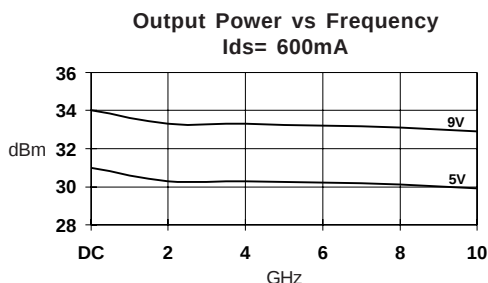


Product Description

Stanford Microdevices' SHF-0598 series is a Al/GaAs/ GaAs Heterostructure FET housed in a low-cost ceramic-mount 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 +33dBm when biased at +9V and 600mA and +30dBm when biased at +5V and 600mA

These devices have 0.5 micron gate lengths with a total gate periphery of 4800 microns. These transistors have proven gold based metallization and nitride passivation.



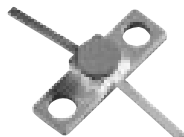
Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions	Units	Min.	Typ.	Max.
P_{1dB}	Output Power at 1dB Compression: $V_{ds} = 9.0V, I_{ds} = 600mA$	$f = 0.9 GHz$ $f = 1.9 GHz$ dBm	33 29.5	33.5 32.5	
G_{1dB}	Gain at P1dB: $V_{ds} = 9.0V, I_{ds} = 600mA$	$f = 0.9 GHz$ $f = 1.9 GHz$ dB	14 11	15 12	
PAE	Power Added Efficiency: $V_{ds} = 9.0V, I_{ds} = 600mA$	$f = 0.9 GHz$ $f = 1.9 GHz$ %		40 40	
TOIP	Output Third Order Intercept Point: $V_{ds} = 9.0V, I_{ds} = 600mA$	$f = 0.9 GHz$ $f = 1.9 GHz$ dBm dBm		43 43	
I_{DSS}	Saturated Drain Current: $V_{ds} = 3.0V, V_{gs} = 0V$	mA		1300	
G_m	Transconductance: $V_{ds} = 3.0V, V_{gs} = 0V$	mS	500	750	1000
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-0598

DC- 8 GHz, 2 Watt AlGaAs/GaAs HFET



Product Features

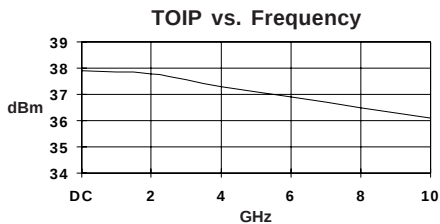
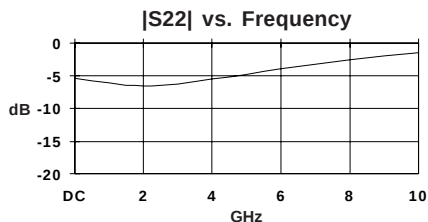
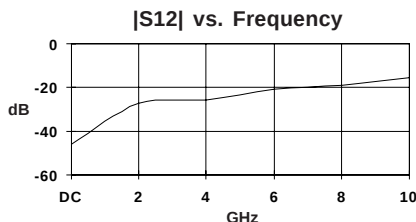
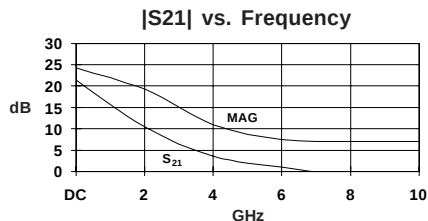
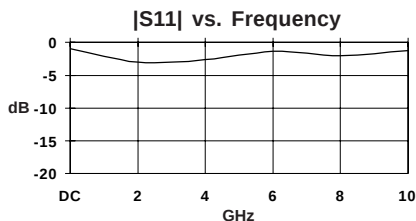
- AlGaAs/GaAs Heterostructure FET Technology
- High Power Added Efficiency: Up to 40%
- 2 Watt Output Power at 1dB Compression
- Low Cost Ceramic Package
- +43dBm Output 3rd Order Intercept Point

Applications

- High Linearity Systems
- VSAT

SHF-0598 DC- 8 GHz, 2 Watt AlGaAs/GaAs HFET

Typical Performance at 25° C ($V_{ds} = 9V$, $I_{ds} = 600mA$)



Typical S-Parameters $V_{ds} = 9V$, $I_{ds} = 600mA$

Freq GHz	S ₁₁	S ₁₁ Ang	S ₂₁	S ₂₁ Ang	S ₁₂	S ₁₂ Ang	S ₂₂	S ₂₂ Ang
0.10	0.982	-31	16.59	162	0.010	-1	0.487	177
0.25	0.975	-66	13.87	150	0.017	9	0.559	177
0.50	0.934	-114	8.50	128	0.025	26	0.631	176
0.75	0.915	-128	6.28	121	0.031	42	0.643	174
1.00	0.923	-143	5.52	117	0.032	53	0.658	172
1.50	0.954	-155	4.79	102	0.045	50	0.700	170
2.00	0.961	-166	2.88	87	0.039	46	0.693	167
2.50	0.966	-169	2.45	86	0.040	49	0.710	167
3.00	0.965	-172	1.64	84	0.031	52	0.704	166
4.00	0.942	179	1.71	95	0.040	79	0.695	159
5.00	0.963	156	1.54	72	0.016	138	0.783	144
6.00	0.880	172	0.867	49	0.056	38	0.610	155
7.00	0.880	164	0.820	79	0.053	29	0.682	148
8.00	0.845	160	1.059	67	0.074	71	0.694	142

(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}	I_{DSS}
RF Input Power	P_{IN}	100 mW
Channel Temperature	T_{CH}	175 C
Storage Temperature	T_{STG}	-65 to +175 C

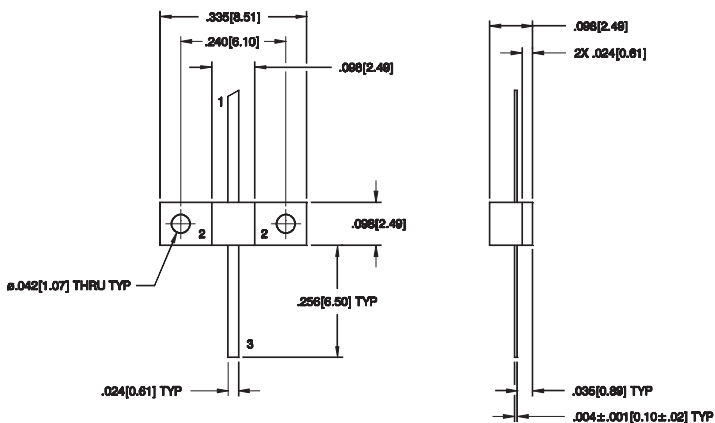
Part Number Ordering Information

Part Number	Devices Per Tray
SHF-0598	100

Notes:

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

Outline Drawing



Pin Designation	
1	Gate
2	Source
3	Drain