

PRELIMINARY

Notice : This is not a final specification
Some parametric limits are subject to change.

MITSUBISHI SEMICONDUCTOR <GaAs FET>

MGFC45V5053A

5.05~5.25GHz BAND 32W INTERNALLY MATCHD GaAs FET

DESCRIPTION

The MGFC45V5053A is an internally impedance matched GaAs power FET especially designed for use in 5.05~5.25 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES (TARGET)

- Internally matched to 50 (Ω) system
- High output power
 $P_{1dB}=32W$ (TYP.) @ $f=5.05\sim 5.25GHz$
- High power gain
 $GLP=10.0dB$ (TYP.) @ $f=5.05\sim 5.25GHz$
- High power added efficiency
 $P.A.E.=33\%$ (TYP.) @ $f=5.05\sim 5.25GHz$
- Low distortion [item -51]
 $IM3=-45dBc$ (TYP.) @ $Po=34.5dBm$ S.C.L.

APPLICATION

5.05~5.25GHz band amplifiers

QUALITY GRADE

- IG

RECOMMENDED BIAS CONDITIONS

- $V_{DS}=10V$
- $I_D=8A$
- $RG=25\Omega$ Refer to Bias Procedure

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-15	V
V_{GS0}	Gate to source voltage	-15	V
I_D	Drain current	20	A
I_{GR}	Reverse gate current	-80	mA
I_{GF}	Forward gate current	168	mA
P_T	Total power dissipation *1	150	W
T_{ch}	Channel temperature	175	°C
T_{stg}	Storage temperature	-65 ~ +175	°C

*1 : $T_c=25^\circ C$

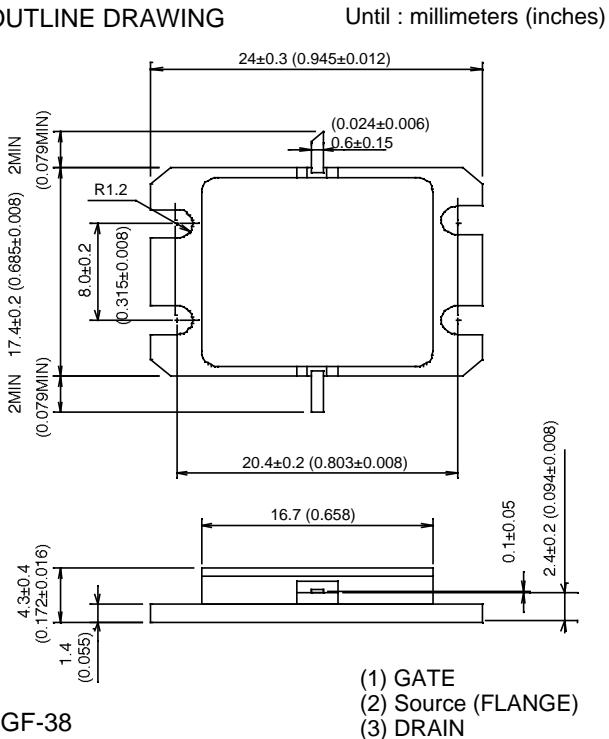
ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max	
I_{DSS}	Saturated drain current	$V_{DS}=3V$, $I_{GS}=0V$	—	24	—	V
G_m	Transconductance	$V_{DS}=3V$, $I_D=8V$	—	8	—	S
V_{GS} (off)	Gate to Source cut-off voltage	$V_{DS}=3V$, $I_D=160mA$	-2	—	-5	V
P_{1dB}	Output power at 1dB gain compression	$V_{DS}=10V$, $I_D=8A$, $f=5.05\sim 5.25GHz$	44	45	—	dBm
GLP	Linear power gain		9	9.5	—	dB
$P.A.E.$	Power added efficiency		—	34	—	%
$IM3$ *2	3rd order IM distortion		-42	-45	—	dBc
R_{th} (ch-c)	Thermal resistance *1	ΔV_f method	—	0.8	1.0	°C/W

*1 : Channel to case

*2 : Item-51,2tone test, $Po=34.5dBm$ Single Carrier Level, $f=5.05$, 5.15 , $5.25GHz$, $\Delta f=5MHz$

OUTLINE DRAWING



< 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 (i)placement of substitutive, auxiliary circuits, (ii)use of non-flammable material or (iii)prevention against any malfunction or mishap.