

NEC

C-BAND MEDIUM POWER GaAs MESFET NE850R599A

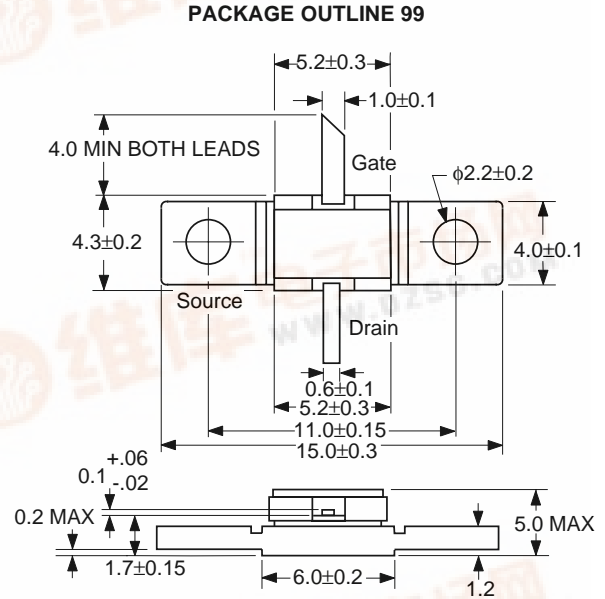
FEATURES

- HIGH OUTPUT POWER: 0.5 W
- HIGH LINEAR GAIN: 9.5 dB
- HIGH EFFICIENCY (PAE): 38%
- SUPERIOR INTERMODULATION DISTORTION
- INDUSTRY STANDARD PACKAGING

DESCRIPTION

The NE850R599A is a medium power GaAs MESFET designed for up to a 1/2W output stage or as a driver for higher power devices. The device has no internal matching and can be used at frequencies from UHF to 8.5 GHz. Equivalent performance in a chip package can be obtained by using only 1 cell of the NE8500100 chip. The chips used in this series offer superior reliability and consistent performance for which NEC microwave semiconductors are known.

OUTLINE DIMENSIONS (Units in mm)



RECOMMENDED OPERATING LIMITS

| SYMBOLS | PARAMETERS | UNITS | MIN | TYP | MAX |
|-------------------|-------------------------|-------|-----|-----|-----|
| V _{DS} | Drain to Source Voltage | V | 9 | | 10 |
| T _{CH} | Channel Temperature | °C | | | 130 |
| G _{COMP} | Gain Compression | dB | | | 3.0 |
| R _G | Gate Resistance | KΩ | | | 1 |

ELECTRICAL CHARACTERISTICS (T_c = 25°C)

| PART NUMBER | | | | NE850R599A | | | |
|----------------------------|------------------|--------------------------------------|-------|------------|------|------|------------------------------------------------------------------------------------------------------------------------------------|
| PACKAGE OUTLINE | | | | 99 | | | |
| Functional Characteristics | SYMBOLS | CHARACTERISTICS | UNITS | MIN | TYP | MAX | TEST CONDITIONS |
| | P _{OUT} | Power Out at Fixed Input Power | dBm | 25.5 | 26.5 | | P _{IN} = 18.5 dBm ¹ V _{DS} = 10 V; I _{DSQ} = 100 mA f = 7.2 GHz; R _G = 1 KΩ |
| | η _{ADD} | Power Added Efficiency | % | | 38 | | |
| | I _{DS} | Drain Source Current | A | | 140 | | |
| | I _{GS} | Gate to Source Current | mA | -1.6 | | 1.6 | P _{IN} = 7 dBm ² |
| G _L | Linear Gain | dB | | 9.5 | | | |
| Electrical Characteristics | I _{DSS} | Saturated Drain Current | mA | 220 | | 430 | V _{DS} = 2.5 V; V _{GS} = 0 V |
| | V _P | Pinch-off Voltage | V | -3.0 | | -1.0 | V _{DS} = 2.5 V; I _{DS} = 2 mA |
| | g _m | Transconductance | mS | | 150 | | V _{DS} = 2.5 V; I _{DS} = I _{DSS} |
| | R _{TH} | Thermal Resistance (channel to case) | °C/W | | | 60 | |

NE850R599A

ABSOLUTE MAXIMUM RATINGS¹

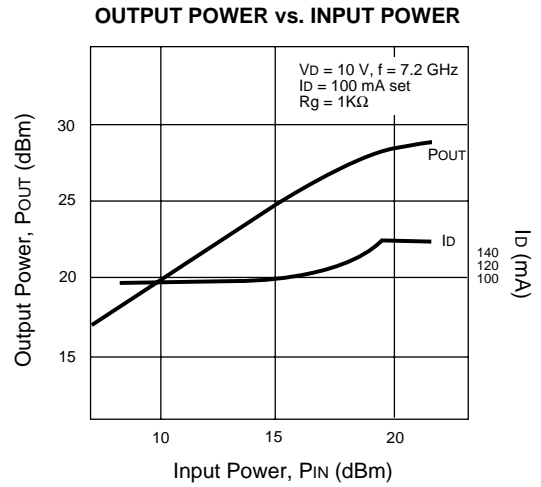
(T_C = 25 °C unless otherwise noted)

| SYMBOLS | PARAMETERS | UNITS | RATINGS |
|-------------------|-------------------------|-------|------------------|
| V _{DSX} | Drain to Source Voltage | V | 15 |
| V _{GDX} | Gate to Drain Voltage | V | -18 |
| V _{G SX} | Gate to Source Voltage | V | -12 |
| I _{DS} | Drain Current | mA | I _{DSS} |
| I _{GS} | Gate Current | mA | 3.0 |
| P _T | Total Power Dissipation | W | 3.0 |
| 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 (T_A = 25°C)



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