

# N-Channel JFET

15 V, 10 to 32 mA, 35 mS

## NSVJ3557SA3

Automotive JFET designed for compact and efficient designs and including high gain performance. AEC-Q101 qualified JFET and PPAP capable suitable for automotive applications.

### Features

- Large |yfs|
- Small Ciss
- This Small Package Enables Sets to be Smaller and Thinner
- Ultralow Noise Figure
- This Device is Pb-Free and RoHS Compliant
- AEC-Q101 Qualified and PPAP Capable

### Applications

- AM Tuner RF Amplification, Low Noise Amplifier
- Low Noise Amplifier

### SPECIFICATIONS ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

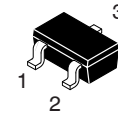
Symbol	Parameter	Value	Unit
V <sub>DSX</sub>	Drain-to-Source Voltage	15	V
V <sub>GDS</sub>	Gate-to-Drain Voltage	-15	V
I <sub>G</sub>	Gate Current	10	mA
I <sub>D</sub>	Drain Current	50	mA
P <sub>D</sub>	Allowable Power Dissipation	200	mW
T <sub>j</sub> , T <sub>stg</sub>	Operating Junction and Storage Temperature	-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.

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Symbol	Parameter	Conditions	Value			Unit
			Min	Typ	Max	
V <sub>(BR)GDS</sub>	Gate-to-Drain Breakdown Voltage	I <sub>G</sub> = -10 μA, V <sub>DS</sub> = 0 V	-15	-	-	V
I <sub>GSS</sub>	Gate Cutoff Current	V <sub>GS</sub> = -10 V, V <sub>DS</sub> = 0 V	-	-	-1	nA
V <sub>GS(off)</sub>	Cutoff Voltage	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 100 μA	-0.3	-0.7	-1.5	V
I <sub>DSS</sub>	Drain Current	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 0 V	10	-	32	mA
yfs	Forward Transfer Admittance	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 0 V, f = 1 kHz	24	35	-	mS
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 0 V, f = 1 MHz	-	10	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	2.9	-	pF
NF	Noise Figure	V <sub>DS</sub> = 5 V, R <sub>g</sub> = 1 kΩ, I <sub>D</sub> = 1 mA, f = 1 kHz	-	1	-	dB

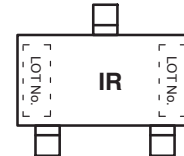
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



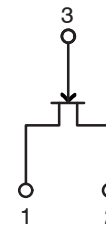
1: Source  
2: Drain  
3: Gate

SC-59 / CP3  
CASE 318BJ

### MARKING DIAGRAM



### ELECTRICAL CONNECTION



1: Source  
2: Drain  
3: Gate

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

# NSVJ3557SA3

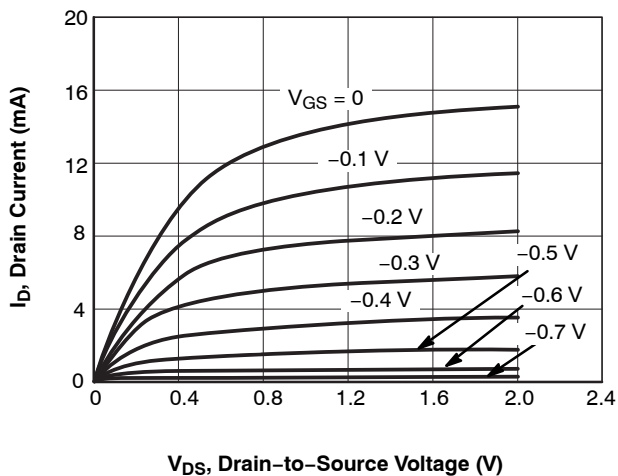


Figure 1.  $I_D - V_{DS}$

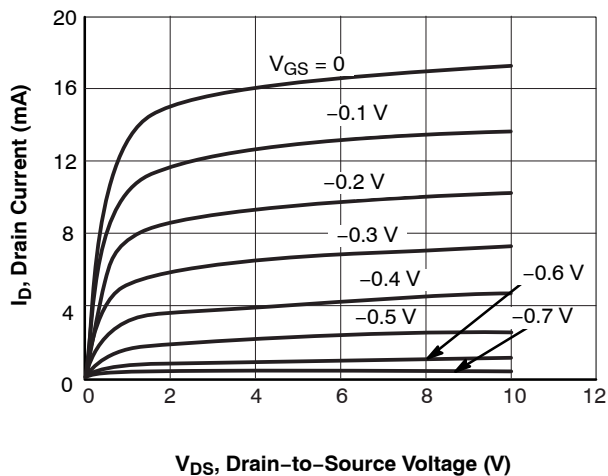


Figure 2.  $I_D - V_{DS}$

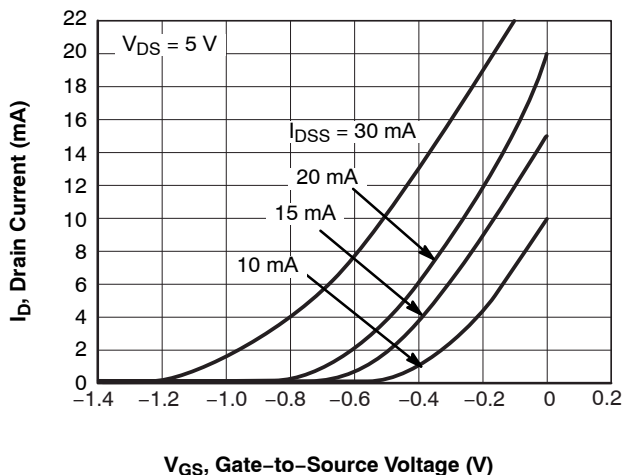


Figure 3.  $I_D - V_{GS}$

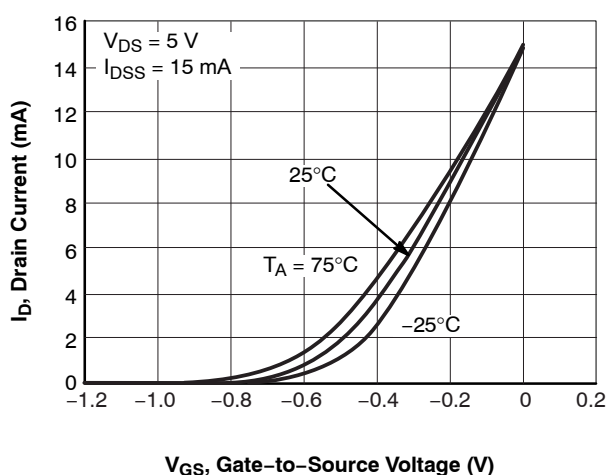


Figure 4.  $I_D - V_{GS}$

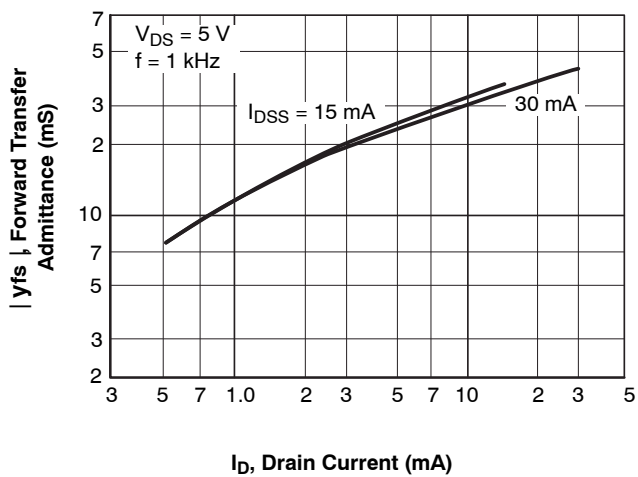


Figure 5.  $|y_{fs}| - I_D$

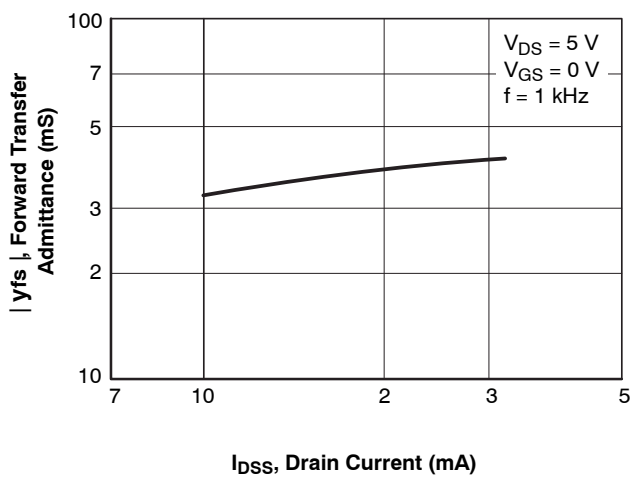
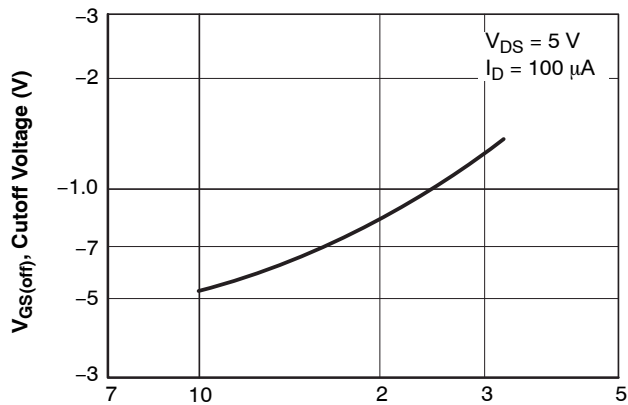
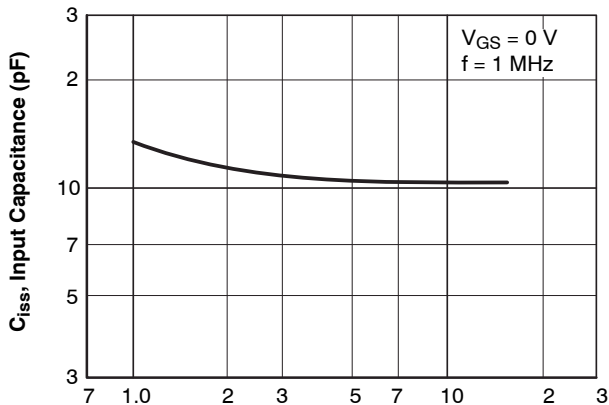


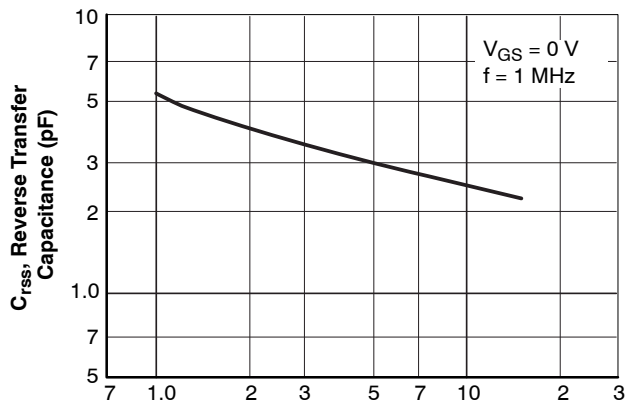
Figure 6.  $|y_{fs}| - I_{DSS}$



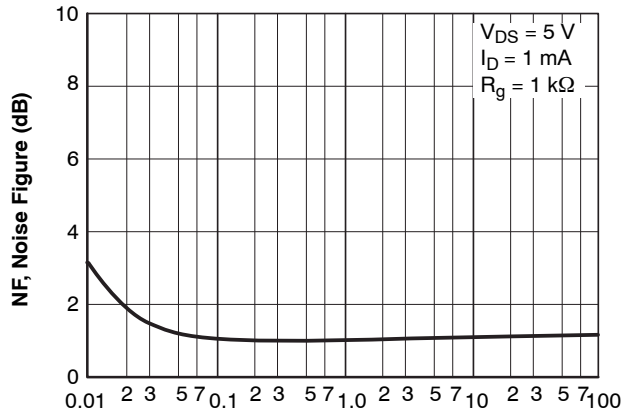
$I_{DSS}$ , Drain Current (mA)  
Figure 7.  $V_{GS(off)} - I_{DSS}$



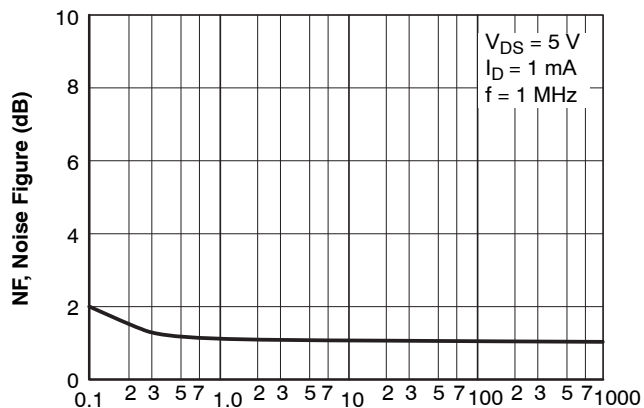
$V_{DS}$ , Drain-to-Source Voltage (V)  
Figure 8.  $C_{iss} - V_{DS}$



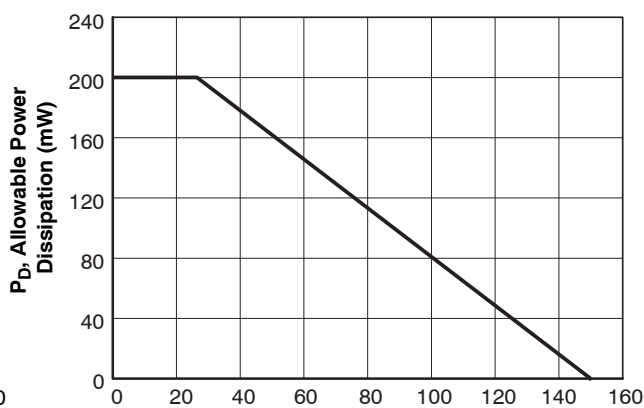
$V_{DS}$ , Drain-to-Source Voltage (V)  
Figure 9.  $C_{rss} - V_{DS}$



f, Frequency (kHz)  
Figure 10. NF - f



$R_g$ , Signal Source Resistance ( $k\Omega$ )  
Figure 11. NF -  $R_g$



$T_A$ , Ambient Temperature ( $^{\circ}C$ )  
Figure 12.  $P_D - T_A$

# NSVJ3557SA3

## ORDERING INFORMATION

Part Number	Marking	Package	Shipping†
NSVJ3557SA3T1G	IR	SC-59 3-Lead / CP3 (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](#).

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

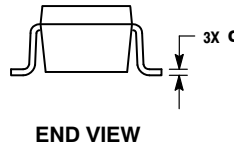
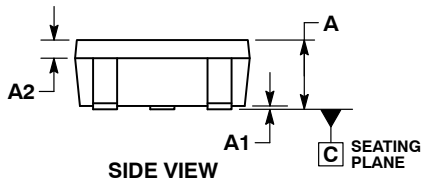
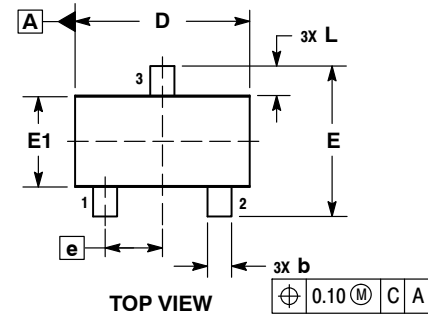
ON Semiconductor®



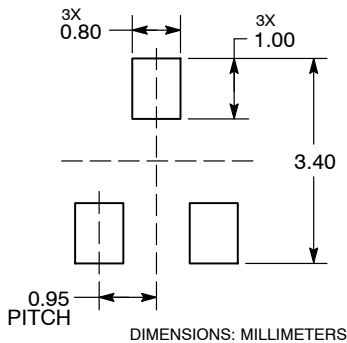
SCALE 2:1

SC-59 / CP3  
CASE 318BJ  
ISSUE O

DATE 09 JAN 2015



### RECOMMENDED SOLDERING FOOTPRINT\*

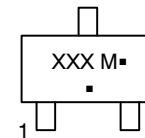


### NOTES:

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.

<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>

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor 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. ON Semiconductor 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)