

< Small Signal InGaP HBT >

# MGF3022AM

4pin flat lead package

## DESCRIPTION

The MGF3022AM InGaP-HBT(Heterojunction Bipolar Transistor) is designed for use in L to C band amplifiers.

The 4pin flat lead package is small-thin size, and offers high cost performance.

## FEATURES

$G_{LP}=18\text{dB}$ ,  $P_{1\text{dB}}=16.5\text{dBm}$ ,  $OIP_3=32\text{dBm}$   
@  $f=2.4\text{GHz}$ ,  $V_{CE}=3\text{V}$ ,  $I_C=33\text{mA}$

## APPLICATION

L to C band low noise amplifiers

## QUALITY GRADE

GG

## MITSUBISHI Proprietary

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## RECOMMENDED BIAS CONDITIONS

$V_{CE}=3\text{V}$ ,  $I_C=33\text{mA}$

## RoHS COMPLIANT

MGF3022AM is a RoHS2 compliant product.

## ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VCBO	Collector to Base voltage	12.0V	V
VCEO	Collector to Emitter voltage	4.0V	V
VEBO	Emitter to Base voltage	2.0V	V
IC	Collector current	45	mA
IB	Base current	10	mA
PT	Total power dissipation	160	mW
Tch	Channel temperature	150	°C
Tstg	Storage temperature	-40 to +125	°C

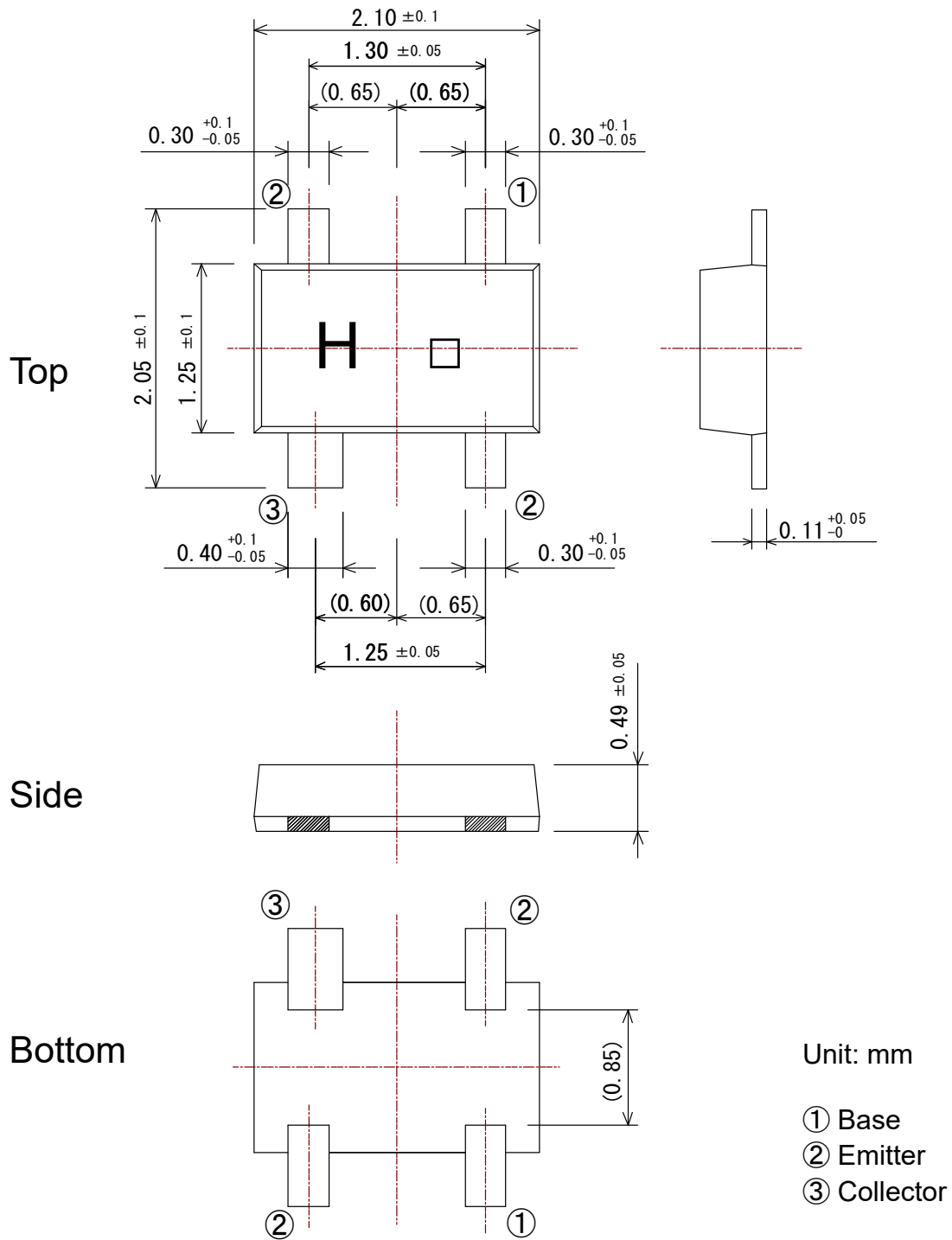
## ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
$h_{FE}$	DC Current Gain	$V_{CE}=3\text{V}$ , $I_C=33\text{mA}$	90	110	130	
$G_{LP}$	Linear Power Gain	$V_{CE}=3\text{V}$ , $I_C=33\text{mA}$	15.5	18	--	dB
$P_{1\text{dB}}$	Output power at 1dB gain compression	$f=2.4\text{GHz}$	14	16.5	--	dBm
$OIP_3$	3rd Oder Intermodulation Distortion Output Intercept Point		--	32	--	dBm
$G_s$	Associated gain	$V_{CE}=3\text{V}$ , $I_C=7\text{mA}$	--	15	--	dB
NFmin.	Minimum noise figure	$f=2.4\text{GHz}$	--	1.0	--	dB

Note 1:  $OIP_3$ ,  $G_s$  and  $NF_{\text{min}}$ . @2.4GHz are not tested.

Note 2:  $G_{LP}$  and  $P_{1\text{dB}}$  @2.4GHz are tested with sampling inspection.

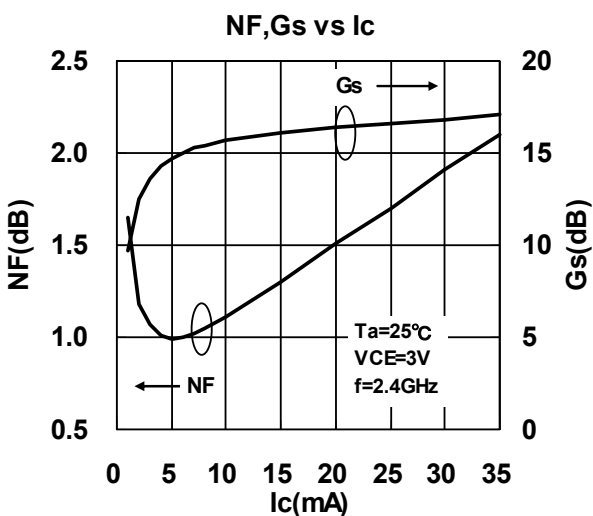
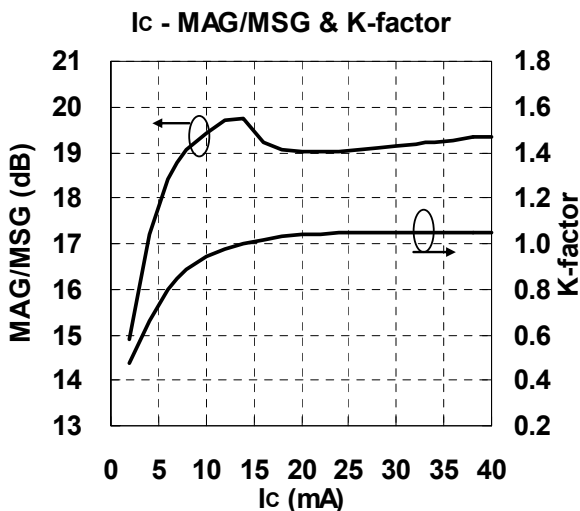
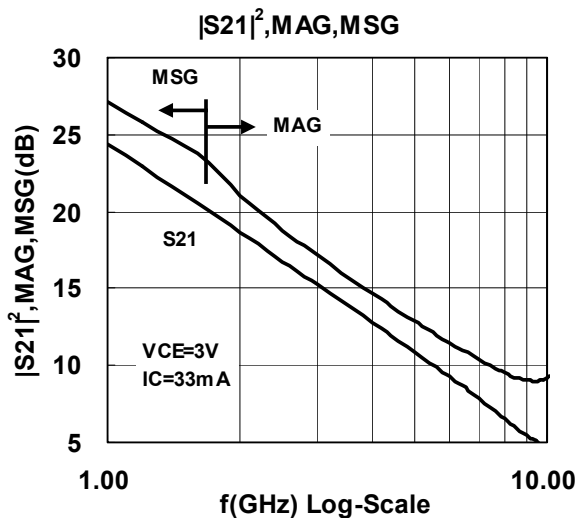
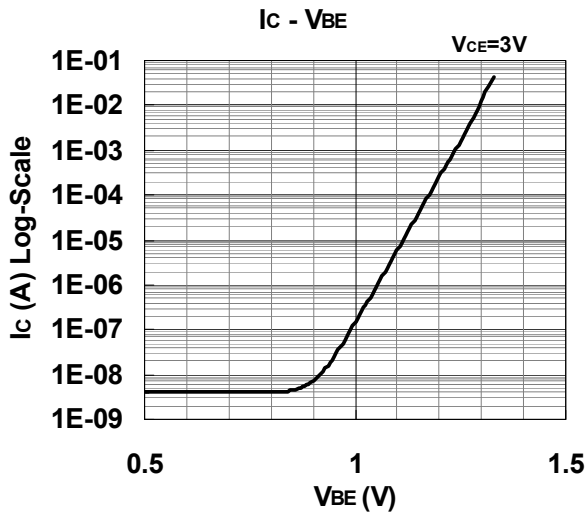
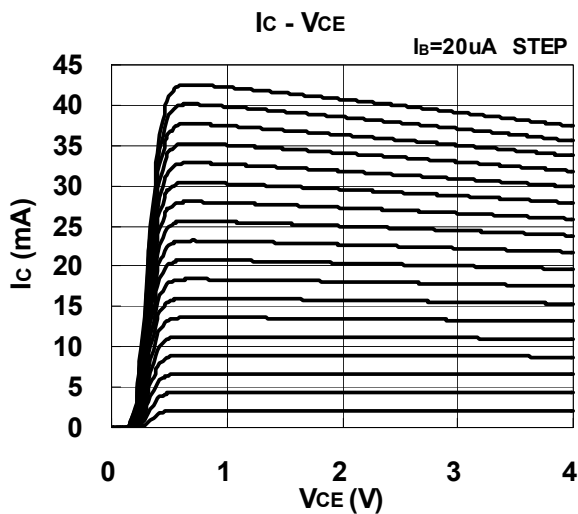
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(GD-30)

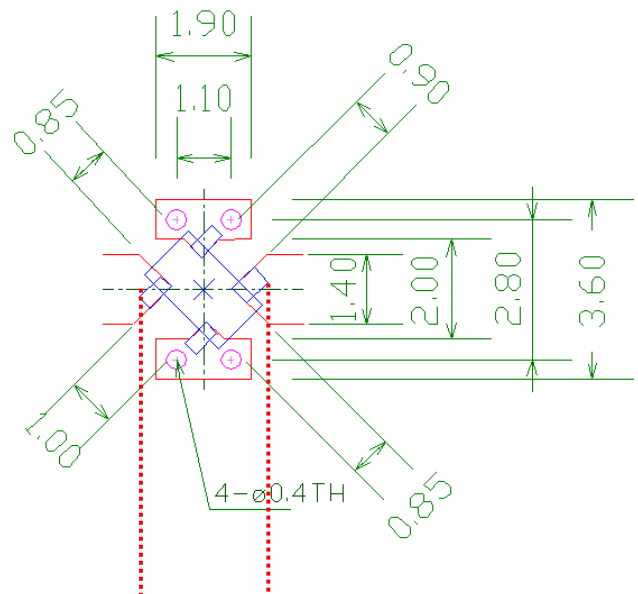
(Reference data)

TYPICAL CHARACTERISTICS (Ta=25°C)



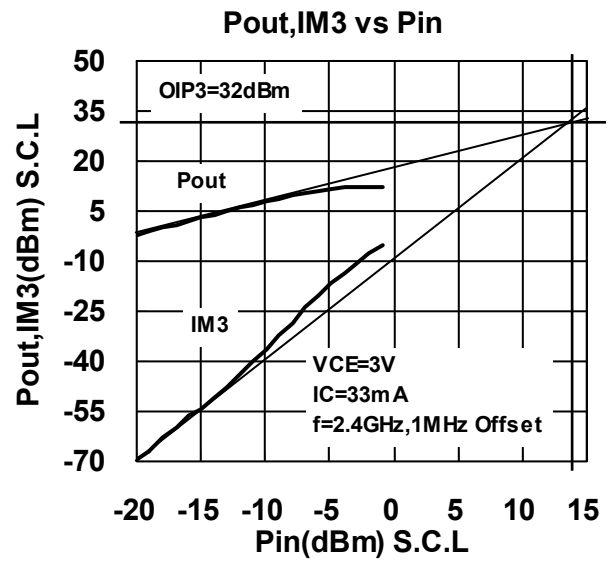
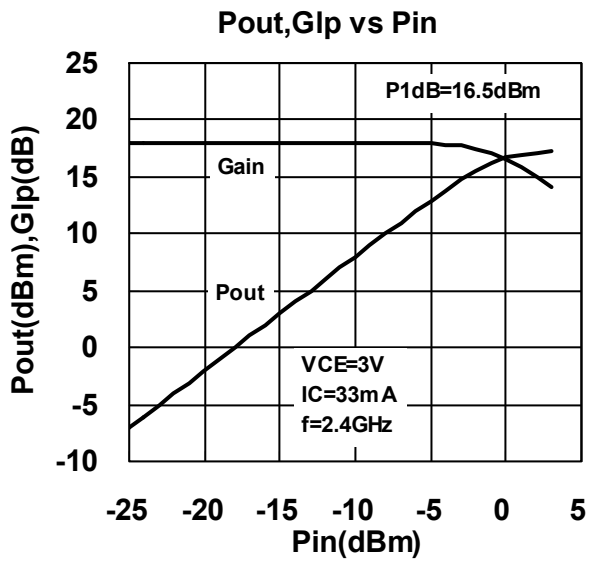
(Conditions: VCE=3V, IC=33mA, Ta=25deg.C)

f (GHz)	S11		S21		S12		S22		K	MAG/MSG (dB)
	Mag.	Angle	Mag.	Angle	Mag.	Angle	Mag.	Angle		
1	0.403	-155.3	16.514	93.9	0.032	55.0	0.329	-62.6	0.84	27.1
2	0.405	169.7	8.577	72.0	0.054	53.6	0.203	-69.9	1.02	21.1
3	0.428	147.6	5.780	55.5	0.076	47.9	0.155	-78.8	1.07	17.2
4	0.459	129.9	4.353	40.5	0.098	40.1	0.121	-93.3	1.09	14.7
5	0.499	114.8	3.485	26.1	0.118	31.3	0.089	-118.2	1.09	12.9
6	0.539	100.1	2.902	11.9	0.138	21.6	0.065	-154.8	1.08	11.5
7	0.588	88.2	2.464	-1.7	0.154	11.9	0.083	152.6	1.08	10.4
8	0.639	77.3	2.126	-14.5	0.168	2.3	0.127	121.7	1.06	9.5
9	0.689	67.6	1.874	-27.0	0.180	-7.7	0.182	103.2	1.03	9.0
10	0.733	58.5	1.673	-39.5	0.190	-17.4	0.238	91.7	1.00	9.2
11	0.774	49.9	1.499	-51.8	0.198	-26.9	0.287	81.1	0.96	8.8
12	0.800	41.5	1.350	-63.7	0.203	-36.1	0.333	73.5	0.94	8.2
13	0.802	33.8	1.228	-74.6	0.209	-44.6	0.383	64.6	0.96	7.7
14	0.817	26.6	1.137	-86.6	0.219	-53.9	0.401	55.6	0.92	7.1
15	0.815	18.9	1.040	-98.0	0.227	-64.0	0.413	49.6	0.92	6.6
16	0.794	11.1	0.954	-109.3	0.230	-74.1	0.441	42.9	0.98	6.2
17	0.783	5.3	0.875	-120.1	0.236	-83.7	0.446	32.4	1.02	4.8
18	0.770	0.3	0.806	-128.6	0.234	-93.9	0.434	26.6	1.09	3.6



Measurement plane

Recommended foot pattern;FR4( $\epsilon_r=4.6@1\text{MHz}$ , $t=0.8\text{mm}$ )



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