MGFK30V4045

14.0-14.5GHz BAND 1W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFK30V4045 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
  P1dB = 1.1W(TYP.) @f=14.0-14.5GHz
・High linear power gain
  GLP = 8.0dB(TYP.) @f=14.0-14.5GHz
・High power added efficiency
  P.A.E.＝24%（TYP.) @f=14.0-14.5GHz

APPLICATION

・For use in 14.0-14.5GHz band amplifiers

QUALITY GRADE

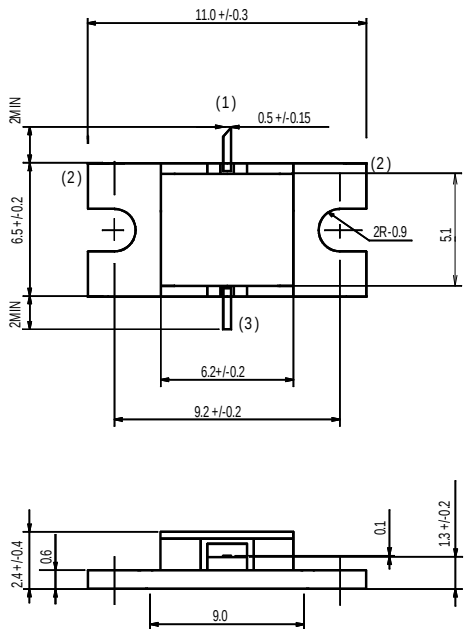
・IG

RECOMMENDED BIAS CONDITIONS

VDS =8 (V)
ID =350 (mA)
Refer to Bias Procedure

OUTLINE DRAWING

Unit : millimeters



GF-11

(1) GATE
(2) SOURCE (FLANGE)
(3) DRAIN

< Keep safety first in your circuit designs! >

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them.Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1)placement of substitutive, auxiliary circuits, (2)use of non-flammable material or (3)prevention against any malfunction or mishap.

ABSOLUTE MAXIMUM RATINGS (Ta=25deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	1000	mA
IGR	Reverse gate current	-3	mA
IGF	Forward gate current	5	mA
PT *1	Total power dissipation	11	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

*1 : Tc=25deg.C

ELECTRICAL CHARACTERISTICS (Ta=25deg.C)

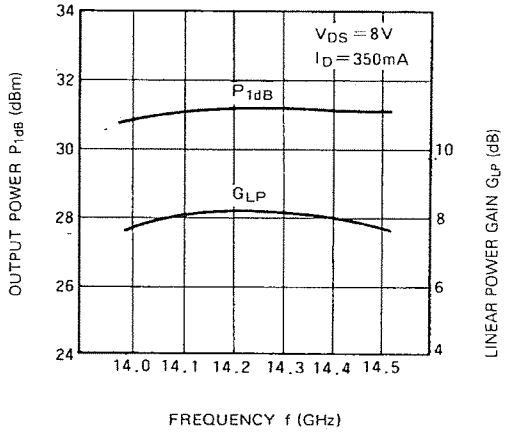
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	800	1000	mA
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=2mA	-2	-	-5	V
gm	Transconductance	VDS=3V,ID=350mA	-	300	-	mS
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=350mA, f=14.0 - 14.5GHz	29.5	31	-	dBm
GLP	Linear power gain		7.0	8.0	-	dB
P.A.E.	Power added efficiency		-	24	-	%
Rth (Ch-C)	Thermal resistance *1	Delta Vf method	-	-	20	deg.C/W

*1 : Channel to case

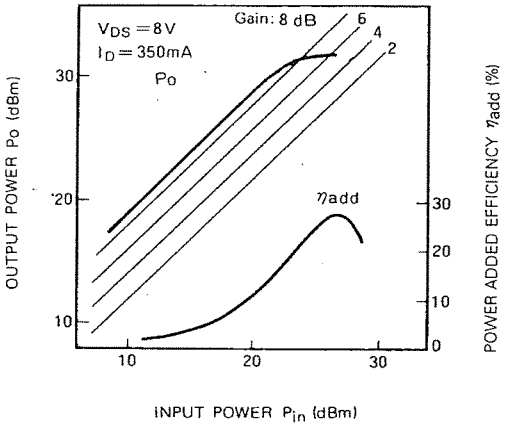
14.0~14.5GHz BAND 1W INTERNALLY MATCHED GaAs FET

TYPICAL CHARACTERISTICS (T_a=25°C)

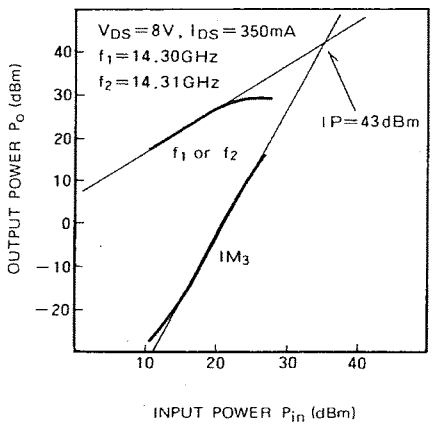
P_{1dB}, G_{LP} vs. f



P_o, η_{add} vs. P_{in} (f = 14, 3GHz)



IM_3 vs. P_{in}



Requests Regarding Safety Designs

Mitsubishi Electric constantly strives to raise the level of its quality and reliability. Despite these concerted efforts, however, there will be occasions when our semiconductor products suffer breakdowns, malfunctions or other problems. In view of this reality, it is requested that every feasible precaution be taken in the pursuit of redundancy design, malfunction prevention design and other safety-related designs, to prevent breakdowns or malfunctions in our products from resulting in accidents involving people, fires, social losses or other problems, thereby upholding the highest levels of safety in the products when in use by customers.

Matters of Importance when Using these Materials

1. These materials are designed as reference materials to ensure that all customers purchase Mitsubishi Electric semiconductors best suited to their specific use applications. Please be aware, however, that the technical information contained in these materials does not comprise consent for the execution or use of intellectual property rights or other rights owned by Mitsubishi Electric Corporation.
2. Mitsubishi Electric does not assume responsibility for damages resulting from the use of product data, graphs, charts, programs, algorithms or other applied circuit examples described in these materials, or for the infringement of the rights of third-party owners resulting from such use.
3. The data, graphs, charts, programs, algorithms and all other information described in these materials were current at the issue of these materials, with Mitsubishi Electric reserving the right to make any necessary updates or changes in the products or specifications in these materials without prior notice. Before purchasing Mitsubishi Electric semiconductor products, therefore, please obtain the latest available information from Mitsubishi Electric directly or an authorized dealer.
4. Every possible effort has been made to ensure that the information described in these materials is fully accurate. However, Mitsubishi Electric assumes no responsibility for damages resulting from inaccuracies occurring within these materials.
5. When using the product data, technical contents indicated on the graphs, charts, programs or algorithms described in these materials, assessments should not be limited to only the technical contents, programs and algorithm units. Rather, it is requested that ample evaluations be made of each individual system as a whole, with the customer assuming full responsibility for decisions on the propriety of application. Mitsubishi Electric does not accept responsibility for the propriety of application.
6. The products described in these materials, with the exception of special mention concerning use and reliability, have been designed and manufactured with the purpose of use in general electronic machinery. Accordingly these products have not been designed and manufactured with the purpose of application in machinery or systems that will be used under conditions that can affect human life, or in machinery or systems used in social infrastructure that demand a particularly high degree of reliability. When considering the use of the products described in these materials in transportation machinery (automobiles, trains, vessels), for objectives related to medical treatment, aerospace, nuclear power control, submarine repeaters or systems or other specialized applications, please consult with Mitsubishi Electric directly or an authorized dealer.
7. When considering use of products for purposes other than the specific applications described in these materials, please inquire at Mitsubishi Electric or an authorized dealer.
8. The prior consent of Mitsubishi Electric in writing is required for any reprinting or reproduction of these materials.
9. Please direct any inquiries regarding further details of these materials, or any other comments or matters of attention, to Mitsubishi Electric or an authorized dealer.