

MGFK35V2228

12.2~12.8GHz BAND 3W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFK35V2228 is an internally impedance matched GaAs power FET especially designed for use in 12.2 ~ 12.8 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Internally impedance matched
- High output power
 $P_{1dB} = 3.5 \text{ W (TYP.) @ } f = 12.2 \sim 12.8 \text{ GHz}$
- High linear power gain
 $G_{LP} = 7.0 \text{ dB (TYP.) @ } f = 12.2 \sim 12.8 \text{ GHz}$
- High power added efficiency
 $\eta_{add} = 26\% \text{ (TYP.) @ } f = 12.2 \sim 12.8 \text{ GHz, } P_{1dB}$

APPLICATION

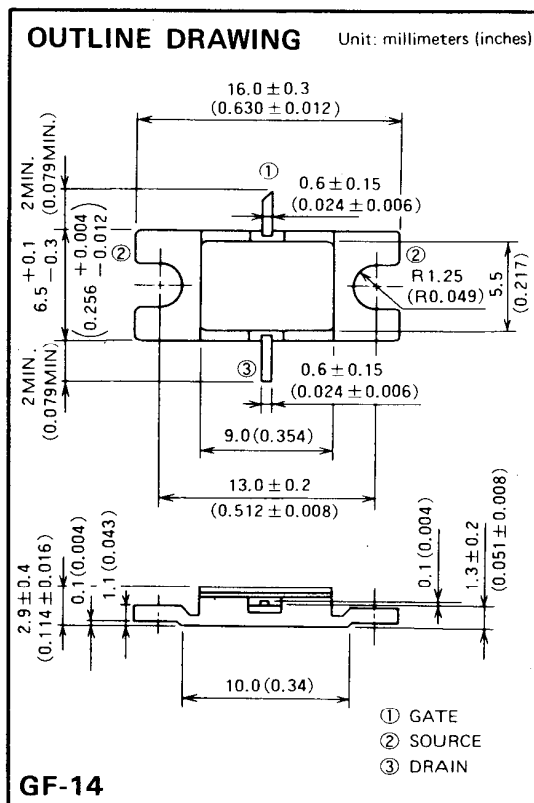
For use in 12.2 ~ 12.8 GHz band amplifiers

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	2.8	A
I_{GR}	Reverse gate current	-9.0	mA
I_{GF}	Forward gate current	18.0	mA
P_T	Total power dissipation *1	27.2	W
T_{ch}	Channel temperature	175	$^\circ\text{C}$
T_{stg}	Storage temperature	-65 ~ +175	$^\circ\text{C}$

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

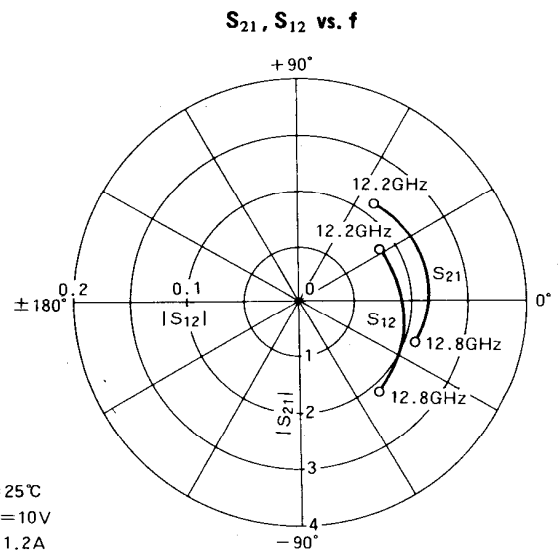
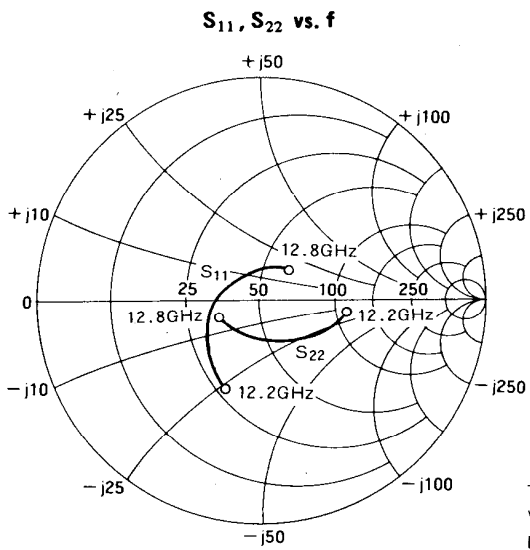
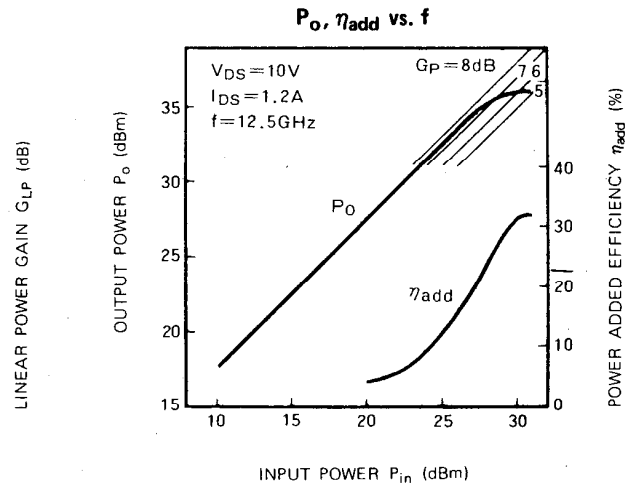
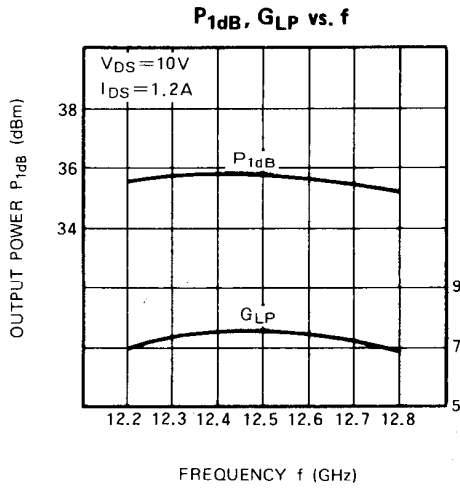
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	$V_{DS} = 3\text{V, } V_{GS} = 0\text{V}$	—	2.0	2.8	A
g_m	Transconductance	$V_{DS} = 3\text{V, } I_D = 1.1\text{A}$	—	1.0	—	S
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3\text{V, } I_D = 10\text{mA}$	-2	-3	-4	V
P_{1dB}	Output power at 1dB gain compression	$V_{DS} = 10\text{V, } I_D = 1.2\text{A, } f = 12.2 \sim 12.8\text{GHz}$	34.5	35.5	—	dBm
G_{LP}	Linear power gain		6.0	7.0	—	dB
η_{add}	Power added efficiency		—	26	—	%
$R_{th(ch-c)}$	Thermal resistance *1	ΔV_f method	—	—	5.5	$^\circ\text{C/W}$

*1: Channel to case

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



$T_a = 25^\circ\text{C}$
 $V_{DS} = 10\text{V}$
 $I_D = 1.2\text{A}$

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.)
12.2	0.413	-112	2.22	53	0.083	33	0.377	-8
12.3	0.345	-131	2.30	42	0.085	21	0.333	-20
12.4	0.267	-158	2.31	32	0.090	10	0.254	-36
12.5	0.222	178	2.35	20	0.093	-4	0.205	-61
12.6	0.149	134	2.30	5	0.099	-20	0.192	-95
12.7	0.152	89	2.25	-7	0.102	-32	0.195	-126
12.8	0.191	44	2.17	-20	0.107	-49	0.206	-156