

# 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

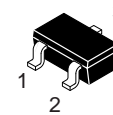
- Package: CP
- JEITA, JEDEC: SC-59, TO-236, SOT-23, TO-236AB
- Minimum Packing Quantity: 3,000 Pcs./Reel

### 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

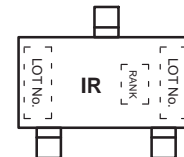
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



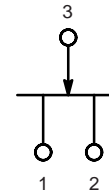
1: Source  
2: Drain  
3: Gate

SC-59 / CP3  
CASE 318BJ

### MARKING DIAGRAM



### ELECTRICAL CONNECTION



### ORDERING INFORMATION

Device	Package	Shipping†
2SK3557-6-TB-E	CP (Pb-Free)	3,000 / Tape & Reel
2SK3557-7-TB-E	CP (Pb-Free)	3,000 / Tape & Reel

†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

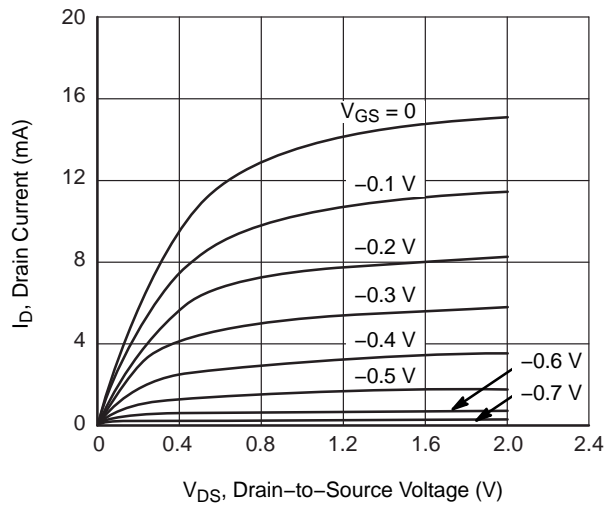


Figure 1.  $I_D - V_{DS}$

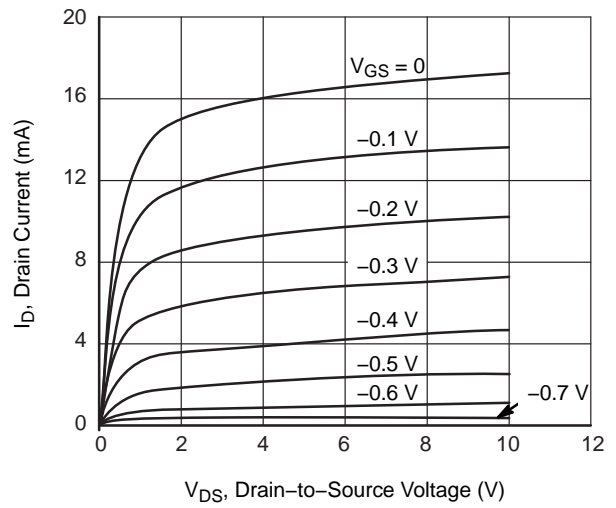


Figure 2.  $I_D - V_{DS}$

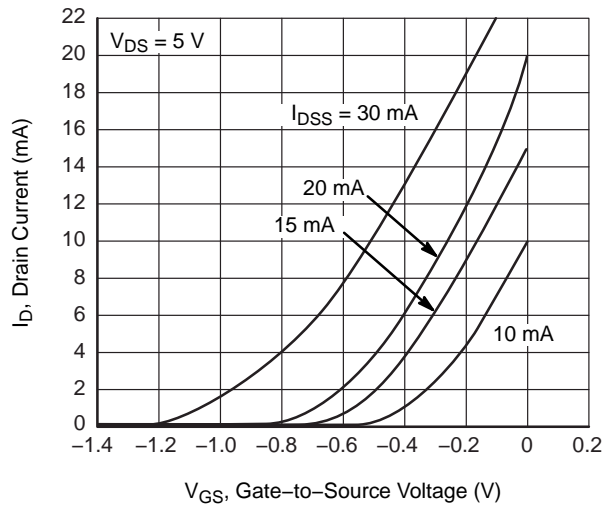


Figure 3.  $I_D - V_{GS}$

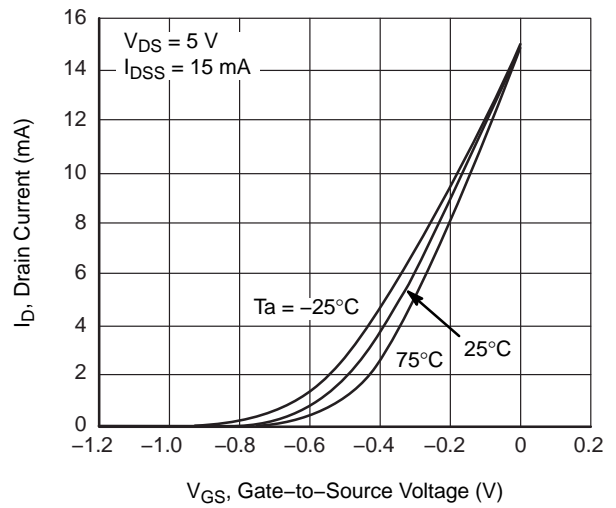


Figure 4.  $I_D - V_{GS}$

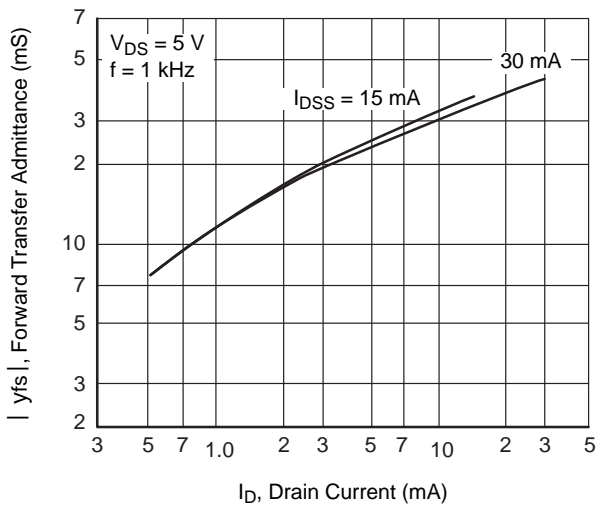


Figure 5.  $|y_{fs}| - I_D$

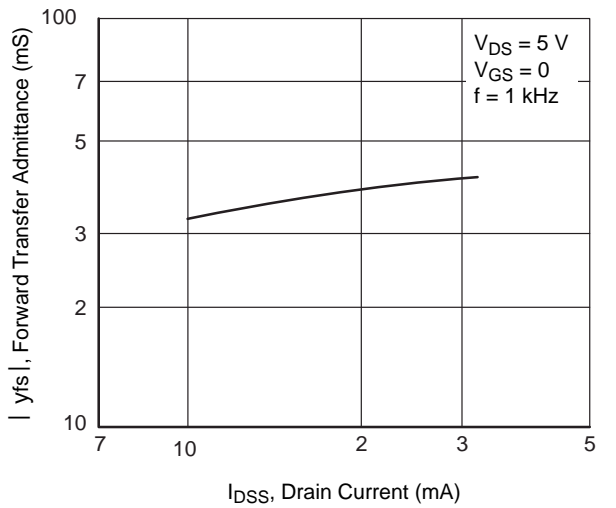


Figure 6.  $|y_{fs}| - I_D$

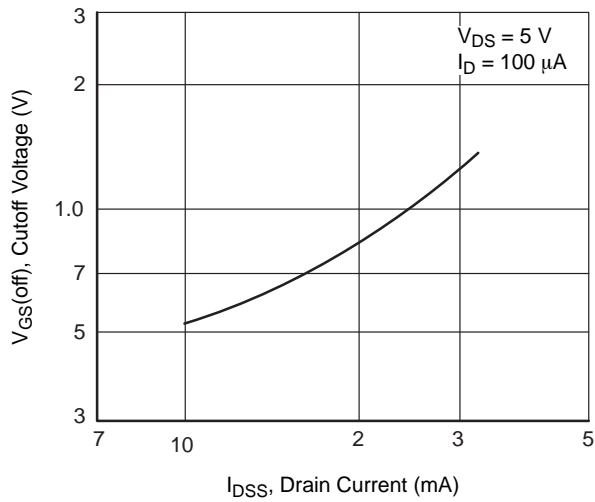


Figure 7.  $V_{GS(off)}$  –  $I_{DSS}$

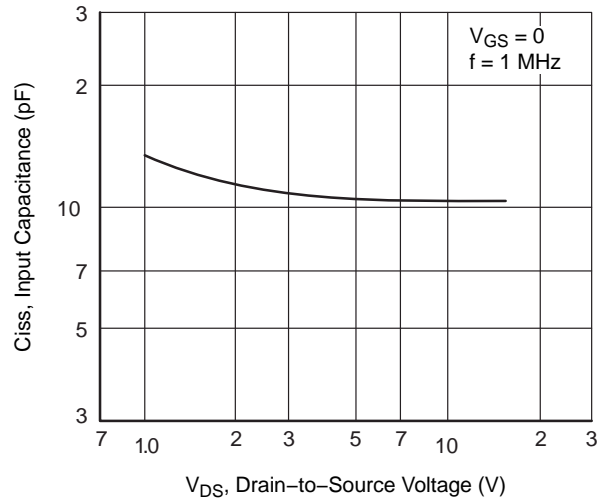


Figure 8.  $C_{iss}$  –  $V_{DS}$

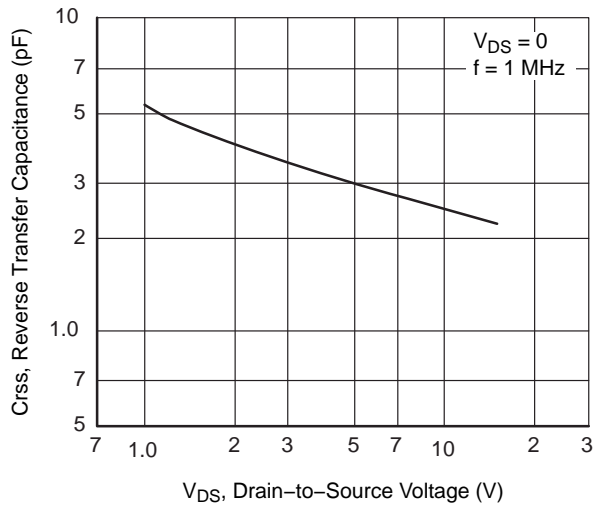


Figure 9.  $C_{rss}$  –  $V_{DS}$

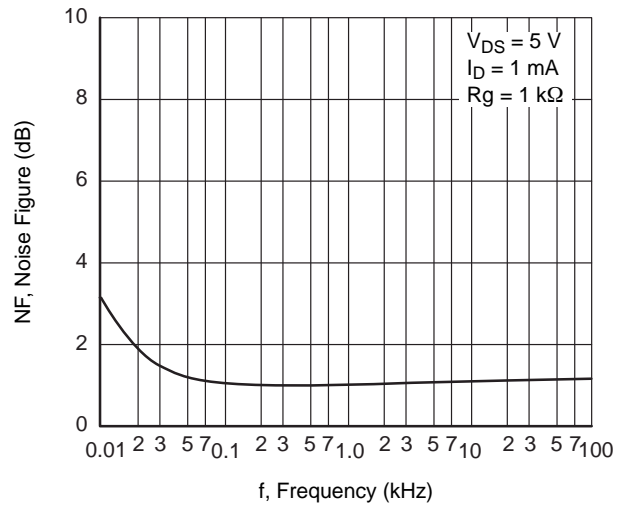


Figure 10. NF –  $f$

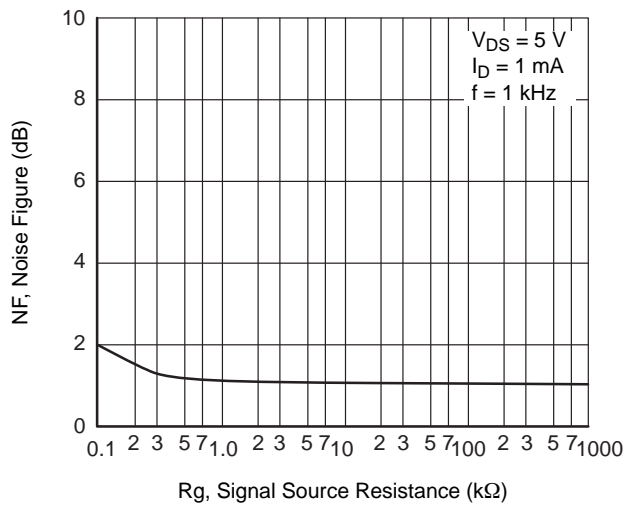


Figure 11. NF –  $R_g$

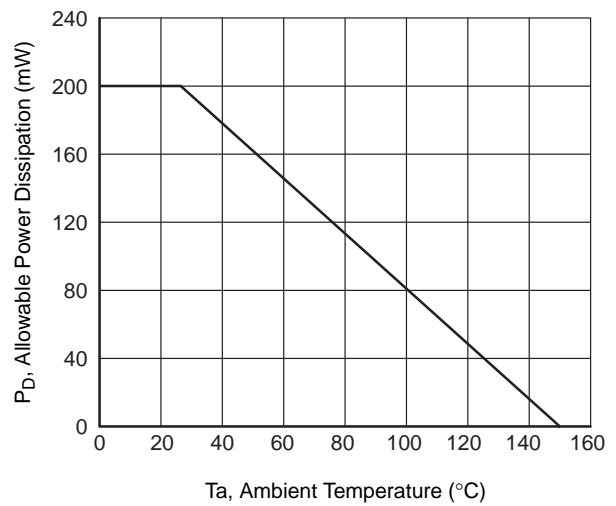


Figure 12.  $P_D$  –  $T_a$

Land Pattern Example

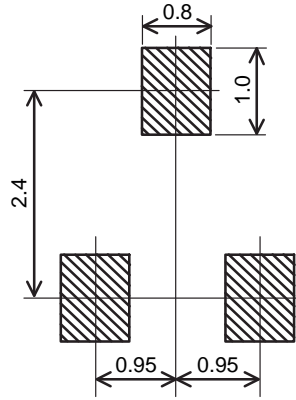


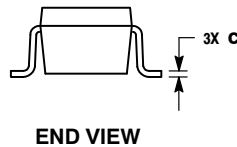
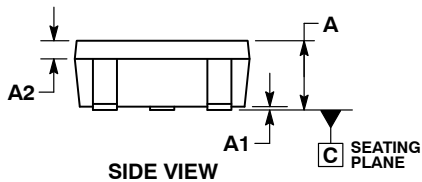
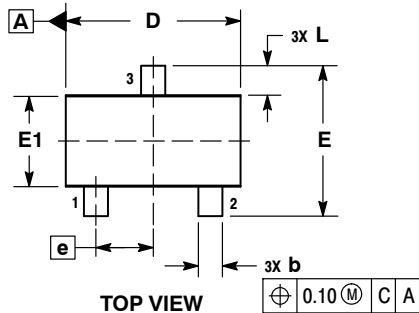
Figure 13. Land Pattern Example



SCALE 2:1

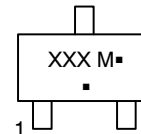
**SC-59 / CP3**  
**CASE 318BJ**  
**ISSUE O**

DATE 09 JAN 2015


**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.

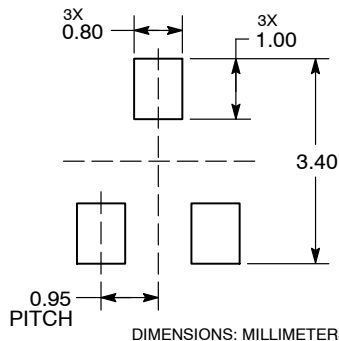
DIM	MILLIMETERS	
	MIN	MAX
A	0.95	1.35
A1	0.00	0.10
A2	0.20	0.40
b	0.35	0.50
c	0.10	0.20
D	2.75	3.05
E	2.30	2.70
E1	1.35	1.65
e	0.95 BSC	
L	0.35	0.75

**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.

**RECOMMENDED SOLDERING FOOTPRINT\***


\*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, [SOLDERRM/D](#).

<b>DOCUMENT NUMBER:</b>	<b>98AON94458F</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>SC-59 / CP3</b>	<b>PAGE 1 OF 1</b>

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

**onsemi**, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at  
[www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)