MGFC36V5258

5.2~5.8GHz BAND 4W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC36V5258 is an internally impedance-matched GaAs power FET especially designed for use in 5.2 ~ 5.8 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power
  P_{1dB} = 4 W (TYP) @ 5.2 ~ 5.8 GHz
- High power gain
  G_{LP} = 10 dB (TYP) @ 5.2 ~ 5.8 GHz
- High power added efficiency
  η_{add} = 32% (TYP) @ 5.2 ~ 5.8 GHz, P_{1dB}
- Hermetically sealed metal-ceramic package

APPLICATION

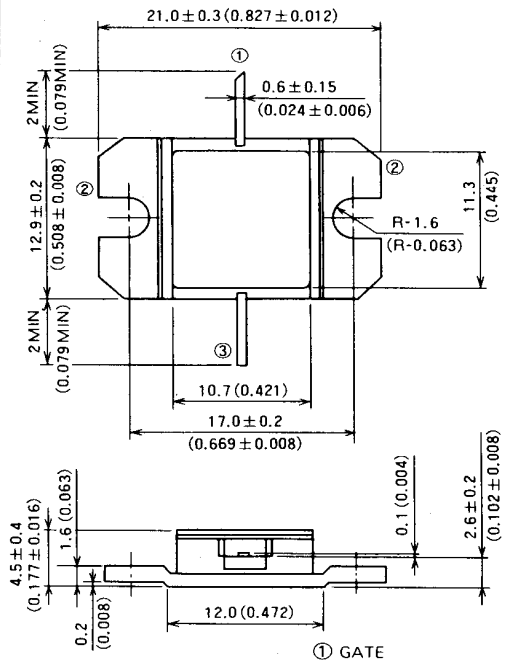
5.2 ~ 5.8 GHz band power amplifiers.

QUALITY GRADE

- IG

OUTLINE DRAWING

Unit: millimeters (inches)



GF-8

ABSOLUTE MAXIMUM RATINGS (Ta=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	2.8	A
I_{GR}	Reverse gate current	−10	mA
I_{GF}	Forward gate current	+21	mA
P_T	Total power dissipation *1	25	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	−65~+175	°C

*1: T_C = 25°C

RECOMMENDED BIAS CONDITIONS

- V_{DS}=10V
- I_D=1.2A
- Rg=100Ω
- Refer to Bias Procedure

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS}=3V, V_{GS}=0V	—	2.0	2.8	A
g_m	Transconductance	V_{DS}=3V, I_D=1.1A	—	1.0	—	S
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V, I_D=10mA	−2	−3	−4	V
P_{1dB}	Output power at 1dB gain compression	V_{DS}=10V, I_D=1.2A, f=5.2~5.8GHz	35	36	—	dBm
G_{LP}	Linear power gain		9	10	—	dB
I_D	Drain current		—	1.1	1.4	A
η_{add}	Power added efficiency		—	33	—	%
Rth(ch-c)	Thermal resistance *1	ΔV_f method	—	—	6	°C/W

*1: Channel to case

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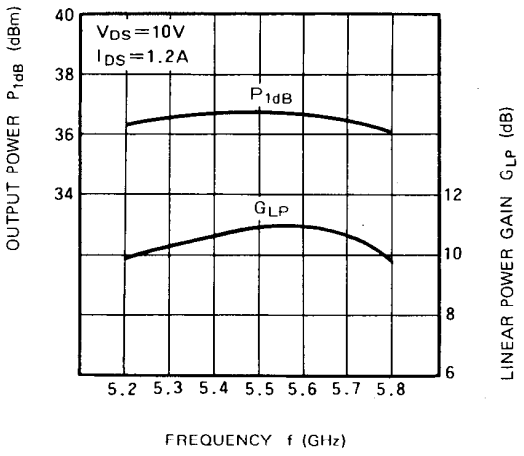
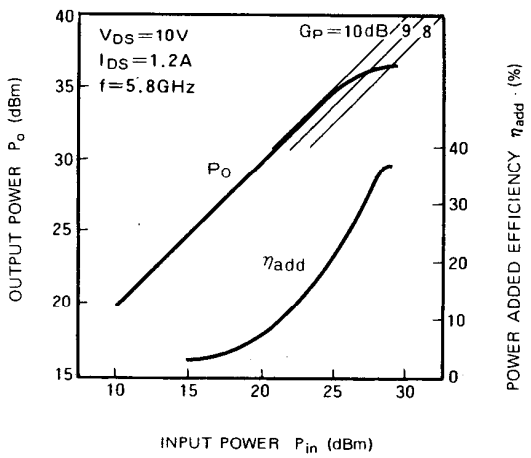
TYPICAL CHARACTERISTICS (Ta=25°C)

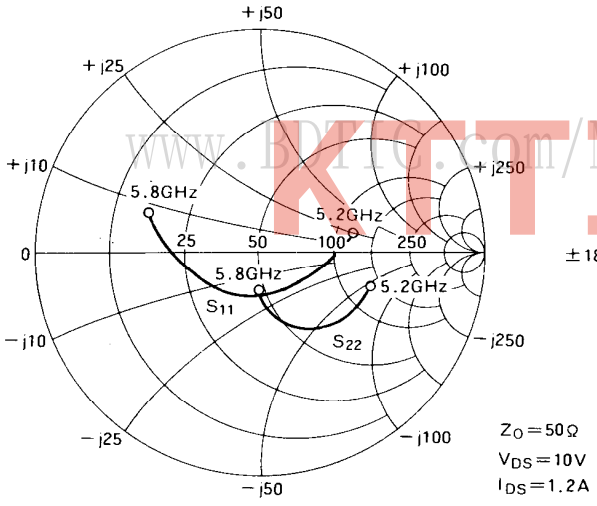
P_{1dB}, G_{LP} vs. f



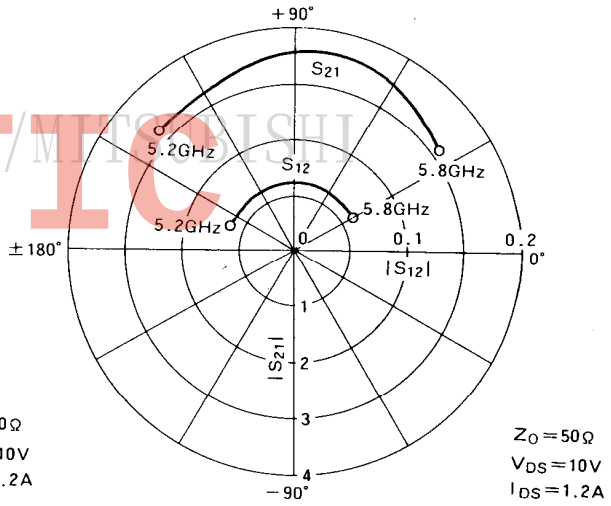
P_o, η_{add} vs. P_{in}



S_{11}, S_{22} vs. f



S_{21}, S_{12} vs.f



S PARAMETERS (Ta=25°C, VDS=10V, IDS=1.2A)

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.)
5.2	0.43	13	3.27	138	0.062	156	0.51	−17
5.3	0.30	− 3	3.30	122	0.062	138	0.48	−28
5.4	0.19	−41	3.45	105	0.062	120	0.46	−39
5.5	0.18	− 99	3.61	89	0.060	102	0.41	−51
5.6	0.28	−152	3.61	73	0.061	78	0.34	−66
5.7	0.39	179	3.45	55	0.059	56	0.26	−80
5.8	0.51	161	3.19	36	0.058	32	0.17	−98

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