

Typical Applications

- Microwave HMIC
- Test and Measurement
- Radar and ECM

Picture



General Description

SAC2504 is a 0.15 μm E-beam gate GaAs Pseudomorphic High Electron Mobility Transistor chip ($W_g=150\mu\text{m}$), which has high associated gain and high dynamic range. The device can be used in circuits up to 40 GHz and suitable for low noise and medium power amplifier applications including a wide range of commercial and military applications. All bond pads are gold plated for either thermo-compression or thermo-sonic wire bonding.

Electrical Performance

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
I_{DSS}	Saturated Drain Current	$V_{ds}=2V, V_{GS}=0V$	40	60	85	mA
g_m	Trans-conductance	$V_{ds}=2V$	45	55	—	mS
V_p	Pinch-off Voltage	$V_{ds}=2V, I_{ds}=0.1mA$	—	-1.2	—	V
NF	Minimum Noise Figure	$V_{ds}=2V, I_{ds}=10mA, f=30GHz$	—	1.4	—	dB
G_A	Associated Gain	$V_{ds}=2V, I_{ds}=10mA, f=30GHz$	—	6	—	dB

* S-parameters files available upon request

Absolute Maximum Ratings

Symbol	Parameter	Absolute Maximum	Units
V_{GS}	Gate - Source Voltage	-1.2~-0.2	V
V_{GD}	Gate Drain Voltage	12	V
I_{DS}	Drain Current	10	mA
P_{diss}	Total Power Dissipation	290	mW
$P_{in\ max}$	RF Input Power	13	dBm
I_{GS}	Gate Source Current	2	mA
T_{CH}	Channel Temperature	150	$^{\circ}C$
T_{STG}	Storage Temperature	-60~150	$^{\circ}C$
θ_{jc}	Thermal Resistance	200	$^{\circ}C/W$

SAC2504

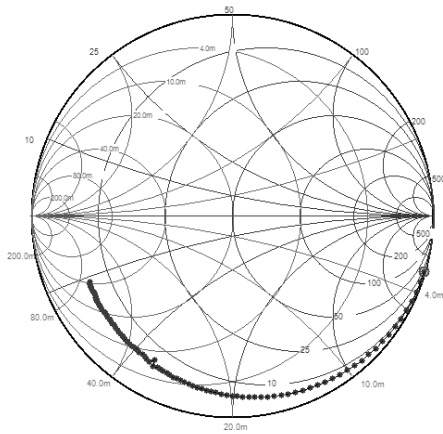
GaAs pHEMT Low Noise Transistor

Rev 1.1

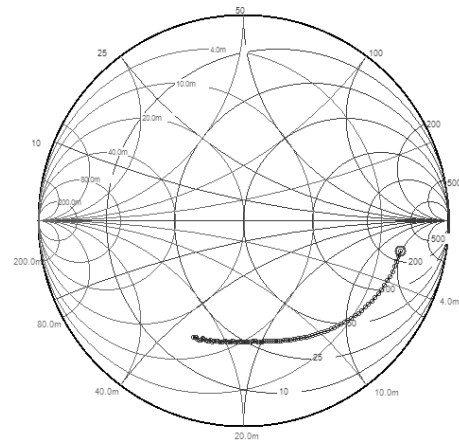
TYPICAL SCATTERING PARAMETERS

VDS=2V IDS=20mA

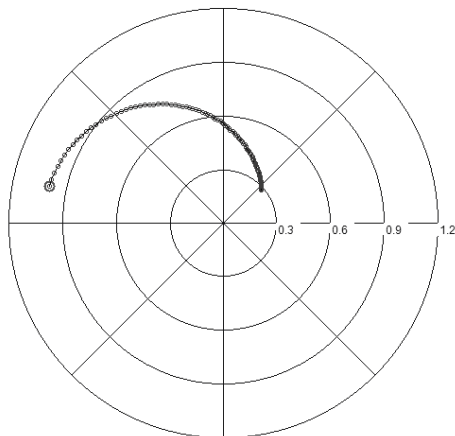
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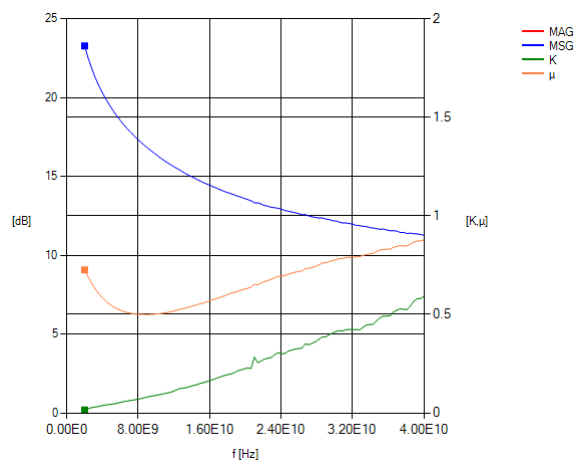
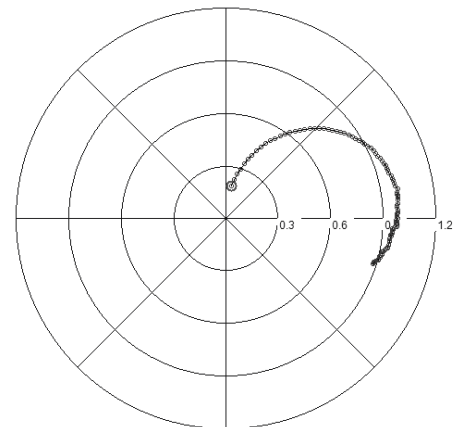
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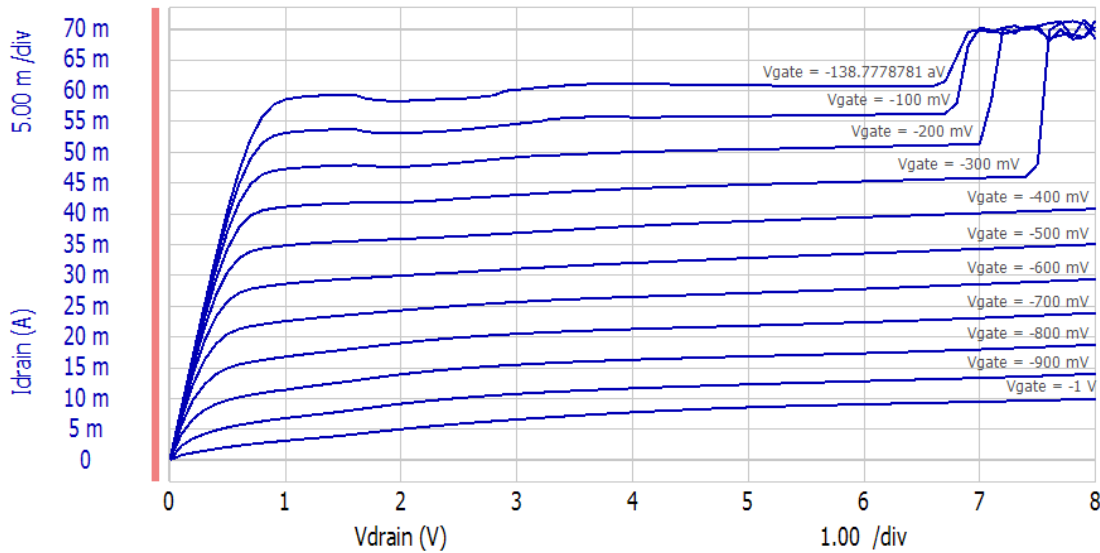
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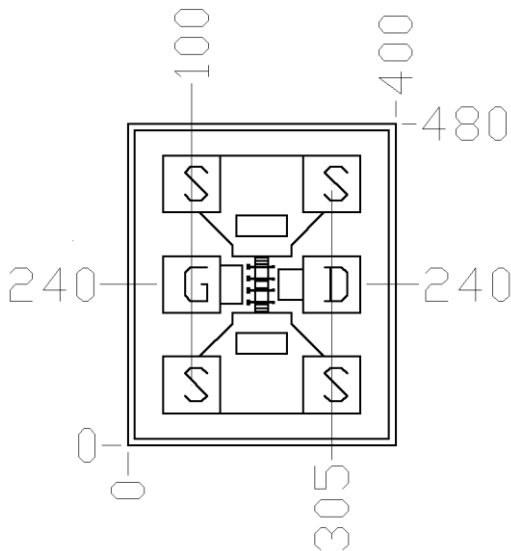
S12



TYPICAL ID-VD PARAMETERS



CHIP DIMENSIONS



1. Source pads are directly connected to back side
2. Pad sizes are 80x80 μ m
3. Thickness: 100 μ m

DIE ATTACHMENT: Conductive epoxy or eutectic die attach is recommended.

WIRE BONDING: The recommended wire bond method is thermo-compression bonding with 0.7mil gold wire.

HANDLING PRECAUTIONS: The user must operate in a clean and dry environment. Care should be exercised during handling to avoid damage to the devices. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling and assembly.