

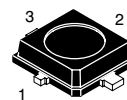
Silicon Lateral FET, N-Channel Enhancement-Mode MOSFET

Designed for use in medium voltage, moderate power amplifiers such as portable analog and digital cellular radios and PC RF modems.

- Typical CW RF Performance @ 849 MHz: $V_{DD} = 12.5$ Volts, $I_{DQ} = 300$ mA, $P_{out} = 38$ dBm
Power Gain — 10.5 dB
Drain Efficiency — 55%
- Capable of Handling 10:1 VSWR, @ 12.5 Vdc, 849 MHz, 38 dBm
- RoHS Compliant
- In Tape and Reel. T1 Suffix = 1,000 Units per 12 mm, 7 inch Reel

MRF9582NT1

**849 MHz, 38 dBm, 12.5 V
HIGH FREQUENCY
POWER TRANSISTOR
LDMOS FET**



**CASE 449-02, STYLE 1
PLD-1**

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Table 1. Maximum Ratings

| Rating | Symbol | Value | Unit |
|---|-----------|------------|------------------|
| Drain-Source Voltage | V_{DSS} | 17 | Vdc |
| Drain-Gate Voltage ($R_{GS} = 1.0$ M Ω) | V_{DGO} | 17 | Vdc |
| Gate-Source Voltage | V_{GS} | 4.0 | Vdc |
| Drain Current - Continuous | I_D | 1.5 | Adc |
| Total Device Dissipation @ $T_C = 85^\circ\text{C}$ | P_D | 10.5 | W |
| Storage Temperature Range | T_{stg} | -65 to 150 | $^\circ\text{C}$ |
| Operating Junction Temperature | T_J | 150 | $^\circ\text{C}$ |

Table 2. Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--------------------------------------|-----------------|-------|---------------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 6 | $^\circ\text{C}/\text{W}$ |

Table 3. Moisture Sensitivity Level

| Test Methodology | Rating | Package Peak Temperature | Unit |
|---------------------------------------|--------|--------------------------|------------------|
| Per JESD 22-A113, IPC/JEDEC J-STD-020 | 1 | 260 | $^\circ\text{C}$ |

NOTE - CAUTION - MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

Table 4. Electrical Characteristics ($T_C = 25^\circ\text{C}$, unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|---------------|------|-------|-----|----------|
| Off Characteristics | | | | | |
| Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 100 \text{ nAdc}$) | $V_{(BR)DSS}$ | — | 45 | — | Vdc |
| Drain-Source Leakage Current ($V_{DS} = 12.5 \text{ Vdc}, V_{GS} = 0$) | I_{DSS} | — | — | 100 | nAdc |
| Gate-Source Leakage Current ($V_{GS} = 5 \text{ Vdc}, V_{DS} = 0$) | I_{GSS} | — | — | 100 | nAdc |
| On Characteristics | | | | | |
| Gate Threshold Voltage | V_{GS} | — | 2.4 | — | Vdc |
| Resistance Drain-Source ($V_{GS} = 5 \text{ Vdc}, I_D = 300 \text{ mA}$) | $R_{DS(on)}$ | 0.05 | 0.5 | 0.8 | Ω |
| Dynamic Characteristics | | | | | |
| Input Capacitance ($V_{DS} = 12.5 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$) | C_{iss} | — | 30.77 | — | pF |
| Output Capacitance ($V_{DS} = 12.5 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$) | C_{oss} | — | 15.6 | — | pF |
| Feedback Capacitance ($V_{DS} = 12.5 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$) | C_{rss} | — | 0.82 | — | pF |
| Typical Characteristics | | | | | |
| Power Gain ($V_{DD} = 12.5 \text{ Vdc}, P_{in} = 27.5 \text{ dBm}, f = 849 \text{ MHz}$) | G_{ps} | — | 10.5 | — | dB |
| Drain Efficiency ($V_{DD} = 12.5 \text{ Vdc}, P_{in} = 27.5 \text{ dBm}, f = 849 \text{ MHz}$) | η_D | — | 55 | — | % |
| Output Power | P_{out} | — | 38 | — | dBm |

TYPICAL CHARACTERISTICS

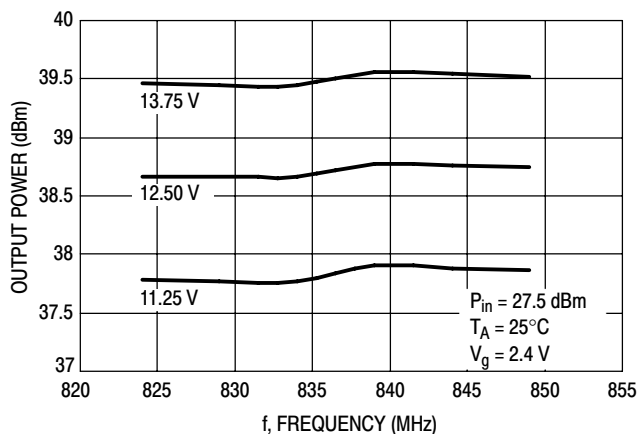


Figure 1. Output Power versus Frequency

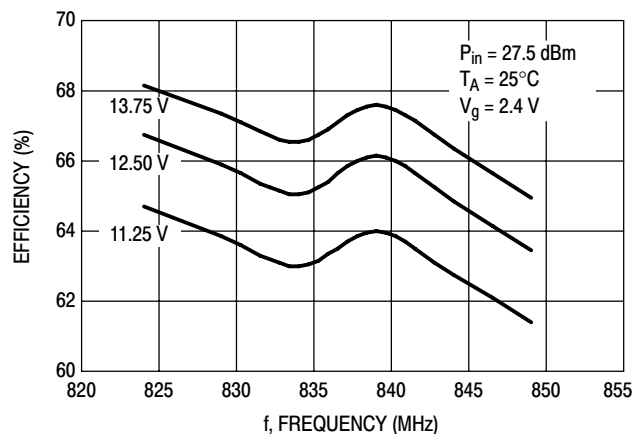


Figure 2. Efficiency versus Frequency

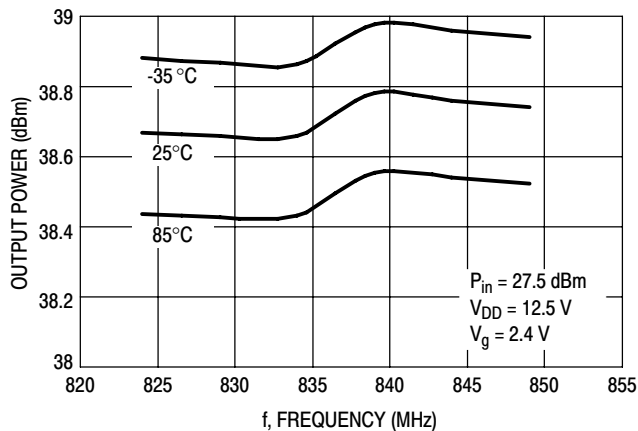


Figure 3. Output Power versus Frequency

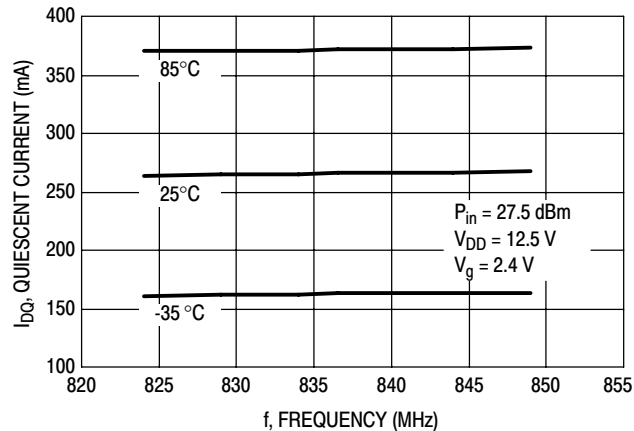
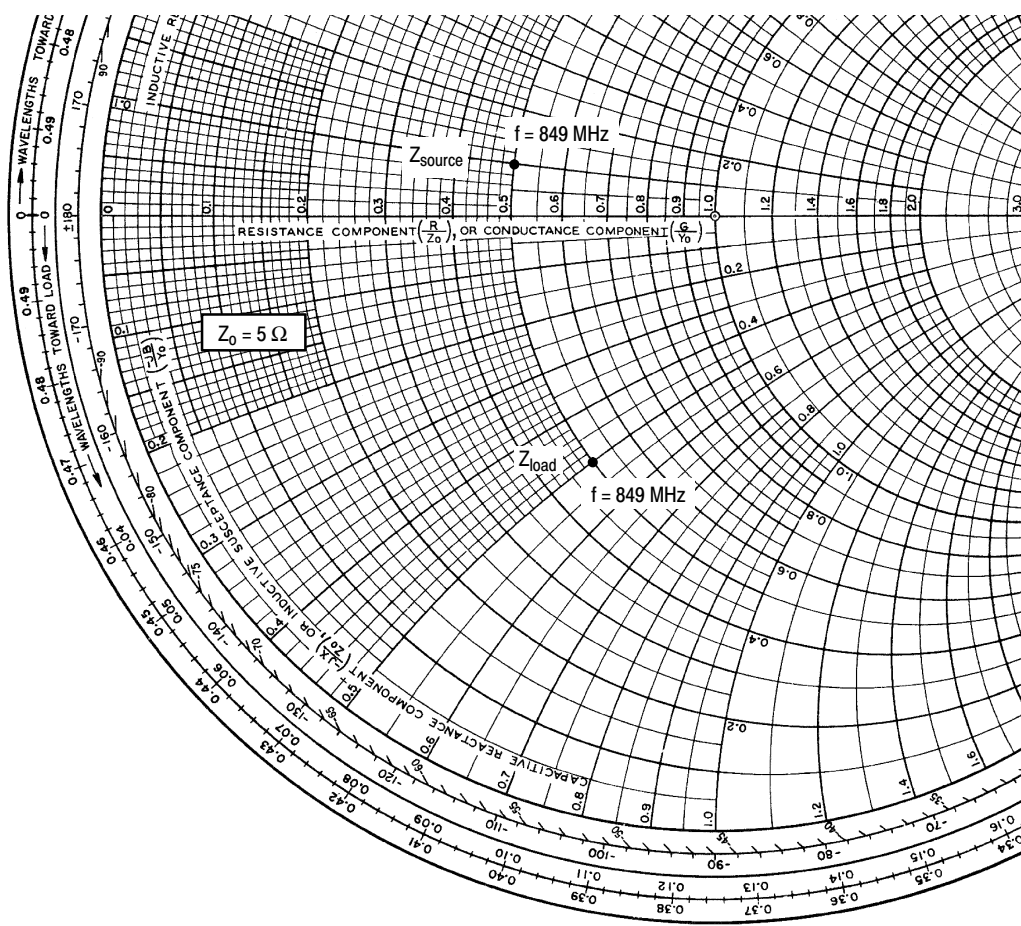


Figure 4. Quiescent Current versus Frequency

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$V_{DD} = 12.5 \text{ Vdc}$, $I_{DQ} = 300 \text{ mA}$, $P_{out} = 38 \text{ dBm}$

| f MHz | Z_{source} Ω | Z_{load} Ω |
|----------|--------------------------|------------------------|
| 849 | $2.5 + j0.5$ | $2.5 - j2.5$ |

Z_{source} = Test circuit impedance as measured from gate to ground.

Z_{load} = Test circuit impedance as measured from drain to ground.

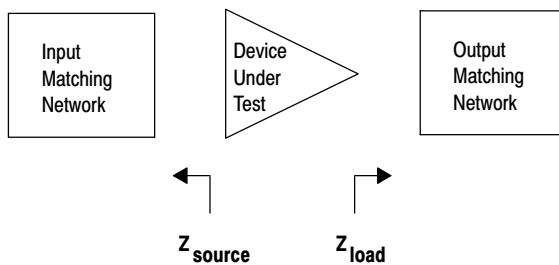


Figure 5. Series Equivalent Source and Load Impedance

REVISION HISTORY

The following table summarizes revisions to this document.

| Revision | Date | Description |
|----------|-----------|---|
| 1 | Dec. 2009 | <ul style="list-style-type: none">Data sheet archived. Part no longer manufactured. |

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