

100W L-BAND TWIN POWER GaAs MESFET | NES1823P-100

FEATURES

- **HIGH OUTPUT POWER:** 100 W TYP
- **HIGH LINEAR GAIN:** 11 dB TYP
- **HIGH DRAIN EFFICIENCY:**
50 % TYP @ $V_{DS} = 10\text{ V}$, $I_D = 6\text{ A}$, $f = 2.2\text{ GHz}$
- **USABLE IN PUSH-PULL OR BALANCED CONFIGURATION.**

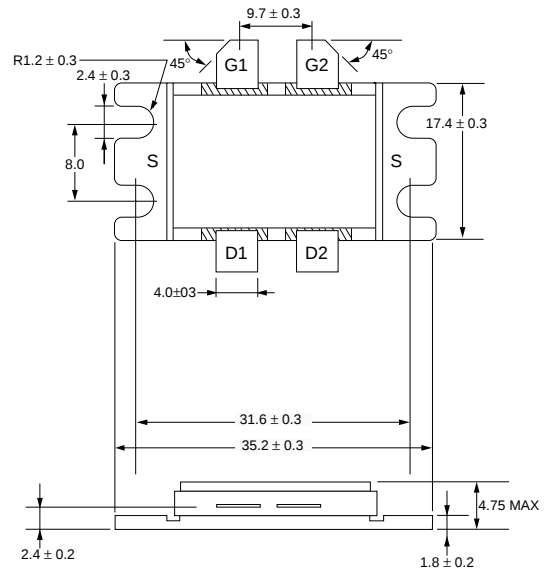
DESCRIPTION

The NES1823F-100 is a "twin" transistor device made-up of two pairs of GaAs MESFET chips which may be combined externally in either push-pull or balanced configurations. It is designed for 2.2 GHz base stations and repeaters for mobile and fixed wireless (WLL) systems, and with modification of the external matching circuit, can be used for 2.3-2.4 GHz WLL and DAB applications. It is capable of delivering 100 W of output power (CW) with high linear gain, high efficiency and excellent linearity. The device employs 0.9 μm Tungsten Silicide gates, via holes, plated heat sink, and silicon dioxide and nitride passivation for superior performance, thermal characteristics, and reliability.

Reliability and performance uniformity are assured by NEC's stringent quality and control procedures.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE T-92



G1, G2 : Gate
D1, D2 : Drain
S : Source

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE				NES1823P-100 T-92			
Functional Characteristics	SYMBOLS	CHARACTERISTICS	UNITS	MIN	TYP	MAX	TEST CONDITIONS
	P _{OUT}	Output Power	dBm	49.0	50.0		V _{DS} = 10 V f = 2.2 GHz I _{DSQ} = 6.0 A Total (RF off) P _{IN} = +42.5 dBm R _G = 10 Ω (Each Side)
	G _L	Linear Gain	dB	9	11		
	η _D	Drain Efficiency	%		50		
	I _D	Drain Current	A		20	32.5	
Electrical DC Characteristics	I _{DSS}	Saturated Drain Current	A		76		V _{DS} = 2.5 V; V _{GS} = 0 V
	V _P	Pinch-off Voltage	V	-4.0	-2.6		V _{DS} = 2.5 V; I _{DS} = 330 mA
	R _{TH}	Thermal Resistance	°C/W		0.6	0.8	Channel to Case

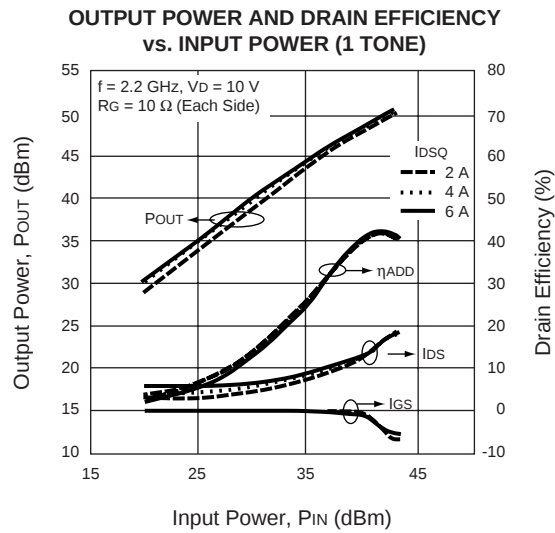
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{DS}	Drain to Source Voltage	V	15
V _{GSO}	Gate to Source Voltage	V	-7
I _D	Drain Current	A	76
I _G	Gate Current	mA	440
P _T	Total Power Dissipation ²	W	220
T _{CH}	Channel Temperature	°C	175
T _{STG}	Storage Temperature	°C	-65 to +175

Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. T_C = 25°C

TYPICAL PERFORMANCE CURVES (T_A = 25°C)



RECOMMENDED OPERATING LIMITS

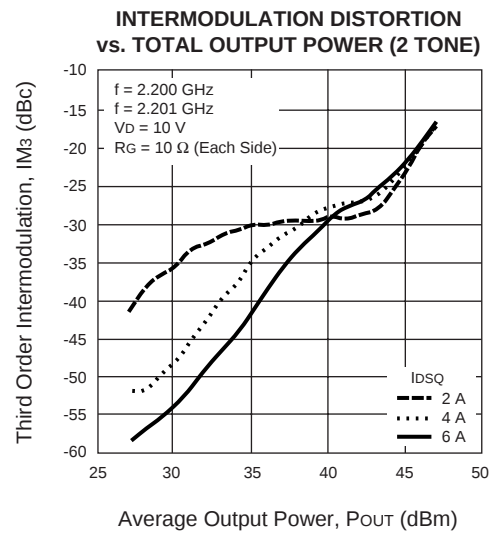
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
V _{DS}	Drain to Source Voltage	V		10	10
G _{COMP}	Gain Compression	dB _{COMP}			3
T _{CH}	Channel Temperature	°C			+150
I _{DSQ}	Set Drain Current ¹	A		6	8
R _G	Gate Resistance ²	Ω			10

Notes:

1. V_{DS} = 10 V, R_F OFF, I_{Dset} = 3.0 A Each Drain.
2. R_G is the series resistance for each side between the gate supply and the FET gate.

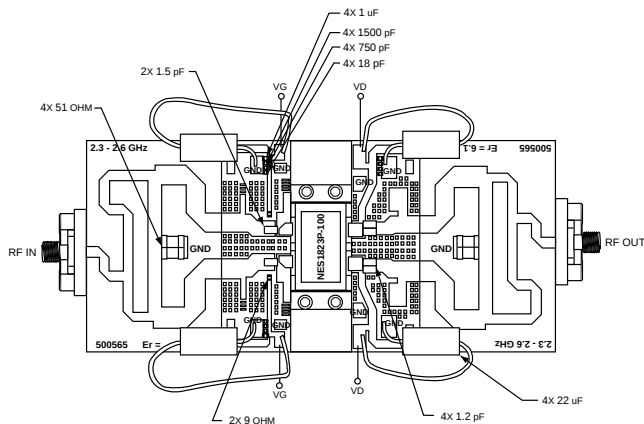
ORDERING INFORMATION

PART NUMBER	PACKAGE
NES1823P-100	T-92



APPLICATION CIRCUIT

NES1823P-100 PUSH-PULL (2.37-2.40 GHz)



Notes:

Artwork available from CEL engineering.

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PRINTED IN USA ON RECYCLED PAPER -10/98