

**2N4416**  
**2N4416A**

**SILICON**  
**N-CHANNEL JFETS**



**TO-72 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N4416 and 2N4416A are silicon N-Channel Junction Field Effect Transistors designed for VHF amplifier and mixer applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^{\circ}\text{C}$ )

Gate-Drain Voltage  
 Gate-Source Voltage  
 Drain-Source Voltage  
 Gate Current  
 Power Dissipation  
 Operating and Storage Junction Temperature

| SYMBOL         | <u>2N4416</u> | <u>2N4416A</u> | UNITS              |
|----------------|---------------|----------------|--------------------|
| $V_{GD}$       | 30            | 35             | V                  |
| $V_{GS}$       | 30            | 35             | V                  |
| $V_{DS}$       | 30            | 35             | V                  |
| $I_G$          |               | 10             | mA                 |
| $P_D$          |               | 300            | mW                 |
| $T_J, T_{stg}$ | -65 to +200   |                | $^{\circ}\text{C}$ |

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

| SYMBOL        | TEST CONDITIONS                                        | <u>2N4416</u> |       | <u>2N4416A</u> |       | UNITS         |
|---------------|--------------------------------------------------------|---------------|-------|----------------|-------|---------------|
|               |                                                        | MIN           | MAX   | MIN            | MAX   |               |
| $I_{GSS}$     | $V_{GS}=20\text{V}, V_{DS}=0$                          | -             | 100   | -              | 100   | pA            |
| $I_{GSS}$     | $V_{GS}=20\text{V}, V_{DS}=0, T_A=150^{\circ}\text{C}$ | -             | 100   | -              | 100   | nA            |
| $I_{DSS}$     | $V_{DS}=15\text{V}, V_{GS}=0$                          | 5.0           | 15    | 5.0            | 15    | mA            |
| $BV_{GSS}$    | $I_G=1.0\mu\text{A}$                                   | 30            | -     | 35             | -     | V             |
| $V_{GS(off)}$ | $V_{DS}=15\text{V}, I_D=1.0\text{nA}$                  | -             | 6.0   | 2.5            | 6.0   | V             |
| $g_{FS}$      | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{kHz}$         | 4,500         | 7,500 | 4,500          | 7,500 | $\mu\text{S}$ |
| $g_{OS}$      | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{kHz}$         | -             | 50    | -              | 50    | $\mu\text{S}$ |
| $C_{rss}$     | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{MHz}$         | -             | 1.0   | -              | 1.0   | pF            |
| $C_{iss}$     | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{MHz}$         | -             | 4.0   | -              | 4.0   | pF            |
| $C_{oss}$     | $V_{DS}=15\text{V}, V_{GS}=0, f=1.0\text{MHz}$         | -             | 2.0   | -              | 2.0   | pF            |

**HIGH FREQUENCY CHARACTERISTICS:**

| SYMBOL    | TEST CONDITIONS                                              | <u>100MHz</u> |       | <u>400MHz</u> |        | UNITS         |
|-----------|--------------------------------------------------------------|---------------|-------|---------------|--------|---------------|
|           |                                                              | MIN           | MAX   | MIN           | MAX    |               |
| $g_{iss}$ | $V_{DS}=15\text{V}, V_{GS}=0$                                | -             | 100   | -             | 1,000  | $\mu\text{S}$ |
| $b_{iss}$ | $V_{DS}=15\text{V}, V_{GS}=0$                                | -             | 2,500 | -             | 10,000 | $\mu\text{S}$ |
| $g_{oss}$ | $V_{DS}=15\text{V}, V_{GS}=0$                                | -             | 75    | -             | 100    | $\mu\text{S}$ |
| $b_{oss}$ | $V_{DS}=15\text{V}, V_{GS}=0$                                | -             | 1,000 | -             | 4,000  | $\mu\text{S}$ |
| $g_{fs}$  | $V_{DS}=15\text{V}, V_{GS}=0$                                | -             | -     | 4,000         | -      | $\mu\text{S}$ |
| $G_{ps}$  | $V_{DS}=15\text{V}, I_D=5.0\text{mA}$                        | 18            | -     | 10            | -      | dB            |
| NF        | $V_{DS}=15\text{V}, I_D=5.0\text{mA}, R_G=1.0\text{k}\Omega$ | -             | 2.0   | -             | 4.0    | dB            |

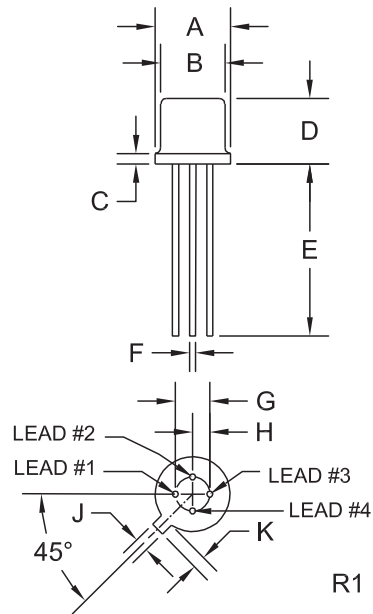
R2 (4-June 2013)

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# TO-72 CASE - MECHANICAL OUTLINE



| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| SYMBOL     | INCHES |       | MILLIMETERS |      |
|            | MIN    | MAX   | MIN         | MAX  |
| A (DIA)    | 0.209  | 0.230 | 5.31        | 5.84 |
| B (DIA)    | 0.175  | 0.195 | 4.45        | 4.95 |
| C          | -      | 0.030 | -           | 0.76 |
| D          | 0.170  | 0.210 | 4.32        | 5.33 |
| E          | 0.500  | -     | 12.70       | -    |
| F (DIA)    | 0.016  | 0.019 | 0.41        | 0.48 |
| G (DIA)    | 0.100  |       | 2.54        |      |
| H          | 0.050  |       | 1.27        |      |
| J          | 0.036  | 0.046 | 0.91        | 1.17 |
| K          | 0.028  | 0.048 | 0.71        | 1.22 |

TO-72 (REV: R1)

## LEAD CODE:

- 1) Source
- 2) Drain
- 3) Gate
- 4) Case

MARKING:  
FULL PART NUMBER

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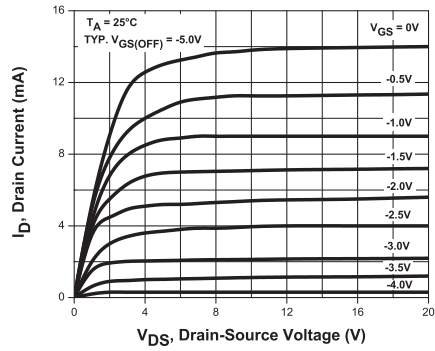
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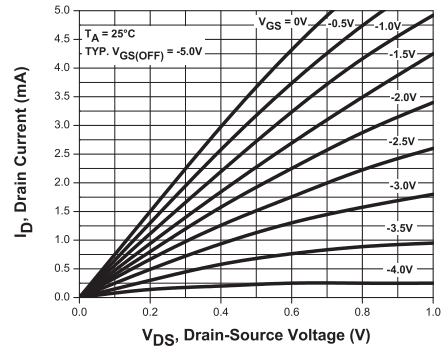
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TYPICAL ELECTRICAL CHARACTERISTICS

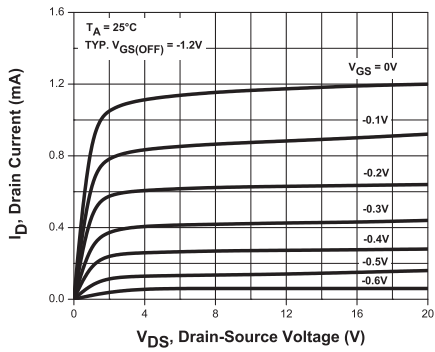
Output Characteristics



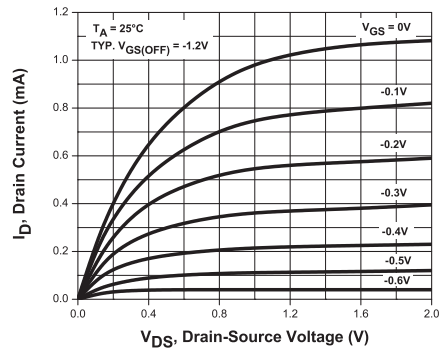
Output Characteristics



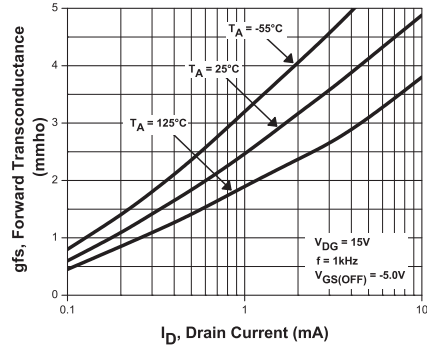
Output Characteristics



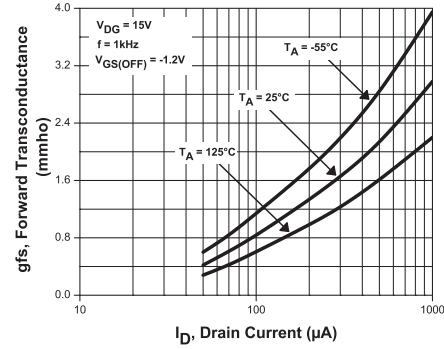
Output Characteristics



Forward Transconductance Characteristics



Forward Transconductance Characteristics



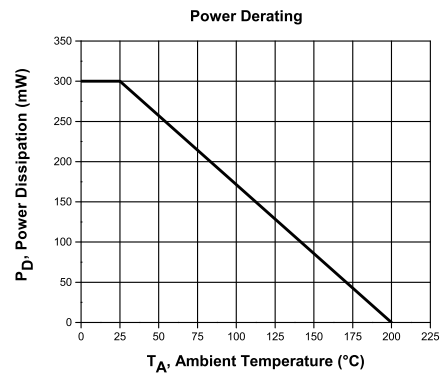
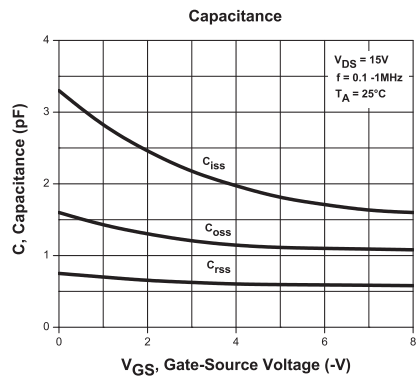
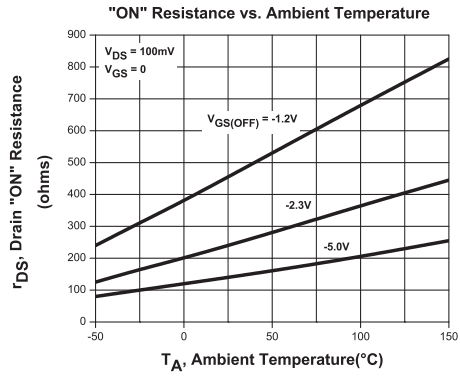
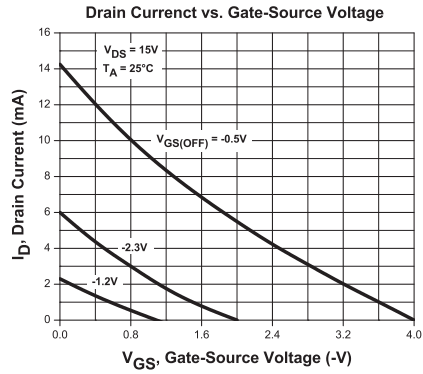
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TYPICAL ELECTRICAL CHARACTERISTICS



R2 (4-June 2013)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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