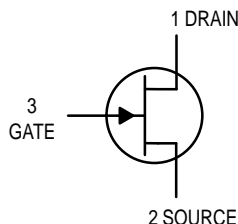


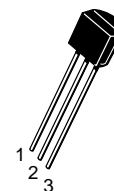
JFETs — General Purpose

N-Channel — Depletion



2N5458

*Motorola Preferred Device



CASE 29-04, STYLE 5
TO-92 (TO-226AA)

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|----------------------------------------------------------------------------------------|-----------|-------------|----------------------------|
| Drain-Source Voltage | V_{DS} | 25 | Vdc |
| Drain-Gate Voltage | V_{DG} | 25 | Vdc |
| Reverse Gate-Source Voltage | V_{GSR} | -25 | Vdc |
| Gate Current | I_G | 10 | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 310 2.82 | mW mW/ $^\circ\text{C}$ |
| Junction Temperature Range | T_J | 125 | $^\circ\text{C}$ |
| Storage Channel Temperature Range | T_{stg} | -65 to +150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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

OFF CHARACTERISTICS

| | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------|------|--------------|------|
| Gate-Source Breakdown Voltage ($I_G = -10 \mu\text{Adc}$, $V_{DS} = 0$) | $V_{(BR)GSS}$ | -25 | — | — | Vdc |
| Gate Reverse Current ($V_{GS} = -15 \text{Vdc}$, $V_{DS} = 0$) ($V_{GS} = -15 \text{Vdc}$, $V_{DS} = 0$, $T_A = 100^\circ\text{C}$) | I_{GSS} | — | — | -1.0 -200 | nAdc |
| Gate-Source Cutoff Voltage ($V_{DS} = 15 \text{Vdc}$, $I_D = 10 \text{nAdc}$) | $V_{GS(off)}$ | -1.0 | — | -7.0 | Vdc |
| Gate-Source Voltage ($V_{DS} = 15 \text{Vdc}$, $I_D = 200 \mu\text{Adc}$) | V_{GS} | — | -3.5 | — | Vdc |

ON CHARACTERISTICS

| | | | | | |
|------------------------------------------------------------------------------------|-----------|-----|-----|-----|------|
| Zero-Gate-Voltage Drain Current (1) ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$) | I_{DSS} | 2.0 | 6.0 | 9.0 | mAdc |
|------------------------------------------------------------------------------------|-----------|-----|-----|-----|------|

SMALL-SIGNAL CHARACTERISTICS

| | | | | | |
|---------------------------------------------------------------------------------------------------------------------|------------|------|-----|------|------------------|
| Forward Transfer Admittance Common Source (1) ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{kHz}$) | $ y_{fs} $ | 1500 | — | 5500 | μmhos |
| Output Admittance Common Source (1) ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{kHz}$) | $ y_{os} $ | — | 10 | 50 | μmhos |
| Input Capacitance ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{MHz}$) | C_{iss} | — | 4.5 | 7.0 | pF |
| Reverse Transfer Capacitance ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{MHz}$) | C_{rss} | — | 1.5 | 3.0 | pF |

1. Pulse Test; Pulse Width $\leq 630 \text{ms}$, Duty Cycle $\leq 10\%$.

Preferred devices are Motorola recommended choices for future use and best overall value.

TYPICAL CHARACTERISTICS

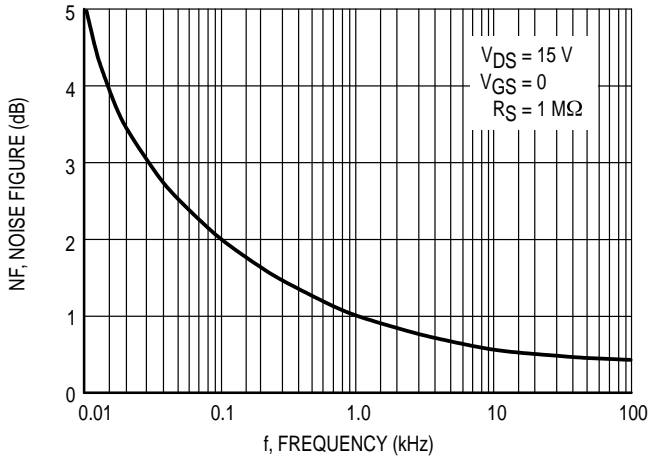


Figure 1. Noise Figure versus Frequency

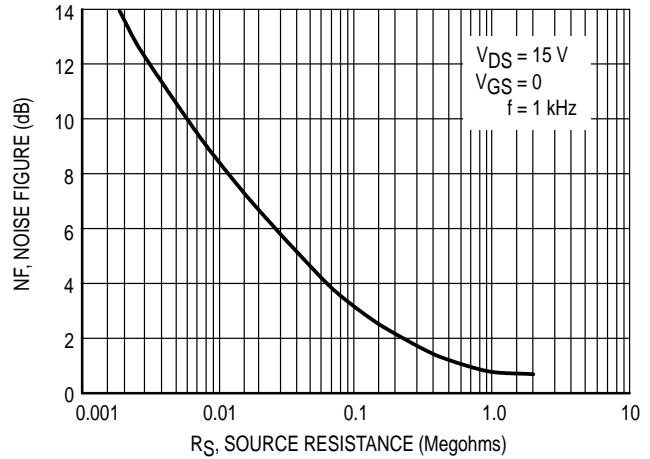


Figure 2. Noise Figure versus Source Resistance

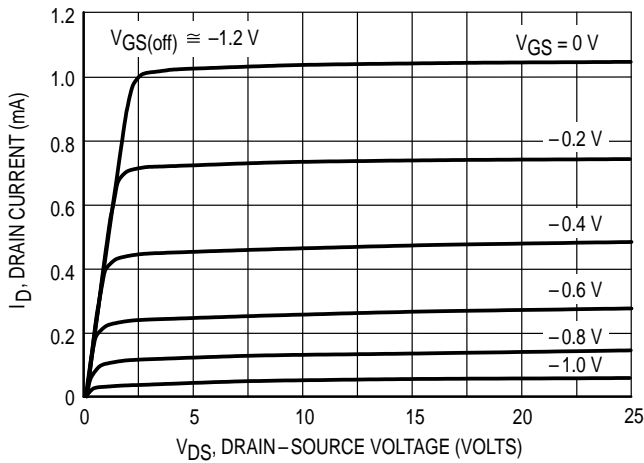


Figure 3. Typical Drain Characteristics

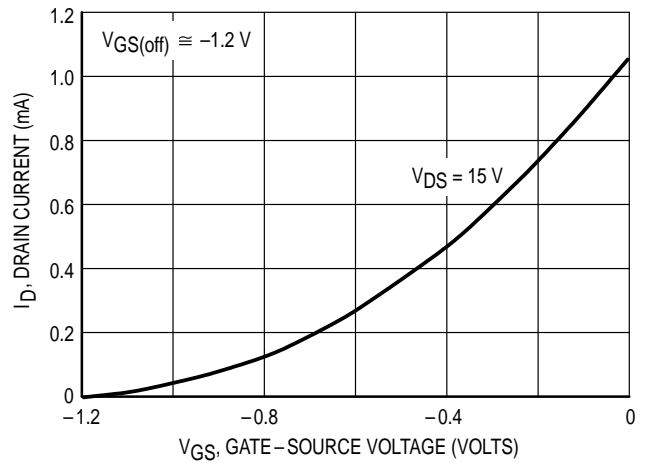


Figure 4. Common Source Transfer Characteristics

TYPICAL CHARACTERISTICS

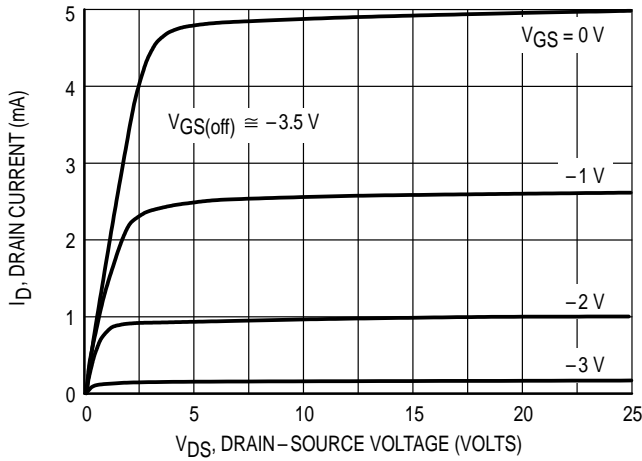


Figure 5. Typical Drain Characteristics

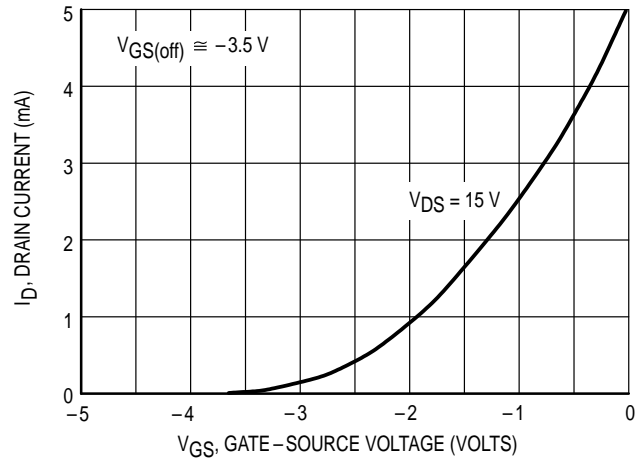


Figure 6. Common Source Transfer Characteristics

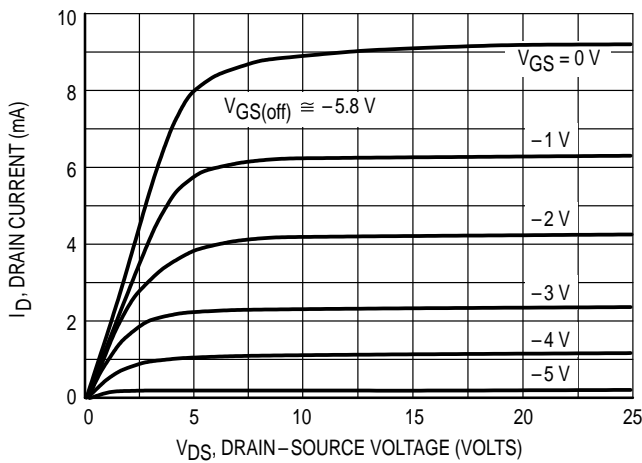


Figure 7. Typical Drain Characteristics

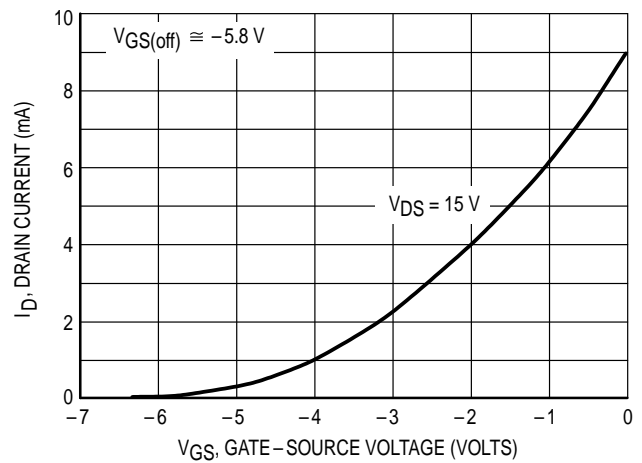
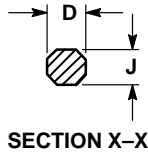
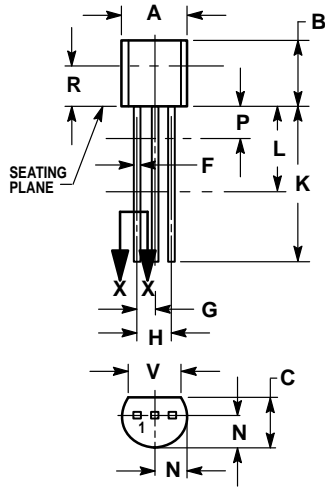


Figure 8. Common Source Transfer Characteristics

Note: Graphical data is presented for dc conditions. Tabular data is given for pulsed conditions (Pulse Width = 630 ms, Duty Cycle = 10%). Under dc conditions, self heating in higher I_{DSS} units reduces I_{DSS} .

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.175 | 0.205 | 4.45 | 5.20 |
| B | 0.170 | 0.210 | 4.32 | 5.33 |
| C | 0.125 | 0.165 | 3.18 | 4.19 |
| D | 0.016 | 0.022 | 0.41 | 0.55 |
| F | 0.016 | 0.019 | 0.41 | 0.48 |
| G | 0.045 | 0.055 | 1.15 | 1.39 |
| H | 0.095 | 0.105 | 2.42 | 2.66 |
| J | 0.015 | 0.020 | 0.39 | 0.50 |
| K | 0.500 | — | 12.70 | — |
| L | 0.250 | — | 6.35 | — |
| N | 0.080 | 0.105 | 2.04 | 2.66 |
| P | — | 0.100 | — | 2.54 |
| R | 0.115 | — | 2.93 | — |
| V | 0.135 | — | 3.43 | — |

CASE 029-04
(TO-226AA)
ISSUE AD

STYLE 5:

1. DRAIN
2. SOURCE
3. GATE

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