MGFK25V4045

14.0~14.5GHz BAND 0.3W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFK25V4045 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
- Flip-chip mounted
- High output power
  P_{1dB} = 0.3 W (TYP.) @ f = 14 ~ 14.5 GHz
- High linear power gain
  G_{LP} = 9dB (TYP.) @ f = 14 ~ 14.5 GHz
- High power added efficiency
  η_{add} = 25% (TYP.) @ f = 14 ~ 14.5 GHz, P_{1dB}

APPLICATION

For use in 14.0 ~ 14.5 GHz-band amplifiers.

QUALITY GRADE

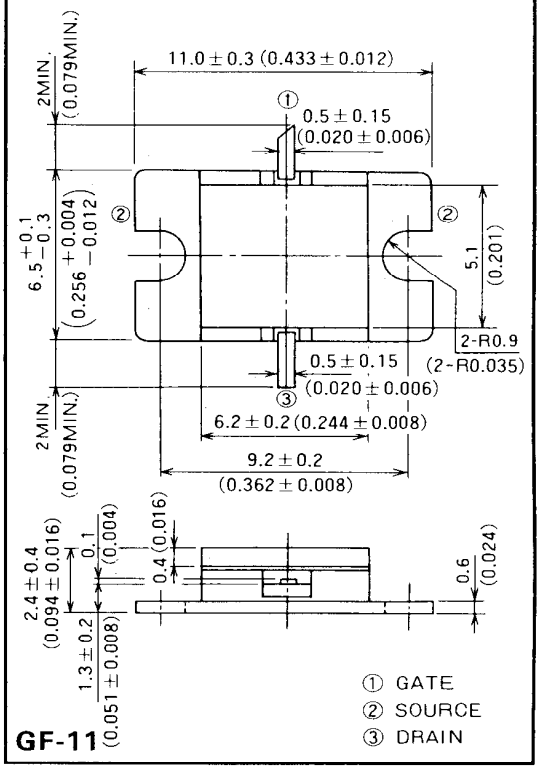
- IG

RECOMMENDED BIAS CONDITIONS

- V_{DS}=8V
- I_D=80mA
- Refer to Bias Procedure

OUTLINE DRAWING

Unit: millimeters (inches)



ABSOLUTE MAXIMUM RATINGS (T_a=25°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	500	mA
I_{GR}	Reverse gate current	−1.0	mA
I_{GF}	Forward gate current	1.0	mA
P_T	Total power dissipation *1	2.7	W
Tch	Channel temperature	175	℃
Tstg	Storage temperature	−65~+175	℃

*1: Tc=25°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS}=3V, V_{GS}=0V	—	200	500	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=150mA	—	100	—	mS
P_{1dB}	Output power at 1dB gain compression	V_{DS}=8V, I_D=150mA, f=14.0~14.5GHz	23.0	24.8	—	dBm
G_{LP}	Linear power gain		7.0	9.0	—	dB
η_{add}	Power added efficiency		—	25	—	%
Rth(ch-c)	Thermal resistance *1	ΔV_f method	—	—	40	℃/W

*1: Channel to case

MITSUBISHI ELECTRIC

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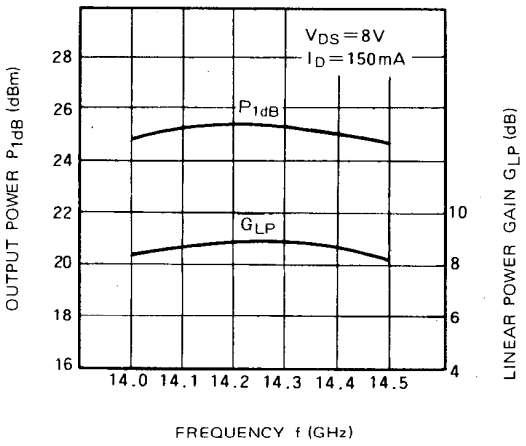
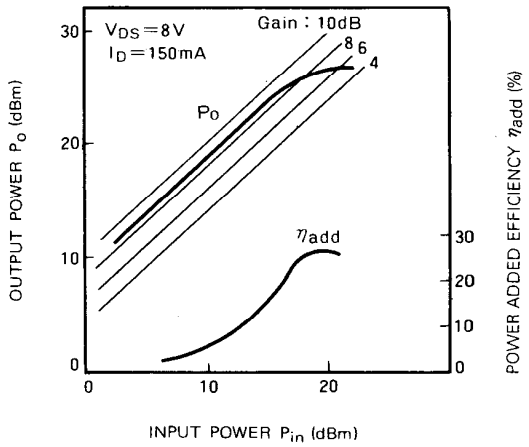
TYPICAL CHARACTERISTICS (Ta=25°C)

P_{1dB}, G_{LP} vs. f



P_o, η_{add} vs. P_{in} (f = 14.3 GHz)



IM_3 vs. P_{in}