

RF MOSFET Power Transistor, 2W, 28V

500 - 1000 MHz

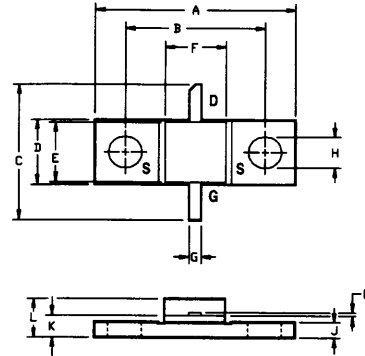
LF2802A

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- Common Source Configuration
- Lower Noise Floor
- Applications

Broadband Linear Operation
500 MHz to 1400 MHz



Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 65 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Drain-Source Current | I_{DS} | 0.7 | A |
| Power Dissipation | P_D | 8 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 21.8 | °C/W |

| LETTER DIM | MILLIMETERS | | INCHES | |
|------------|-------------|-------|--------|------|
| | MIN | MAX | MIN | MAX |
| A | 20.70 | 20.96 | .815 | .825 |
| B | 14.35 | 14.61 | .565 | .575 |
| C | 13.72 | 14.22 | .540 | .560 |
| D | 6.27 | 6.53 | .247 | .257 |
| E | 6.22 | 6.48 | .245 | .255 |
| F | 6.22 | 6.48 | .245 | .255 |
| G | 1.14 | 1.40 | .045 | .055 |
| H | 2.92 | 3.18 | .115 | .125 |
| J | 1.40 | 1.65 | .055 | .065 |
| K | 1.96 | 2.46 | .077 | .097 |
| L | 3.61 | 4.37 | .142 | .172 |
| M | .08 | .15 | .003 | .006 |

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------------|--------------------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS}=0.0\text{ V}, I_{DS}=1.0\text{ mA}$ |
| Drain-Source Leakage Current | I_{DSS} | - | 0.5 | mA | $V_{DS}=28.0\text{ V}, V_{GS}=0.0\text{ V}$ |
| Gate-Source Leakage Current | I_{GSS} | - | 0.5 | μA | $V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS}=10.0\text{ V}, I_{DS}=5.0\text{ mA}$ |
| Forward Transconductance | G_M | 40 | - | mS | $V_{DS}=10.0\text{ V}, I_{DS}=50.0\text{ mA}, \Delta V_{GS}=1.0\text{ V}, 80\ \mu\text{s Pulse}$ |
| Input Capacitance | C_{ISS} | - | 3.5 | pF | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$ |
| Output Capacitance | C_{OSS} | - | 3.75 | pF | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$ |
| Reverse Capacitance | C_{RSS} | - | 1.2 | pF | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$ |
| Power Gain | G_P | 10 | - | dB | $V_{DD}=28.0\text{ V}, I_{DO}=25\text{ mA}, P_{OUT}=2.0\text{ W}, F=1.0\text{ GHz}$ |
| Drain Efficiency | η_D | 40 | - | % | $V_{DD}=28.0\text{ V}, I_{DO}=25\text{ mA}, P_{OUT}=2.0\text{ W}, F=1.0\text{ GHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 20:1 | - | $V_{DD}=28.0\text{ V}, I_{DO}=25\text{ mA}, P_{OUT}=2.0\text{ W}, F=1.0\text{ GHz}$ |

Specifications Subject to Change Without Notice.

9-68

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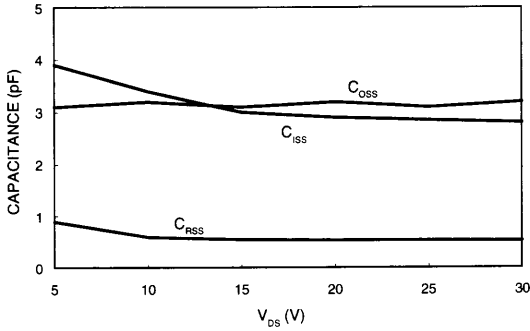
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Asia/Pacific: Tel. +81 (03) 3226-1671
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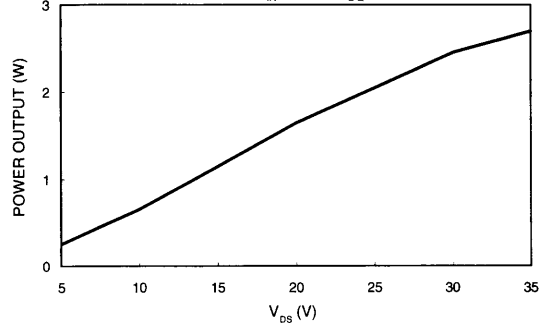
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Typical Broadband Performance Curves

CAPACITANCES vs VOLTAGE
F=1.0 MHz

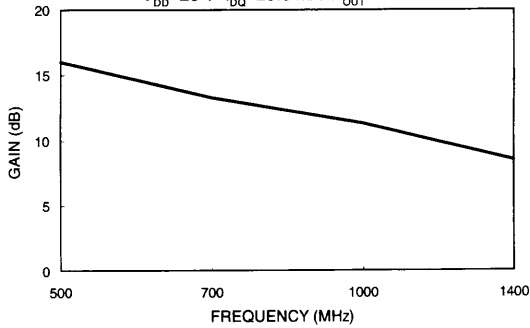


POWER OUTPUT vs VOLTAGE
F=1.0 GHz P_{IN}=0.2 W I_{DQ}=25 mA



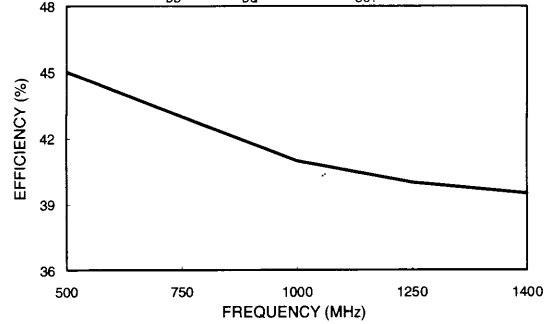
GAIN vs FREQUENCY

V_{DD}=28 V I_{DQ}=25.0 mA P_{OUT}=2.0 W



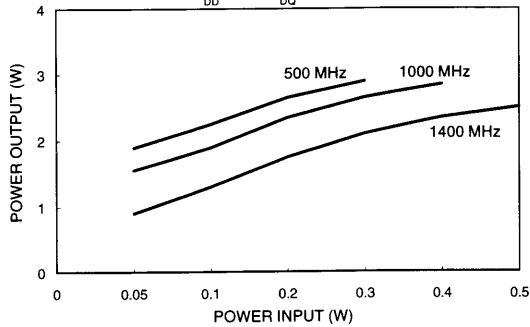
EFFICIENCY vs FREQUENCY

V_{DD}=28 V I_{DQ}=25.0 mA P_{OUT}=2.0 W



POWER OUTPUT vs POWER OUTPUT

V_{DD}=28 V I_{DQ}=25.0 mA



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Typical Device Impedance

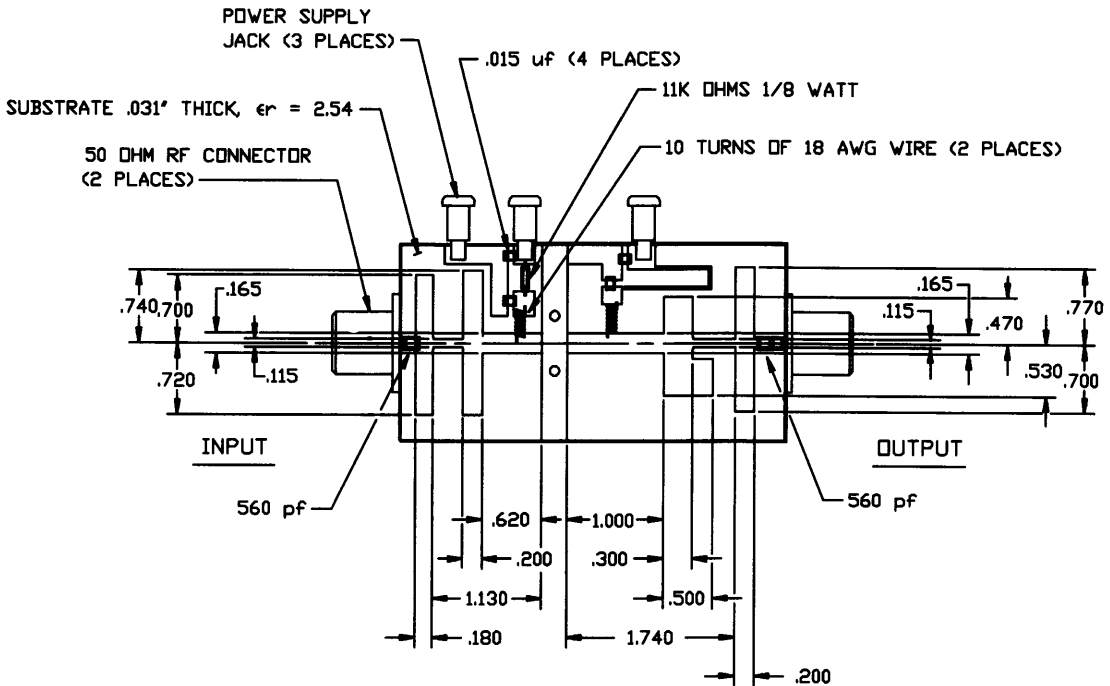
| Frequency (MHz) | Z _{IN} (OHMS) | Z _{LOAD} (OHMS) |
|-----------------|------------------------|--------------------------|
| 500 | 10.0 - j 41.5 | 40.0 + j 53.0 |
| 1000 | 4.2 - j 12.0 | 11.85 + j 33.0 |
| 1400 | 3.5 - j 1.0 | 7.5 + j 23.3 |

V_{DD}=28 V, I_{DQ}=25 mA, P_{OUT}=2.0 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to source.

Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to ground.

RF Test Fixture



Specifications Subject to Change Without Notice.

RF MOSFET Power Transistor, 5W, 28V

500 - 1000 MHz

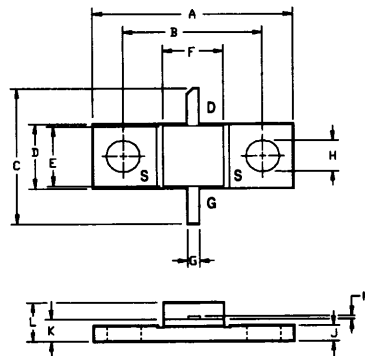
LF2805A

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- Common Source Configuration
- Lower Noise Floor
- Applications

Broadband Linear Operation
500 MHz to 1400 MHz



Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 65 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Drain-Source Current | I_{DS} | 1.4 | A |
| Power Dissipation | P_D | 14.4 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -65 to +150 | °C |
| Thermal Resistance | θ_{JC} | 12.1 | °C/W |

| LETTER DIM | MILLIMETERS | | INCHES | |
|------------|-------------|-------|--------|------|
| | MIN | MAX | MIN | MAX |
| A | 20.70 | 20.96 | .815 | .825 |
| B | 14.35 | 14.61 | .565 | .575 |
| C | 13.72 | 14.22 | .540 | .560 |
| D | 6.27 | 6.53 | .247 | .257 |
| E | 6.22 | 6.48 | .245 | .255 |
| F | 6.22 | 6.48 | .245 | .255 |
| G | 1.14 | 1.40 | .045 | .055 |
| H | 2.92 | 3.18 | .115 | .125 |
| J | 1.40 | 1.65 | .055 | .065 |
| K | 1.96 | 2.46 | .077 | .097 |
| L | 3.61 | 4.37 | .142 | .172 |
| M | .08 | .15 | .003 | .006 |

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------------|---------------------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS}=0.0\text{ V}, I_{DS}=2.0\text{ mA}$ |
| Drain-Source Leakage Current | I_{DSS} | - | 1.0 | mA | $V_{DS}=28.0\text{ V}, V_{GS}=0.0\text{ V}$ |
| Gate-Source Leakage Current | I_{GSS} | - | 1.0 | μA | $V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS}=10.0\text{ V}, I_{DS}=10.0\text{ mA}$ |
| Forward Transconductance | G_M | 80 | - | mS | $V_{DS}=10.0\text{ V}, I_{DS}=100.0\text{ mA}, \Delta V_{GS}=1.0\text{ V}, 80\ \mu\text{s Pulse}$ |
| Input Capacitance | C_{ISS} | - | 7 | pF | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$ |
| Output Capacitance | C_{OSS} | - | 5 | pF | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$ |
| Reverse Capacitance | C_{RSS} | - | 2.4 | pF | $V_{DS}=28.0\text{ V}, F=1.0\text{ MHz}$ |
| Power Gain | G_P | 10 | - | dB | $V_{DD}=28.0\text{ V}, I_{DQ}=50\text{ mA}, P_{OUT}=5.0\text{ W}, F=1.0\text{ GHz}$ |
| Drain Efficiency | η_D | 50 | - | % | $V_{DD}=28.0\text{ V}, I_{DQ}=50\text{ mA}, P_{OUT}=5.0\text{ W}, F=1.0\text{ GHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 20:1 | - | $V_{DD}=28.0\text{ V}, I_{DQ}=50\text{ mA}, P_{OUT}=5.0\text{ W}, F=1.0\text{ GHz}$ |

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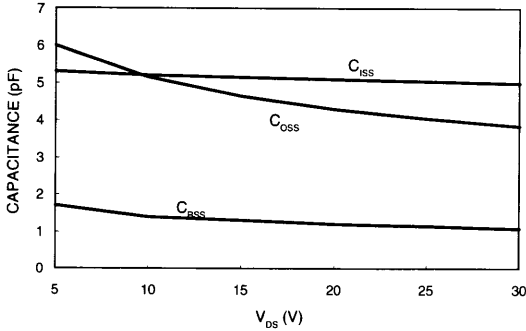
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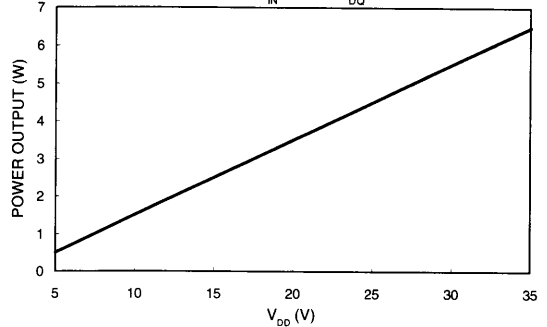
9-71

Typical Broadband Performance Curves

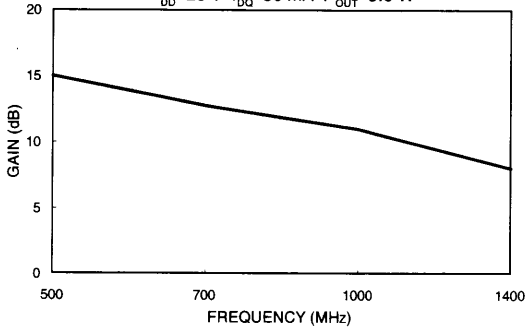
CAPACITANCES vs VOLTAGE
F=1.0 MHz



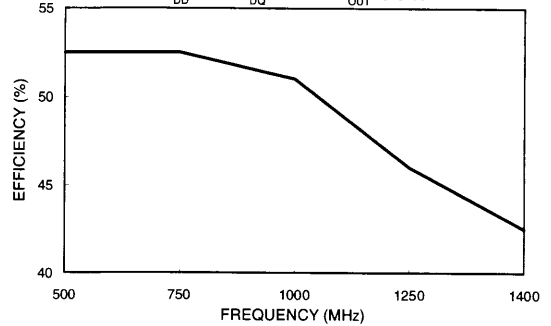
POWER OUTPUT vs VOLTAGE
F=1.0 GHz P_{IN}=0.5 W I_{DC}=50 mA



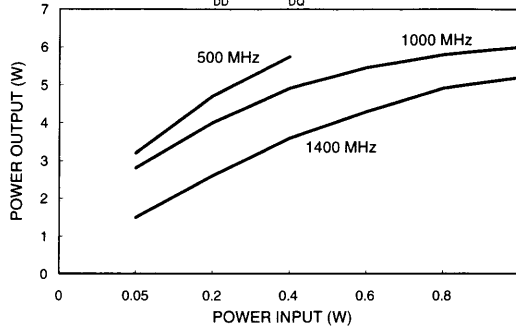
GAIN vs FREQUENCY
V_{DD}=28 V I_{DC}=50 mA P_{OUT}=5.0 W



EFFICIENCY vs FREQUENCY
V_{DD}=28 V I_{DC}=50 mA P_{OUT}=5.0 W



POWER OUTPUT vs POWER OUTPUT
V_{DD}=28 V I_{DC}=50 mA



Specifications Subject to Change Without Notice.

Typical Device Impedance

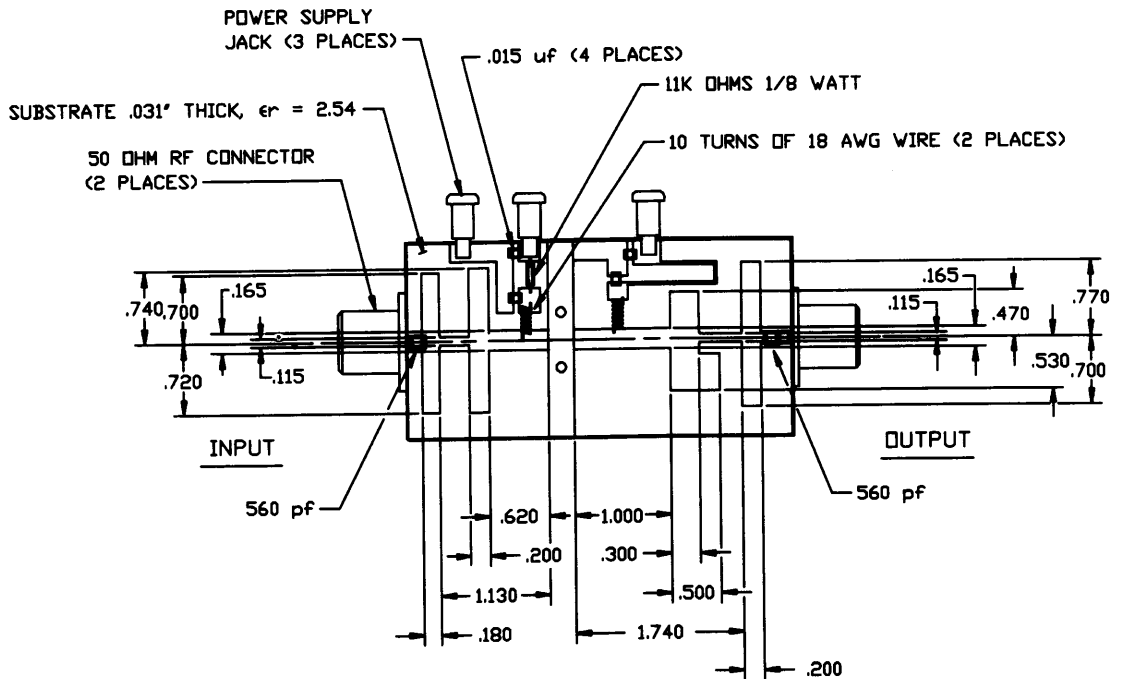
| Frequency (MHz) | Z _{IN} (OHMS) | Z _{LOAD} (OHMS) |
|-----------------|------------------------|--------------------------|
| 500 | 4.3 - j 29.0 | 27.3 + j 28.6 |
| 1000 | 2.2 - j 2.75 | 8.0 + j 16.0 |
| 1400 | 2.8 + j 3.0 | 9.4 + j 10.6 |

V_{DD}=28 V, I_{DD}=50 mA, P_{OUT}=5.0 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to source.

Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to ground.

RF Test Fixture



Specifications Subject to Change Without Notice.

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RF MOSFET Power Transistor, 10W, 28V

500 - 1000 MHz

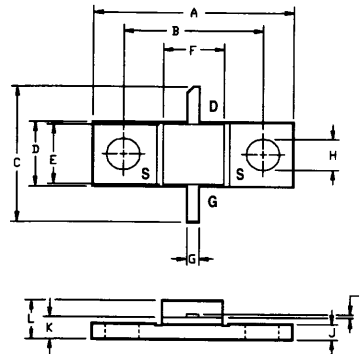
LF2810A

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- Common Source Configuration
- Lower Noise Floor
- Applications

Broadband Linear Operation
500 MHz to 1200 MHz



Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 65 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Drain-Source Current | I_{DS} | 2.8 | A |
| Power Dissipation | P_D | 26.5 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 6.6 | °C/W |

| LETTER DIM | MILLIMETERS | | INCHES | |
|------------|-------------|-------|--------|------|
| | MIN | MAX | MIN | MAX |
| A | 20.70 | 20.96 | .815 | .825 |
| B | 14.35 | 14.61 | .565 | .575 |
| C | 13.72 | 14.22 | .540 | .560 |
| D | 6.27 | 6.53 | .247 | .257 |
| E | 6.22 | 6.48 | .245 | .255 |
| F | 6.22 | 6.48 | .245 | .255 |
| G | 1.14 | 1.40 | .045 | .055 |
| H | 2.92 | 3.18 | .115 | .125 |
| J | 1.40 | 1.65 | .055 | .065 |
| K | 1.96 | 2.46 | .077 | .097 |
| L | 3.61 | 4.37 | .142 | .172 |
| M | .08 | .15 | .003 | .006 |

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------------|------------------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS}=0.0\text{ V}$, $I_{DS}=4.0\text{ mA}$ |
| Drain-Source Leakage Current | I_{DSS} | - | 2.0 | mA | $V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}$ |
| Gate-Source Leakage Current | I_{GSS} | - | 2.0 | μA | $V_{GS}=20\text{ V}$, $V_{DS}=0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS}=10.0\text{ V}$, $I_{DS}=20.0\text{ mA}$ |
| Forward Transconductance | G_M | 160 | - | mS | $V_{DS}=10.0\text{ V}$, $I_{DS}=200.0\text{ mA}$, 80-30 μs Pulse |
| Input Capacitance | C_{ISS} | - | 14 | pF | $V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$ |
| Output Capacitance | C_{OSS} | - | 10 | pF | $V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$ |
| Reverse Capacitance | C_{RSS} | - | 4.8 | pF | $V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$ |
| Power Gain | G_P | 10 | - | dB | $V_{DD}=28.0\text{ V}$, $I_{DQ}=100\text{ mA}$, $P_{OUT}=10.0\text{ W}$, $F=1.0\text{ GHz}$ |
| Drain Efficiency | η_D | 50 | - | % | $V_{DD}=28.0\text{ V}$, $I_{DQ}=100\text{ mA}$, $P_{OUT}=10.0\text{ W}$, $F=1.0\text{ GHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 20:1 | - | $V_{DD}=28.0\text{ V}$, $I_{DQ}=100\text{ mA}$, $P_{OUT}=10.0\text{ W}$, $F=1.0\text{ GHz}$ |

Specifications Subject to Change Without Notice.

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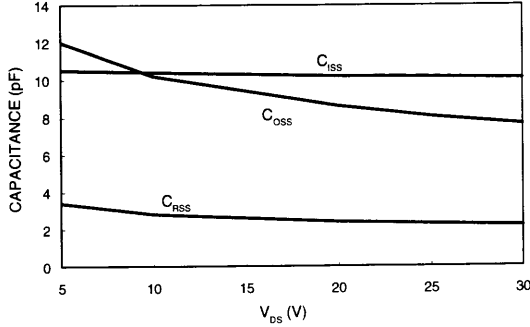
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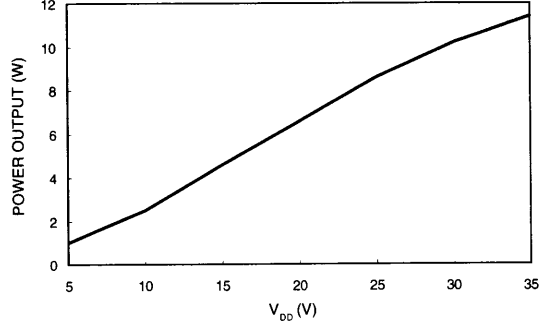
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Typical Broadband Performance Curves

CAPACITANCES vs VOLTAGE
F=1.0 MHz

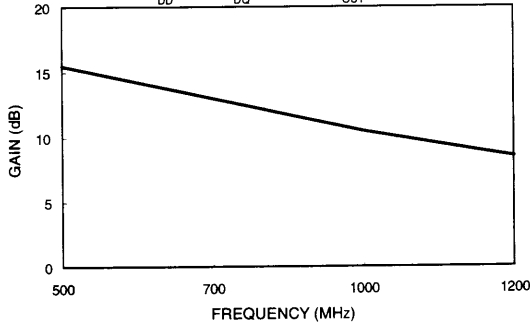


POWER OUTPUT vs VOLTAGE
F=1.0 GHz $P_{IN}=1.0\text{ W}$ $I_{DQ}=100\text{ mA}$



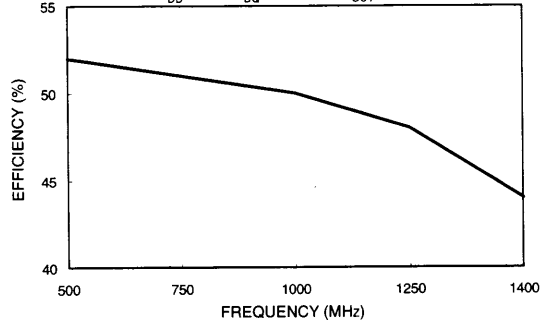
GAIN vs FREQUENCY

$V_{DD}=28\text{ V}$ $I_{DQ}=100\text{ mA}$ $P_{OUT}=10\text{ W}$



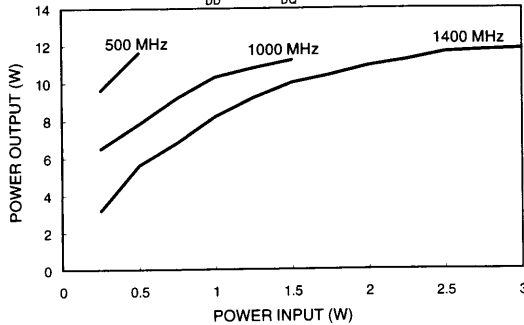
EFFICIENCY vs FREQUENCY

$V_{DD}=28\text{ V}$ $I_{DQ}=100\text{ mA}$ $P_{OUT}=10\text{ W}$



POWER OUTPUT vs POWER OUTPUT

$V_{DD}=28\text{ V}$ $I_{DQ}=200\text{ mA}$



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Typical Device Impedance

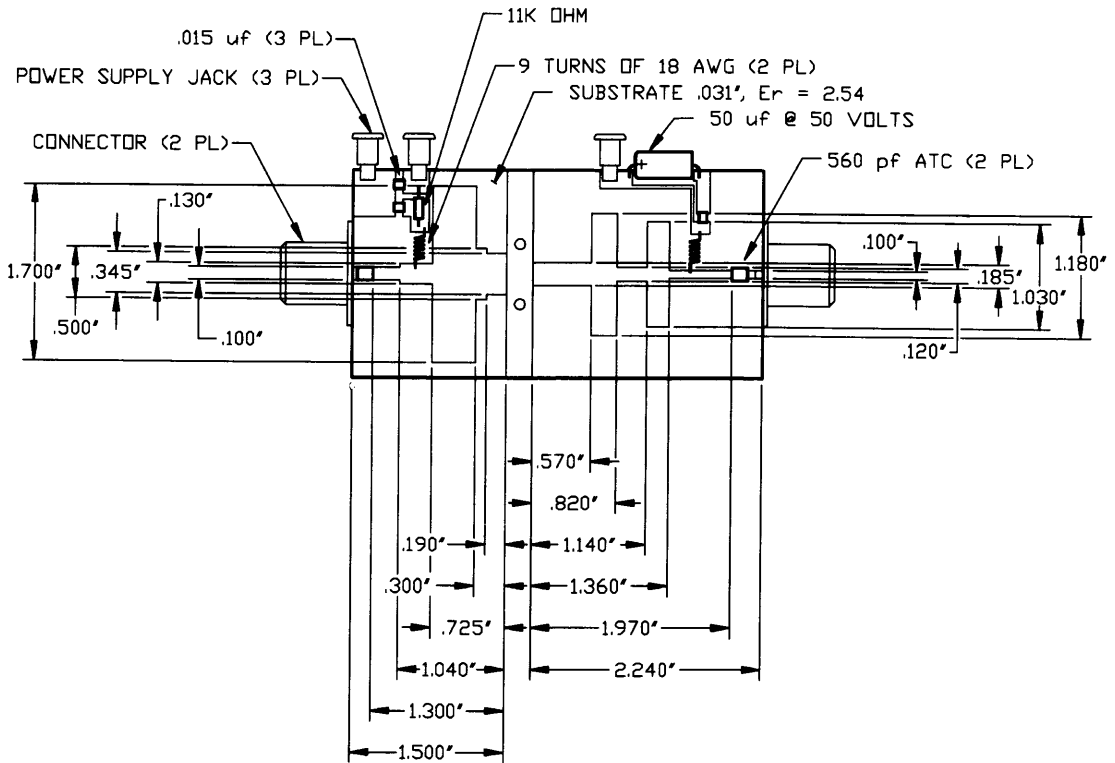
| Frequency (MHz) | Z _{IN} (OHMS) | Z _{LOAD} (OHMS) |
|-----------------|------------------------|--------------------------|
| 500 | 0.60 - j 9.5 | 10.0 + j 17.0 |
| 1000 | 1.4 + j 1.0 | 4.85 + j 7.9 |
| 1200 | 1.5 + j 3.5 | 5.7 + j 5.7 |

V_{DD}=28 V, I_{DQ}=100 mA, P_{OUT}=10 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to source.

Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to ground.

RF Test Fixture



Specifications Subject to Change Without Notice.

9-76

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RF MOSFET Power Transistor, 40W, 26V

500 - 1000 MHz

LF2840G

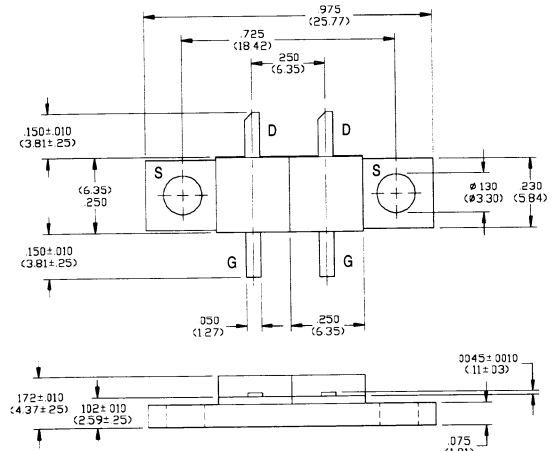
V2.00

Features

- N-Channel Enhancement Mode Device
- 40 Watts CW
- Common Source Gemini Configuration
- RESFET Structure
- Gold Metallization

Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Drain-Source Current | I_{DS} | 10 | A |
| Power Dissipation | P_D | 109 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 1.6 | °C/W |



UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES ±.005* (MILLIMETERS ±.13MM)

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|-------|-------|----------------------------------------------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | 60 | - | V | $I_D=20.0$ mA, $V_{GS}=0.0$ V* |
| Drain-Source Leakage Current | I_{DSS} | - | 2.0 | mA | $V_{DS}=28.0$ V, $V_{GS}=0.0$ V* |
| Gate-Source Leakage Current | I_{GSS} | - | 1.0 | μA | $V_{GS}=20.0$ V, $V_{DS}=0.0$ V* |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS}=10.0$ V, $I_{DS}=100$ mA* |
| Forward Transconductance | G_M | 0.5 | - | S | $V_{DS}=10.0$ V, $I_{DS}=1000$ mA (pulsed)* |
| Input Capacitance | C_{ISS} | - | 300 | pF | $V_{DS}=28.0$ V, $F=1.0$ MHz (Reference Only)* |
| Output Capacitance | C_{OSS} | - | 90 | pF | $V_{DS}=28.0$ V, $F=1.0$ MHz* |
| Reverse Capacitance | C_{RSS} | - | 30 | pF | $V_{DS}=28.0$ V, $F=1.0$ MHz* |
| Power Gain | G_p | 10 | - | dB | $V_{DD}=26.0$ V, $I_{DQ}=400$ mA, $P_{OUT}=40$ W, $F=1000$ MHz |
| Drain Efficiency | η_D | 50 | - | % | $V_{DD}=26.0$ V, $I_{DQ}=400$ mA, $P_{OUT}=40$ W, $F=1000$ MHz |
| Load Mismatch Tolerance | VSWR-T | - | 3.0:1 | - | $V_{DD}=26.0$ V, $I_{DQ}=400$ mA, $P_{OUT}=40$ W, $F=1000$ MHz |

* Per Side

Typical Optimum Device Impedance

| F(MHz) | $Z_{in}(\Omega)$ | $Z_{LOAD}(\Omega)$ |
|--------|------------------|--------------------|
| 1000 | 6.8 + j18 | 4.2 - j1.6 |

Specifications Subject to Change Without Notice.

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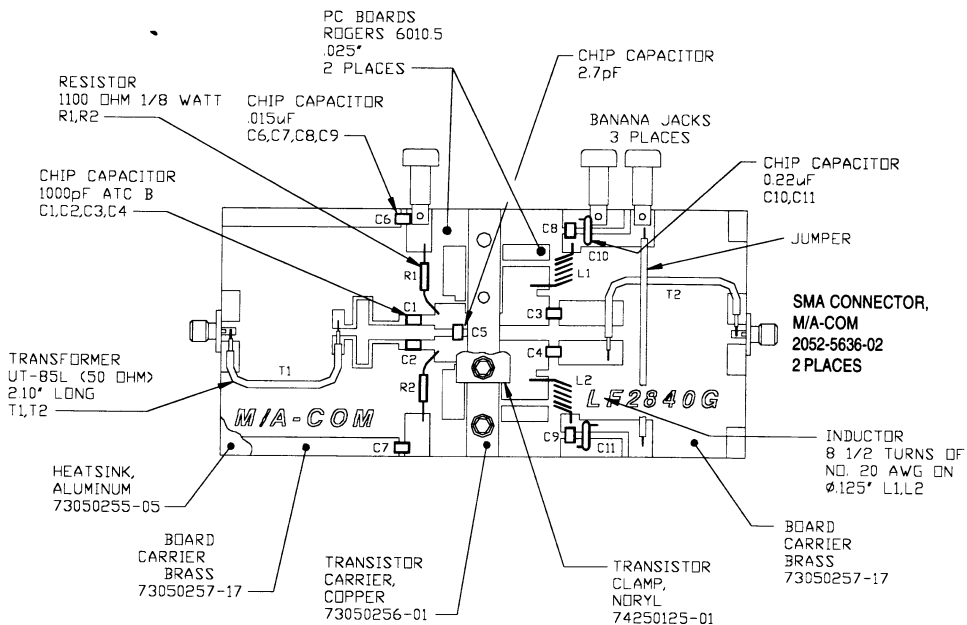
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Asia/Pacific: Tel. +81 (03) 3226-1671
Fax +81 (03) 3226-1451

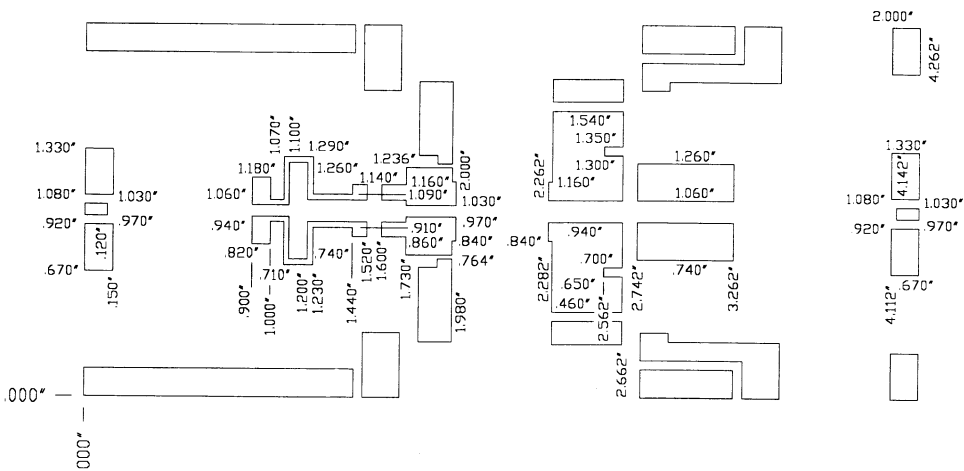
Europe: Tel. +44 (1344) 869 595
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RF Test Fixture



Test Fixture PC Board Dimensions



RF MOSFET Power Transistor, 30W, 40V

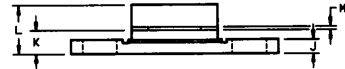
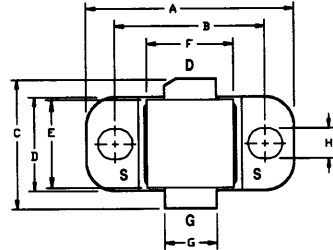
500 - 1000 MHz

LF4030C

V2.00

Features

- N-Channel Enhancement Mode Device
- Gold Metallized
- Resfet Structure
- Lower Capacitances for Broadband Operation
- Common Source Configuration
- Applications
 - Broadband Linear Operation
 - 500 MHz to 1200 MHz



Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 80 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Drain-Source Current | I_{DS} | 5 | A |
| Power Dissipation | P_D | 58 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 3 | °C/W |

| LETTER DIM | MILLIMETERS | | INCHES | |
|------------|-------------|-------|--------|------|
| | MIN | MAX | MIN | MAX |
| A | 22.73 | 22.99 | .895 | .905 |
| B | 16.38 | 16.64 | .645 | .655 |
| C | 13.72 | 14.22 | .540 | .560 |
| D | 10.03 | 10.29 | .395 | .405 |
| E | 9.40 | 9.65 | .370 | .380 |
| F | 9.40 | 9.65 | .370 | .380 |
| G | 5.59 | 5.84 | .220 | .230 |
| H | 3.12 | 3.38 | .123 | .133 |
| J | 1.40 | 1.65 | .055 | .065 |
| K | 2.34 | 2.84 | .092 | .112 |
| L | 4.90 | 5.72 | .193 | .225 |
| M | .05 | .13 | .002 | .005 |

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|-----|---------------|---------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | 80 | - | V | $V_{GS}=0.0\text{ V}, I_{DS}=20.0\text{ mA}$ |
| Drain-Source Leakage Current | I_{DSS} | - | 2.0 | mA | $V_{DS}=40.0\text{ V}, V_{GS}=0.0\text{ V}$ |
| Gate-Source Leakage Current | I_{GSS} | - | 10 | μA | $V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 1.0 | 6.0 | V | $V_{DS}=10.0\text{ V}, I_{DS}=100.0\text{ mA}$ |
| Forward Transconductance | G_M | 500 | - | mS | $V_{DS}=10.0\text{ V}, I_{DS}=1.0\text{ mA}, 300\text{ }\mu\text{s Pulse}$ |
| Input Capacitance | C_{ISS} | - | 55 | pF | $V_{DS}=40.0\text{ V}, F=1.0\text{ MHz}, \text{Reference only.}^*$ |
| Output Capacitance | C_{OSS} | - | 25 | pF | $V_{DS}=40.0\text{ V}, F=1.0\text{ MHz}$ |
| Reverse Capacitance | C_{RSS} | - | 7 | pF | $V_{DS}=40.0\text{ V}, F=1.0\text{ MHz}$ |
| Power Gain | G_P | 10 | - | dB | $V_{DD}=40.0\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=30.0\text{ W}, F=1.0\text{ GHz}$ |
| Drain Efficiency | η_D | 50 | - | % | $V_{DD}=40.0\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=30.0\text{ W}, F=1.0\text{ GHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 3:1 | - | $V_{DD}=40.0\text{ V}, I_{DQ}=100\text{ mA}, P_{OUT}=30.0\text{ W}, F=1.0\text{ GHz}$ |

* Note: Due to the internal matching network, this parameter cannot be measured.

Specifications Subject to Change Without Notice.

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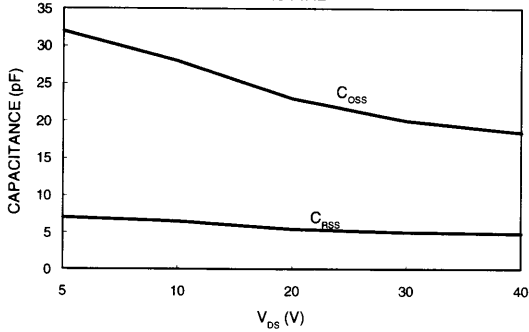
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Typical Broadband Performance Curves

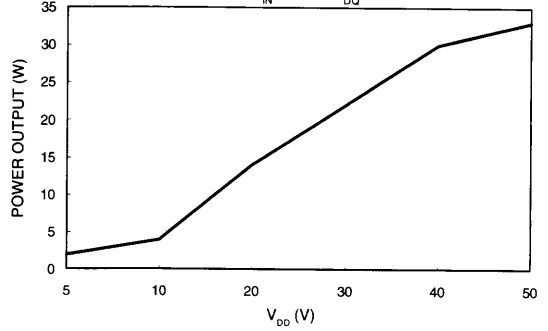
CAPACITANCES vs VOLTAGE

F=1.0 MHz



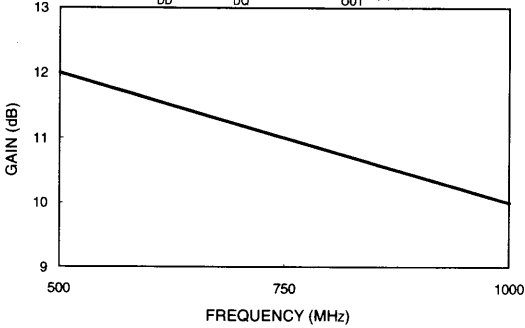
POWER OUTPUT vs VOLTAGE

F=1.0 GHz P_{IN}=3.0 W I_{D0}=100 mA



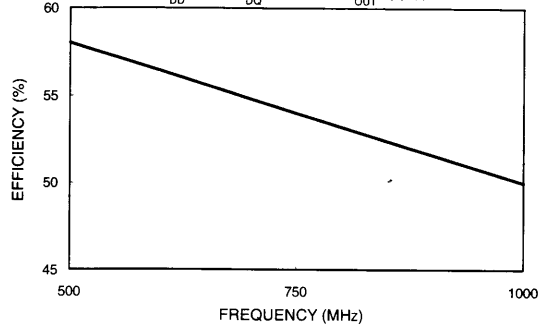
GAIN vs FREQUENCY

V_{DD}=40 V I_{D0}=100 mA P_{OUT}=30 W



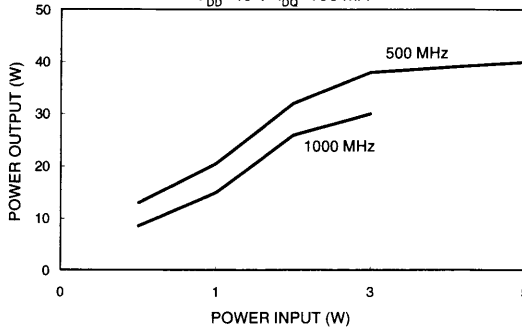
EFFICIENCY vs FREQUENCY

V_{DD}=40 V I_{D0}=100 mA P_{OUT}=30 W



POWER OUTPUT vs POWER OUTPUT

V_{DD}=40 V I_{D0}=100 mA



Specifications Subject to Change Without Notice.

Typical Device Impedance

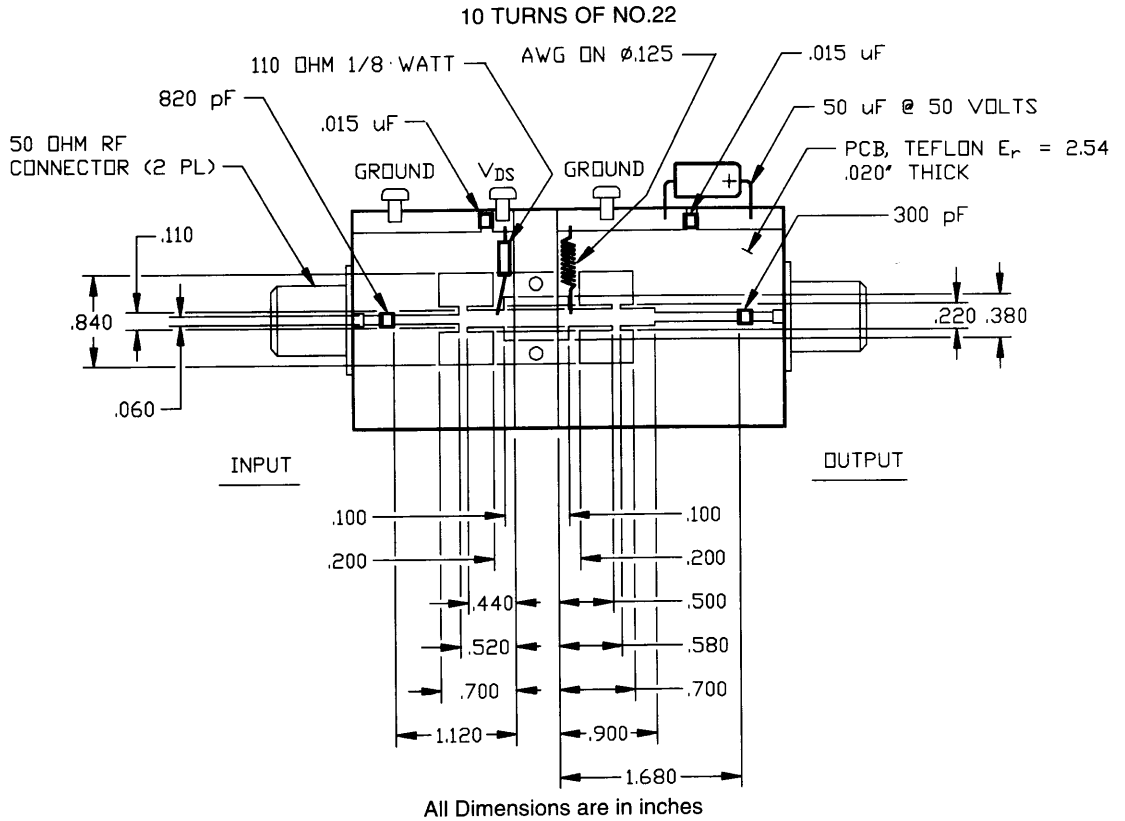
| Frequency (MHz) | Z _{IN} (OHMS) | Z _{LOAD} (OHMS) |
|-----------------|------------------------|--------------------------|
| 500 | 1.3 + j 1.6 | 5.5 + j 6.5 |
| 640 | 2.0 + j 4.0 | 4.0 + j 5.5 |
| 850 | 4.5 + j 3.0 | 3.2 + j 3.0 |
| 1000 | 3.5 + j 2.0 | 3.0 + j 2.0 |

V_{DD}=40 V, I_{DQ}=100 mA, P_{OUT}=30.0 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to source.

Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to ground.

RF Test Fixture



Specifications Subject to Change Without Notice.

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RF MOSFET Power Transistor, 100W, 40V

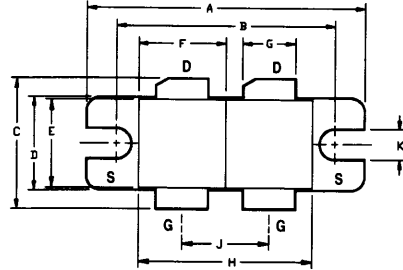
500 - 1000 MHz

LF40100M

V2.00

Features

- Gold Metallized
- Input Matched
- Resfet Structure
- Lower Capacitances for Broadband Operation
- N-Channel Enhancement Mode Device
- Common Source Configuration
- Push-Pull Applications
- Broadband Linear Operation 500 MHz to 1000 MHz



Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|----------------------|---------------|-------------|-------|
| Drain-Source Voltage | V_{DS} | 80 | V |
| Gate-Source Voltage | V_{GS} | 20 | V |
| Drain-Source Current | I_{DS} | 20 | A |
| Power Dissipation | P_D | 233 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 0.75 | °C/W |

| LETTER | MILLIMETERS | | INCHES | |
|--------|-------------|-------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 30.35 | 30.61 | 1.195 | 1.205 |
| B | 23.65 | 23.90 | .931 | .941 |
| C | 12.72 | 14.22 | .540 | .560 |
| D | 9.63 | 9.88 | .379 | .389 |
| E | 9.40 | 9.65 | .370 | .380 |
| F | 9.40 | 9.65 | .370 | .380 |
| G | 5.59 | 5.84 | .220 | .230 |
| H | 18.80 | 19.30 | .740 | .760 |
| J | 9.40 | 9.65 | .370 | .380 |
| K | 3.12 | 3.38 | .123 | .133 |
| L | 1.47 | 1.57 | .058 | .062 |
| M | 2.39 | 2.74 | .094 | .108 |
| N | 5.03 | 5.69 | .198 | .224 |
| P | .05 | .13 | .002 | .005 |

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|-----|---------------|----------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | 80 | - | V | $V_{GS}=0.0\text{ V}, I_{DS}=40.0\text{ mA}^*$ |
| Drain-Source Leakage Current | I_{DSS} | - | 4.0 | mA | $V_{DS}=40.0\text{ V}, V_{GS}=0.0\text{ V}^*$ |
| Gate-Source Leakage Current | I_{GSS} | - | 20 | μA | $V_{GS}=20\text{ V}, V_{DS}=0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 1.0 | 6.0 | V | $V_{DS}=10.0\text{ V}, I_{DS}=200.0\text{ mA}^*$ |
| Forward Transconductance | G_M | 1.0 | - | S | $V_{DS}=10.0\text{ V}, I_{DS}=2.0\text{ mA}, 300\text{ }\mu\text{s Pulse}^*$ |
| Input Capacitance | C_{ISS} | - | 110 | pF | $V_{DS}=40.0\text{ V}, F=1.0\text{ MHz}, \text{Reference only.}^{**}$ |
| Output Capacitance | C_{OSS} | - | 50 | pF | $V_{DS}=40.0\text{ V}, F=1.0\text{ MHz}^*$ |
| Reverse Capacitance | C_{RSS} | - | 14 | pF | $V_{DS}=40.0\text{ V}, F=1.0\text{ MHz}^*$ |
| Power Gain | G_P | 10 | - | dB | $V_{DD}=40.0\text{ V}, I_{DD}=400\text{ mA}, P_{OUT}=100.0\text{ W}, F=1.0\text{ GHz}$ |
| Drain Efficiency | η_D | 45 | - | % | $V_{DD}=40.0\text{ V}, I_{DD}=400\text{ mA}, P_{OUT}=100.0\text{ W}, F=1.0\text{ GHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 3:1 | - | $V_{DD}=40.0\text{ V}, I_{DG}=400\text{ mA}, P_{OUT}=100.0\text{ W}, F=1.0\text{ GHz}$ |

* Per side

** Note: Due to the internal matching network, this parameter cannot be measured.

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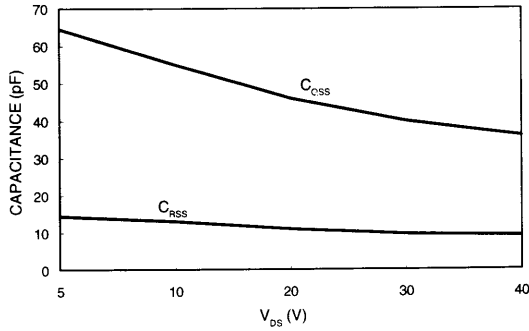
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Typical Broadband Performance Curves

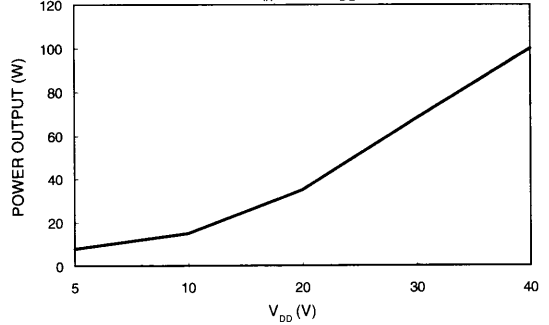
CAPACITANCES vs VOLTAGE

F=1.0 MHz



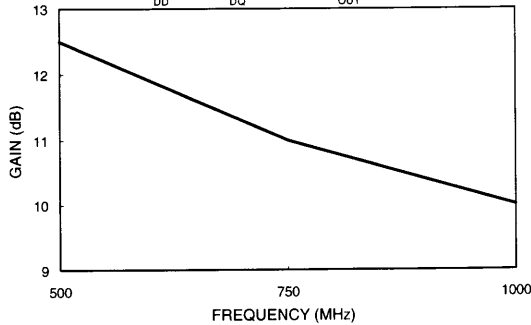
POWER OUTPUT vs VOLTAGE

F=1.0 GHz $P_{IN}=10\text{ W}$ $I_{DQ}=400\text{ mA}$



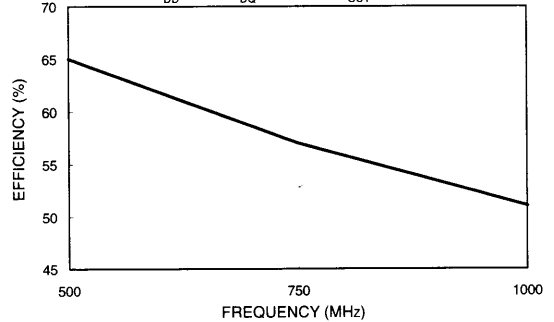
GAIN vs FREQUENCY

$V_{DD}=40\text{ V}$ $I_{DQ}=400\text{ mA}$ $P_{OUT}=100\text{ W}$



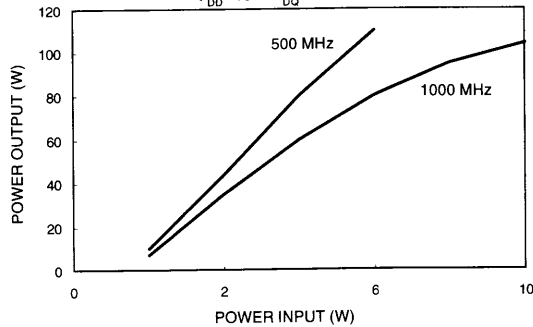
EFFICIENCY vs FREQUENCY

$V_{DD}=40\text{ V}$ $I_{DQ}=400\text{ mA}$ $P_{OUT}=100\text{ W}$



POWER OUTPUT vs POWER OUTPUT

$V_{DD}=40\text{ V}$ $I_{DQ}=400\text{ mA}$



- Continued next page -

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Typical Device Impedance

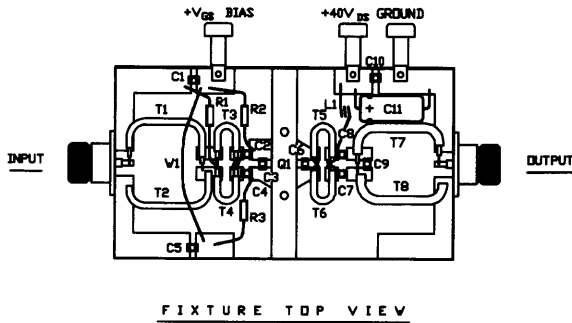
| Frequency (MHz) | Z _{IN} (OHMS) | Z _{LOAD} (OHMS) |
|-----------------|------------------------|--------------------------|
| 500 | 1.3 + j 5.5 | 5.2 + j 5.0 |
| 640 | 1.0 + j 6.5 | 3.3 - j 0.5 |
| 850 | 2.4 + j 9.4 | 2.2 - j 3.7 |
| 1000 | 3.5 + j 10.5 | 2.2 - j 5.5 |

V_{DD}=40 V, I_{DQ}=400 mA, P_{OUT}=100 Watts

Z_{IN} is the series equivalent input impedance of the device from gate to gate.

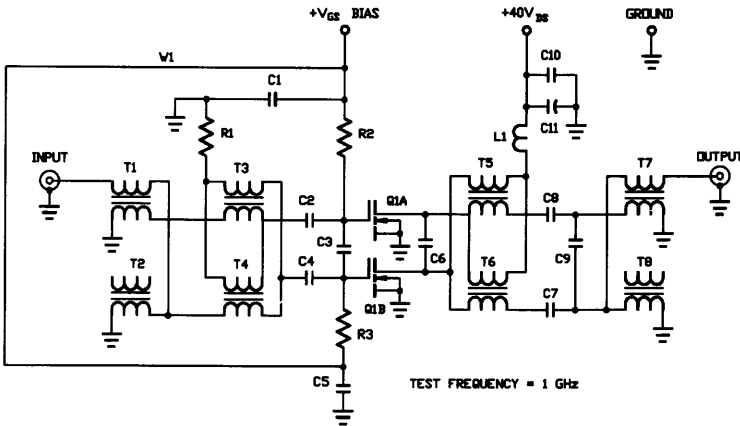
Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to drain.

RF Test Fixture



PARTS LIST

| | | | | |
|-----|----|-----|---------------|---------------------------------------|
| C1 | C5 | C10 | 560 pF | |
| C2 | C4 | C7 | C8 | 33 pF |
| C3 | | | 8.2 pF | |
| C6 | | | 11 pF | |
| C9 | | | 2.2 pF | |
| C11 | | | 50 uF @ 50 V. | |
| T1 | T2 | T7 | T8 | 1.50" DF 50 OHM COAX |
| T3 | T4 | T5 | T6 | .70" DF 25 OHM COAX |
| L1 | | | | 3 TURNS OF NL 18 AVG DN J25" DIAMETER |
| R1 | | | | 10 OHM .50 WATT |
| R2 | R3 | | | 56 OHM .50 WATT |
| V1 | | | | 2.70" DF NL 18 AVG |
| Q1 | | | | LF40100M |



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