

# N-Channel JFET

15 V, 10 to 32 mA, 35 mS, CP

## 2SK3557

### Applications

- AM Tuner RF Amplification
- Low Noise Amplifier

### Features

- Large |yfs|
- Small Ciss
- Ultrasmall-sized Package Permitting 2SK3557-applied Sets to be Made Smaller and Slimmer
- Ultralow Noise Figure
- These are Pb-Free Devices

### Product & Package Information

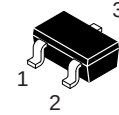
- Package: CP
- JEITA, JEDEC: SC-59, TO-236, SOT-23, TO-236AB
- Minimum Packing Quantity: 3,000 Pcs./Reel

### Specifications

#### ABSOLUTE MAXIMUM RATINGS (at Ta = 25°C)

| Parameter                   | Symbol    | Conditions | Ratings     | Unit |
|-----------------------------|-----------|------------|-------------|------|
| Drain-to-Source Voltage     | $V_{DSX}$ |            | 15          | V    |
| Gate-to-Drain Voltage       | $V_{GDS}$ |            | -15         | V    |
| Gate Current                | $I_G$     |            | 10          | mA   |
| Drain Current               | $I_D$     |            | 50          | mA   |
| Allowable Power Dissipation | $P_D$     |            | 200         | mW   |
| Junction Temperature        | $T_j$     |            | 150         | °C   |
| Storage Temperature         | $T_{stg}$ |            | -55 to +150 | °C   |

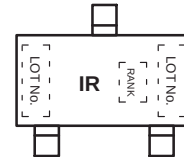
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



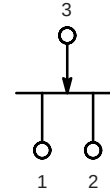
- 1: Source  
2: Drain  
3: Gate

SC-59 / CP3  
CASE 318BJ

### MARKING DIAGRAM



### ELECTRICAL CONNECTION



### ORDERING INFORMATION

| Device         | Package         | Shipping <sup>†</sup> |
|----------------|-----------------|-----------------------|
| 2SK3557-6-TD-E | CP<br>(Pb-Free) | 3,000 / Tape & Reel   |
| 2SK3557-7-TD-E | CP<br>(Pb-Free) | 3,000 / Tape & Reel   |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

## 2SK3557

### ELECTRICAL CHARACTERISTICS (at Ta = 25°C)

| Parameter                       | Symbol        | Conditions                                             | Ratings |      |      | Unit |
|---------------------------------|---------------|--------------------------------------------------------|---------|------|------|------|
|                                 |               |                                                        | Min     | Typ  | Max  |      |
| Gate-to-Drain Breakdown Voltage | $V_{(BR)GDS}$ | $I_G = -10 \mu A, V_{DS} = 0 V$                        | -15     | -    | -    | V    |
| Gate Cutoff Current             | $I_{GSS}$     | $V_{GS} = -10 V, V_{DS} = 0 V$                         | -       | -    | -1.0 | nA   |
| Cutoff Voltage                  | $V_{GS(off)}$ | $V_{DS} = 5 V, I_D = 100 \mu A$                        | -0.3    | -0.7 | -1.5 | V    |
| Drain Current                   | $I_{DSS}$     | $V_{DS} = 5 V, V_{GS} = 0 V$                           | 10*     | -    | 32*  | mA   |
| Forward Transfer Admittance     | $ y_{fs} $    | $V_{DS} = 5 V, V_{GS} = 0 V, f = 1 kHz$                | 24      | 35   | -    | mS   |
| Input Capacitance               | $C_{iss}$     | $V_{DS} = 5 V, V_{GS} = 0 V, f = 1 MHz$                | -       | 10.0 | -    | pF   |
| Reverse Transfer Capacitance    | $C_{rss}$     | $V_{DS} = 5 V, V_{GS} = 0 V, f = 1 MHz$                | -       | 2.9  | -    | pF   |
| Noise Figure                    | NF            | $V_{DS} = 5 V, R_g = 1 k\Omega, I_D = 1 mA, f = 1 kHz$ | -       | 1.0  | -    | dB   |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

\*The 2SK3557 is classified by  $I_{DSS}$  as follows: (unit: mA)

**Table 1.**

| Rank      | 6            | 7            |
|-----------|--------------|--------------|
| $I_{DSS}$ | 10.0 to 20.0 | 16.0 to 32.0 |

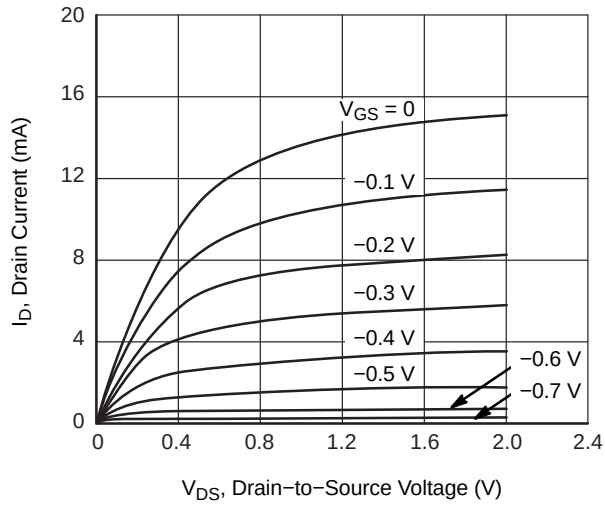


Figure 1.  $I_D - V_{DS}$

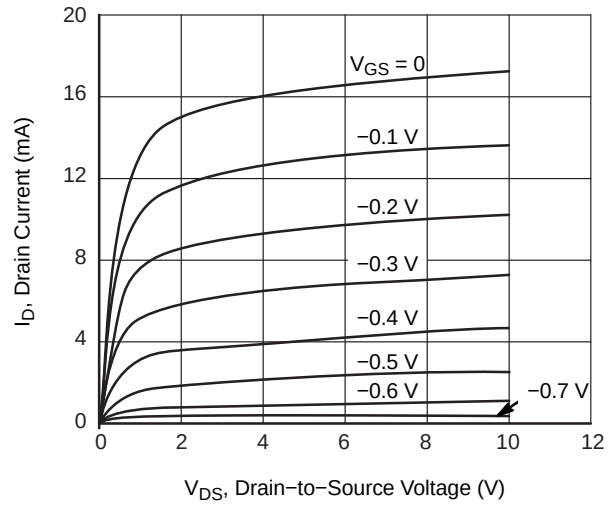


Figure 2.  $I_D - V_{DS}$

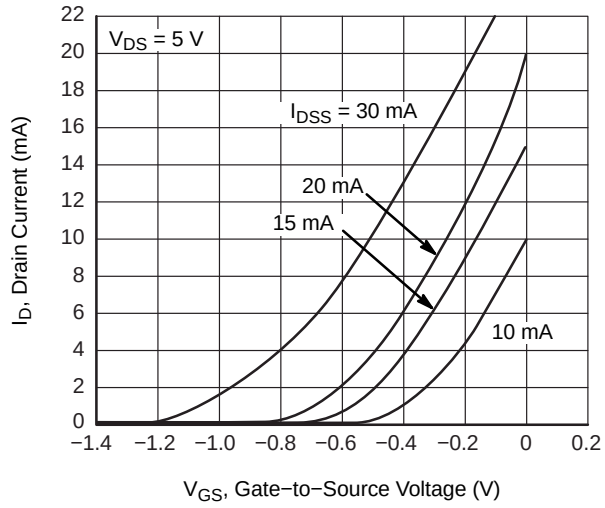


Figure 3.  $I_D - V_{GS}$

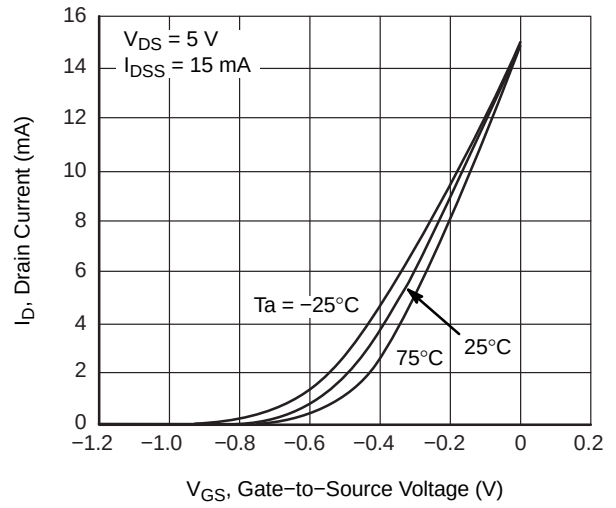


Figure 4.  $I_D - V_{GS}$

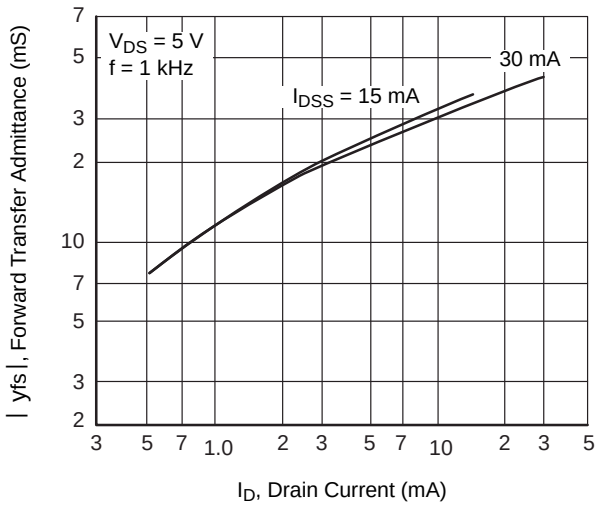


Figure 5.  $|y_{fs}| - I_D$

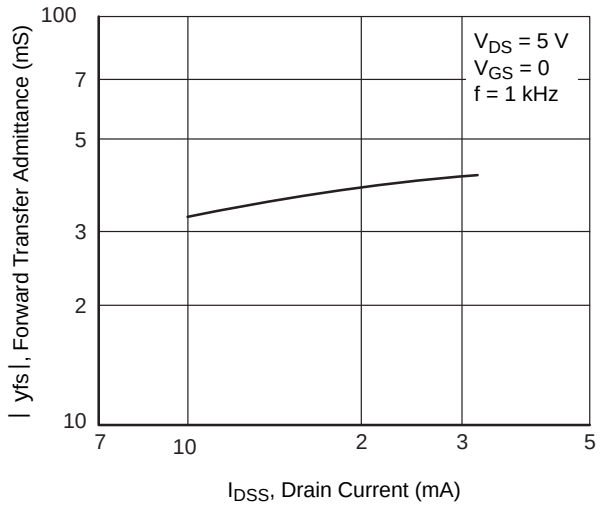


Figure 6.  $|y_{fs}| - I_{DSS}$

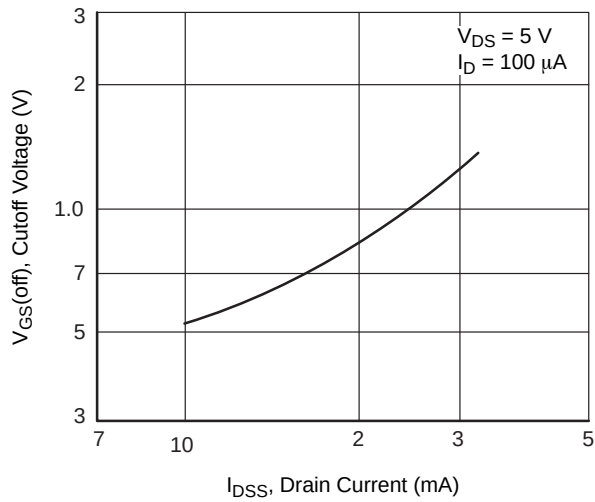


Figure 7.  $V_{GS(off)}$  -  $I_{DSS}$

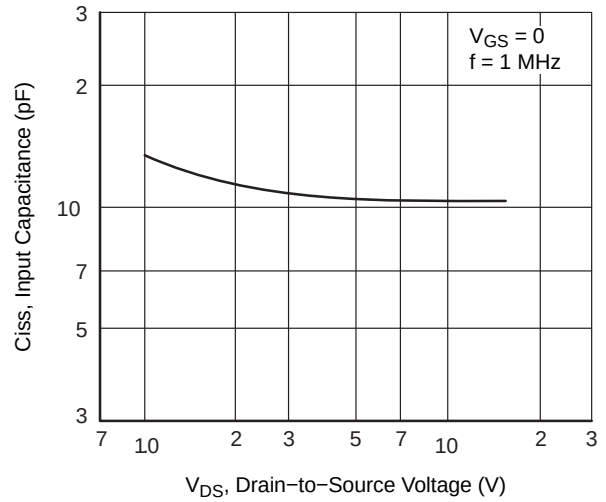


Figure 8.  $C_{iss}$  -  $V_{DS}$

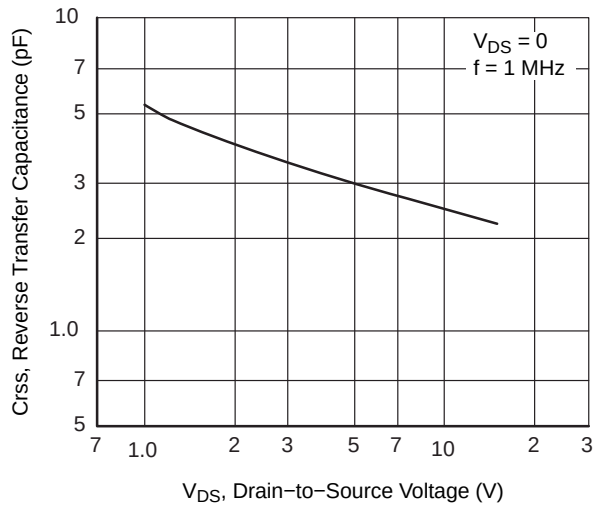


Figure 9.  $C_{rss}$  -  $V_{DS}$

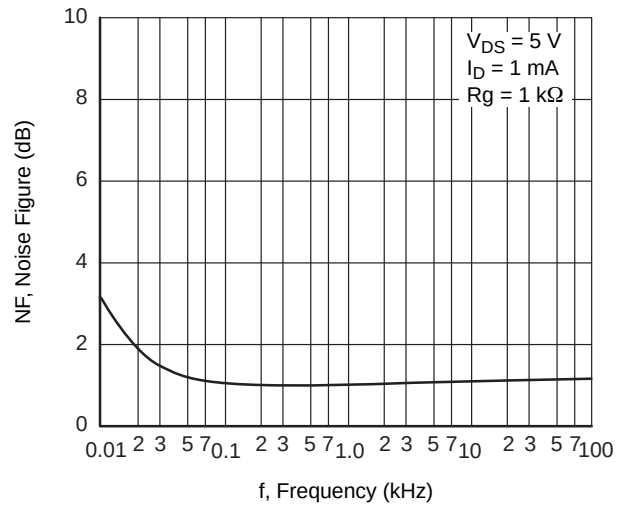


Figure 10.  $NF$  -  $f$

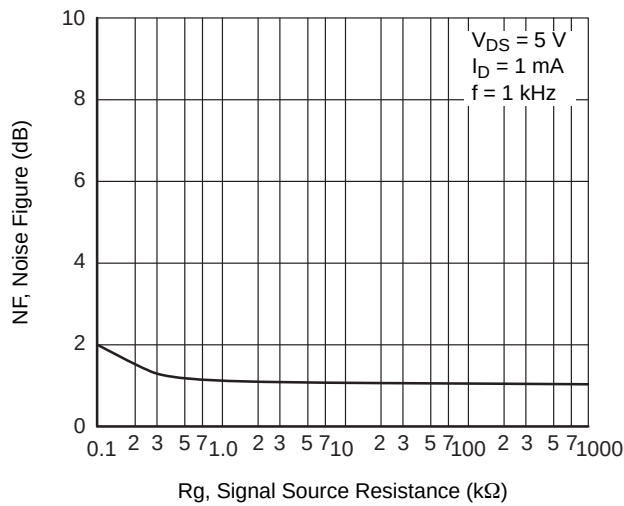


Figure 11.  $NF$  -  $R_g$

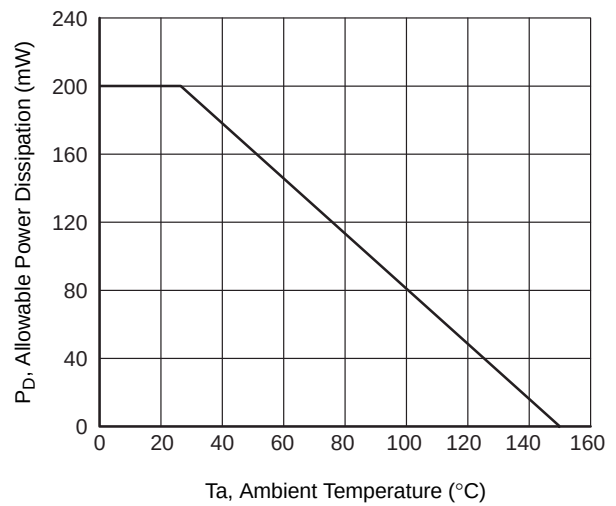


Figure 12.  $P_D$  -  $T_a$

## Land Pattern Example

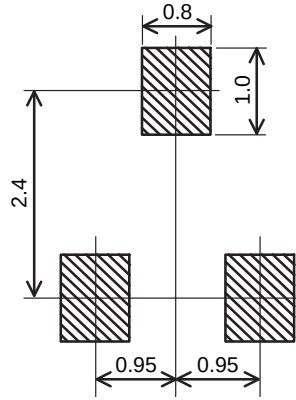


Figure 13. Land Pattern Example

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

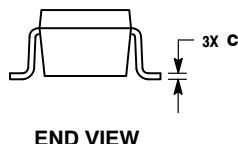
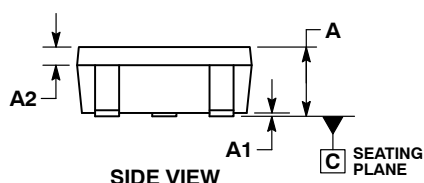
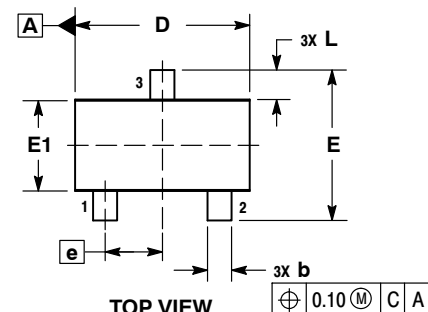
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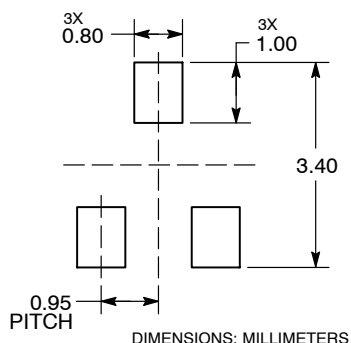
SCALE 2:1

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ISSUE O

DATE 09 JAN 2015



### RECOMMENDED SOLDERING FOOTPRINT\*

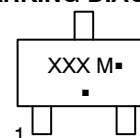


#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.20 PER SIDE.
4. DIMENSIONS D AND E1 ARE MEASURED AT THE OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DIMENSIONS b AND c APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10 AND 0.20 FROM THE TIP.

| MILLIMETERS |          |      |
|-------------|----------|------|
| DIM         | MIN      | MAX  |
| A           | 0.95     | 1.35 |
| A1          | 0.00     | 0.10 |
| A2          | 0.20     | 0.40 |
| b           | 0.35     | 0.50 |
| c           | 0.10     | 0.20 |
| D           | 2.75     | 3.05 |
| E           | 2.30     | 2.70 |
| E1          | 1.35     | 1.65 |
| e           | 0.95 BSC |      |
| L           | 0.35     | 0.75 |

### GENERIC MARKING DIAGRAM



XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

|                         |                    |                                                                                                                                                                                  |
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