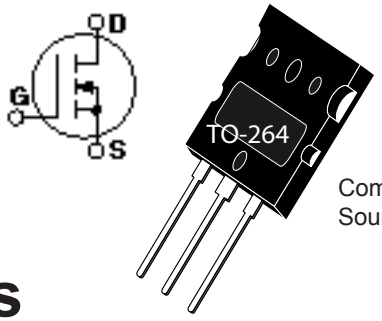
# ARF468AG
# ARF468BG




Common Source

# RF POWER MOSFETs
## N-CHANNEL ENHANCEMENT MODE

**150V 300W 45MHz**

The ARF468A and ARF468B comprise a symmetric pair of common source RF power transistors designed for push-pull scientific, commercial, medical and industrial RF power amplifier applications up to 45 MHz. They have been optimized for both linear and high efficiency classes of operation.

- **Specified 150 Volt, 40.68 MHz Characteristics:**
  - **Output Power = 300 Watts.**
  - **Gain = 15dB (Class AB)**
  - **Efficiency = 75% (Class C)**
- **Low Cost Common Source RF Package.**
- **Low Vth thermal coefficient.**
- **Low Thermal Resistance.**
- **Optimized SOA for Superior Ruggedness.**

### MAXIMUM RATINGS

All Ratings: $T_C$ = 25°C unless otherwise specified.

| Symbol | Parameter | Ratings | UNIT |
|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | 500 | Volts |
| $V_{DGO}$ | Drain-Gate Voltage | 500 | |
| $I_D$ | Continuous Drain Current @ $T_C$ = 25°C | 22 | Amps |
| $V_{GS}$ | Gate-Source Voltage | ±30 | Volts |
| $P_D$ | Total Power Dissipation @ $T_C$ = 25°C | 300 | Watts |
| $R_{\theta JC}$ | Junction to Case | 0.35 | °C/W |
| $T_J$,$T_{STG}$ | Operating and Storage Junction Temperature Range | -55 to 150 | °C |
| $T_L$ | Lead Temperature: 0.063" from Case for 10 Sec. | 300 | |

### STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Characteristic / Test Conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage ($V_{GS}$ = 0V, $I_D$ = 250 µA) | 500 | | | Volts |
| $R_{DS(ON)}$ | Drain-Source On-State Resistance ① ($V_{GS}$ = 10V, $I_D$ = 11A) | | | 0.3 | ohms |
| $I_{DSS}$ | Zero Gate Voltage Drain Current ($V_{DS}$ = 500V, $V_{GS}$ = 0V) | | | 25 | µA |
| | Zero Gate Voltage Drain Current ($V_{DS}$ = 400V, $V_{GS}$ = 0V, $T_C$ = 125°C) | | | 250 | |
| $I_{GSS}$ | Gate-Source Leakage Current ($V_{GS}$ = ±30V, $V_{DS}$ = 0V) | | | ±100 | nA |
| $g_{fs}$ | Forward Transconductance ($V_{DS}$ = 25V, $I_D$ = 11A) | 5 | 8 | 9 | mhos |
| $V_{GS}(TH)$ | Gate Threshold Voltage ($V_{DS}$ = $V_{GS}$, $I_D$ = 1mA) | 2.5 | 4 | 5 | Volts |

**CAUTION:** These Devices are Sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

## DYNAMIC CHARACTERISTICS

| Symbol | Characteristic | Test Conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0V<br>$V_{DS}$ = 150V<br>f = 1 MHz | | 2230 | | |
| $C_{oss}$ | Output Capacitance | | | 230 | | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 105 | | |

## FUNCTIONAL CHARACTERISTICS

| Symbol | Characteristic | Test Conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| $G_{PS}$ | Common Source Amplifier Power Gain | f = 40.68 MHz | 14 | 15 | | dB |
| η | Drain Efficiency | $V_{GS}$ = 2.5V $V_{DD}$ = 150V | 70 | 75 | | % |
| Ψ | Electrical Ruggedness VSWR 10:1 | $P_{out}$ = 300W | No Degradation in Output Power | | | |

① Pulse Test: Pulse width < 380μS, Duty Cycle < 2%



## TYPICAL PERFORMANCE CURVES

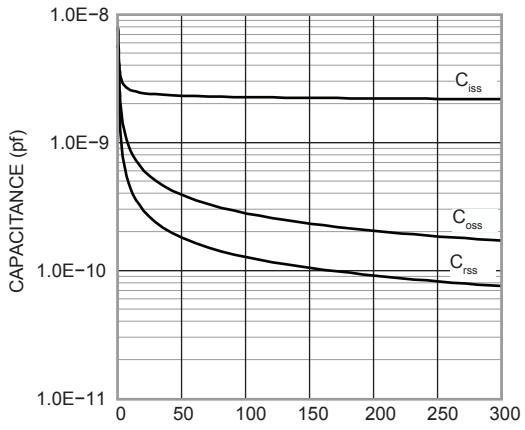



**Figure 1, Typical Capacitance vs. Drain-to-Source Voltage**

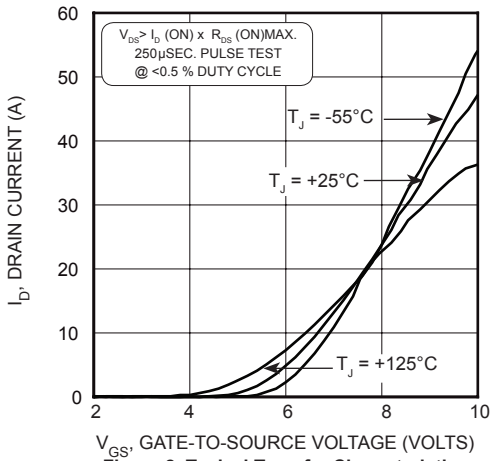



**Figure 2, Typical Transfer Characteristics**

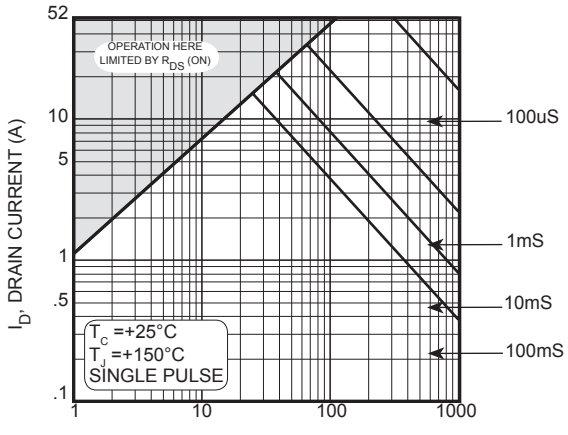



**Figure 3, Typical Maximum Safe Operating Area**

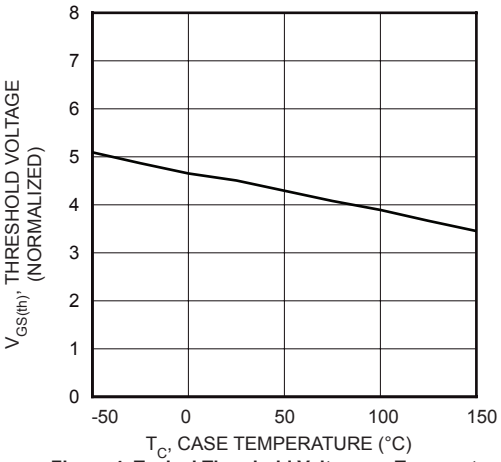



**Figure 4, Typical Threshold Voltage vs Temperature**

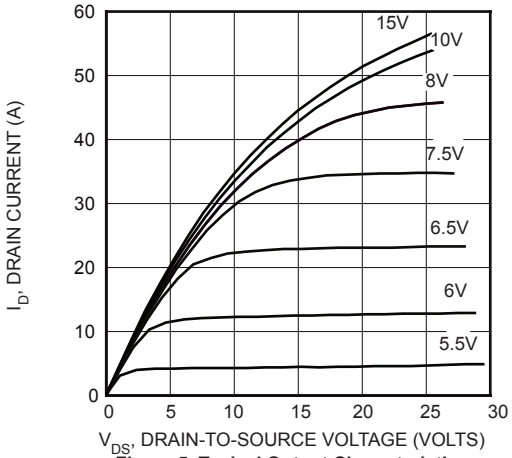



**Figure 5, Typical Output Characteristics**

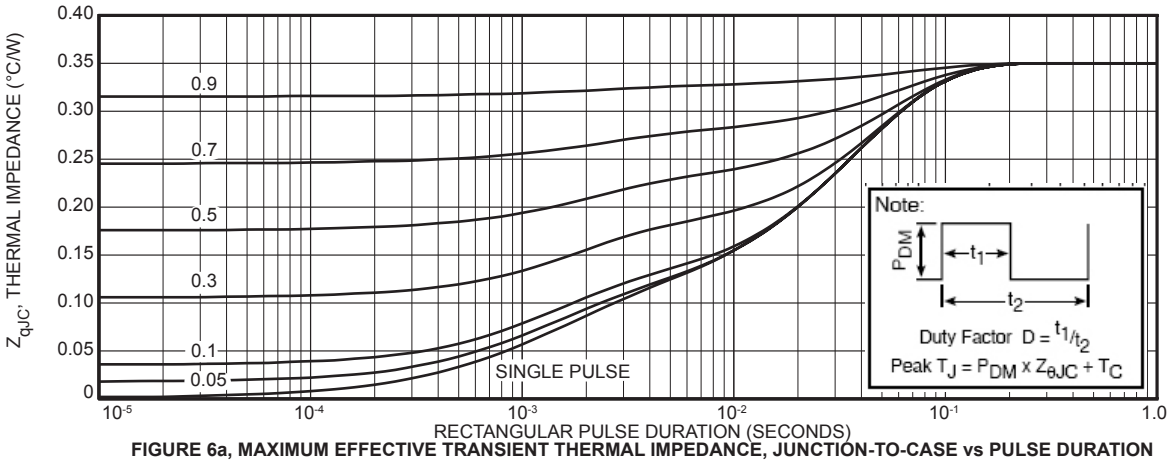



**FIGURE 6a, MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs PULSE DURATION**

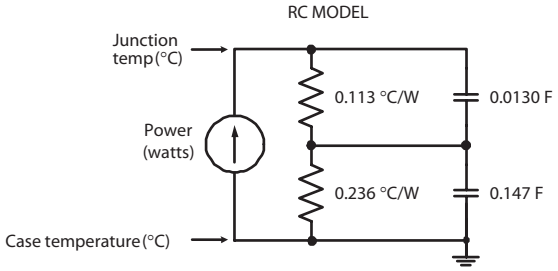
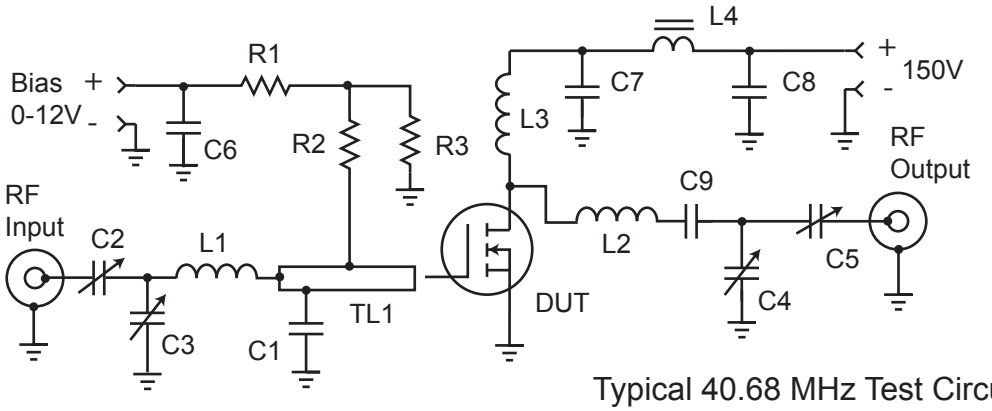



**Figure 6b, TRANSIENT THERMAL IMPEDANCE**

Table 1 - Typical Class AB Large Signal Input - Output Impedance

| Freq. (MHz) | $Z_{in}$ (Ω) | $Z_{OL}$ (Ω) |
|---|---|---|
| 2.0 | 18 - j 10.5 | 21 - j 1.4 |
| 13.5 | 2.7 - j 4.6 | 17.5 - j 7.8 |
| 27.1 | 1.8 - j 1.6 | 11.7 - j 10.4 |
| 40.7 | 1.7 - j 0.2 | 7.7 - j 10 |

$Z_{IN}$ - Gate shunted with 25Ω $I_{dq}$ = 0
$Z_{OL}$ - Conjugate of optimum load for 300 Watts output at $V_{dd}$=125V



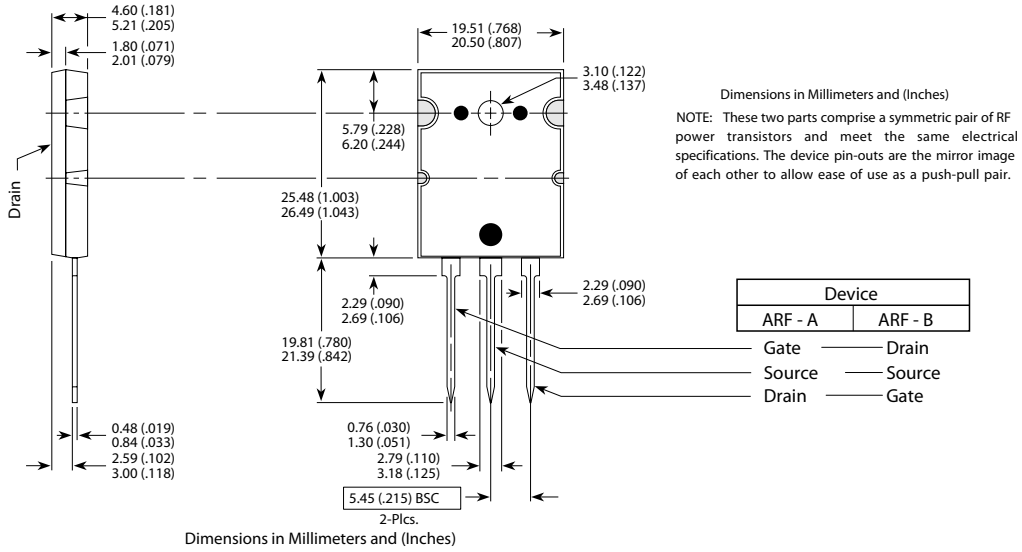

Typical 40.68 MHz Test Circuit

C1 -- 2200pF ATC 700B
C2-C5 -- Arco 465 Mica trimmer
C6-C8 -- .1 µF 500V ceramic chip
C9 -- 3x 2200 pF 500V chips COG

L1 -- 4t #22 AWG .25"ID .25 "L ~87nH
L2 -- 5t #16 AWG .312" ID .35"L ~176nH
L3 -- 10t #24 AWG .25"ID ~.5µH
L4 -- VK200-4B ferrite choke 3µH

R1- R3 -- 1kΩ 0.5Ω Carbon
TL1 -- 34Ω t-line 0.175" x 1"
C1 .45" from gate pin.
PCB -- 0.062" FR4, Er=4.7

**TO-264 (L) Package Outline**



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050-4982 Rev A 7-2014

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