

DESCRIPTION

The MGFK30MXXXX products are internally impedance matched devices for use in Ku-band power amplifier applications.

This family of devices use high performance flip chip style GaAs die which offer excellent electrical and thermal resistance characteristics.

FEATURES

- Internally matched to 50Ω
- Flip-chip mounted
- High output power
- High linear power gain
- High power added efficiency
- High linearity

FREQUENCIES

TYPE NO.	FREQUENCY
MGFK30M4045	14.0 ~ 14.5 GHz

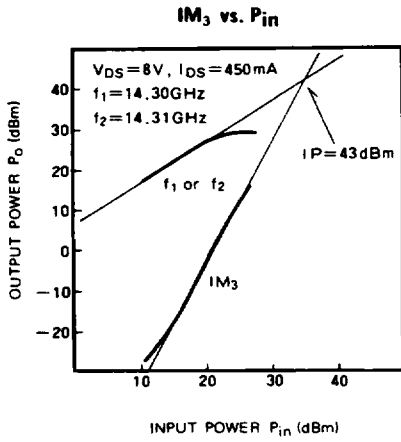
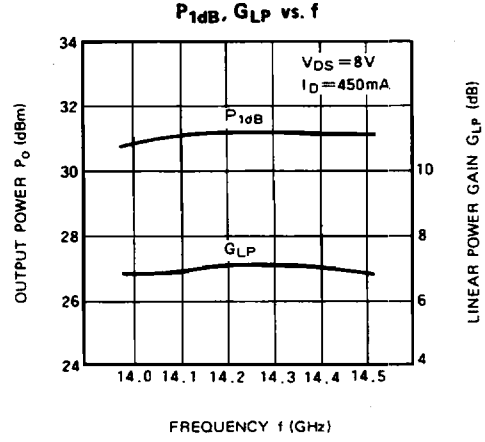
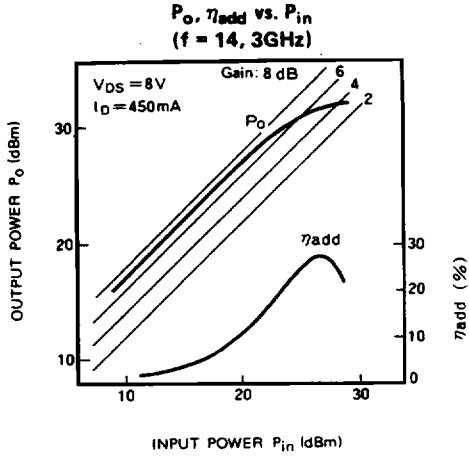
ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETER	RATINGS	UNIT
V_{GDO}	Gate to drain voltage	-14	V
V_{GSO}	Gate to source voltage	-14	V
I_D	Drain current	1.2	A
I_{GR}	Reverse gate current	-3.0	mA
I_{GF}	Forward gate current	6.0	mA
P_T	Total power dissipation	7.5	W
T_{ch}	Channel temperature	175	$^\circ\text{C}$
T_{stg}	Storage temperature	-55 ~ +175	$^\circ\text{C}$
$R_{th(ch-c)}$	Thermal resistance	20	$^\circ\text{C/W}$

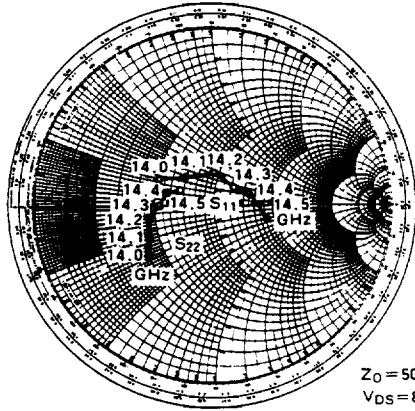
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
I_{DSS}	Saturated drain current	$V_{DS} = 3V, V_{GS} = 0V$	600	900	1200	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3V, I_D = 1mA$	-2		-5	V
g_m	Transconductance	$V_{DS} = 3V, I_D = 450mA$	210	300		mS
P_{1dB}	Output power at 1dB gain compression	$V_{DS} = 8V, I_D = 450mA, f = 14.0\text{ GHz} \sim 14.5\text{ GHz}$	0.9	1.1		W
G_{LP}	Linear power gain		6.0	7.0		dB
η_{add}	Power added efficiency			24		%
R_g	Gate Resistance			500		Ω

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

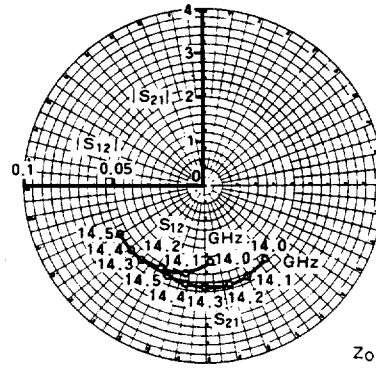


S₁₁, S₂₂ vs. f



Z₀ = 50 Ω
V_{DS} = 8V
I_D = 450 mA

S₁₂, S₂₁ vs. f



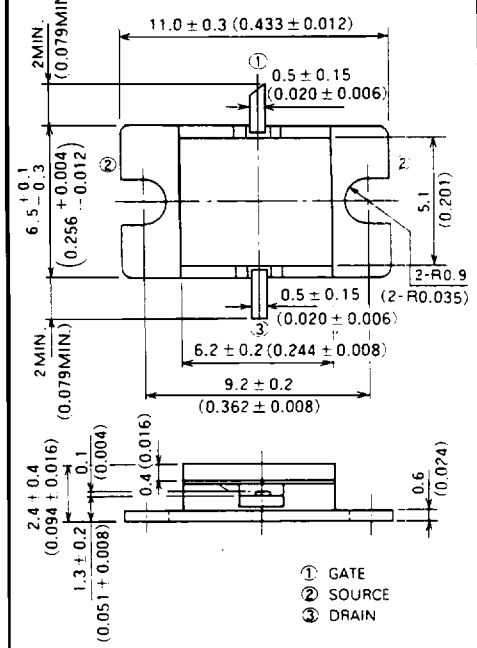
Z₀ = 50 Ω
V_{DS} = 8V
I_D = 450 mA

S PARAMETERS (T_a = 25 °C, V_{DS} = 8V, I_D = 450 mA)

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	0.346	154	0.088	- 85	2.194	- 51	0.469	-143
14.1	0.227	133	0.100	-102	2.251	- 66	0.414	-152
14.2	0.205	91	0.105	-118	2.286	- 76	0.376	-168
14.3	0.166	45	0.111	-128	2.312	- 90	0.311	-180
14.4	0.223	19	0.109	-138	2.234	-101	0.275	164
14.5	0.316	-14	0.110	-149	2.192	-113	0.212	157

OUTLINE DRAWING

Unit: millimeters (inches)



ORDERING INFORMATION

Part Number	Grade	Tested at	P _{1dB}	Notes
MGFK30M4045-01	Industrial	14.0 - 14.5 GHz	30 dBm	