

MGFK35V4045

14.0~14.5GHz BAND 3W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFK35V4045 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
 $P_{1dB} = 3.5 \text{ W (TYP.) @ } f = 14 \sim 14.5 \text{ GHz}$
- High linear power gain
 $G_{LP} = 6.5 \text{ dB (TYP.) @ } f = 14 \sim 14.5 \text{ GHz}$
- High power added efficiency
 $\eta_{add} = 20\% \text{ (TYP.) @ } f = 14 \sim 14.5 \text{ GHz, } P_{1dB}$

APPLICATION

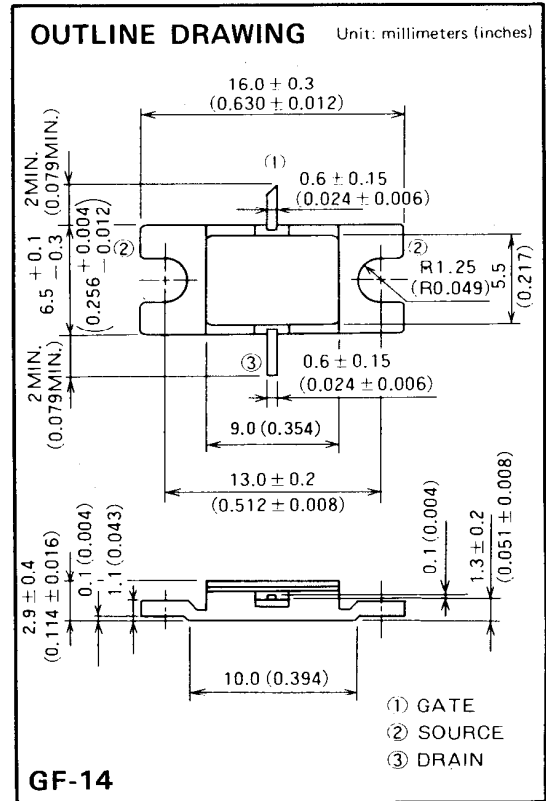
For use in 14.0 ~ 14.5 GHz-band amplifiers

QUALITY GRADE

- IG

RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10\text{V}$
- $I_D = 1.2\text{A}$
- Refer to Bias Procedure



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

Symbol	Parameter	Rating	Unit
V_{GDO}	Gate to drain voltage	-15	V
V_{GSO}	Gate to source voltage	-15	V
I_D	Drain current	3500	mA
I_{GR}	Reverse gate current	-9.0	mA
I_{GF}	Forward gate current	18.0	mA
P_T	Total power dissipation *1	33.3	W
T_{ch}	Channel temperature	175	$^\circ\text{C}$
T_{stg}	Storage temperature	-65 ~ +175	$^\circ\text{C}$

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

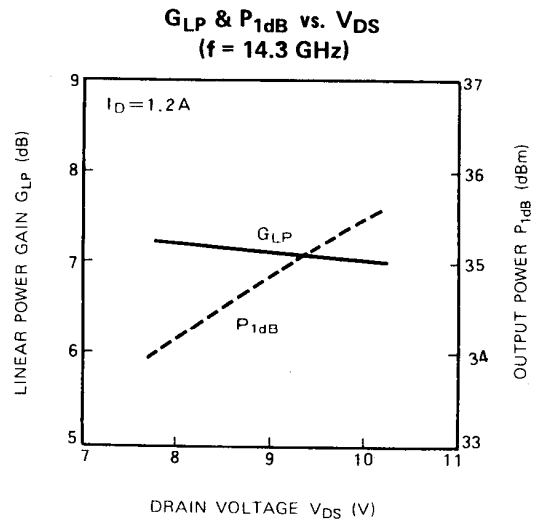
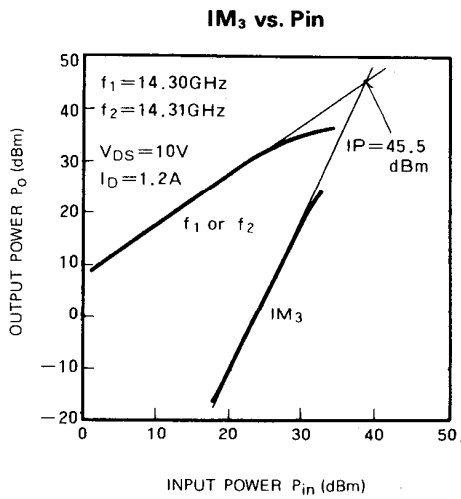
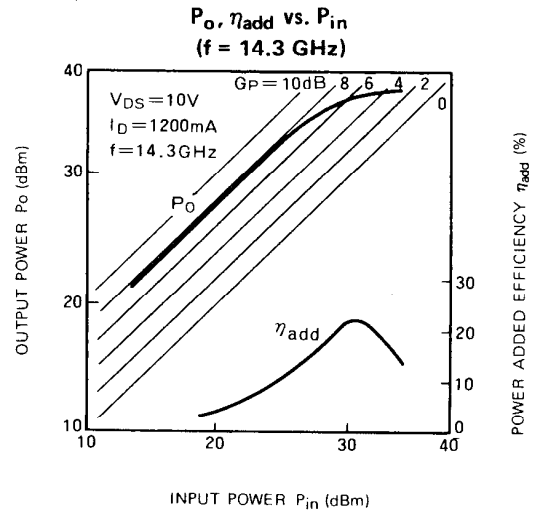
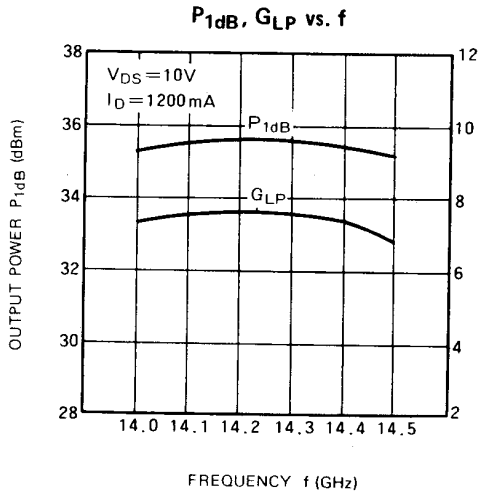
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{BSS}	Saturated drain current	$V_{DS} = 3\text{V, } V_{GS} = 0\text{V}$	2000	2700	3500	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3\text{V, } I_D = 10\text{mA}$	-2	—	-5	V
g_m	Transconductance	$V_{DS} = 3\text{V, } I_D = 1200\text{mA}$	700	1000	—	mS
P_{1dB}	Output power at 1dB gain compression	$V_{DS} = 10\text{V, } I_D = 1200\text{mA, } f = 14.0 \sim 14.5\text{GHz}$	34.5	35.4	—	dBm
G_{LP}	Linear power gain		5.5	6.5	—	dB
η_{add}	Power added efficiency		—	20	—	%
$R_{th(ch-c)}$	Thermal resistance *1		ΔV_f method	—	—	4.5

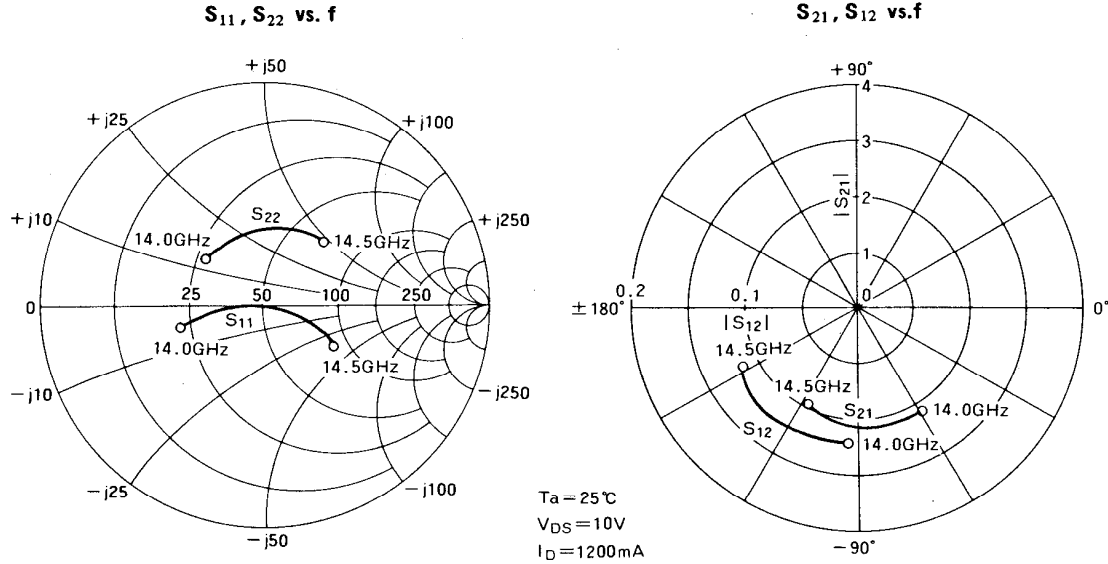
*1: Channel to case

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



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S PARAMETERS (Ta = 25°C, V_{DS} = 10V, I_D = 1200mA)

f (GHz)	S Parameters (TYP.)							
	S ₁₁		S ₁₂		S ₂₁		S ₂₂	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
14.0	0.391	-164	2.089	-58	0.137	-94	0.324	139
14.1	0.224	-173	2.163	-70	0.139	-105	0.322	117
14.2	0.091	176	2.188	-82	0.141	-118	0.331	98
14.3	0.052	-3	2.163	-93	0.143	-130	0.342	78
14.4	0.198	-22	2.113	-105	0.140	-141	0.362	62
14.5	0.337	-32	1.995	-117	0.127	-152	0.397	47