

FEATURES

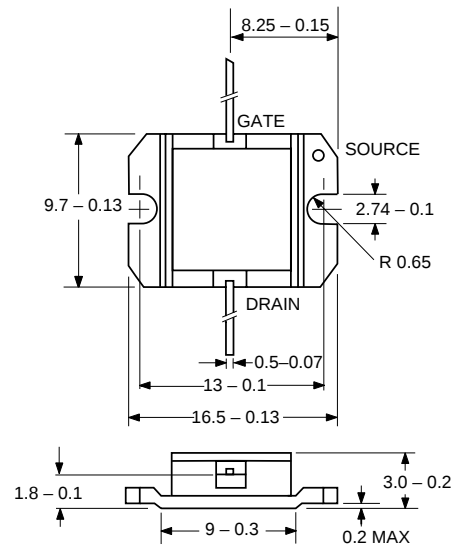
- **HIGH OUTPUT POWER:** 37.0 dBm TYP
- **HIGH LINEAR GAIN:** 8.0 dB TYP
- **HIGH EFFICIENCY:** 30% TYP
- **INPUT AND OUTPUT INTERNALLY MATCHED FOR OPTIMUM PERFORMANCE**

DESCRIPTION

The NEZ1011-5E is a power GaAs MESFET which provides high gain, high efficiency and high output power in X, Ku-band. The internal input and output matching enables guaranteed performance to be achieved with only a 50 Ω external circuit. To reduce thermal resistance the device has a PHS (Plated Heat Sink) structure. The device incorporates a Wsi (tungsten silicide) gate structure for high reliability.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE T-78



RECOMMENDED OPERATING LIMITS

SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V _{DS}	Drain to Source Voltage	V	10	10	10
T _{CH}	Channel Temperature	°C			+130
G _{COMP}	Gain Compression	dB			3
R _g	Gate Resistance ¹	Ω	25	50	50

Note:

1. R_g is the series resistance between the gate supply and the FET gate.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER			NEZ1011-5E			TEST CONDITIONS
SYMBOLS	CHARACTERISTICS	UNITS	MIN	TYP	MAX	
P _{1dB}	Output Power at 1 dB Gain Compression	dBm	36.0	37.0		f = 10.7, 11.2, 11.7 GHz V _{DS} = 10 V I _{DS} = 1.5 A (RF OFF) R _g = 50 Ω
G _L	Linear Gain	dB	7.5	8.0		
η_{ADD} (1 dB)	Power Added Efficiency at 1 dB Gain Comp.	%		30		
I _{DS} (1 dB)	Drain Current at 1 dB Gain Compression	A		2.0	2.3	
I _{DSS}	Saturated Drain Current	A	1.5	3.0	5.0	V _{DS} = 1.5 V, V _{GS} = 0 V
V _P	Pinch-off Voltage	V	-3.0	-1.3	-0.5	V _{DS} = 2.5 V, I _{DS} = 20 mA
BV _{GD}	Gate to Drain Breakdown Voltage	V	15	18		I _{GD} = 20 mA
R _{TH}	Thermal Resistance	°C/W		4.5	5.0	Channel to Case

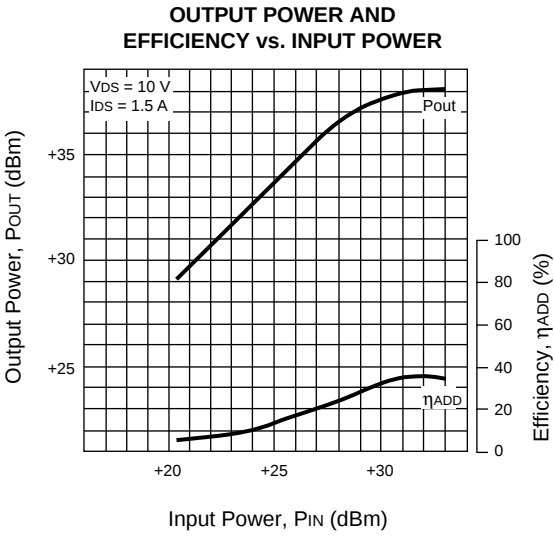
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25 °C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{DS}	Drain to Source Voltage	V	15
V _{GS}	Gate to Source Voltage	V	-7
I _{DS}	Drain Current	A	4.5
I _{GF}	Gate Forward Current	mA	+40
I _{GR}	Gate Reverse Current	mA	-40
P _T	Total Power Dissipation	W	30
T _{CH}	Channel Temperature	°C	175
T _{STG}	Storage Temperature	°C	-65 to +175

Note:

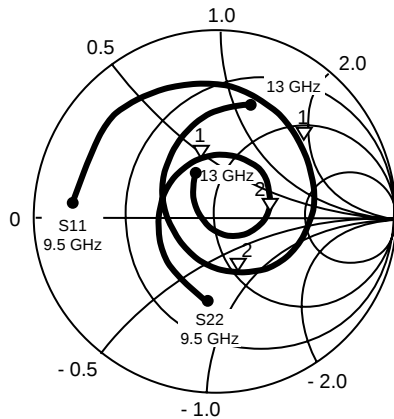
1. Operation in excess of any one of these parameters may result in permanent damage.

TYPICAL PERFORMANCE CURVES

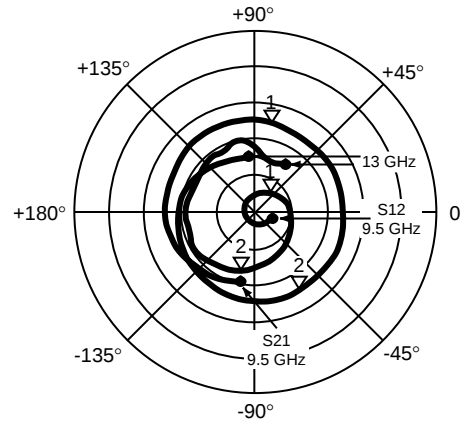


ORDERING INFORMATION

PART NUMBER	QUANTITY	PACKAGING
NEZ1011-5E		T-78

TYPICAL SCATTERING PARAMETERS (T_A = 25°C)

MARKER
1. 10.7 GHz
2. 11.7 GHz



NEZ1011-5E

V_{DS} = 10 V, I_{DS} = 1.5 mA

FREQUENCY	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10.1	0.749	112.65	2.461	168.24	0.015	151.68	0.285	-163.97
9.50	0.795	177.097	2.102	-104.596	0.025	-12.624	0.497	-97.121
9.60	0.791	166.158	2.238	-121.060	0.025	-30.059	0.474	-106.699
9.70	0.783	155.492	2.311	-134.131	0.021	-49.370	0.450	-116.031
9.80	0.774	144.184	2.405	-146.297	0.017	-73.646	0.425	-126.474
9.90	0.765	133.012	2.534	-163.554	0.016	-97.929	0.400	-138.312
10.0	0.751	121.078	2.539	-179.266	0.012	-135.797	0.375	-150.582
10.1	0.734	109.490	2.502	165.681	0.012	-174.066	0.352	-164.453
10.2	0.715	97.542	2.564	150.428	0.015	147.007	0.333	-179.454
10.3	0.695	86.492	2.529	135.648	0.018	115.190	0.320	164.767
10.4	0.676	75.113	2.516	121.356	0.023	95.322	0.306	149.021
10.5	0.653	64.124	2.529	106.739	0.027	74.089	0.302	133.607
10.6	0.636	53.940	2.507	92.067	0.033	56.001	0.304	118.951
10.7	0.612	43.369	2.484	78.134	0.038	39.778	0.307	104.803
10.8	0.594	33.428	2.478	64.151	0.042	23.174	0.312	91.645
10.9	0.575	22.866	2.450	49.875	0.047	7.059	0.320	79.861
11.0	0.552	13.083	2.447	36.338	0.050	-7.479	0.325	69.008
11.1	0.535	2.903	2.482	22.306	0.055	-19.924	0.327	58.242
11.2	0.508	-7.593	2.473	7.750	0.059	-34.841	0.330	48.324
11.3	0.491	-17.574	2.454	-5.943	0.062	-47.246	0.328	38.476
11.4	0.461	-28.983	2.516	-20.088	0.067	-59.558	0.323	29.580
11.5	0.436	-39.932	2.506	-35.678	0.073	-74.611	0.318	20.003
11.6	0.404	-53.797	2.487	-50.074	0.075	-87.343	0.304	10.526
11.7	0.366	-67.625	2.488	-63.579	0.086	-103.128	0.291	1.340
11.8	0.332	-84.471	2.524	-80.559	0.086	-117.892	0.273	-8.817
11.9	0.298	-104.679	2.495	-96.940	0.091	-133.955	0.250	-19.520
12.0	0.277	-127.328	2.484	-112.774	0.097	-149.424	0.225	-31.204
12.1	0.277	-155.200	2.444	-128.256	0.089	-164.876	0.194	-45.526
12.2	0.294	179.432	2.318	-147.074	0.096	178.362	0.162	-62.370
12.3	0.332	156.155	2.256	-161.800	0.091	165.150	0.131	-83.016
12.4	0.386	136.598	2.158	-176.089	0.087	150.149	0.108	-110.989
12.5	0.432	121.126	2.043	166.479	0.097	131.057	0.103	-144.299
12.6	0.481	107.861	1.910	150.431	0.088	119.739	0.116	-175.501
12.7	0.527	96.419	1.812	135.781	0.093	103.730	0.143	160.657
12.8	0.572	87.008	1.687	121.963	0.097	86.355	0.177	142.955
12.9	0.608	77.455	1.539	107.849	0.073	73.273	0.213	129.094
13.0	0.640	69.455	1.531	94.247	0.077	53.973	0.250	117.013

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