

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** MRF6V2010NBR1  
**Manufacturer:** NXP USA Inc.  
**Package:** Please confirm with sales  
**Availability:** Please confirm with sales

**Product Page:**

<https://antrexco.com/product/details/nxp-usa-inc/mrf6v2010nbr1.html>

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**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

# RF Power Field Effect Transistors

## N-Channel Enhancement-Mode Lateral MOSFETs

Designed primarily for CW large-signal output and driver applications with frequencies up to 450 MHz. Devices are unmatched and are suitable for use in industrial, medical and scientific applications.

- Typical CW performance at 220 MHz:  $V_{DD} = 50$  Vdc,  $I_{DQ} = 30$  mA,  $P_{out} = 10$  W  
Power gain — 23.9 dB  
Drain efficiency — 62%
- Capable of handling 10:1 VSWR @ 50 Vdc, 220 MHz, 10 W CW output power

### Features

- Characterized with series equivalent large-signal impedance parameters
- Qualified up to a maximum of 50 V<sub>DD</sub> operation
- Integrated ESD protection
- 225°C capable plastic package

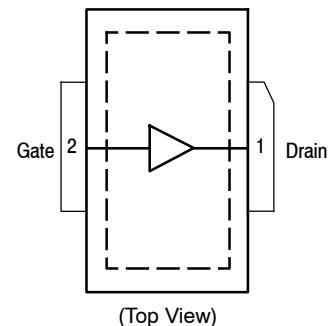
**MRF6V2010N**  
**MRF6V2010NB**  
**MRF6V2010GN**

**10-450 MHz, 10 W, 50 V**  
**LATERAL N-CHANNEL**  
**BROADBAND**  
**RF POWER MOSFETs**

TO-270-2  
PLASTIC  
MRF6V2010N

TO-272-2  
PLASTIC  
MRF6V2010NB

TO-270G-2  
PLASTIC  
MRF6V2010GN



Note: Exposed backside of the package is the source terminal for the transistor.

**Figure 1. Pin Connections**

**Table 1. Maximum Ratings**

| Rating                               | Symbol    | Value       | Unit |
|--------------------------------------|-----------|-------------|------|
| Drain-Source Voltage                 | $V_{DS}$  | -0.5, +110  | Vdc  |
| Gate-Source Voltage                  | $V_{GS}$  | -0.5, +10   | Vdc  |
| Storage Temperature Range            | $T_{stg}$ | -65 to +150 | °C   |
| Case Operating Temperature           | $T_C$     | 150         | °C   |
| Operating Junction Temperature (1,2) | $T_J$     | 225         | °C   |

**Table 2. Thermal Characteristics**

| Characteristic                                                         | Symbol          | Value (2,3) | Unit |
|------------------------------------------------------------------------|-----------------|-------------|------|
| Thermal Resistance, Junction to Case<br>Case Temperature 81°C, 10 W CW | $R_{\theta JC}$ | 3.0         | °C/W |

**Table 3. ESD Protection Characteristics**

| Test Methodology                      | Class |
|---------------------------------------|-------|
| Human Body Model (per JESD22-A114)    | 2     |
| Machine Model (per EIA/JESD22-A115)   | A     |
| Charge Device Model (per JESD22-C101) | IV    |

**Table 4. Moisture Sensitivity Level**

| Test Methodology                      | Rating | Package Peak Temperature | Unit |
|---------------------------------------|--------|--------------------------|------|
| Per JESD 22-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**

|                                                                                                    |               |     |   |     |                 |
|----------------------------------------------------------------------------------------------------|---------------|-----|---|-----|-----------------|
| Gate-Source Leakage Current<br>( $V_{GS} = 5\text{ Vdc}$ , $V_{DS} = 0\text{ Vdc}$ )               | $I_{GSS}$     | —   | — | 10  | $\mu\text{Adc}$ |
| Drain-Source Breakdown Voltage<br>( $I_D = 5\text{ mA}$ , $V_{GS} = 0\text{ Vdc}$ )                | $V_{(BR)DSS}$ | 110 | — | —   | Vdc             |
| Zero Gate Voltage Drain Leakage Current<br>( $V_{DS} = 50\text{ Vdc}$ , $V_{GS} = 0\text{ Vdc}$ )  | $I_{DSS}$     | —   | — | 50  | $\mu\text{Adc}$ |
| Zero Gate Voltage Drain Leakage Current<br>( $V_{DS} = 100\text{ Vdc}$ , $V_{GS} = 0\text{ Vdc}$ ) | $I_{DSS}$     | —   | — | 2.5 | mA              |

**On Characteristics**

|                                                                                                              |              |     |      |     |     |
|--------------------------------------------------------------------------------------------------------------|--------------|-----|------|-----|-----|
| Gate Threshold Voltage<br>( $V_{DS} = 10\text{ Vdc}$ , $I_D = 28\text{ }\mu\text{Adc}$ )                     | $V_{GS(th)}$ | 1   | 1.68 | 3   | Vdc |
| Gate Quiescent Voltage<br>( $V_{DD} = 50\text{ Vdc}$ , $I_D = 30\text{ mAdc}$ , Measured in Functional Test) | $V_{GS(Q)}$  | 1.5 | 2.68 | 3.5 | Vdc |
| Drain-Source On-Voltage<br>( $V_{GS} = 10\text{ Vdc}$ , $I_D = 70\text{ mAdc}$ )                             | $V_{DS(on)}$ | —   | 0.26 | —   | Vdc |

**Dynamic Characteristics**

|                                                                                                                       |           |   |      |   |    |
|-----------------------------------------------------------------------------------------------------------------------|-----------|---|------|---|----|
| Reverse Transfer Capacitance<br>( $V_{DS} = 50\text{ Vdc} \pm 30\text{ mV(rms)ac}$ @ 1 MHz, $V_{GS} = 0\text{ Vdc}$ ) | $C_{rss}$ | — | 0.13 | — | pF |
| Output Capacitance<br>( $V_{DS} = 50\text{ Vdc} \pm 30\text{ mV(rms)ac}$ @ 1 MHz, $V_{GS} = 0\text{ Vdc}$ )           | $C_{oss}$ | — | 7.3  | — | pF |
| Input Capacitance<br>( $V_{DS} = 50\text{ Vdc}$ , $V_{GS} = 0\text{ Vdc} \pm 30\text{ mV(rms)ac}$ @ 1 MHz)            | $C_{iss}$ | — | 16.3 | — | pF |

1. Continuous use at maximum temperature will affect MTTF.

2. MTTF calculator available at <http://www.nxp.com/RF/calculators>.

3. Refer to AN1955, *Thermal Measurement Methodology of RF Power Amplifiers*. Go to <http://www.nxp.com/RF> and search for AN1955.

(continued)

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

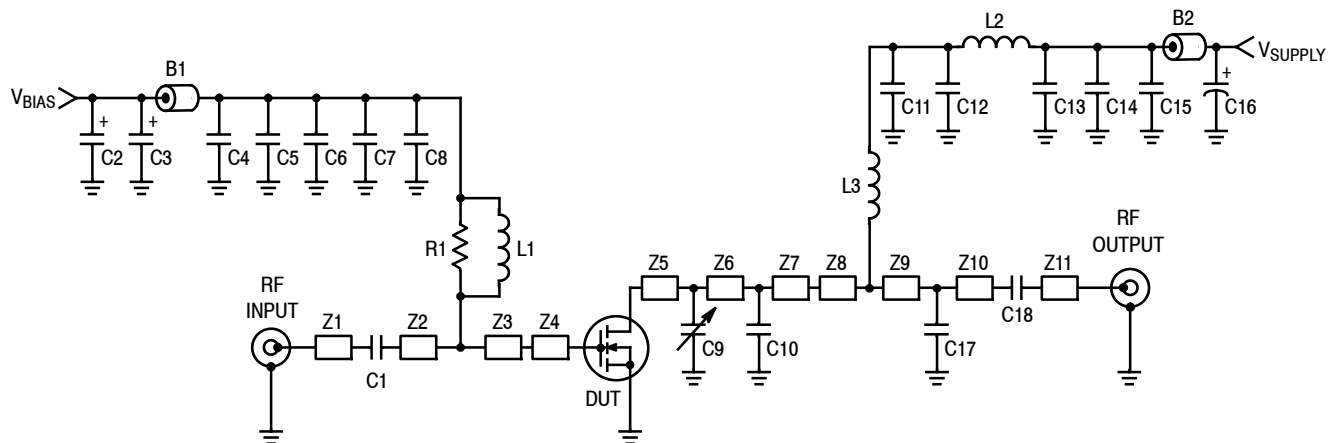
| Characteristic                                                                                                                                                        | Symbol   | Min  | Typ  | Max  | Unit |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|------|------|------|
| <b>Functional Tests</b> (In NXP Test Fixture, 50 ohm system) $V_{DD} = 50\text{ Vdc}$ , $I_{DQ} = 30\text{ mA}$ , $P_{out} = 10\text{ W}$ , $f = 220\text{ MHz}$ , CW |          |      |      |      |      |
| Power Gain                                                                                                                                                            | $G_{ps}$ | 22.5 | 23.9 | 25.5 | dB   |
| Drain Efficiency                                                                                                                                                      | $\eta_D$ | 58   | 62   | —    | %    |
| Input Return Loss                                                                                                                                                     | IRL      | —    | -14  | -9   | dB   |

**Table 6. Ordering Information**

| Device        | Tape and Reel Information                             | Package   |
|---------------|-------------------------------------------------------|-----------|
| MRF6V2010NR1  | R1 Suffix = 500 Units, 24 mm Tape Width, 13-inch Reel | TO-270-2  |
| MRF6V2010NBR1 | R1 Suffix = 500 Units, 44 mm Tape Width, 13-inch Reel | TO-272-2  |
| MRF6V2010GNR1 | R1 Suffix = 500 Units, 24 mm Tape Width, 13-inch Reel | TO-270G-2 |



ATTENTION: The MRF6V2010N, MRF6V2010NB and MRF6V2010GN are high power devices and special considerations must be followed in board design and mounting. Incorrect mounting can lead to internal temperatures which exceed the maximum allowable operating junction temperature. Refer to NXP Application Note AN3263 (for bolt down mounting) or AN1907 (for solder reflow mounting) **PRIOR TO STARTING SYSTEM DESIGN** to ensure proper mounting of these devices.

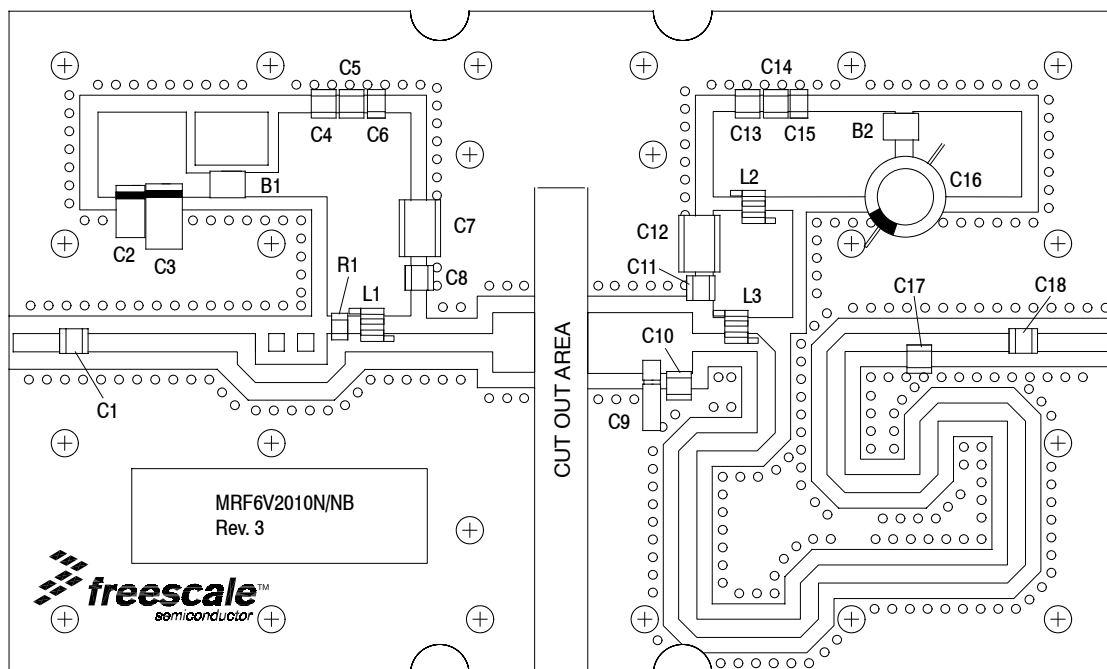


|    |                            |     |                                                            |
|----|----------------------------|-----|------------------------------------------------------------|
| Z1 | 0.235" x 0.082" Microstrip | Z7  | 0.062" x 0.270" Microstrip                                 |
| Z2 | 1.190" x 0.082" Microstrip | Z8  | 0.198" x 0.082" Microstrip                                 |
| Z3 | 0.619" x 0.082" Microstrip | Z9  | 5.600" x 0.082" Microstrip                                 |
| Z4 | 0.190" x 0.270" Microstrip | Z10 | 0.442" x 0.082" Microstrip                                 |
| Z5 | 0.293" x 0.270" Microstrip | Z11 | 0.341" x 0.082" Microstrip                                 |
| Z6 | 0.120" x 0.270" Microstrip | PCB | Arlon CuClad 250GX-0300-55-22, 0.030", $\epsilon_r = 2.55$ |

**Figure 2. MRF6V2010N(NB) Test Circuit Schematic**

**Table 7. MRF6V2010N(NB) Test Circuit Component Designations and Values**

| Part             | Description                              | Part Number        | Manufacturer     |
|------------------|------------------------------------------|--------------------|------------------|
| B1, B2           | 95 $\Omega$ , 100 MHz Long Ferrite Beads | 2743021447         | Fair-Rite        |
| C1, C8, C11, C18 | 1000 pF Chip Capacitors                  | ATC100B102JT50XT   | ATC              |
| C2               | 10 $\mu$ F, 35 V Tantalum Capacitor      | T491D106K035AT     | Kemet            |
| C3               | 22 $\mu$ F, 35 V Tantalum Capacitor      | T491X226K035AT     | Kemet            |
| C4, C13          | 39 K pF Chip Capacitors                  | ATC200B393KT50XT   | ATC              |
| C5, C14          | 22 K pF Chip Capacitors                  | ATC200B223KT50XT   | ATC              |
| C6, C15          | 0.1 $\mu$ F Chip Capacitors              | CDR33BX104AKYS     | Kemet            |
| C7, C12          | 2.2 $\mu$ F, 50 V Chip Capacitors        | C1825C225J5RAC     | Kemet            |
| C9               | 0.6–4.5 pF Variable Capacitor, Gigatrim  | 27271SL            | Johanson         |
| C10              | 12 pF Chip Capacitor                     | ATC100B120JT500XT  | ATC              |
| C16              | 470 $\mu$ F, 63 V Electrolytic Capacitor | ESMG630ELL471MK205 | United Chemi-Con |
| C17              | 27 pF Chip Capacitor                     | ATC100B270JT500XT  | ATC              |
| L1               | 17.5 nH Inductor                         | B06T               | CoilCraft        |
| L2, L3           | 82 nH Inductors                          | 1812SMS-82NJ       | CoilCraft        |
| R1               | 120 $\Omega$ , 1/4 W Chip Resistor       | CRCW1206120RFKEA   | Vishay           |



**Figure 3. MRF6V2010N(NB) Test Circuit Component Layout**

## TYPICAL CHARACTERISTICS

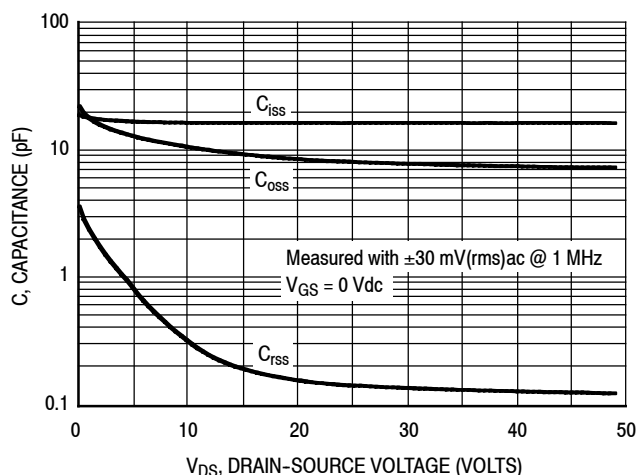


Figure 4. Capacitance versus Drain-Source Voltage

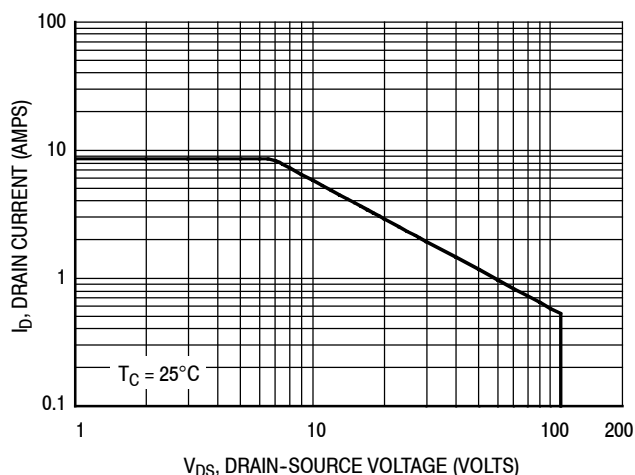


Figure 5. DC Safe Operating Area

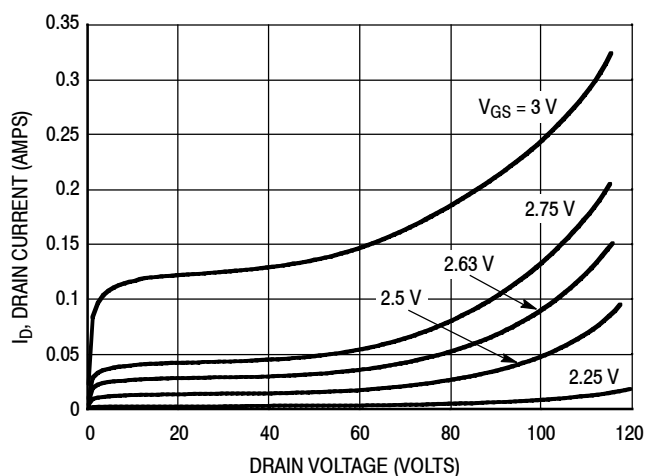


Figure 6. DC Drain Current versus Drain Voltage

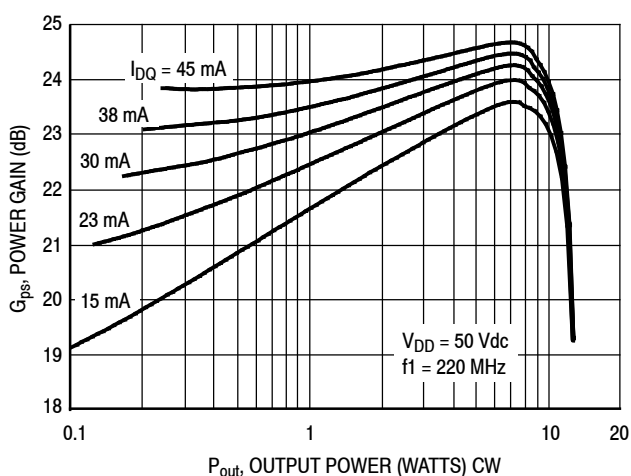


Figure 7. CW Power Gain versus Output Power

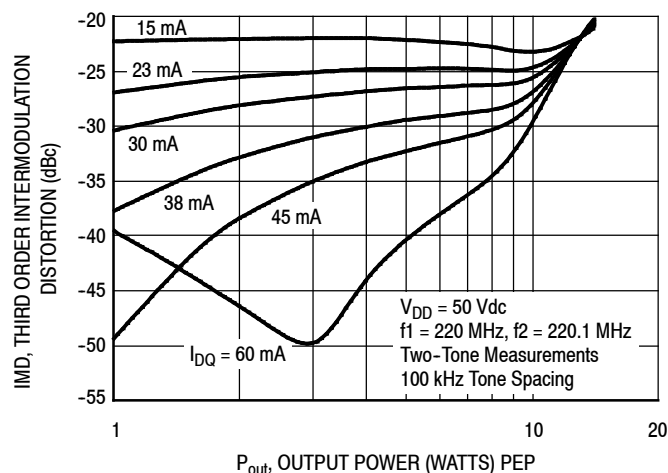


Figure 8. Third Order Intermodulation Distortion versus Output Power

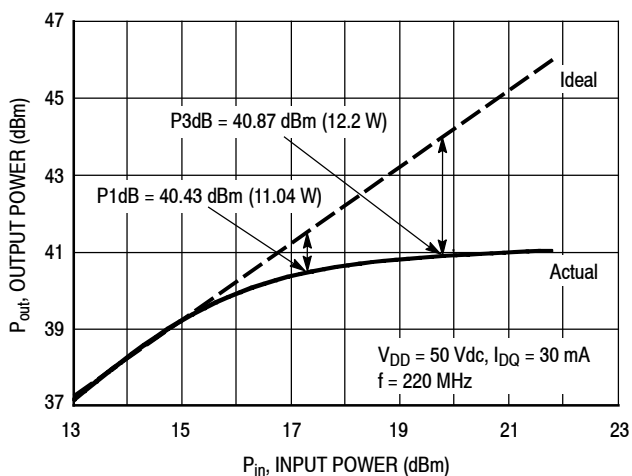


Figure 9. CW Output Power versus Input Power

## TYPICAL CHARACTERISTICS

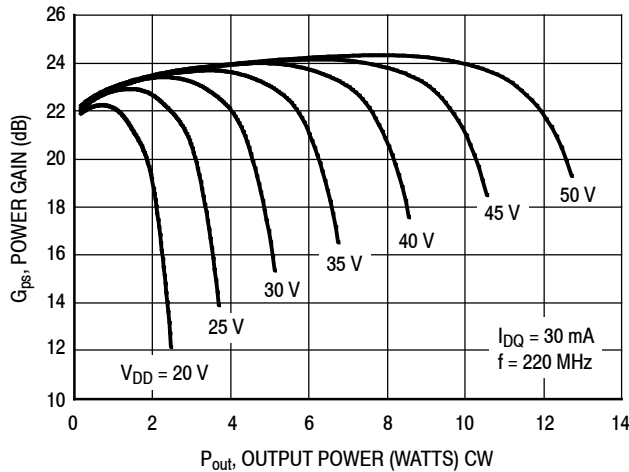


Figure 10. Power Gain versus Output Power

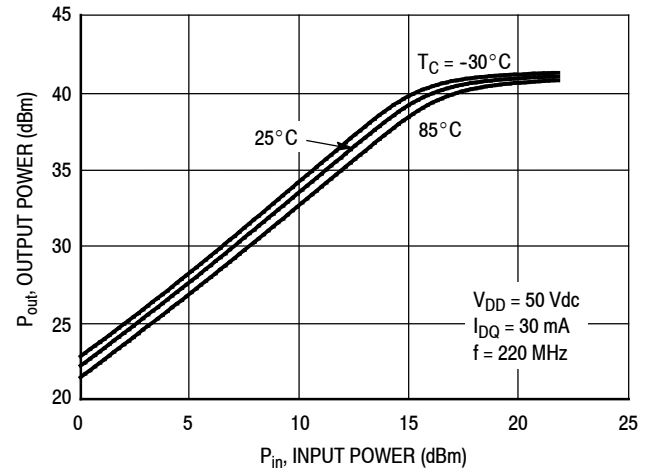


Figure 11. Power Output versus Power Input

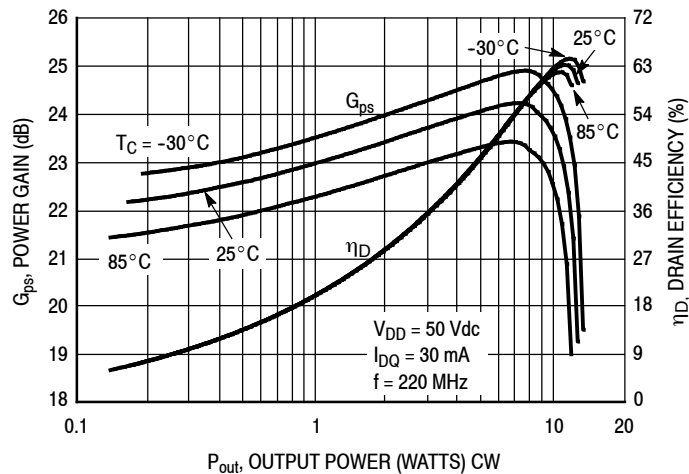


Figure 12. Power Gain and Drain Efficiency versus CW Output Power

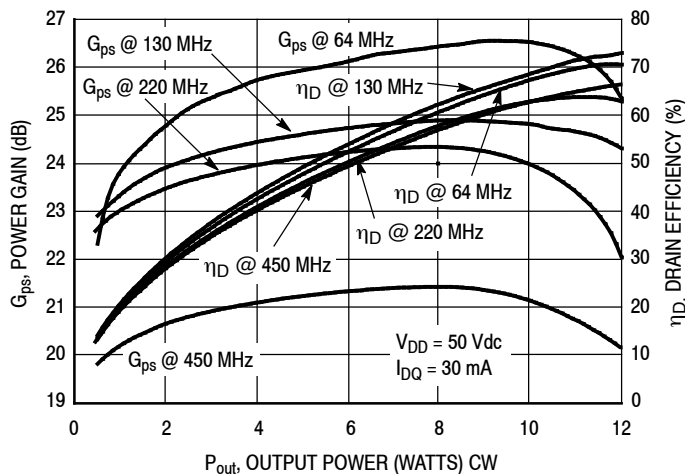
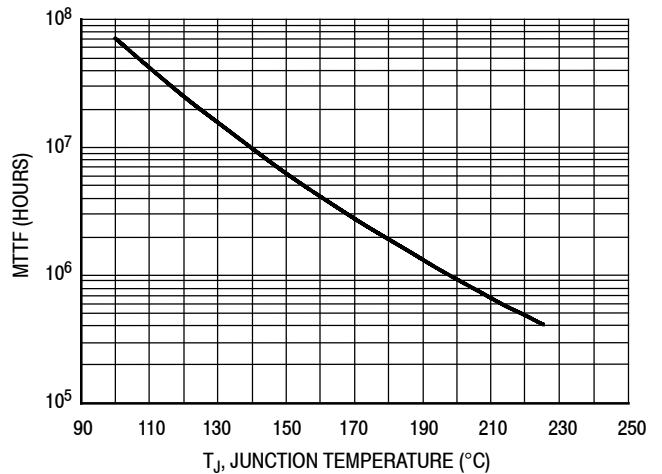


Figure 13. Power Gain and Drain Efficiency versus CW Output Power

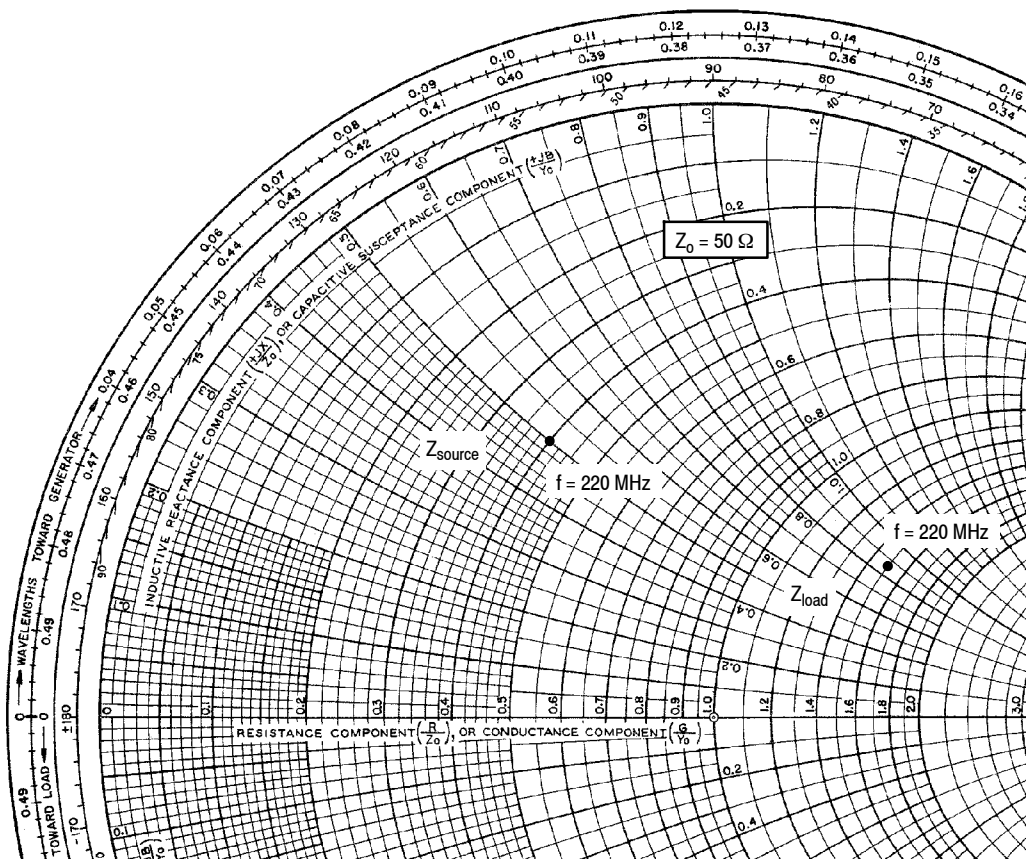


This above graph displays calculated MTTF in hours when the device is operated at  $V_{DD} = 50$  Vdc,  $P_{out} = 10$  W CW, and  $\eta_D = 62\%$ .

MTTF calculator available at <http://www.nxp.com/RF/calculators>.

Figure 14. MTTF versus Junction Temperature

MRF6V2010N MRF6V2010NB MRF6V2010GN



$V_{DD} = 50 \text{ Vdc}$ ,  $I_{DQ} = 30 \text{ mA}$ ,  $P_{out} = 10 \text{ W CW}$

| f<br>MHz | $Z_{source}$<br>$\Omega$ | $Z_{load}$<br>$\Omega$ |
|----------|--------------------------|------------------------|
| 220      | $20 + j25$               | $75 + j44$             |

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

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

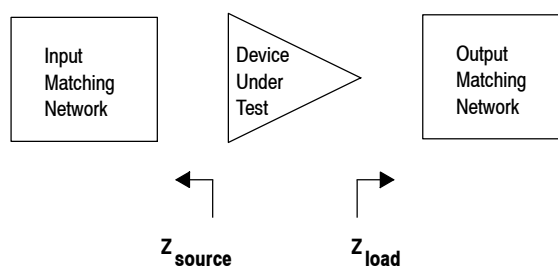


Figure 15. Series Equivalent Source and Load Impedance

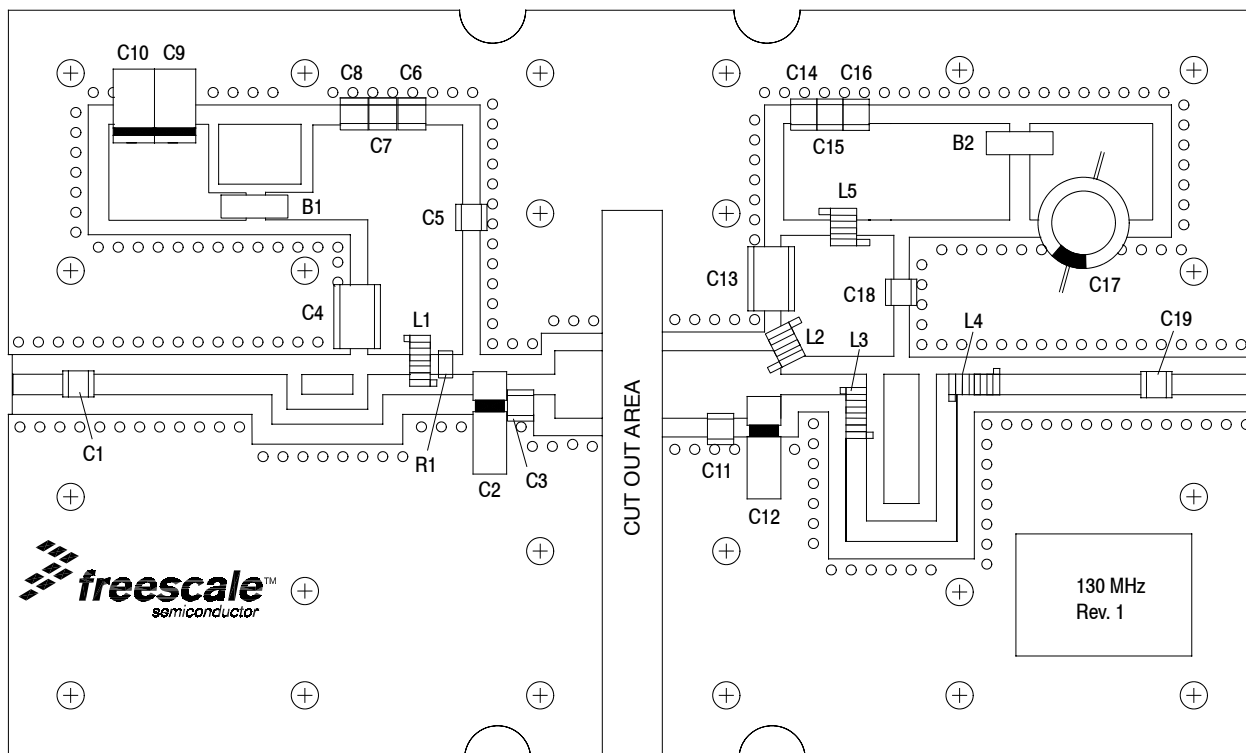


Figure 16. MRF6V2010N(NB) Test Circuit Component Layout — 130 MHz

Table 8. MRF6V2010N(NB) Test Circuit Component Designations and Values — 130 MHz

| Part             | Description                                             | Part Number                                          | Manufacturer |
|------------------|---------------------------------------------------------|------------------------------------------------------|--------------|
| B1, B2           | 95 $\Omega$ , 100 MHz Long Ferrite Beads, Surface Mount | 2743021447                                           | Fair-Rite    |
| C1, C5, C18, C19 | 1000 pF Chip Capacitors                                 | ATC100B102JT50XT                                     | ATC          |
| C2, C12          | 0.6–4.5 pF Variable Capacitors, Gigatrim                | 27271SL                                              | Johanson     |
| C3               | 27 pF Chip Capacitor                                    | ATC100B270JT500XT                                    | ATC          |
| C4, C13          | 2.2 $\mu$ F, 50 V Chip Capacitors                       | C1825C225J5RAC                                       | Kemet        |
| C6, C14          | 0.1 $\mu$ F, 50 V Chip Capacitors                       | CDR33BX104AKYM                                       | Kemet        |
| C7, C15          | 22K pF Chip Capacitors                                  | ATC200B223KT50XT                                     | ATC          |
| C8, C16          | 39K pF Chip Capacitors                                  | ATC200B393KT50XT                                     | ATC          |
| C9               | 22 $\mu$ F, 35 V Tantalum Capacitor                     | T491X226K035AT                                       | Kemet        |
| C10              | 10 $\mu$ F, 35 V Tantalum Capacitor                     | T491D106K035AT                                       | Kemet        |
| C11              | 16 pF Chip Capacitor                                    | ATC100B160JT500XT                                    | ATC          |
| C17              | 330 $\mu$ F, 63 V Electrolytic Capacitor                | MCRH63V337M13X21-RH                                  | Multicomp    |
| L1               | 17.5 nH Inductor                                        | B06T                                                 | CoilCraft    |
| L2, L5           | 82 nH Inductors                                         | 1812SMS-82NJ                                         | CoilCraft    |
| L3               | 35.5 nH Inductor                                        | B09T                                                 | CoilCraft    |
| L4               | 43 nH Inductor                                          | B10T                                                 | CoilCraft    |
| R1               | 100 $\Omega$ , 1/4 W Chip Resistor                      | CRCW1206100RFKEA                                     | Vishay       |
| PCB              | PCB Material 0.030"                                     | CuClad 250GX-0300-55-22, 0.030", $\epsilon_r = 2.55$ | Arlon        |

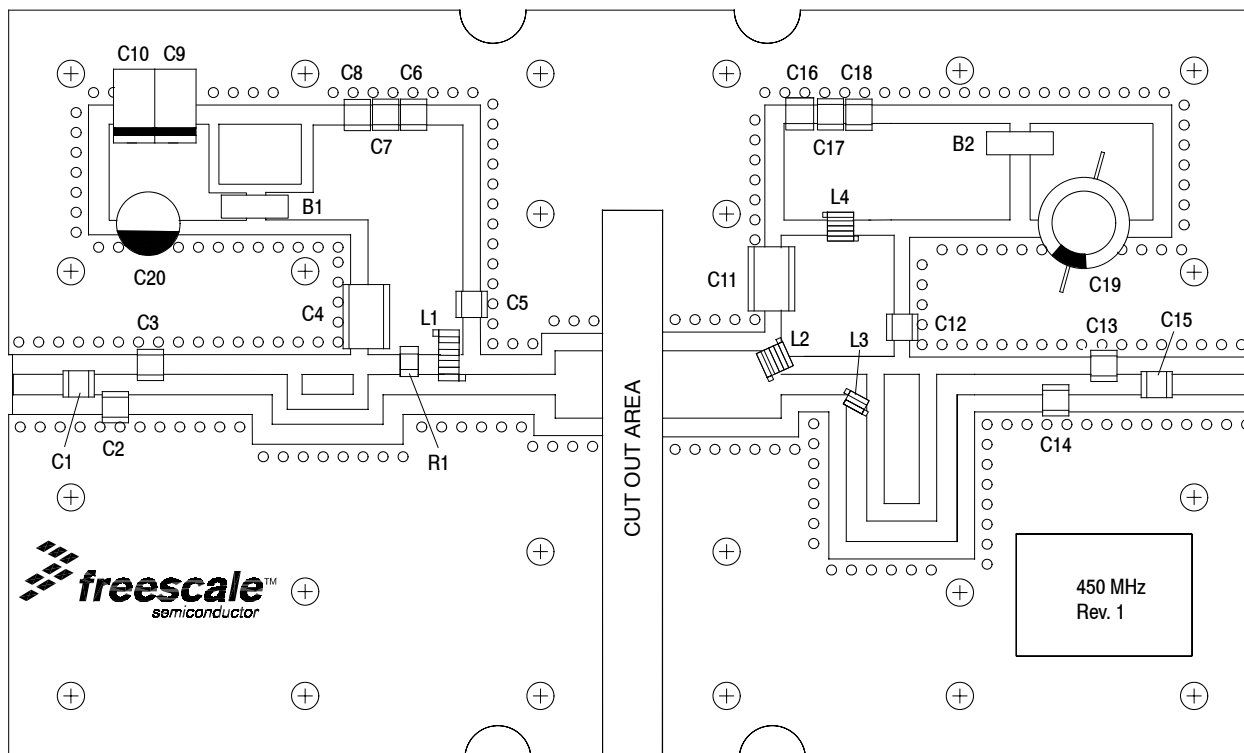


Figure 17. MRF6V2010N(NB) Test Circuit Component Layout — 450 MHz

Table 9. MRF6V2010N(NB) Test Circuit Component Designations and Values — 450 MHz

| Part             | Description                                             | Part Number                                             | Manufacturer |
|------------------|---------------------------------------------------------|---------------------------------------------------------|--------------|
| B1, B2           | 95 $\Omega$ , 100 MHz Long Ferrite Beads, Surface Mount | 2743021447                                              | Fair-Rite    |
| C1, C5, C12, C15 | 240 pF Chip Capacitors                                  | ATC100B241JT200XT                                       | ATC          |
| C2, C3           | 10 pF Chip Capacitors                                   | ATC100B100JT500XT                                       | ATC          |
| C4, C11          | 2.2 $\mu$ F, 50 V Chip Capacitors                       | C1825C225J5RAC                                          | Kemet        |
| C6, C16          | 0.1 $\mu$ F 50V Chip Capacitors                         | CDR33BX104AKYM                                          | Kemet        |
| C7, C17          | 22K pF Chip Capacitors                                  | ATC200B223KT50XT                                        | ATC          |
| C8, C18          | 39K pF Chip Capacitors                                  | ATC200B393KT50XT                                        | ATC          |
| C9               | 22 $\mu$ F, 35 V Tantalum Capacitor                     | T491X226K035AT                                          | Kemet        |
| C10              | 10 $\mu$ F, 35 V Tantalum Capacitor                     | T491D106K035AT                                          | Kemet        |
| C13, C14         | 6.2 pF Chip Capacitors                                  | ATC100B6R2BT500XT                                       | ATC          |
| C19              | 470 $\mu$ F, 63 V Electrolytic Capacitor                | MCGPR63V477M13X26-RH                                    | Multicomp    |
| C20              | 47 $\mu$ F, 50 V Electrolytic Capacitor                 | 476KXM050M                                              | Illinois Cap |
| L1               | 17.5 nH Inductor                                        | B06T                                                    | CoilCraft    |
| L2, L4           | 82 nH Inductors                                         | 1812SMS-82NJ                                            | CoilCraft    |
| L3               | 5.0 nH Inductor                                         | A02T                                                    | CoilCraft    |
| R1               | 120 $\Omega$ , 1/4 W Chip Resistor                      | CRCW1206120RFKEA                                        | Vishay       |
| PCB              | PCB Material 0.030"                                     | CuClad 250GX-0300-55-22,<br>0.030", $\epsilon_r = 2.55$ | Arlon        |

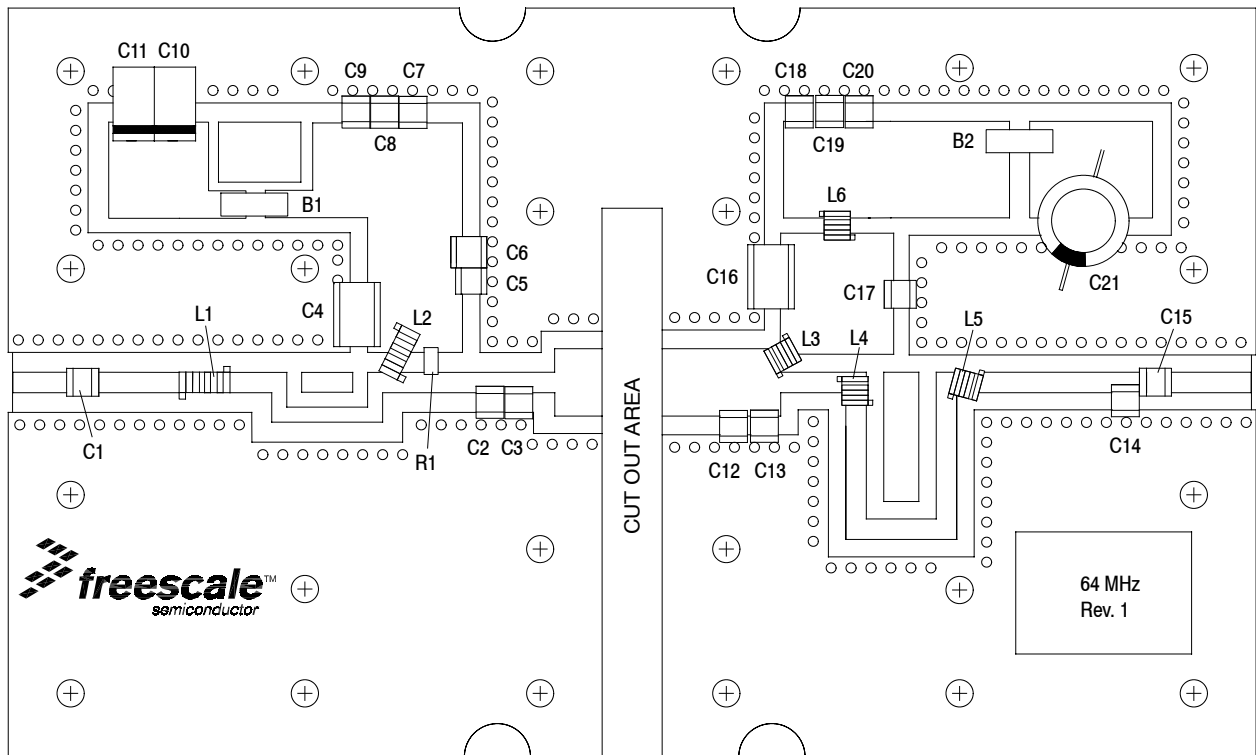
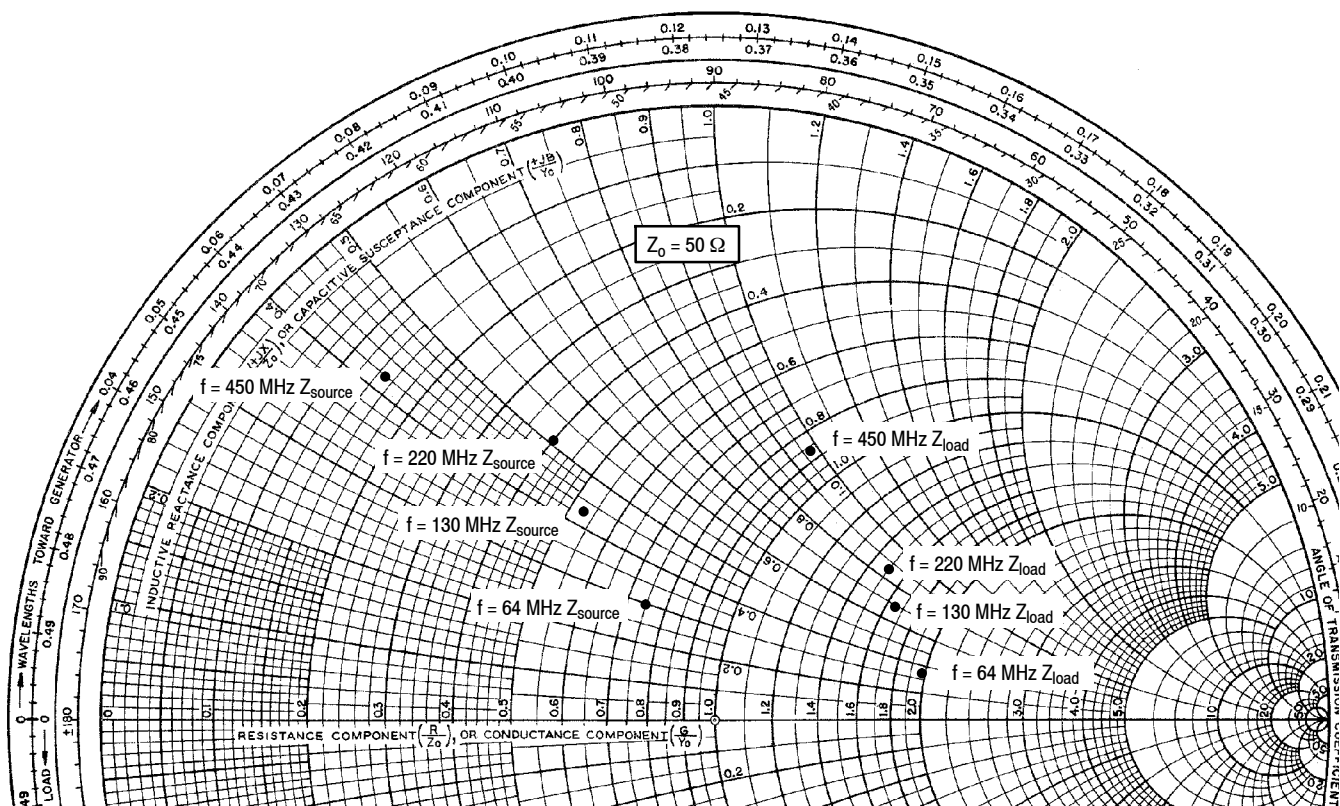


Figure 18. MRF6V2010N(NB) Test Circuit Component Layout — 64 MHz

Table 10. MRF6V2010N(NB) Test Circuit Component Designations and Values — 64 MHz

| Part             | Description                                             | Part Number                                             | Manufacturer |
|------------------|---------------------------------------------------------|---------------------------------------------------------|--------------|
| B1, B2           | 95 $\Omega$ , 100 MHz Long Ferrite Beads, Surface Mount | 2743021447                                              | Fair-Rite    |
| C1, C5, C15, C17 | 1000 pF Chip Capacitors                                 | ATC100B102JT50XT                                        | ATC          |
| C2               | 91 pF Chip Capacitor                                    | ATC100B910JT500XT                                       | ATC          |
| C3, C14          | 22 pF Chip Capacitors                                   | ATC100B220JT500XT                                       | ATC          |
| C4, C16          | 2.2 $\mu$ F, 50 V Chip Capacitors                       | C1825C225J5RAC                                          | Kemet        |
| C6               | 220 nF, 50 V Chip Capacitor                             | C1812C224J5RAC                                          | Kemet        |
| C7, C18          | 0.1 $\mu$ F, 50 V Chip Capacitors                       | CDR33BX104AKYM                                          | Kemet        |
| C8, C19          | 100K pF Chip Capacitors                                 | ATC200B104KT50XT                                        | ATC          |
| C9, C20          | 22K pF Chip Capacitors                                  | ATC200B223KT50XT                                        | ATC          |
| C10              | 22 $\mu$ F, 35 V Tantalum Capacitor                     | T491X226K035AT                                          | Kemet        |
| C11              | 10 $\mu$ F, 35 V Tantalum Capacitor                     | T491D106K035AT                                          | Kemet        |
| C12              | 68 pF Chip Capacitor                                    | ATC100B680JT500XT                                       | ATC          |
| C13              | 27 pF Chip Capacitor                                    | ATC100B270JT500XT                                       | ATC          |
| C21              | 330 $\mu$ F, 63 V Electrolytic Capacitor                | MCRH63V337M13X21-RH                                     | Multicomp    |
| L1               | 17.5 nH Inductor                                        | B06T                                                    | CoilCraft    |
| L2               | 43 nH Inductor                                          | B10T                                                    | CoilCraft    |
| L3, L4, L5, L6   | 82 nH Inductors                                         | 1812SMS-82NJ                                            | CoilCraft    |
| R1               | 180 $\Omega$ , 1/4 W Chip Resistor                      | CRCW1206180RFKEA                                        | Vishay       |
| PCB              | PCB Material 0.030"                                     | CuClad 250GX-0300-55-22,<br>0.030", $\epsilon_r = 2.55$ | Arlon        |



$V_{DD} = 50 \text{ Vdc}$ ,  $I_{DQ} = 30 \text{ mA}$ ,  $P_{out} = 10 \text{ W CW}$

| f<br>MHz | $Z_{source}$<br>$\Omega$ | $Z_{load}$<br>$\Omega$ |
|----------|--------------------------|------------------------|
| 64       | $37.5 + j15.1$           | $94.5 + j16.7$         |
| 130      | $26.7 + j21.3$           | $83.8 + j35.0$         |
| 220      | $20.0 + j25.4$           | $75.0 + j44.0$         |
| 450      | $7.70 + j21.0$           | $43.0 + j49.0$         |

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

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

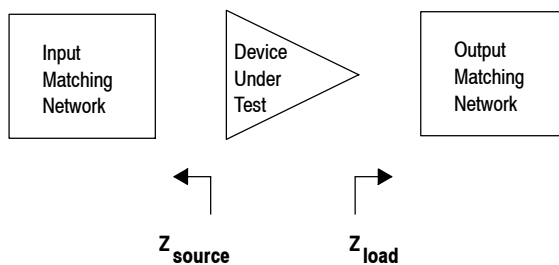


Figure 19. Series Equivalent Source and Load Impedance

## 50 OHM TYPICAL CHARACTERISTICS

**Table 11. Common Source S-Parameters** ( $V_{DD} = 50\text{ V}$ ,  $I_{DQ} = 30\text{ mA}$ ,  $T_A = 25^\circ\text{C}$ , 50 Ohm System)

| f<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |       | S <sub>22</sub> |        |
|----------|-----------------|--------|-----------------|-------|-----------------|-------|-----------------|--------|
|          | S <sub>11</sub> | ∠ φ    | S <sub>21</sub> | ∠ φ   | S <sub>12</sub> | ∠ φ   | S <sub>22</sub> | ∠ φ    |
| 10       | 0.997           | -5.0   | 11.520          | 175.6 | 0.000790        | 84.6  | 0.960           | -0.8   |
| 20       | 0.994           | -9.5   | 11.419          | 171.6 | 0.00157         | 84.3  | 0.962           | -3.5   |
| 30       | 0.992           | -14.5  | 11.356          | 167.9 | 0.00232         | 78.1  | 0.963           | -5.5   |
| 40       | 0.987           | -19.3  | 11.278          | 164.1 | 0.00307         | 74.6  | 0.964           | -7.7   |
| 50       | 0.981           | -24.0  | 11.187          | 160.1 | 0.00380         | 71.0  | 0.964           | -9.9   |
| 60       | 0.974           | -28.6  | 11.042          | 156.1 | 0.00449         | 67.4  | 0.963           | -12.1  |
| 70       | 0.965           | -33.0  | 10.848          | 152.1 | 0.00513         | 63.8  | 0.961           | -14.2  |
| 80       | 0.955           | -37.4  | 10.636          | 148.2 | 0.00574         | 60.4  | 0.958           | -16.3  |
| 90       | 0.944           | -41.6  | 10.405          | 144.5 | 0.00631         | 57.0  | 0.955           | -18.4  |
| 100      | 0.933           | -45.7  | 10.147          | 140.8 | 0.00683         | 53.8  | 0.951           | -20.4  |
| 120      | 0.912           | -53.3  | 9.603           | 134.2 | 0.00776         | 47.9  | 0.944           | -24.2  |
| 140      | 0.892           | -60.4  | 9.061           | 127.9 | 0.00851         | 42.4  | 0.936           | -27.9  |
| 160      | 0.873           | -66.7  | 8.516           | 122.2 | 0.00914         | 37.6  | 0.929           | -31.3  |
| 180      | 0.856           | -72.7  | 7.993           | 116.9 | 0.00967         | 32.9  | 0.923           | -34.6  |
| 200      | 0.841           | -78.1  | 7.497           | 112.1 | 0.0101          | 28.7  | 0.918           | -37.9  |
| 220      | 0.828           | -83.0  | 7.040           | 107.5 | 0.0104          | 24.9  | 0.914           | -41.1  |
| 240      | 0.819           | -87.5  | 6.612           | 103.3 | 0.0107          | 21.3  | 0.912           | -44.2  |
| 260      | 0.810           | -91.7  | 6.214           | 99.3  | 0.0109          | 18.0  | 0.909           | -47.2  |
| 280      | 0.804           | -95.5  | 5.845           | 95.7  | 0.0110          | 15.0  | 0.908           | -50.2  |
| 300      | 0.799           | -99.0  | 5.507           | 92.2  | 0.0112          | 11.9  | 0.907           | -53.0  |
| 320      | 0.796           | -102.2 | 5.192           | 88.8  | 0.0112          | 9.1   | 0.906           | -55.9  |
| 340      | 0.794           | -105.1 | 4.901           | 85.7  | 0.0113          | 6.5   | 0.906           | -58.6  |
| 360      | 0.793           | -107.8 | 4.630           | 82.8  | 0.0112          | 4.1   | 0.906           | -61.4  |
| 380      | 0.793           | -110.4 | 4.382           | 79.9  | 0.0112          | 2.0   | 0.906           | -64.1  |
| 400      | 0.794           | -112.7 | 4.152           | 77.2  | 0.0112          | -0.3  | 0.906           | -66.7  |
| 420      | 0.796           | -114.9 | 3.937           | 74.6  | 0.0112          | -2.5  | 0.907           | -69.3  |
| 440      | 0.798           | -116.9 | 3.733           | 72.2  | 0.0111          | -4.4  | 0.907           | -71.8  |
| 460      | 0.800           | -118.8 | 3.547           | 69.8  | 0.0110          | -6.5  | 0.908           | -74.2  |
| 480      | 0.803           | -120.5 | 3.372           | 67.6  | 0.0109          | -8.5  | 0.908           | -76.7  |
| 500      | 0.807           | -122.2 | 3.213           | 65.4  | 0.0108          | -10.0 | 0.909           | -79.0  |
| 520      | 0.810           | -123.8 | 3.061           | 63.3  | 0.0107          | -11.9 | 0.910           | -81.3  |
| 540      | 0.814           | -125.4 | 2.919           | 61.2  | 0.0105          | -13.5 | 0.911           | -83.6  |
| 560      | 0.817           | -126.8 | 2.784           | 59.3  | 0.0104          | -14.9 | 0.912           | -85.8  |
| 580      | 0.821           | -128.1 | 2.661           | 57.5  | 0.0103          | -16.6 | 0.914           | -87.9  |
| 600      | 0.825           | -129.3 | 2.545           | 55.7  | 0.0101          | -18.1 | 0.915           | -90.0  |
| 620      | 0.829           | -130.5 | 2.436           | 53.9  | 0.00996         | -19.6 | 0.917           | -92.1  |
| 640      | 0.833           | -131.6 | 2.334           | 52.2  | 0.00981         | -21.0 | 0.918           | -94.1  |
| 660      | 0.837           | -132.7 | 2.237           | 50.5  | 0.00963         | -22.4 | 0.920           | -96.0  |
| 680      | 0.840           | -133.8 | 2.144           | 48.9  | 0.00946         | -23.7 | 0.921           | -97.9  |
| 700      | 0.843           | -134.8 | 2.058           | 47.3  | 0.00928         | -25.0 | 0.923           | -99.7  |
| 720      | 0.847           | -135.8 | 1.977           | 45.8  | 0.00910         | -26.1 | 0.924           | -101.4 |
| 740      | 0.850           | -136.8 | 1.900           | 44.4  | 0.00894         | -27.3 | 0.926           | -103.0 |
| 760      | 0.854           | -137.8 | 1.828           | 43.0  | 0.00876         | -28.6 | 0.928           | -104.7 |
| 780      | 0.857           | -138.7 | 1.760           | 41.6  | 0.00859         | -29.7 | 0.930           | -106.2 |

(continued)

**MRF6V2010N MRF6V2010NB MRF6V2010GN**

## 50 OHM TYPICAL CHARACTERISTICS

**Table 10. Common Source S-Parameters** ( $V_{DD} = 50\text{ V}$ ,  $I_{DQ} = 30\text{ mA}$ ,  $T_A = 25^\circ\text{C}$ , 50 Ohm System) (continued)

| f<br>MHz | S <sub>11</sub> |               | S <sub>21</sub> |               | S <sub>12</sub> |               | S <sub>22</sub> |               |
|----------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|
|          | S <sub>11</sub> | $\angle \phi$ | S <sub>21</sub> | $\angle \phi$ | S <sub>12</sub> | $\angle \phi$ | S <sub>22</sub> | $\angle \phi$ |
| 800      | 0.858           | -139.7        | 1.697           | 40.2          | 0.00839         | -31.1         | 0.932           | -107.6        |
| 820      | 0.861           | -140.7        | 1.636           | 38.9          | 0.00818         | -32.1         | 0.934           | -109.0        |
| 840      | 0.864           | -141.6        | 1.578           | 37.6          | 0.00798         | -33.1         | 0.935           | -110.4        |
| 860      | 0.867           | -142.6        | 1.523           | 36.4          | 0.00781         | -33.8         | 0.936           | -111.7        |
| 880      | 0.870           | -143.5        | 1.471           | 35.1          | 0.00763         | -34.8         | 0.938           | -112.9        |
| 900      | 0.873           | -144.5        | 1.421           | 33.9          | 0.00745         | -35.9         | 0.939           | -114.1        |

The drawing consists of two views: a front view (top) and a side view (bottom).

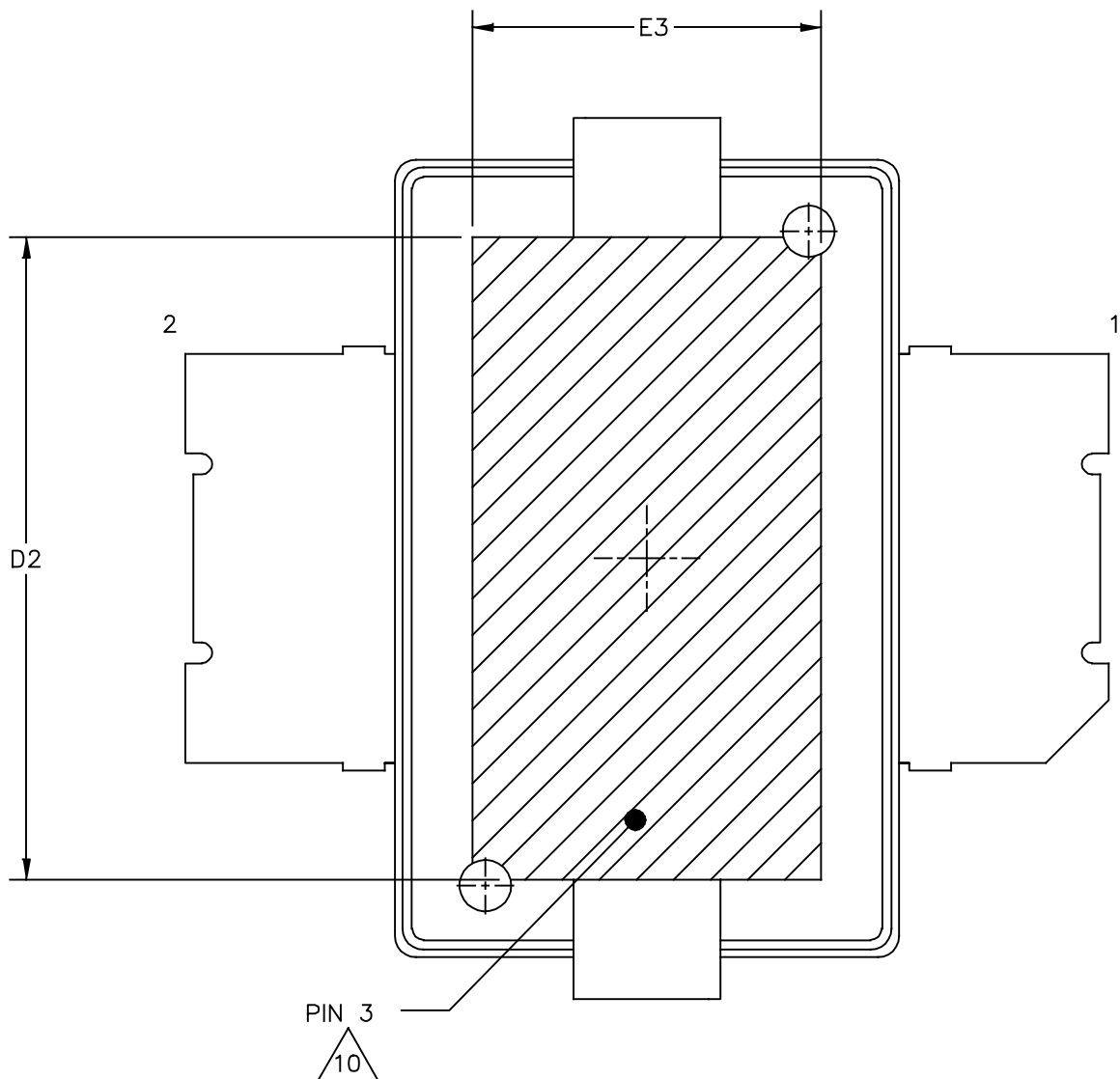
**Front View (Top):**

- Dimensions:**
  - $E1$ : Distance from the left edge to the center of the top feature.
  - $2X E4$ : Width of the top feature.
  - $2X D3$ : Distance from the center of the top feature to the right edge.
  - $DD$ : Total height of the part.
  - $2X b1$ : Distance from the top edge to the center of the side features.
  - $E$ : Total width of the part.
  - $D1$ : Distance from the bottom edge to the center of the side features.
- Feature Callouts:**
  - $\text{4}$  (triangle symbol): Feature 4, located at the top center.
  - $2X \text{9}$  (triangle symbol): Feature 9, located on the top surface.
  - $\text{aaa}$  (M symbol): Material specification, located on the left side.
  - $D A$ : Datum A, located on the left side.
  - $\text{bbb}$  (M symbol): Material specification, located at the bottom center.
  - $D B$ : Datum B, located at the bottom center.

**Side View (Bottom):**

- Dimensions:**
  - $c1$ : Distance from the left edge to the center of the side feature.
  - $A1$ : Distance from the bottom edge to the center of the side feature.
  - $A2$  (triangle symbol): Feature 2, located at the bottom left.
  - $2X F$  (M symbol): Material specification, located on the left side.
  - $2X \text{9}$  (triangle symbol): Feature 9, located on the top surface.
  - $2X E2$ : Width of the side feature.
  - $E5$ : Distance from the left edge to the center of the side feature.
  - $AA$ : Total height of the part.
- Feature Callouts:**
  - $H$ : Feature H, located on the left side.
  - $D$ : Feature D, located on the right side.
  - $\text{bbb}$  (M symbol): Material specification, located at the bottom center.
  - $D B$ : Datum B, located at the bottom center.

**MRF6V2010N MRF6V2010NB MRF6V2010GN**



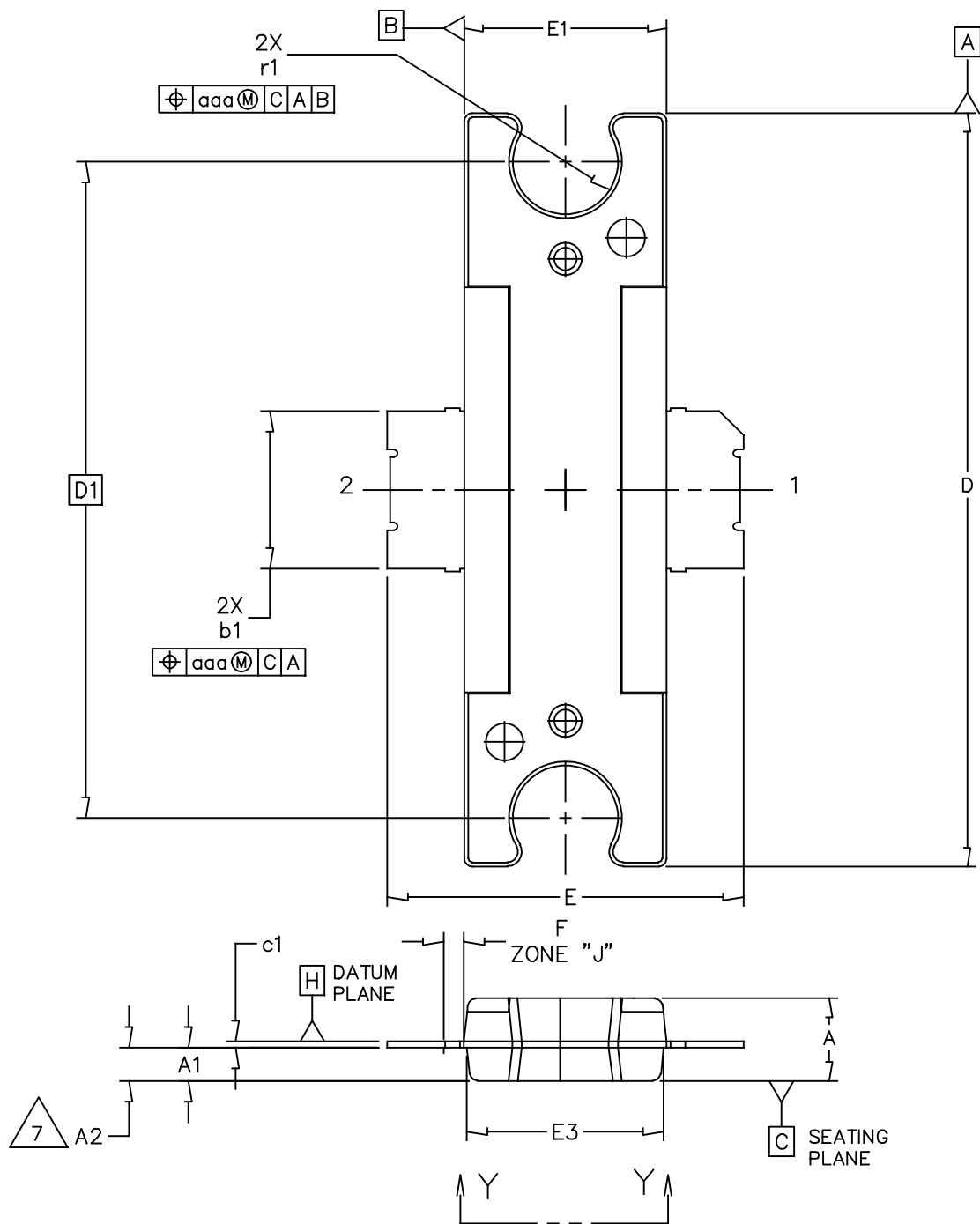
VIEW W-W  
BOTTOM VIEW

|                                                  |                                      |                            |
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|                                                  | STANDARD: NON-JEDEC                  |                            |
|                                                  | SOT1732-1                            | 22 FEB 2016                |

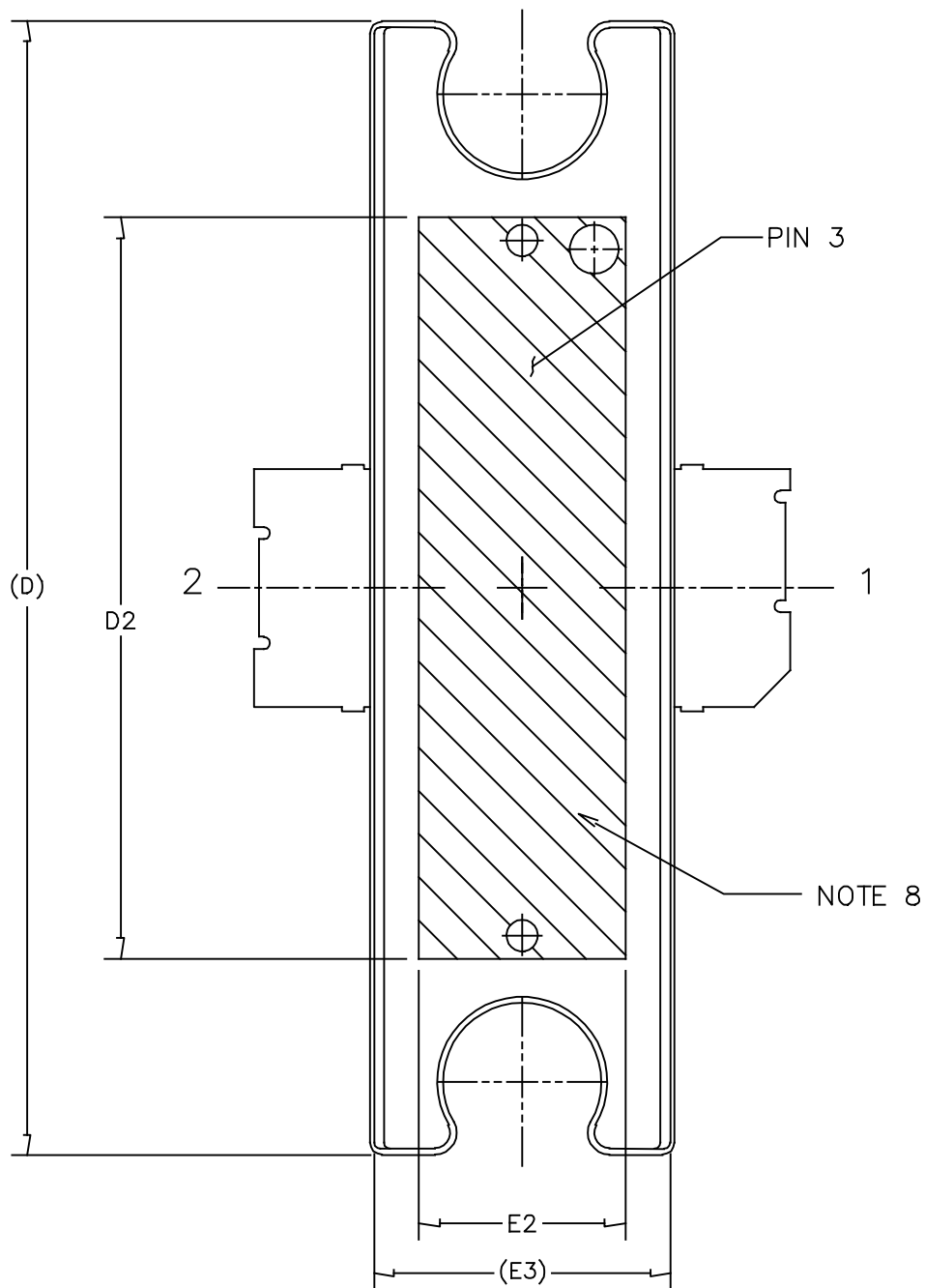
# NOTES:

1. CONTROLLING DIMENSION: INCH
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.
3. DATUM PLANE H IS LOCATED AT TOP OF LEAD AND IS COINCIDENT WITH THE LEAD WHERE THE LEAD EXITS THE PLASTIC BODY AT THE TOP OF THE PARTING LINE.
4. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS .006 INCH (0.15 MM) PER SIDE. DIMENSIONS D1 AND E1 DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE H.
5. DIMENSION b1 DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .005 INCH (0.13 MM) TOTAL IN EXCESS OF THE b1 DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. DATUMS A AND B TO BE DETERMINED AT DATUM PLANE H.
7. DIMENSION A2 APPLIES WITHIN ZONE J ONLY.
8. DIMENSIONS DD AND E2 DO NOT INCLUDE MOLD PROTRUSION. OVERALL LENGTH INCLUDING MOLD PROTRUSION SHOULD NOT EXCEED 0.430 INCH (10.92 MM) FOR DIMENSION DD AND 0.080 INCH (2.03 MM) FOR DIMENSION E2. DIMENSIONS DD AND E2 DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE D.
9. THESE SURFACES OF THE HEAT SLUG ARE NOT PART OF THE SOLDERABLE SURFACES AND MAY REMAIN UNPLATED.
10. HATCHING REPRESENTS THE EXPOSED AREA OF THE HEAT SLUG. DIMENSIONS D2 AND E3 REPRESENT THE VALUES BETWEEN THE TWO OPPOSITE POINTS ALONG THE EDGES OF EXPOSED AREA OF THE HEAT SLUG.

| INCH                                             |      | MILLIMETER |                    | INCH  |                                                      | MILLIMETER |          |
|--------------------------------------------------|------|------------|--------------------|-------|------------------------------------------------------|------------|----------|
| DIM                                              | MIN  | MAX        | MIN                | MAX   | DIM                                                  | MIN        | MAX      |
| AA                                               | .078 | .082       | 1.98               | 2.08  | E4                                                   | .058       | .066     |
| A1                                               | .039 | .043       | 0.99               | 1.09  | E5                                                   | .231       | .235     |
| A2                                               | .040 | .042       | 1.02               | 1.07  | F                                                    | .025 BSC   | 0.64 BSC |
| DD                                               | .416 | .424       | 10.57              | 10.77 | b1                                                   | .193       | .199     |
| D1                                               | .378 | .382       | 9.60               | 9.70  | c1                                                   | .007       | .011     |
| D2                                               | .290 | -----      | 7.37               | ----- | aaa                                                  | .004       | 0.10     |
| D3                                               | .016 | .024       | 0.41               | 0.61  | bbb                                                  | .008       | 0.20     |
| E                                                | .436 | .444       | 11.07              | 11.28 |                                                      |            |          |
| E1                                               | .238 | .242       | 6.04               | 6.15  |                                                      |            |          |
| E2                                               | .066 | .074       | 1.68               | 1.88  |                                                      |            |          |
| E3                                               | .150 | -----      | 3.81               | ----- |                                                      |            |          |
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|                                                  |      |            |                    |       | STANDARD: NON-JEDEC                                  |            |          |
|                                                  |      |            |                    |       | SOT1732-1                                            |            |          |



|                                                  |  |                                 |                            |
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| TITLE:<br>TO-272<br>2 LEAD                       |  | DOCUMENT NO: 98ASA99191D REV: F |                            |
|                                                  |  | STANDARD: JEDEC TO-272 BC       |                            |
|                                                  |  | SOT1733-1                       | 22 JAN 2016                |



VIEW Y-Y

|                                                  |                    |                            |             |
|--------------------------------------------------|--------------------|----------------------------|-------------|
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| TITLE:<br><br>TO-272<br>2 LEAD                   |                    | DOCUMENT NO: 98ASA99191D   | REV: F      |
|                                                  |                    | STANDARD: JEDEC TO-272 BC  |             |
|                                                  |                    | SOT1733-1                  | 22 JAN 2016 |

MRF6V2010N MRF6V2010NB MRF6V2010GN

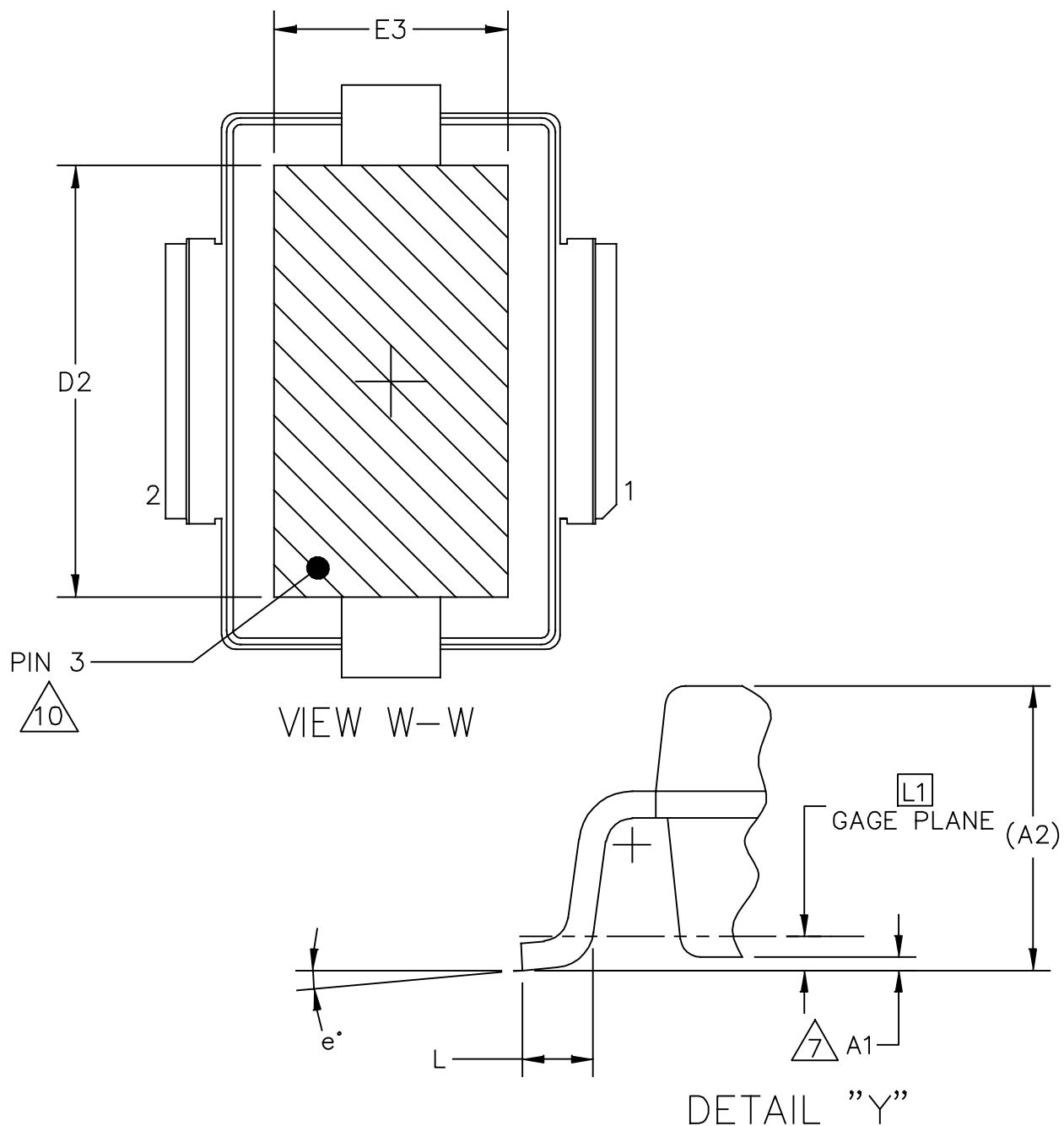
NOTES:

1. CONTROLLING DIMENSION: INCH
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.
3. DATUM PLANE -H- IS LOCATED AT THE TOP OF LEAD AND IS COINCIDENT WITH THE LEAD WHERE THE LEAD EXITS THE PLASTIC BODY AT THE TOP OF THE PARTING LINE.
4. DIMENSIONS "D" AND "E1" DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS .006 PER SIDE. DIMENSIONS "D" AND "E1" DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE -H-.
5. DIMENSIONS "b1" DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .005 TOTAL IN EXCESS OF THE "b1" DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. DATUMS -A- AND -B- TO BE DETERMINED AT DATUM PLANE -H-.
7. DIMENSION A2 APPLIES WITHIN ZONE "J" ONLY.
8. HATCHING REPRESENTS THE EXPOSED AREA OF THE HEAT SLUG.

STYLE 1:  
 PIN 1 - DRAIN  
 PIN 2 - GATE  
 PIN 3 - SOURCE

| INCH                                             |          |      | MILLIMETER |                    | INCH                                 |      |                            | MILLIMETER |      |
|--------------------------------------------------|----------|------|------------|--------------------|--------------------------------------|------|----------------------------|------------|------|
| DIM                                              | MIN      | MAX  | MIN        | MAX                | DIM                                  | MIN  | MAX                        | MIN        | MAX  |
| A                                                | .100     | .104 | 2.54       | 2.64               | b1                                   | .193 | .199                       | 4.90       | 5.05 |
| A1                                               | .039     | .043 | 0.99       | 1.09               | c1                                   | .007 | .011                       | 0.18       | 0.28 |
| A2                                               | .040     | .042 | 1.02       | 1.07               | r1                                   | .063 | .068                       | 1.60       | 1.73 |
| D                                                | .928     | .932 | 23.57      | 23.67              | aaa                                  | .004 |                            | 0.1        |      |
| D1                                               | .810 BSC |      | 20.57 BSC  |                    |                                      |      |                            |            |      |
| D2                                               | .604     | ---- | 15.34      | ----               |                                      |      |                            |            |      |
| E                                                | .438     |      | 11.12      | 11.23              |                                      |      |                            |            |      |
| E1                                               | .248     | .252 | 6.30       | 6.40               |                                      |      |                            |            |      |
| E2                                               | .162     | ---- | 4.11       | ----               |                                      |      |                            |            |      |
| E3                                               | .241     | .245 | 6.12       | 6.22               |                                      |      |                            |            |      |
| F                                                | .025 BSC |      | 0.64 BSC   |                    |                                      |      |                            |            |      |
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|                                                  |          |      |            |                    | STANDARD: JEDEC TO-272 BS            |      |                            |            |      |
|                                                  |          |      |            |                    | SOT1733-1      22 JAN 2016           |      |                            |            |      |





|                                                  |                    |                            |             |
|--------------------------------------------------|--------------------|----------------------------|-------------|
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| TITLE:<br><br>TO-270G-2                          |                    | DOCUMENT NO: 98ASA99301D   | REV: D      |
|                                                  |                    | STANDARD: JEDEC TO-270 BA  |             |
|                                                  |                    | SOT1731-1                  | 28 MAR 2016 |

NOTES:

1. CONTROLLING DIMENSION: INCH

2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.

3. DATUM PLANE H IS LOCATED AT TOP OF LEAD AND IS COINCIDENT WITH THE LEAD WHERE THE LEAD EXITS THE PLASTIC BODY AT THE TOP OF THE PARTING LINE.

4. DIMENSIONS "D1" AND "E1" DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS .006 INCH (0.15MM) PER SIDE. DIMENSIONS "D1" AND "E1" DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE H.

5. DIMENSION b1 DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .005 INCH (0.13 MM) TOTAL IN EXCESS OF THE b1 DIMENSION AT MAXIMUM MATERIAL CONDITION.

6. DATUMS A AND B TO BE DETERMINED AT DATUM PLANE H.

7. DIMENSION A1 IS MEASURED WITH REFERENCE TO DATUM D. THE POSITIVE VALUE IMPLIES THAT THE BOTTOM OF THE PACKAGE IS HIGHER THAN THE BOTTOM OF THE LEAD.

8. DIMENSIONS DD AND E2 DO NOT INCLUDE MOLD PROTRUSION. OVERALL LENGTH INCLUDING MOLD PROTRUSION SHOULD NOT EXCEED 0.430 INCH (10.92 MM) FOR DIMENSION DD AND 0.080 INCH (2.03 MM) FOR DIMENSION E2.

9. THESE SURFACES OF THE HEAT SLUG ARE NOT PART OF THE SOLDERABLE SURFACES AND MAY REMAIN UNPLATED.

10. HATCHING REPRESENTS THE EXPOSED AND SOLDERABLE AREA OF THE HEAT SLUG. DIMENSIONS D2 AND E3 REPRESENT THE VALUES BETWEEN THE TWO OPPOSITE POINTS ALONG THE EDGES OF EXPOSED AREA OF THE HEAT SLUG.

| INCH                                             |        |      | MILLIMETER |                    | DIM                                                  | INCH     |                            | MILLIMETER |      |
|--------------------------------------------------|--------|------|------------|--------------------|------------------------------------------------------|----------|----------------------------|------------|------|
| DIM                                              | MIN    | MAX  | MIN        | MAX                |                                                      | MIN      | MAX                        | MIN        | MAX  |
| AA                                               | .078   | .082 | 1.98       | 2.08               | L                                                    | .018     | .024                       | 0.46       | 0.61 |
| A1                                               | .001   | .004 | 0.03       | 0.10               | L1                                                   | .010 BSC |                            | 0.25 BSC   |      |
| A2                                               | (.083) |      | (2.11)     |                    | b1                                                   | .193     | .199                       | 4.90       | 5.06 |
| DD                                               | .416   | .424 | 10.57      | 10.77              | c1                                                   | .007     | .011                       | 0.18       | 0.28 |
| D1                                               | .378   | .382 | 9.60       | 9.70               | e                                                    | 2'       | 8'                         | 2'         | 8'   |
| D2                                               | .290   | —    | 7.37       | —                  | aaa                                                  | .004     |                            | 0.10       |      |
| D3                                               | .016   | .024 | 0.41       | 0.61               | bbb                                                  | .008     |                            | 0.20       |      |
| E                                                | .316   | .324 | 8.03       | 8.23               |                                                      |          |                            |            |      |
| E1                                               | .238   | .242 | 6.04       | 6.15               |                                                      |          |                            |            |      |
| E2                                               | .066   | .074 | 1.68       | 1.88               |                                                      |          |                            |            |      |
| E3                                               | .150   | —    | 3.81       | —                  |                                                      |          |                            |            |      |
| E4                                               | .058   | .066 | 1.47       | 1.68               |                                                      |          |                            |            |      |
| E5                                               | .231   | .235 | 5.87       | 5.97               |                                                      |          |                            |            |      |
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| TITLE:<br><br>TO—270G—2                          |        |      |            |                    | DOCUMENT NO: 98ASA99301D                      REV: D |          |                            |            |      |
|                                                  |        |      |            |                    | STANDARD: JEDEC TO—270 BA                            |          |                            |            |      |
|                                                  |        |      |            |                    | SOT1731—1                                            |          |                            |            |      |

## PRODUCT DOCUMENTATION AND SOFTWARE

Refer to the following resources to aid your design process.

### Application Notes

- AN1907: Solder Reflow Attach Method for High Power RF Devices in Plastic Packages
- AN1955: Thermal Measurement Methodology of RF Power Amplifiers
- AN3263: Bolt Down Mounting Method for High Power RF Transistors and RFICs in Over-Molded Plastic Packages
- AN3789: Clamping of High Power RF Transistors and RFICs in Over-Molded Plastic Packages

### Engineering Bulletins

- EB212: Using Data Sheet Impedances for RF LDMOS Devices

### Software

- Electromigration MTTF Calculator
- RF High Power Model

### To Download Resources Specific to a Given Part Number:

1. Go to <http://www.nxp.com/RF>
2. Search by part number
3. Click part number link
4. Choose the desired resource from the drop down menu

## REVISION HISTORY

The following table summarizes revisions to this document.

| Revision | Date      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0        | Feb. 2007 | <ul style="list-style-type: none"><li>• Initial release of data sheet</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1        | May 2007  | <ul style="list-style-type: none"><li>• Corrected Test Circuit Component part numbers in Table 6, Component Designations and Values for C1, C8, C11, C18, C4, C13, C5, and C14, p. 3</li><li>• Corrected Series Impedance <math>Z_{\text{source}}</math> and <math>Z_{\text{load}}</math> values, Fig. 13, Series Equivalent Source and Load Impedance, p. 7</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2        | Aug. 2007 | <ul style="list-style-type: none"><li>• Replaced Case Outline 1265-08 with 1265-09, Issue K, p. 1, 12-14. Corrected cross hatch pattern in bottom view and changed its dimensions (D2 and E3) to minimum value on source contact (D2 changed from Min-Max .290-.320 to .290 Min; E3 changed from Min-Max .150-.180 to .150 Min). Added JEDEC Standard Package Number.</li><li>• Replaced Case Outline 1337-03 with 1337-04, p. 1, 15-17. Issue D: Removed Drain-ID label from View Y-Y on Sheet 2. Renamed E2 to E3. Added cross-hatch region dimensions D2 and E2.</li><li>• Corrected Test Circuit Component part number in Table 6, Component Designations and Values for R1, p. 3</li><li>• Added Figure 12, Power Gain and Drain Efficiency versus CW Output Power, p. 6</li><li>• Corrected plot points to show 50 Ohms in Figure 14, Series Equivalent Source and Load Impedance, p. 7</li><li>• Added Figures 15-17, Test Circuit Component Layout and Tables 7-9, Test Circuit Component Designations and Values to show 130, 450 and 64 MHz, respectively, p. 8-10</li><li>• Added Figure 18, Series Equivalent Source and Load Impedance to show 64, 130, 220 and 450 MHz plot points, p. 11</li></ul> |
| 3        | Feb. 2008 | <ul style="list-style-type: none"><li>• Added Case Operating Temperature limit to the Maximum Ratings table and set limit to 150°C, p. 1</li><li>• Corrected <math>C_{\text{iss}}</math> test condition to indicate AC stimulus on the <math>V_{\text{GS}}</math> connection versus the <math>V_{\text{DS}}</math> connection, Dynamic Characteristics table, p. 2</li><li>• Replaced Case Outline 1337-04, Issue D, with 1337-04, Issue E, p. 15-17. Corrected document number 98ASA99191D on Sheet 3.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4        | Mar. 2008 | <ul style="list-style-type: none"><li>• Corrected <math>Z_{\text{source}}</math> (37.5 + j15.1) and <math>Z_{\text{load}}</math> (94.5 + j16.7) 64 MHz values and replotted both, p. 11</li><li>• Added S-Parameter table, p. 12, 13</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

(continued)

## REVISION HISTORY (continued)

| Revision | Date       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5        | Apr. 2010  | <ul style="list-style-type: none"> <li>Operating Junction Temperature increased from 200°C to 225°C in Maximum Ratings table, related “Continuous use at maximum temperature will affect MTTF” footnote added and changed 200°C to 225°C in Capable Plastic Package bullet, p. 1</li> <li>Added Electromigration MTTF Calculator and RF High Power Model availability to Product Software, p. 20</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 6        | Sept. 2016 | <ul style="list-style-type: none"> <li>Added part number MRF6V2010GN, pp. 1, 3</li> <li>Added TO-270G-2 package isometric, p. 1, and Mechanical Outline, pp. 21-23</li> <li>Table 3, ESD Protection Characteristics, removed the word “Minimum” after the ESD class rating. ESD ratings are characterized during new product development but are not 100% tested during production. ESD ratings provided in the data sheet are intended to be used as a guideline when handling ESD sensitive devices, p. 2</li> <li>Fig. 14, MTTF versus Junction Temperature: MTTF end temperature on graph changed to match maximum operating junction temperature, p. 7</li> <li>Replaced Case Outline TO-270-2, Issue K (Case 1265-09), with TO-270-2, Issue R, pp. 15-17. Issue P: changed dimension A to AA and D to DD on Sheets 1 and 3. Added tolerance bbb and feature control frame to dimensions E and E5. Issue R: incorporated NXP logo.</li> </ul> |

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