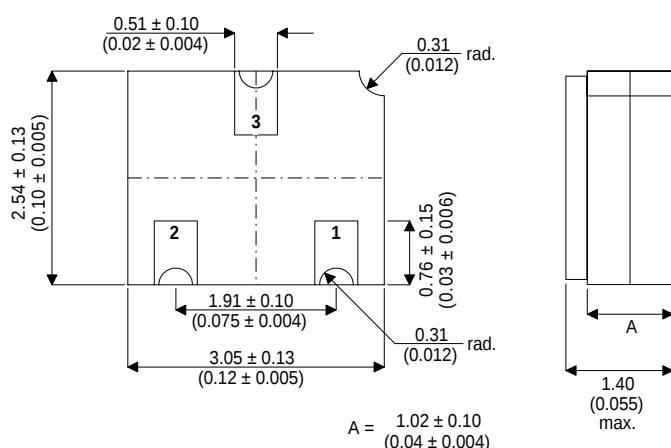


## MECHANICAL DATA

Dimensions in mm (inches)



## SOT23 CERAMIC (LCC1 PACKAGE)

### Underside View

PAD 1 – Source    PAD 2 – Drain    PAD 3 – Gate

## FEATURES

- HERMETIC CERAMIC SURFACE MOUNT PACKAGE (SOT23 COMPATIBLE)
- CECC SCREENING OPTIONS
- SPACE QUALITY LEVEL OPTIONS

## APPLICATIONS:

The 2N4416 and 2N4416A are N-Channel JFETs designed to provide high-performance amplification, especially at high-frequency.

## ABSOLUTE MAXIMUM RATINGS

( $T_{amb} = 25^{\circ}\text{C}$  unless otherwise stated)

|           |                                      | 2N4416                       | 2N4416A |
|-----------|--------------------------------------|------------------------------|---------|
| $V_{GD}$  | Gate – Drain Voltage                 | –30V                         | –35V    |
| $V_{GS}$  | Gate – Source Voltage                | –30V                         | –35V    |
| $I_G$     | Gate Current                         | 10mA                         |         |
| $P_D$     | Power Dissipation                    | 300mW                        |         |
|           | Derate                               | 1.7mW / $^{\circ}\text{C}$   |         |
| $T_j$     | Operating Junction Temperature Range | –55 to $150^{\circ}\text{C}$ |         |
| $T_{stg}$ | Storage Temperature Range            | –55 to $150^{\circ}\text{C}$ |         |

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

| Parameter                                              | Test Conditions                                                  | Min.                                          | Typ.       | Max.         | Unit                   |
|--------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------|------------|--------------|------------------------|
| <b>STATIC CHARACTERISTICS</b>                          |                                                                  |                                               |            |              |                        |
| $V_{(BR)GSS}$ Gate – Source Breakdown Voltage          | $V_{DS} = 0V$<br>$I_G = -1\mu A$                                 | <b>2N4416</b><br>-30<br><b>2N4416A</b><br>-35 | -36<br>-36 |              | V                      |
| $V_{GSS(off)}$ Gate – Source Cut-off Voltage           | $V_{DS} = 15V$<br>$I_D = 1nA$                                    | <b>2N4416</b><br>-2.5<br><b>2N4416A</b><br>-6 | -3<br>-3   | -6<br>-6     |                        |
| $I_{DSS}^*$ Saturation Current                         | $V_{DS} = 15V$<br>$V_{GS} = 0V$                                  | 5                                             | 10         | 15           |                        |
| $I_{GSS}$ Gate Reverse Current                         | $V_{GS} = -20$<br>$V_{DS} = 0V$<br>$T_{amb} = 125^\circ\text{C}$ |                                               | -2<br>-4   | -100<br>-100 | pA<br>nA               |
| $I_G$ Gate Operating Current                           | $V_{DG} = 10V$<br>$I_D = 1mA$                                    |                                               | -20        |              | pA                     |
| $I_{D(off)}$ Drain Cut-off Current                     | $V_{DS} = 10V$<br>$V_{GS} = -10V$                                |                                               | 2          |              |                        |
| $V_{GS(F)}$ Gate – Source Forward Voltage              | $I_G = 1mA$<br>$V_{DS} = 0V$                                     |                                               | 0.7        |              | V                      |
| $R_{DS(on)}$ Drain – Source On Resistance              | $V_{GS} = 0V$<br>$I_D = 1mA$                                     |                                               | 150        |              | $\Omega$               |
| <b>DYNAMIC CHARACTERISTICS</b>                         |                                                                  |                                               |            |              |                        |
| $g_{fs}$ Common – Source Forward Transconductance      | $V_{DS} = 15V$<br>$f = 1kHz$<br>$V_{GS} = 0V$                    | 4.5                                           | 6          | 7.5          | ms                     |
| $g_{os}$ Common – Source Output Transconductance       |                                                                  |                                               | 15         | 50           | $\mu s$                |
| $C_{iss}$ Common – Source Input Capacitance            | $V_{DS} = 15V$<br>$f = 1MHz$<br>$V_{GS} = 0V$                    |                                               | 2.2        | 4            | pF                     |
| $C_{rss}$ Common – Source Reverse Transfer Capacitance |                                                                  |                                               | 0.7        | 0.8          |                        |
| $C_{oss}$ Common – Source Output Capacitance           |                                                                  |                                               | 1          | 2            |                        |
| $\bar{e}_n$ Equivalent Input Noise Voltage             | $V_{DS} = 10V$<br>$f = 1kHz$<br>$V_{GS} = 0V$                    |                                               | 6          |              | $\frac{nV}{\sqrt{Hz}}$ |

Pulse Test;  $PW = 300\mu s$ , Duty Cycle  $\leq 3\%$