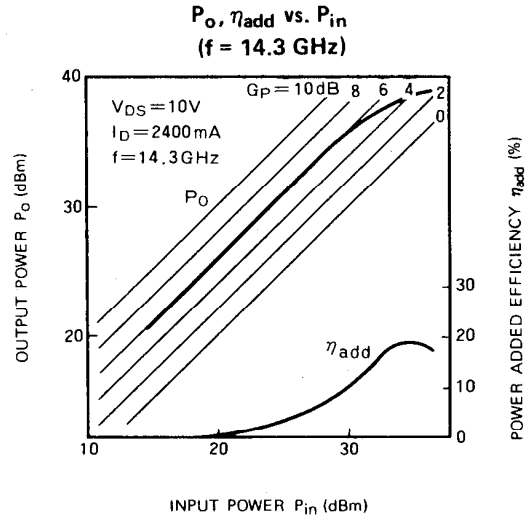
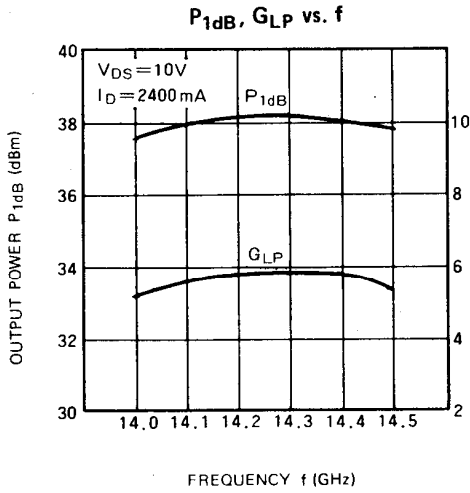
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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
η_{add}	Power added efficiency		—	17	—	%
$R_{th(ch:c)}$	Thermal resistance *1	ΔV_f method	—	—	3.5	$^\circ\text{C/W}$

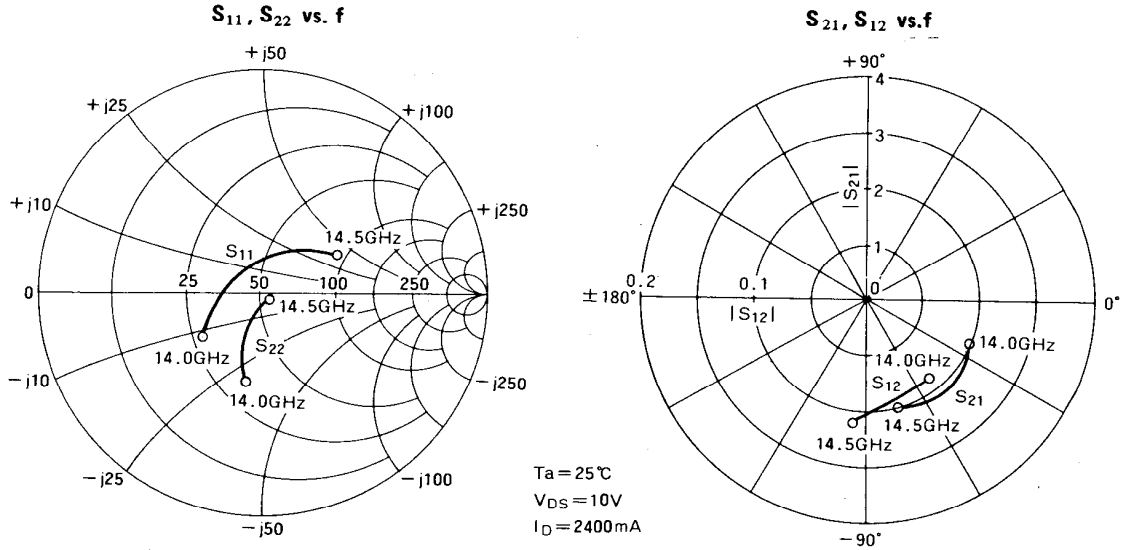
*1: Channel to case

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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 ₁₁		S ₂₁		S ₁₂		S ₂₂	
	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