

RF Power LDMOS Transistor

N-Channel Enhancement-Mode Lateral MOSFET

RF power transistor suitable for industrial heating applications from 728 to 2700 MHz. Device is capable of both CW and pulse operation.

2300 MHz

- Typical Single-Carrier W-CDMA Performance: $V_{DD} = 28$ Vdc, $I_{DQ} = 90$ mA, $P_{out} = 1.26$ W Avg., Input Signal PAR = 9.9 dB @ 0.01% Probability on CCDF.(1)

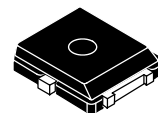
| Frequency | G_{ps} (dB) | η_D (%) | Output PAR (dB) | ACPR (dBc) | IRL (dB) |
|-----------|---------------|--------------|-----------------|------------|----------|
| 2300 MHz | 21.2 | 23.6 | 9.0 | -40.9 | -10 |
| 2350 MHz | 21.6 | 22.6 | 8.6 | -40.0 | -22 |
| 2400 MHz | 20.7 | 21.0 | 8.3 | -40.1 | -9 |

Features

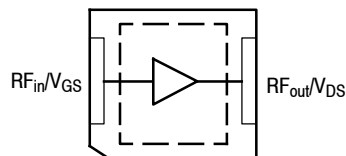
- Greater Negative Gate-Source Voltage Range for Improved Class C Operation
- Designed for Digital Predistortion Error Correction Systems
- Universal Broadband Driven Device with Internal RF Feedback

MHT1006NT1

**728–2700 MHz, 10 W CW, 28 V
INDUSTRIAL HEATING, RUGGED
RF POWER LDMOS TRANSISTOR**



**PLD-1.5W
PLASTIC**



(Top View)

Note: The center pad on the backside of the package is the source terminal for the transistor.

Figure 1. Pin Connections

1. All data measured in fixture with device soldered to heatsink.

Table 1. Maximum Ratings

| Rating | Symbol | Value | Unit |
|--|-----------|-------------|------|
| Drain-Source Voltage | V_{DSS} | -0.5, +65 | Vdc |
| Gate-Source Voltage | V_{GS} | -6.0, +10 | Vdc |
| Operating Voltage | V_{DD} | 32, +0 | Vdc |
| Storage Temperature Range | T_{stg} | -65 to +150 | °C |
| Case Operating Temperature Range | T_C | -40 to +150 | °C |
| Operating Junction Temperature Range (1,2) | T_J | -40 to +150 | °C |

Table 2. Thermal Characteristics

| Characteristic | Symbol | Value (2,3) | Unit |
|--|-----------------|-------------|------|
| Thermal Resistance, Junction to Case Case Temperature 81°C, 10 W CW, 28 Vdc, $I_{DQ} = 90$ mA, 2140 MHz | $R_{\theta JC}$ | 3.7 | °C/W |

Table 3. ESD Protection Characteristics

| Test Methodology | Class |
|---------------------------------------|-------|
| Human Body Model (per JESD22-A114) | 1B |
| Machine Model (per EIA/JESD22-A115) | A |
| Charge Device Model (per JESD22-C101) | III |

Table 4. Moisture Sensitivity Level

| Test Methodology | Rating | Package Peak Temperature | Unit |
|--------------------------------------|--------|--------------------------|------|
| Per JESD22-A113, IPC/JEDEC J-STD-020 | 3 | 260 | °C |

Table 5. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

Off Characteristics

| | | | | | |
|---|-----------|---|---|----|-----------------|
| Zero Gate Voltage Drain Leakage Current ($V_{DS} = 65$ Vdc, $V_{GS} = 0$ Vdc) | I_{DSS} | — | — | 10 | μAdc |
| Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28$ Vdc, $V_{GS} = 0$ Vdc) | I_{DSS} | — | — | 1 | μAdc |
| Gate-Source Leakage Current ($V_{GS} = 5$ Vdc, $V_{DS} = 0$ Vdc) | I_{GSS} | — | — | 1 | μAdc |

On Characteristics

| | | | | | |
|--|--------------|-----|-----|-----|-----|
| Gate Threshold Voltage ($V_{DS} = 10$ Vdc, $I_D = 12.1$ μAdc) | $V_{GS(th)}$ | 0.8 | 1.2 | 1.6 | Vdc |
| Gate Quiescent Voltage ($V_{DD} = 28$ Vdc, $I_D = 90$ mAdc, Measured in Functional Test) | $V_{GS(Q)}$ | 1.5 | 1.8 | 2.3 | Vdc |
| Drain-Source On-Voltage ($V_{GS} = 6$ Vdc, $I_D = 121$ mAdc) | $V_{DS(on)}$ | 0.1 | 0.2 | 0.3 | Vdc |

1. Continuous use at maximum temperature will affect MTTF.
2. MTTF calculator available at <http://www.freescale.com/rtf>. Select Software & Tools/Development Tools/Calculators to access MTTF calculators by product.
3. Refer to AN1955, *Thermal Measurement Methodology of RF Power Amplifiers*. Go to <http://www.freescale.com/rtf>. Select Documentation/Application Notes - AN1955.

(continued)

Table 5. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted) (continued)

Typical Performance over Frequency ⁽¹⁾ (In Freescale Test Fixture, 50 ohm system) $V_{DD} = 28\text{ Vdc}$, $I_{DQ} = 90\text{ mA}$, $P_{out} = 1.26\text{ W Avg.}$, Input Signal PAR = 9.9 dB @ 0.01% Probability on CCDF

| Frequency | G_{ps} (dB) | η_D (%) | Output PAR (dB) | ACPR (dBc) | IRL (dB) |
|-----------|---------------|--------------|-----------------|------------|----------|
| 2300 MHz | 21.2 | 23.6 | 9.0 | -40.9 | -10 |
| 2350 MHz | 21.6 | 22.6 | 8.6 | -40.0 | -22 |
| 2400 MHz | 20.7 | 21.0 | 8.3 | -40.1 | -9 |

Functional Tests (In Freescale Test Fixture, 50 ohm system) $V_{DD} = 28\text{ Vdc}$, $I_{DQ} = 90\text{ mA}$, $P_{out} = 1.26\text{ W Avg.}$, $f = 2170\text{ MHz}$, Single-Carrier W-CDMA, IQ Magnitude Clipping, Input Signal PAR = 9.9 dB @ 0.01% Probability on CCDF. ACPR measured in 3.84 MHz Channel Bandwidth @ $\pm 5\text{ MHz}$ Offset.

| Characteristic | Symbol | Min | Typ | Max | Unit |
|------------------------------|----------|------|-------|-------|------|
| Power Gain | G_{ps} | 20.0 | 21.7 | — | dB |
| Drain Efficiency | η_D | 18.5 | 21.5 | — | % |
| Adjacent Channel Power Ratio | ACPR | — | -40.6 | -37.9 | dBc |
| Input Return Loss | IRL | — | -14 | -9 | dB |

Load Mismatch (In Freescale Test Fixture, 50 ohm system) $I_{DQ} = 90\text{ mA}$, $f = 2140\text{ MHz}$

| | |
|---|-----------------------|
| VSWR 5:1 at 32 Vdc, 13.9 W CW Output Power (3 dB Input Overdrive from 10 W CW Rated Power) | No Device Degradation |
|---|-----------------------|

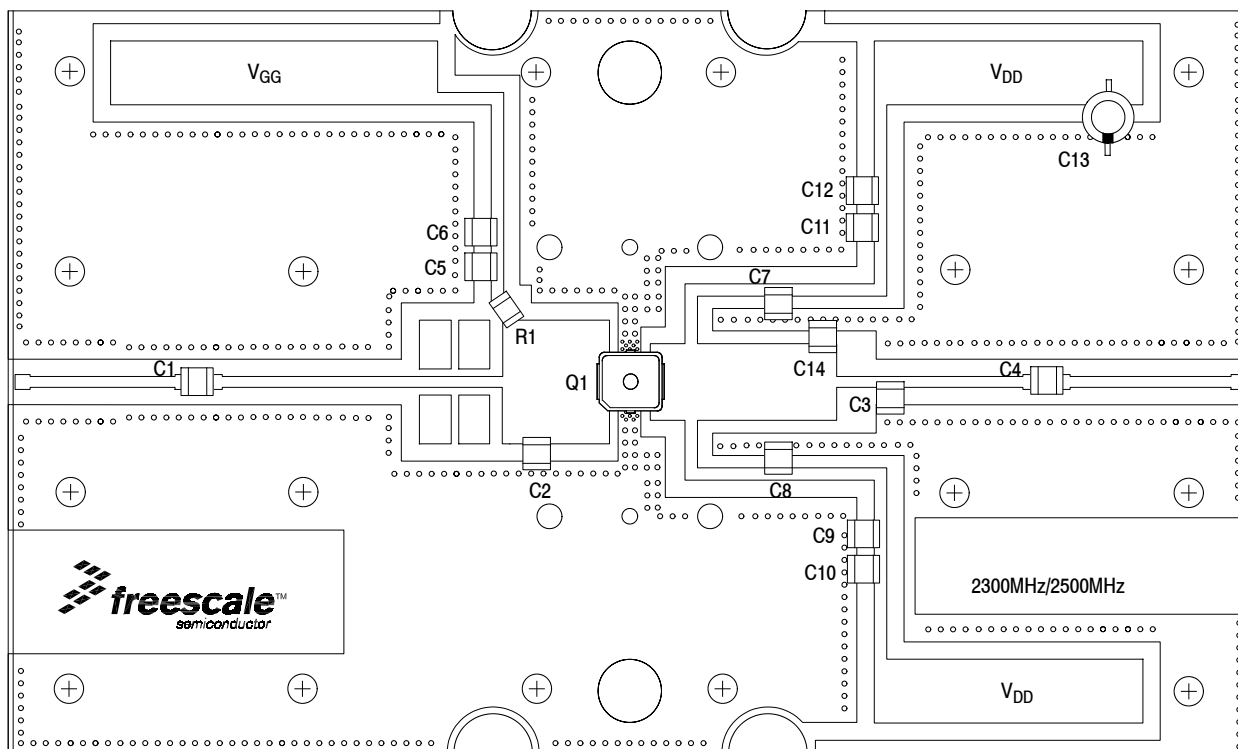
Typical Performance ⁽¹⁾ (In Freescale Test Fixture, 50 ohm system) $V_{DD} = 28\text{ Vdc}$, $I_{DQ} = 90\text{ mA}$, 2110–2170 MHz Bandwidth

| | | | | | |
|---|------------------|---|-------|---|----------------------|
| P_{out} @ 1 dB Compression Point, CW | P_{1dB} | — | 10 | — | W |
| AM/PM (Maximum value measured at the P3dB compression point across the 2110–2170 MHz frequency range.) | Φ | — | -12.6 | — | $^\circ$ |
| VBW Resonance Point (IMD Seventh Order Intermodulation Inflection Point) | VBW_{res} | — | 120 | — | MHz |
| Gain Flatness in 60 MHz Bandwidth @ $P_{out} = 1.26\text{ W Avg.}$ | G_F | — | 0.20 | — | dB |
| Gain Variation over Temperature (-30°C to $+85^\circ\text{C}$) | ΔG | — | 0.011 | — | dB/ $^\circ\text{C}$ |
| Output Power Variation over Temperature (-30°C to $+85^\circ\text{C}$) | ΔP_{1dB} | — | 0.004 | — | dB/ $^\circ\text{C}$ |

Table 6. Ordering Information

| Device | Tape and Reel Information | Package |
|------------|---|----------|
| MHT1006NT1 | T1 Suffix = 1000 Units, 16 mm Tape Width, 7-inch Reel | PLD-1.5W |

1. All data measured in fixture with device soldered to heatsink.



NOTE: All data measured in fixture with device soldered to heatsink.

Figure 2. MHT1006NT1 Test Circuit Component Layout — 2300–2400 MHz

Table 7. MHT1006NT1 Test Circuit Component Designations and Values — 2300–2400 MHz

| Part | Description | Part Number | Manufacturer |
|-----------------------|---|--------------------|--------------------|
| C1, C4, C5, C7, C8 | 6.8 pF Chip Capacitors | ATC100B6R8JT500XT | ATC |
| C2, C14 | 1 pF Chip Capacitors | ATC100B1R0JT500XT | ATC |
| C3 | 1.2 pF Chip Capacitor | ATC100B1R2JT500XT | ATC |
| C6, C9, C10, C11, C12 | 10 μ F Chip Capacitors | GRM32ER61H106KA12L | Murata |
| C13 | 220 μ F, 50 V Electrolytic Capacitor | 227CKS050M | Illinois Capacitor |
| Q1 | RF Power LDMOS Transistor | MHT1006NT1 | Freescale |
| R1 | 4.75 Ω , Chip Resistor | CRCW12064R75FKEA | Vishay |
| PCB | Rogers RO4350B, 0.020", $\epsilon_r = 3.66$ | — | MTL |

TYPICAL CHARACTERISTICS — 2300–2400 MHz

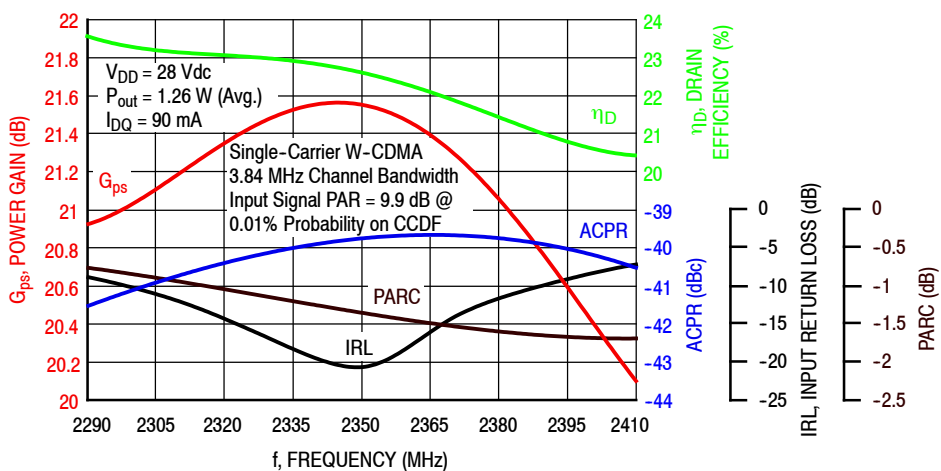


Figure 3. Single-Carrier Output Peak-to-Average Ratio Compression (PARC) Broadband Performance @ $P_{out} = 1.26$ W Avg.

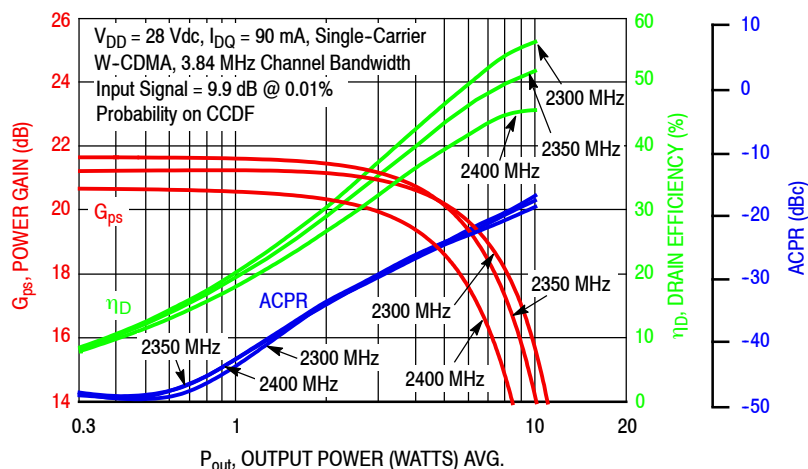


Figure 4. Single-Carrier W-CDMA Power Gain, Drain Efficiency and ACPR versus Output Power

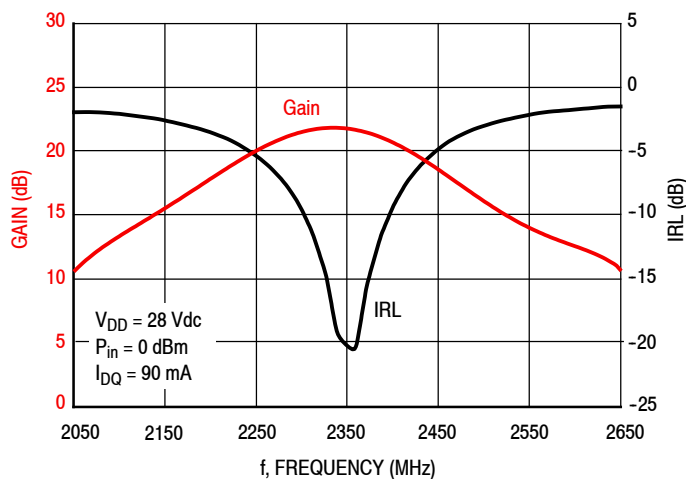


Figure 5. Broadband Frequency Response

$V_{DD} = 28 \text{ Vdc}$, $I_{DQ} = 87 \text{ mA}$, Pulsed CW, 10 $\mu\text{sec}(\text{on})$, 10% Duty Cycle

| f (MHz) | $Z_{\text{source}} (\Omega)$ | $Z_{\text{in}} (\Omega)$ | Max Output Power | | | | | |
|---------|------------------------------|--------------------------|----------------------------------|-----------|-------|-----|--------------|-----------|
| | | | P1dB | | | | | |
| | | | $Z_{\text{load}}^{(1)} (\Omega)$ | Gain (dB) | (dBm) | (W) | η_D (%) | AM/PM (°) |
| 2300 | 1.12 - j1.10 | 0.995 + j1.38 | 5.39 + j2.23 | 20.1 | 40.9 | 12 | 55.9 | -12 |
| 2400 | 1.06 - j1.59 | 0.948 + j1.96 | 5.09 + j1.86 | 19.8 | 40.9 | 12 | 55.1 | -12 |
| 2500 | 1.00 - j1.60 | 1.29 + j1.95 | 4.51 + j1.56 | 19.2 | 40.8 | 12 | 55.8 | -10 |
| 2600 | 0.985 - j3.50 | 0.743 + j3.66 | 4.81 + j1.10 | 19.0 | 41.3 | 13 | 56.2 | -14 |
| 2690 | 1.10 - j3.13 | 1.48 + j2.98 | 4.14 + j0.987 | 19.0 | 41.0 | 13 | 57.5 | -12 |

| f (MHz) | $Z_{\text{source}} (\Omega)$ | $Z_{\text{in}} (\Omega)$ | Max Output Power | | | | | |
|---------|------------------------------|--------------------------|----------------------------------|-----------|-------|-----|--------------|-----------|
| | | | P3dB | | | | | |
| | | | $Z_{\text{load}}^{(2)} (\Omega)$ | Gain (dB) | (dBm) | (W) | η_D (%) | AM/PM (°) |
| 2300 | 1.12 - j1.10 | 0.919 + j1.64 | 6.28 + j1.74 | 17.8 | 41.7 | 15 | 55.0 | -19 |
| 2400 | 1.06 - j1.59 | 0.861 + j2.23 | 5.86 + j1.41 | 17.5 | 41.7 | 15 | 54.4 | -19 |
| 2500 | 1.00 - j1.60 | 1.37 + j2.32 | 5.40 + j1.17 | 16.9 | 41.7 | 15 | 55.8 | -17 |
| 2600 | 0.985 - j3.50 | 0.579 + j3.82 | 5.37 + j0.912 | 16.9 | 42.0 | 16 | 55.8 | -22 |
| 2690 | 1.10 - j3.13 | 1.74 + j3.43 | 5.04 + j0.759 | 16.8 | 41.8 | 15 | 57.1 | -18 |

(1) Load impedance for optimum P1dB power. (2) Load impedance for optimum P3dB power.

Z_{source} = Measured impedance presented to the input of the device at the package reference plane.

Z_{in} = Impedance as measured from gate contact to ground.

Z_{load} = Measured impedance presented to the output of the device at the package reference plane.

Figure 6. Load Pull Performance — Maximum Power Tuning

$V_{DD} = 28 \text{ Vdc}$, $I_{DQ} = 87 \text{ mA}$, Pulsed CW, 10 $\mu\text{sec}(\text{on})$, 10% Duty Cycle

| f (MHz) | $Z_{\text{source}} (\Omega)$ | $Z_{\text{in}} (\Omega)$ | Max Drain Efficiency | | | | | |
|---------|------------------------------|--------------------------|----------------------------------|-----------|-------|-----|--------------|-----------|
| | | | P1dB | | | | | |
| | | | $Z_{\text{load}}^{(1)} (\Omega)$ | Gain (dB) | (dBm) | (W) | η_D (%) | AM/PM (°) |
| 2300 | 1.12 - j1.10 | 0.855 + j1.22 | 3.36 + j4.23 | 21.6 | 39.8 | 9 | 61.9 | -20 |
| 2400 | 1.06 - j1.59 | 0.829 + j1.80 | 3.34 + j3.53 | 21.2 | 39.9 | 10 | 60.4 | -19 |
| 2500 | 1.00 - j1.60 | 1.04 + j1.82 | 3.21 + j3.00 | 20.8 | 40.0 | 10 | 61.1 | -16 |
| 2600 | 0.985 - j3.50 | 0.709 + j3.49 | 3.17 + j2.53 | 20.0 | 40.5 | 11 | 60.7 | -20 |
| 2690 | 1.10 - j3.13 | 1.14 + j2.91 | 2.87 + j2.16 | 20.4 | 40.2 | 10 | 62.0 | -18 |

| f (MHz) | $Z_{\text{source}} (\Omega)$ | $Z_{\text{in}} (\Omega)$ | Max Drain Efficiency | | | | | |
|---------|------------------------------|--------------------------|----------------------------------|-----------|-------|-----|--------------|-----------|
| | | | P3dB | | | | | |
| | | | $Z_{\text{load}}^{(2)} (\Omega)$ | Gain (dB) | (dBm) | (W) | η_D (%) | AM/PM (°) |
| 2300 | 1.12 - j1.10 | 0.803 + j1.51 | 3.96 + j4.10 | 19.4 | 40.7 | 12 | 61.1 | -27 |
| 2400 | 1.06 - j1.59 | 0.757 + j2.07 | 3.70 + j3.45 | 19.1 | 40.6 | 12 | 59.8 | -27 |
| 2500 | 1.00 - j1.60 | 1.15 + j2.18 | 3.58 + j2.94 | 18.7 | 40.8 | 12 | 61.2 | -24 |
| 2600 | 0.985 - j3.50 | 0.556 + j3.73 | 4.15 + j2.29 | 17.8 | 41.5 | 14 | 59.7 | -26 |
| 2690 | 1.10 - j3.13 | 1.43 + j3.33 | 3.40 + j2.01 | 18.2 | 41.1 | 13 | 61.7 | -25 |

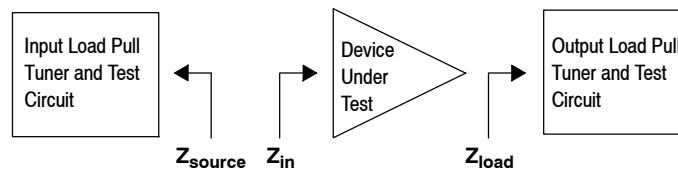
(1) Load impedance for optimum P1dB efficiency. (2) Load impedance for optimum P3dB efficiency.

Z_{source} = Measured impedance presented to the input of the device at the package reference plane.

Z_{in} = Impedance as measured from gate contact to ground.

Z_{load} = Measured impedance presented to the output of the device at the package reference plane.

Figure 7. Load Pull Performance — Maximum Drain Efficiency Tuning



P1dB - TYPICAL LOAD PULL CONTOURS — 2500 MHz

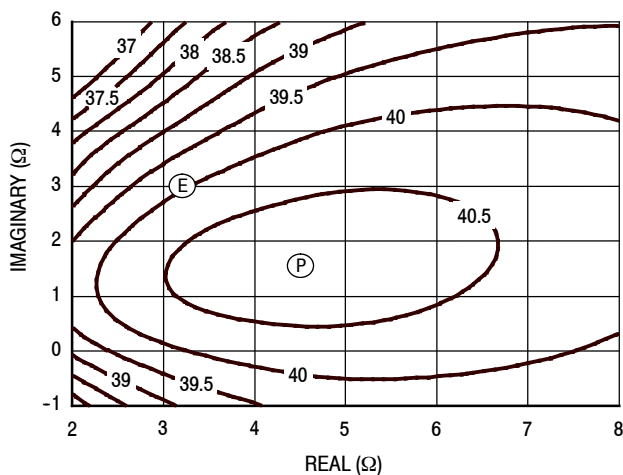


Figure 8. P1dB Load Pull Output Power Contours (dBm)

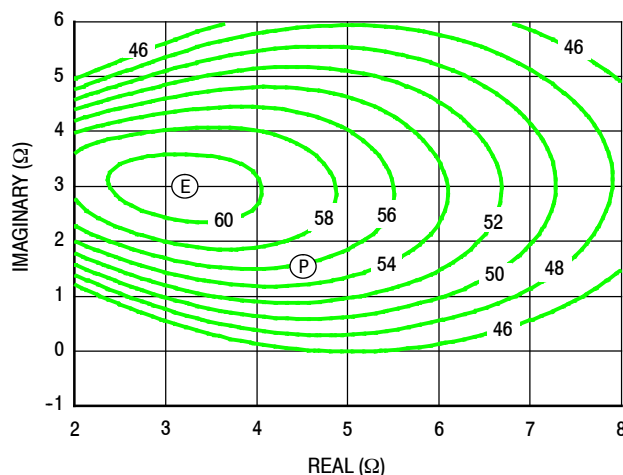


Figure 9. P1dB Load Pull Efficiency Contours (%)

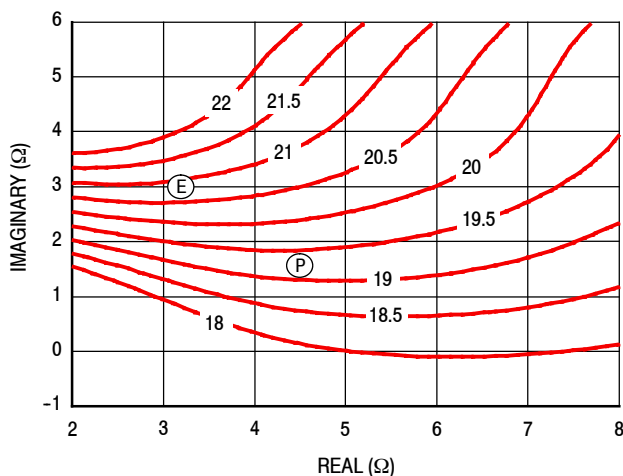


Figure 10. P1dB Load Pull Gain Contours (dB)

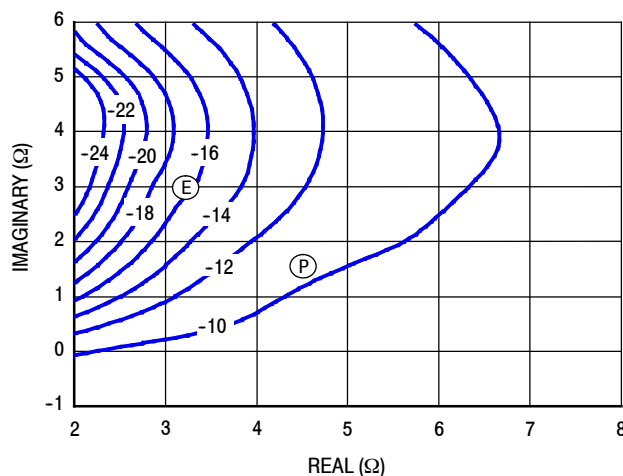


Figure 11. P1dB Load Pull AM/PM Contours (°)

NOTE: (P) = Maximum Output Power
 (E) = Maximum Drain Efficiency

- Gain
- Drain Efficiency
- Linearity
- Output Power

P3dB - TYPICAL LOAD PULL CONTOURS — 2500 MHz

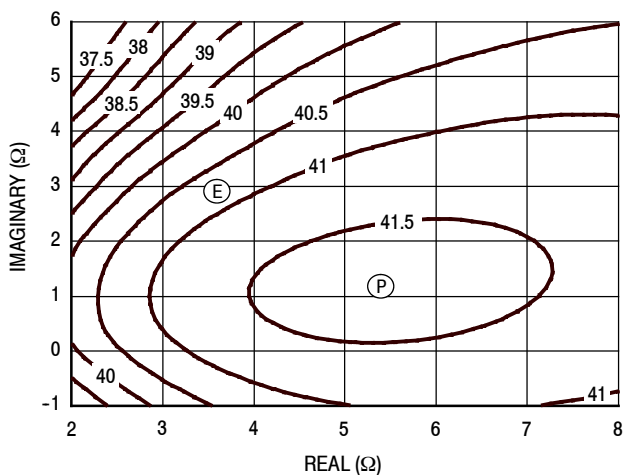


Figure 12. P3dB Load Pull Output Power Contours (dBm)

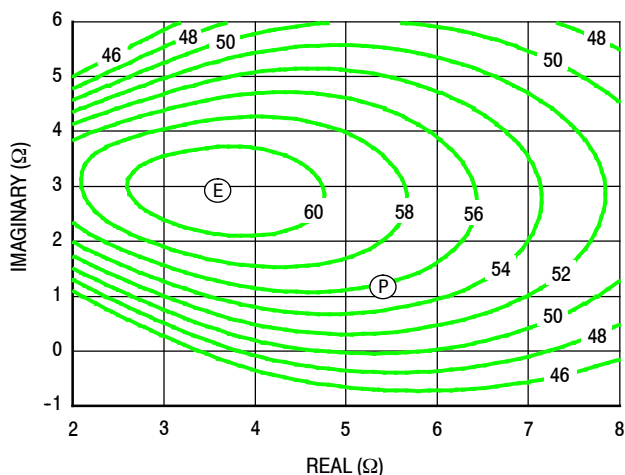


Figure 13. P3dB Load Pull Efficiency Contours (%)

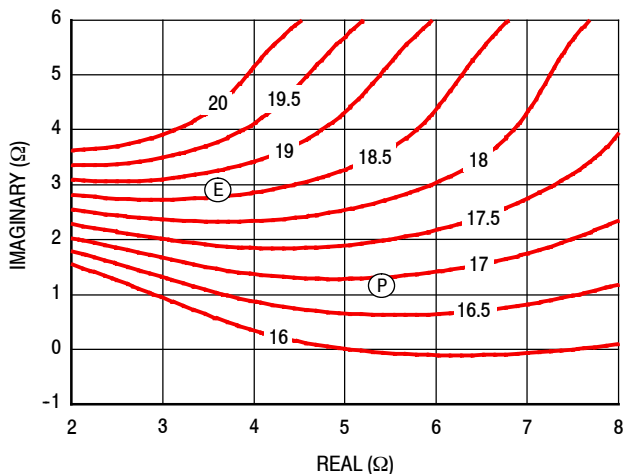


Figure 14. P3dB Load Pull Gain Contours (dB)

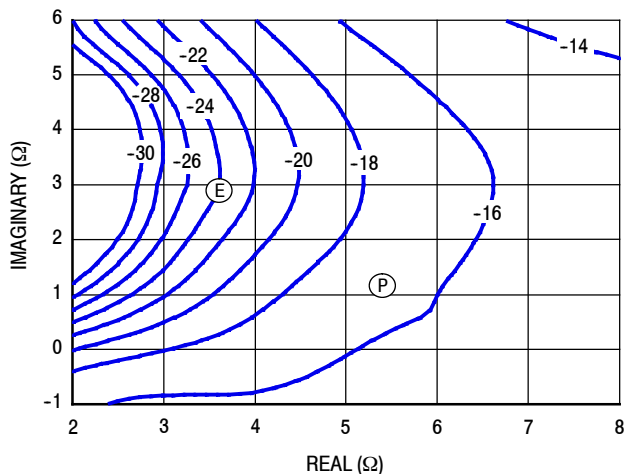


Figure 15. P3dB Load Pull AM/PM Contours (°)

NOTE: (P) = Maximum Output Power
 (E) = Maximum Drain Efficiency

- Gain
- Drain Efficiency
- Linearity
- Output Power

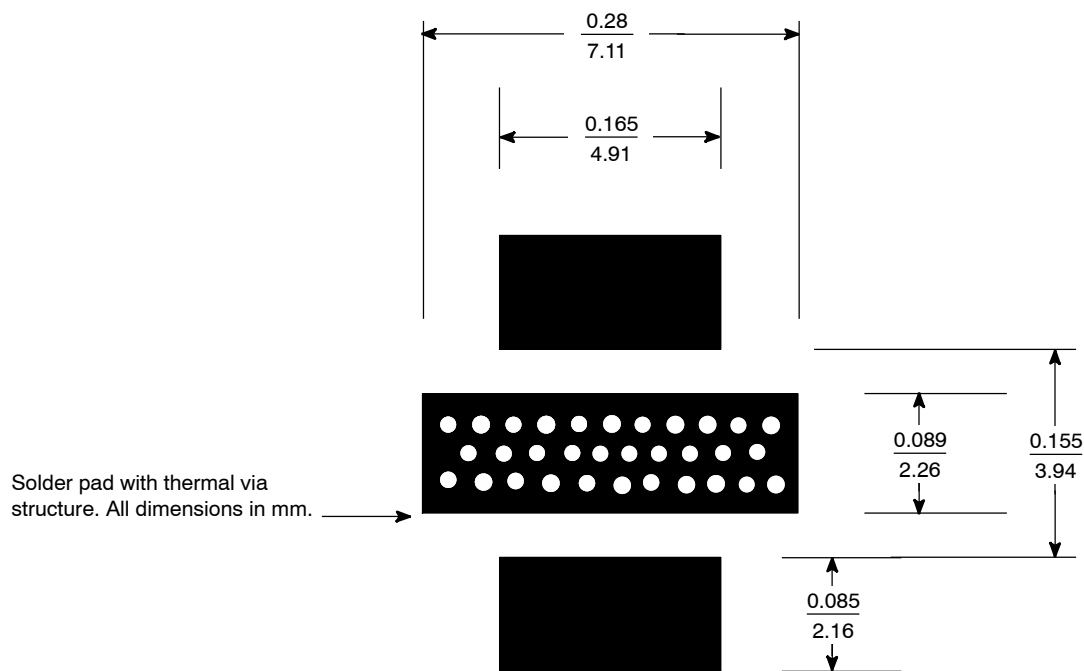


Figure 16. PCB Pad Layout for PLD-1.5W

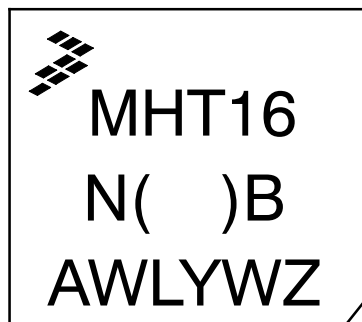
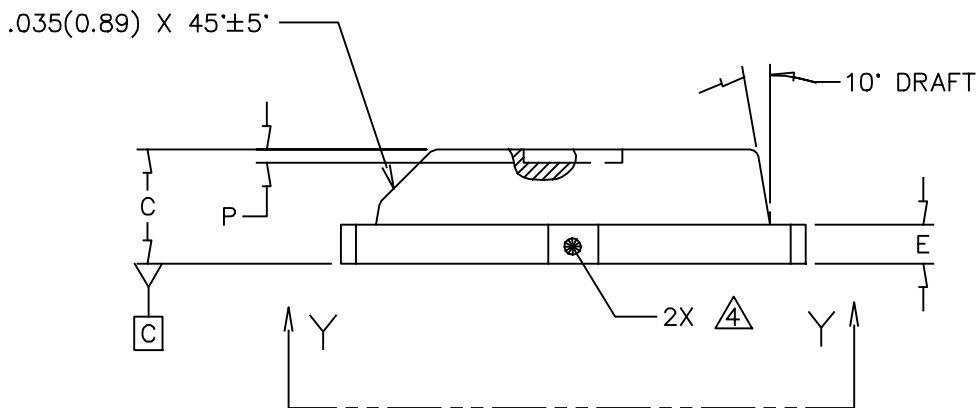
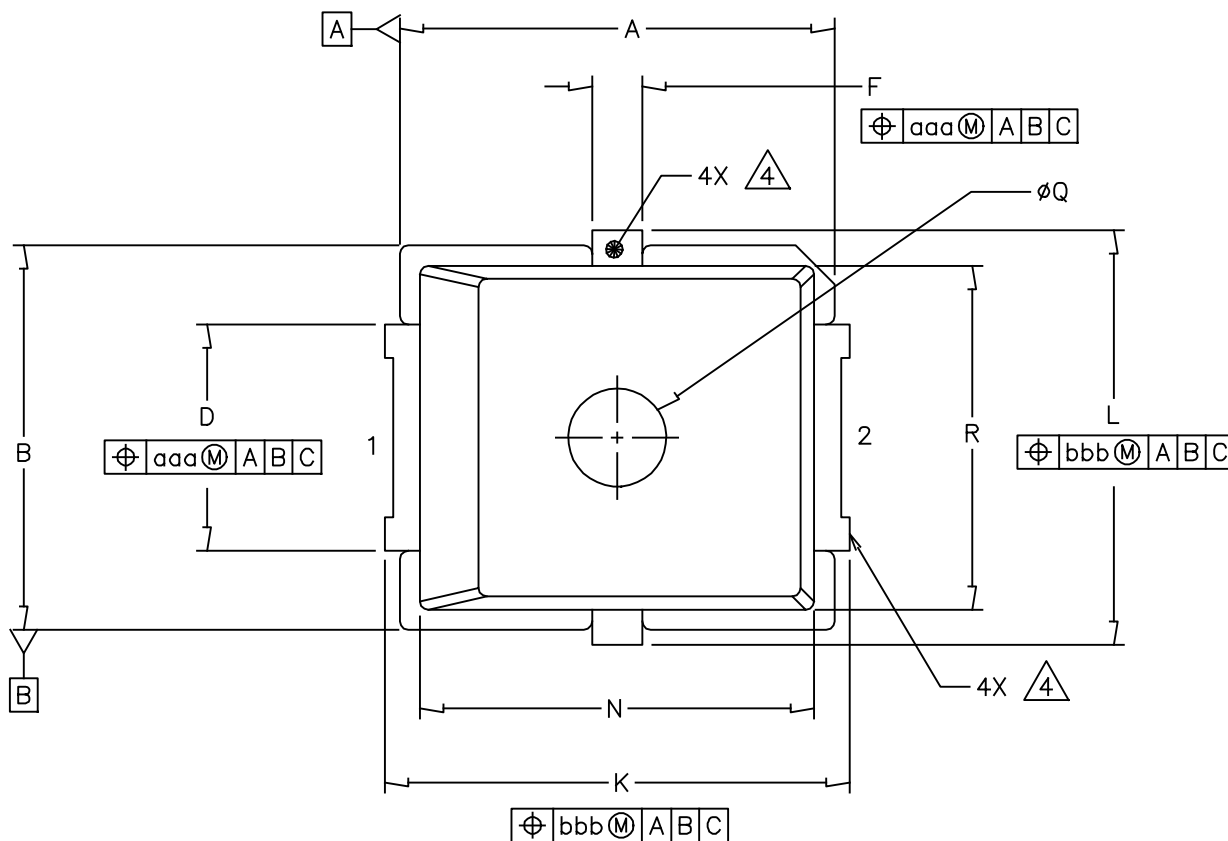
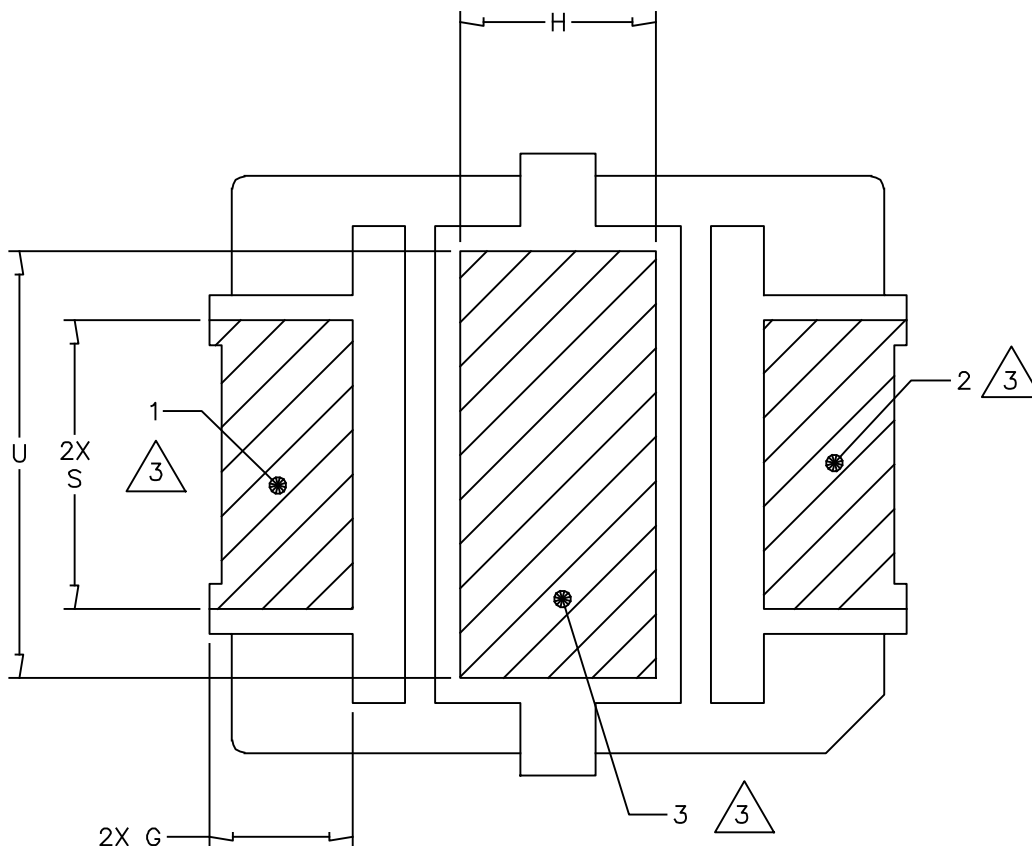


Figure 17. Product Marking

PACKAGE DIMENSIONS



| | | | | | |
|---|--|--------------------------|--|----------------------------|--|
| © FREESCALE SEMICONDUCTOR, INC. ALL RIGHTS RESERVED. | | MECHANICAL OUTLINE | | PRINT VERSION NOT TO SCALE | |
| TITLE: PLD-1.5W | | DOCUMENT NO: 98ASA00476D | | REV: 0 | |
| | | CASE NUMBER: 2297-01 | | 14 JUN 2012 | |
| | | STANDARD: NON-JEDEC | | | |



VIEW Y-Y

| | | | |
|---|--------------------------|----------------------------|--|
| © FREESCALE SEMICONDUCTOR, INC. ALL RIGHTS RESERVED. | MECHANICAL OUTLINE | PRINT VERSION NOT TO SCALE | |
| TITLE: PLD-1.5W | DOCUMENT NO: 98ASA00476D | REV: 0 | |
| | CASE NUMBER: 2297-01 | 14 JUN 2012 | |
| | STANDARD: NON-JEDEC | | |

NOTES:

1. CONTROLLING DIMENSION: INCH.
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.

3. HATCHING REPRESENTS THE EXPOSED AND SOLDERABLE AREA. DIMENSIONS G, S, H AND U REPRESENT THE VALUES BETWEEN THE TWO OPPOSITE POINTS ALONG THE EDGES OF EXPOSED AREA.

4. THESE SURFACES ARE NOT PART OF THE SOLDERABLE SURFACES AND MAY REMAIN UNPLATED.

| DIM | INCH | | MILLIMETER | | DIM | INCH | | MILLIMETER | |
|---|------|------|--------------------|------|--------------------------|----------------------------|------|-------------|------|
| | MIN | MAX | MIN | MAX | | MIN | MAX | MIN | MAX |
| A | .255 | .265 | 6.48 | 6.73 | Q | .055 | .063 | 1.40 | 1.60 |
| B | .225 | .235 | 5.72 | 5.97 | R | .200 | .210 | 5.08 | 5.33 |
| C | .065 | .072 | 1.65 | 1.83 | S | .110 | — | 2.79 | — |
| D | .130 | .150 | 3.30 | 3.81 | U | .156 | — | 3.96 | — |
| E | .021 | .026 | 0.53 | 0.66 | aaa | | .004 | | 0.10 |
| F | .026 | .044 | 0.66 | 1.12 | bbb | | .005 | | 0.13 |
| G | .038 | — | 0.97 | — | | | | | |
| H | .069 | — | 1.75 | — | | | | | |
| J | .160 | .180 | 4.06 | 4.57 | | | | | |
| K | .273 | .285 | 6.93 | 7.24 | | | | | |
| L | .245 | .255 | 6.22 | 6.48 | | | | | |
| N | .230 | .240 | 5.84 | 6.10 | | | | | |
| P | .000 | .008 | 0.00 | 0.20 | | | | | |
| © FREESCALE SEMICONDUCTOR, INC. ALL RIGHTS RESERVED. | | | MECHANICAL OUTLINE | | | PRINT VERSION NOT TO SCALE | | | |
| TITLE: PLD-1.5W | | | | | DOCUMENT NO: 98ASA00476D | | | REV: 0 | |
| | | | | | CASE NUMBER: 2297-01 | | | 14 JUN 2012 | |
| | | | | | STANDARD: NON-JEDEC | | | | |

PRODUCT DOCUMENTATION AND SOFTWARE

Refer to the following resources to aid your design process.

Application Notes

- AN1955: Thermal Measurement Methodology of RF Power Amplifiers

Engineering Bulletins

- EB212: Using Data Sheet Impedances for RF LDMOS Devices

Software

- Electromigration MTTF Calculator

For Software, do a Part Number search at <http://www.freescale.com>, and select the “Part Number” link. Go to the Software & Tools tab on the part’s Product Summary page to download the respective tool.

REVISION HISTORY

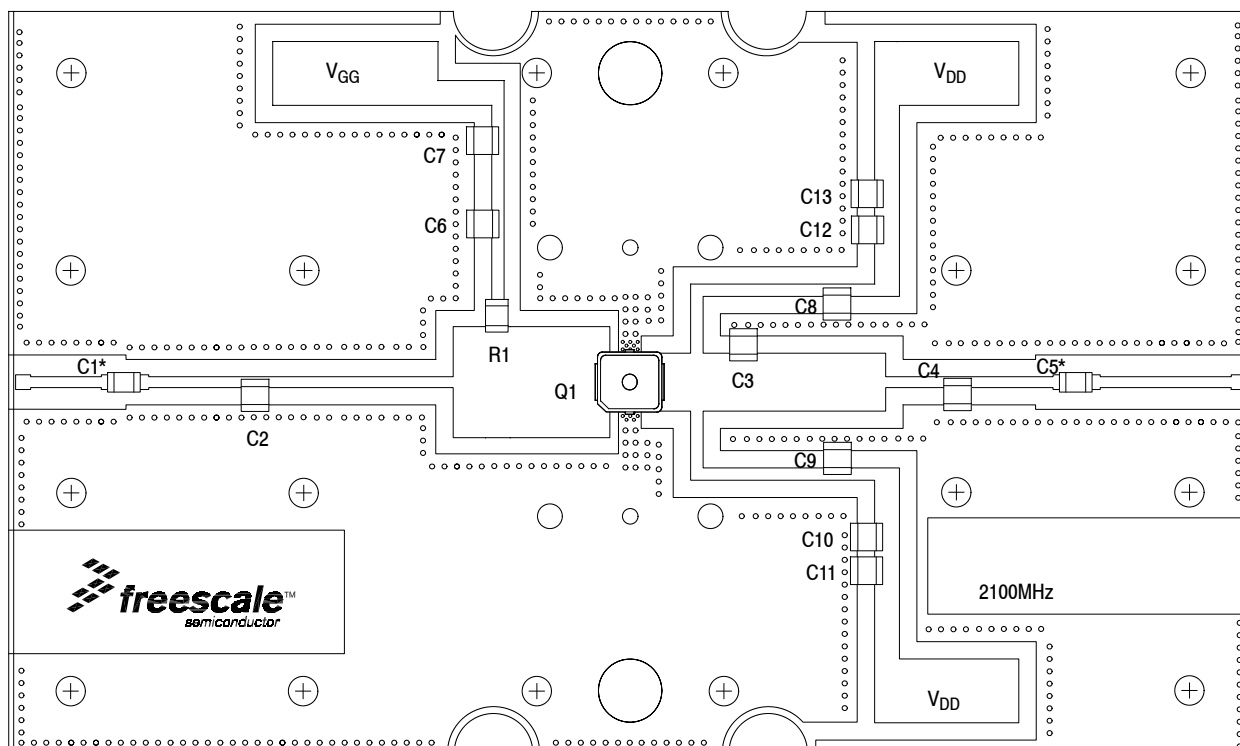
The following table summarizes revisions to this document.

| Revision | Date | Description |
|----------|-----------|--|
| 0 | May 2014 | <ul style="list-style-type: none"> • Initial Release of Data Sheet |
| 1 | Dec. 2015 | <ul style="list-style-type: none"> • Table 1, Maximum Ratings: corrected operating junction temperature range upper limit, p. 2 • Table 5, Electrical Characteristics, On Characteristics $V_{DS(on)}$: updated I_D unit of measure to mA_{dc} to reflect actual unit of measure, p. 2 • Added Ordering Information Table 6, p. 3 |

APPENDIX A: 2110–2170 MHz TYPICAL PERFORMANCE DATA, LAYOUT AND PARTS LIST

Typical Performance over Frequency ⁽¹⁾ (In Freescale Test Fixture, 50 ohm system) $V_{DD} = 28$ Vdc, $I_{DQ} = 90$ mA, $P_{out} = 1.26$ W Avg., Input Signal PAR = 9.9 dB @ 0.01% Probability on CCDF

| Frequency | G_{ps} (dB) | η_D (%) | Output PAR (dB) | ACPR (dBc) | IRL (dB) |
|-----------|---------------|--------------|-----------------|------------|----------|
| 2110 MHz | 21.6 | 23.2 | 9.1 | -42.0 | -11 |
| 2140 MHz | 21.8 | 23.0 | 9.0 | -41.5 | -15 |
| 2170 MHz | 21.7 | 22.6 | 8.7 | -41.7 | -15 |



*C1 and C5 are mounted vertically.

1. All data measured in fixture with device soldered to heatsink.

Figure A-1. MHT1006NT1 Test Circuit Component Layout — 2110–2170 MHz

Table A-1. MHT1006NT1 Test Circuit Component Designations and Values — 2110–2170 MHz

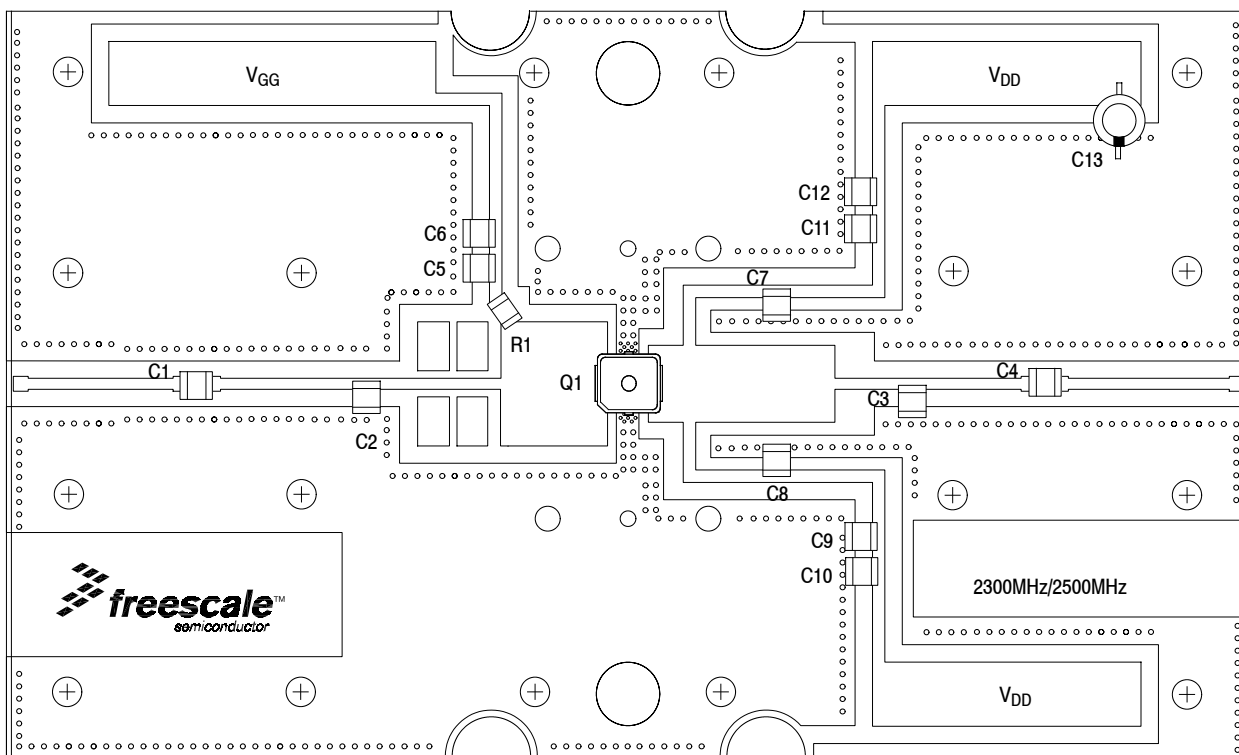
| Part | Description | Part Number | Manufacturer |
|------------------------|---|--------------------|--------------|
| C1, C5, C6, C8, C9 | 9.1 pF Chip Capacitors | ATC100B9R1JT500XT | ATC |
| C2 | 1.1 pF Chip Capacitor | ATC100B1R1JT500XT | ATC |
| C3 | 2.0 pF Chip Capacitor | ATC100B2R0JT500XT | ATC |
| C4 | 1.0 pF Chip Capacitor | ATC100B1R0JT500XT | ATC |
| C7, C10, C11, C12, C13 | 10 μ F Chip Capacitors | GRM32ER61H106KA12L | Murata |
| Q1 | RF Power LDMOS Transistor | MHT1006NT1 | Freescale |
| R1 | 2.37 Ω Chip Resistor | CRCW12062R37FKEA | Vishay |
| PCB | Rogers RO4350B, 0.020", $\epsilon_r = 3.66$ | — | MTL |

APPENDIX B: 2500–2700 MHz

TYPICAL PERFORMANCE DATA AND GRAPHS, LAYOUT AND PARTS LIST

Typical Performance over Frequency ⁽¹⁾ (In Freescale Test Fixture, 50 ohm system) $V_{DD} = 28$ Vdc, $I_{DQ} = 90$ mA, $P_{out} = 1.26$ W Avg., Input Signal PAR = 9.9 dB @ 0.01% Probability on CCDF

| Frequency | G_{ps} (dB) | η_D (%) | Output PAR (dB) | ACPR (dBc) | IRL (dB) |
|-----------|---------------|--------------|-----------------|------------|----------|
| 2500 MHz | 19.6 | 22.0 | 9.8 | -44.8 | -7 |
| 2600 MHz | 21.0 | 22.7 | 9.4 | -41.4 | -15 |
| 2700 MHz | 19.6 | 21.2 | 8.9 | -39.7 | -5 |



1. All data measured in fixture with device soldered to heatsink.

Figure B-1. MHT1006NT1 Test Circuit Component Layout — 2500–2700 MHz

Table B-1. MHT1006NT1 Test Circuit Component Designations and Values — 2500–2700 MHz

| Part | Description | Part Number | Manufacturer |
|-----------------------|---|--------------------|--------------------|
| C1, C4, C5, C7, C8 | 6.8 pF Chip Capacitors | ATC100B6R8JT500XT | ATC |
| C2 | 1.2 pF Chip Capacitor | ATC100B1R2JT500XT | ATC |
| C3 | 1 pF Chip Capacitor | ATC100B1R0JT500XT | ATC |
| C6, C9, C10, C11, C12 | 10 μ F Chip Capacitors | GRM32ER61H106KA12L | Murata |
| C13 | 220 μ F, 50 V Electrolytic Capacitor | 227CKS050M | Illinois Capacitor |
| Q1 | RF Power LDMOS Transistor | MHT1006NT1 | Freescale |
| R1 | 4.75 Ω Chip Resistor | CRCW12064R75FKEA | Vishay |
| PCB | Rogers RO4350B, 0.020", $\epsilon_r = 3.66$ | — | MTL |

TYPICAL CHARACTERISTICS — 2500–2700 MHz

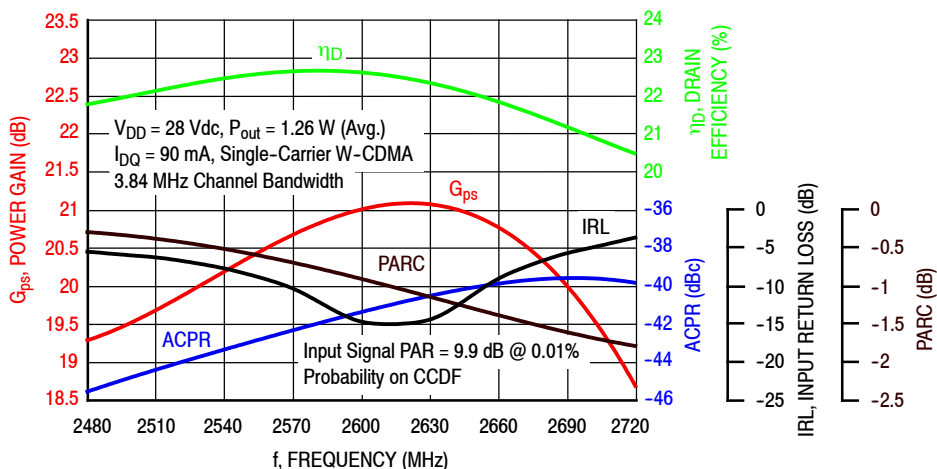


Figure B-2. Single-Carrier Output Peak-to-Average Ratio Compression (PARC) Broadband Performance @ $P_{out} = 1.26$ W Avg.

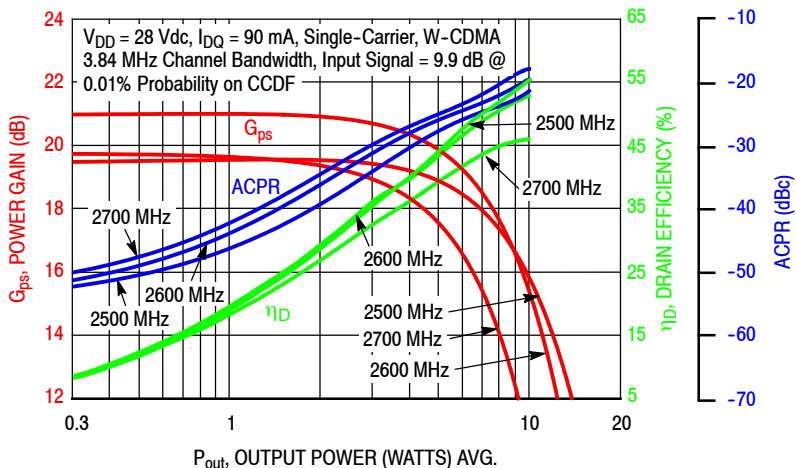


Figure B-3. Single-Carrier W-CDMA Power Gain, Drain Efficiency and ACPR versus Output Power

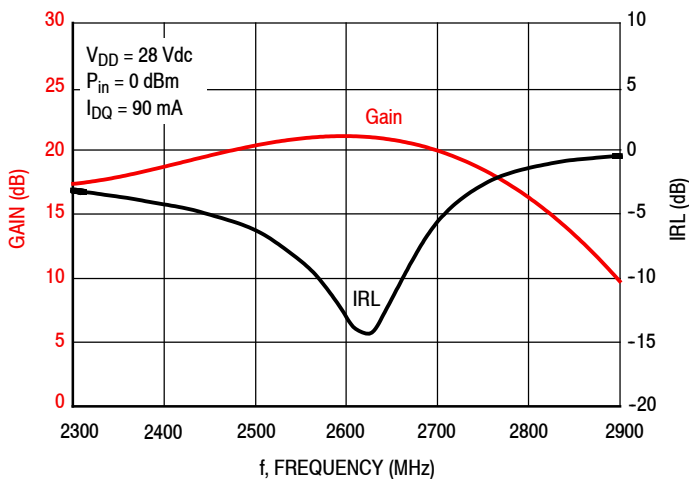


Figure B-4. Broadband Frequency Response

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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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