< GaN HEMT for satellite communication (SATCOM) earth station>

MGFK45G3745A

Ku band internally matched power GaN HEMT
13.75 － 14.5 GHz BAND / 30W Multi-carrier operable

DESCRIPTION

The MGFK45G3745A, GaN HEMT with an N-channel schottky gate, is designed for Ku-band applications with multi-carrier operation.

FEATURES

- High voltage operation : VDS=24V
- High output power : Po=45.3dBm (TYP.) @Pin=39dBm
- High efficiency : PAE=30% (TYP.) @Pin=39dBm
- Wide offset frequency : Up to 400MHz
- Designed for use in Class AB linear amplifiers

APPLICATION

- Amplifier for Ku-band SATCOM

QUALITY

- General & Industrial

Packaging

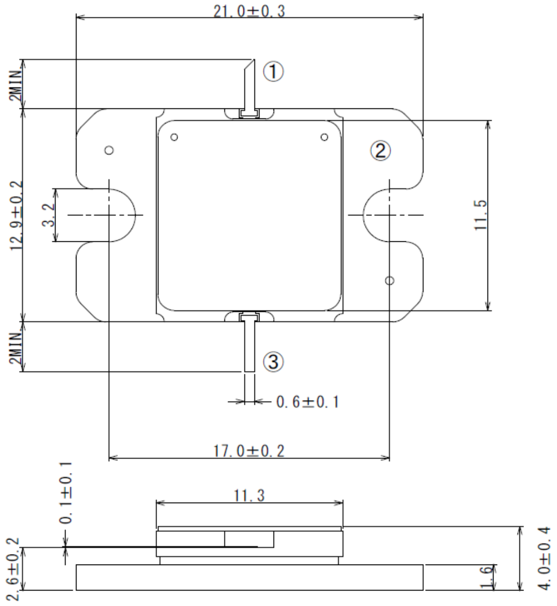
- Individual case

RECOMMENDED BIAS CONDITIONS

- Vds=24V
- Ids=0.72A
- Rg=90Ω

OUTLINE DRAWING

Unit : millimeters



GF-68

① GATE
② SOURCE (FLANGE)
③ DRAIN

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
Vgso	Gate to Source Voltage at Operating	-10	V
Vds	Drain to source voltage	27	V
IGF	Forward gate current	50	mA
IGR	Reverse gate current	-12	mA
τ	Screw torque	49	N･cm
PT*1	Total power dissipation	112	W
Pin	Input power	≦41	dBm
Tch	Channel temperature	250	°C
Tstg	Storage temperature	-55 to +125	°C
Tc	Maximum case operating temperature	100	°C

*1:Tc=25°C

Recommended operating Condition

Symbol	Parameter	Limit	Unit
Tc	Maximum case operating temperature	85	℃
Vds	Drain to source voltage	≦24	V
IDQ	Drain current without RF drive	0.72	A

Electrical characteristics (Ta=25°C)

Parameter	Symbol	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
Gate to source cut-off voltage	VGS(off)	VDS=24V,ID=14.4mA	-1	-	-5	V
Output Power	Pout *2	VDS=24V,ID(RF off)=0.72A f=13.75 – 14.5GHz *2 : Pin=39dBm *3 : Pin=24dBm	44.3	45.3	-	dBm
Power added efficiency	PAE *2		-	30	-	%
Linear power gain	GLP *3		8.5	9.5	-	dB
3rd Order Intermodulation distortion	IM3	Two-tone Test,Po=36.3dBm (Single Carrier Level) Δ f=5MHz(IM3),Δ f=200MHz(IM3-2), Δ f=400MHz(IM3-3)	-25	-	-	dBc
	IM3-2		-24	-	-	
	IM3-3		-24	-	-	
Thermal resistance	Rth(ch-c) *4	ΔVf method	-	1.6	2.0	°C/W

*4 :Channel-case

Specifications are subject to change without notice

ESD *5	Class 0	-199~

*5 :Based on EIAJ ED-4701 C-111A(C=100pF,R=1.5kΩ)

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