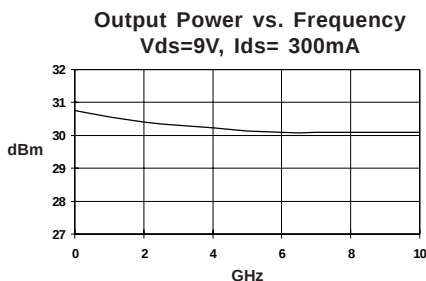


Product Description

Stanford Microdevices' SHF-0298 series is a Al/GaAs/ GaAs Heterostructure FET housed in a low-cost ceramic package. HFET technology improves breakdown voltage for high drain voltage operation. Its low Schottky leakage current improves power added efficiency.

These HFETs are an ideal choice for high dynamic range, high intercept point requirements. Its output power at 1dB gain compression is +30dBm when biased at +9V and 300mA.

These devices have 0.5 micron gate lengths with a total gate periphery of 2400 microns. These transistors are proven gold based metallization and nitride passivation.



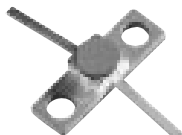
Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions		Units	Min.	Typ.	Max.
P _{1dB}	Output Power at 1dB Compression: V _{ds} = 9.0V, I _{ds} = 300mA	f = 0.9 GHz f = 1.9 GHz	dBm	30 30	30.3 30.3	
G _{1dB}	Gain at P _{1dB} : V _{ds} = 9.0V, I _{ds} = 300mA	f = 0.9 GHz f = 1.9 GHz	dB	14 11	15 12	
PAE	Power Added Efficiency: V _{ds} = 9.0V, I _{ds} = 300mA	f = 0.9 GHz f = 1.9 GHz	%		40 40	
TOIP	Output Third Order Intercept Point V _{ds} = 9.0V, I _{ds} = 300mA	f = 0.9 GHz f = 1.9 GHz	dBm dBm		40 40	
P _{1dB}	Output Power at 1dB Compression: V _{ds} = 5.0V, I _{ds} = 300mA	f = 0.9 GHz f = 1.9 GHz	dBm	26 26	27 27	
G _{1dB}	Gain at P _{1dB} : V _{ds} = 5.0V, I _{ds} = 300mA	f = 0.9 GHz f = 1.9 GHz	dB	13 10	14 11	
I _{DSS}	Saturated Drain Current: V _{ds} = 3.0V, V _{gs} = 0V		mA	400	650	900
G _M	Transconductance: V _{ds} = 3.0V, V _{gs} = 0V		mS	250	375	500
V _P	Pinch-Off Voltage: V _{ds} = 3.0V, I _{ds} = 1mA		V	-4.0	-2.2	-0.5
V _{BGS}	Gate-to-Source Breakdown Voltage		V	-30	-22	-17
V _{BGD}	Gate-to-Drain Breakdown Voltage		V	-30	-22	-17

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SHF-0298

DC-10 GHz, 1 Watt AlGaAs/GaAs HFET



Product Features

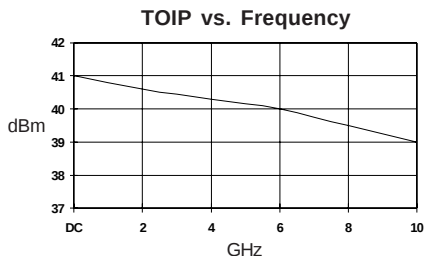
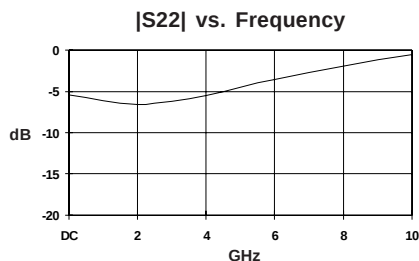
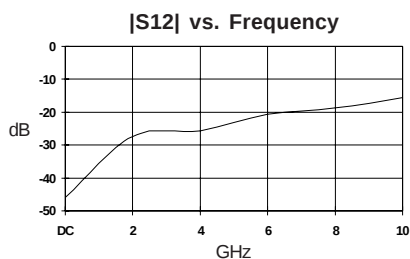
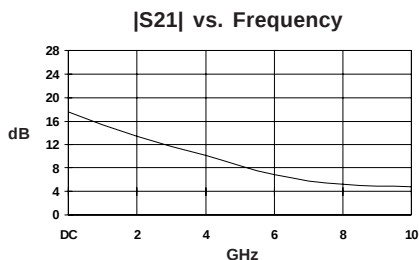
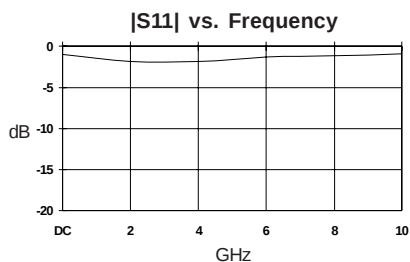
- AlGaAs/GaAs Heterostructure FET Technology
- High Power Added Efficiency: Up to 40%
- 1 Watt Output Power at 1dB Compression
- Low Cost Ceramic Package
- +40dBm Output 3rd Order Intercept Point

Applications

- Analog and Digital Wireless Systems
- VSAT

SHF-0298 DC-10 GHz 1 Watt AlGaAs/GaAs HFET

Typical Performance at 25° C ($V_{ds} = 9V$, $I_{ds} = 300mA$)



Typical S-Parameters $V_{ds} = 9V$, $I_{d} = 300mA$

Freq GHz	S ₁₁	S ₁₁ Ang	S ₂₁	S ₂₁ Ang	S ₁₂	S ₁₂ Ang	S ₂₂	S ₂₂ Ang
.100	0.980	-24	9.20	176	0.01	87	0.20	-115
.500	0.890	-172	8.71	117	0.04	35	0.38	-136
1.00	0.900	-128	7.75	107	0.04	29	0.45	-150
2.00	0.890	-153	5.51	92	0.04	21	0.48	-156
3.00	0.890	-158	3.61	78	0.04	20	0.51	-148
4.00	0.890	-163	2.32	71	0.04	22	0.54	-150
5.00	0.890	-168	1.92	59	0.04	23	0.57	-152
6.00	0.890	-170	1.78	53	0.03	31	0.59	-150
7.00	0.900	-172	1.68	48	0.03	51	0.63	-150
8.00	0.920	-174	1.58	37	0.03	56	0.68	-154
9.00	0.930	-176	1.50	39	0.03	53	0.73	-158
10.00	0.940	-178	1.42	30	0.03	58	0.75	-162
11.00	0.950	-180	1.34	21	0.03	63	0.77	-164
12.00	0.960	-182	1.26	11	0.03	68	0.79	-166

(S-Parameters include the effects of two 1.0 mil diameter bond wires, each 30 mils long, connected to the gate and drain pads on the die)

Absolute Maximum Ratings

Parameter	Symbol	Absolute Maximum
Drain-to-Source Voltage	V_{DS}	+10V
Gate-to-Source Voltage	V_{GS}	-17V
Drain Current	I_{DS}	IDSS
Operating Temperature	T_{OP}	-45 C to +85 C
RF Input Power	P_{in}	100 mW
Channel Temperature	T_{CH}	+175 C
Storage Temperature	T_{STG}	-65 to +150 C
Thermal Resistance, Junction-Ground Lead	R_{TH}	35.5 degC/W

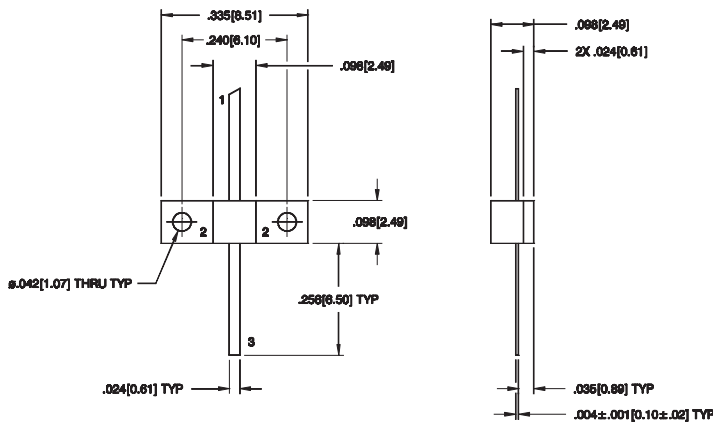
Notes:

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Mounting Surface Temperature = 25° C

Part Number Ordering Information

Part Number	Devices Per Tray
SHF-0298	100

Outline Drawing



Pin Designation	
1	Gate
2	Source
3	Drain