

# NSVJ6904DSB6

## Advance Information

### N-Channel JFET

-25 V, 20 to 40 mA, 40 mS, Dual

The NSVJ6904DSB6 is a composite type of JFET designed for compact size and high efficiency which can achieve high gain performance. This AEC-Q101 qualified and PPAP capable device is suited for automotive applications.

#### Features

- Large  $|y_{fs}|$
- Small Ciss
- Ultralow Noise Figure
- CPH6 Package is Pin-Compatible with SC-74
- AEC-Q101 Qualified and PPAP Capable
- Mounting Area is Greatly Reduced by Incorporating Two JFETs of the NSVJ3910SB3 in One Package of CPH6 Compared with Using Two Separate Packages

#### Typical Applications

- AM Tuner RF Amplification
- Low Noise Amplifier

#### Specifications

##### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbo l	Value	Unit
Drain to Source Voltage	$V_{DSX}$	25	V
Gate to Drain Voltage	$V_{GDS}$	-25	V
Gate Current	$I_G$	10	mA
Drain Current	$I_D$	50	mA
Allowable Power Dissipation 1 unit	$P_D$	400	mW
Total Power Dissipation	$P_T$	700	mW
Operating Junction and Storage Temperature	$T_J, T_{Stg}$	-55 to +150	$^\circ\text{C}$

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.

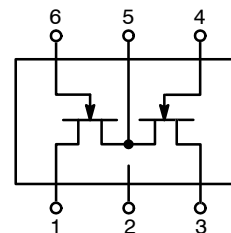


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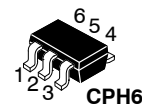
$V_{DSS}$	$R_{DS(on)}$ MAX	$I_D$ MAX
60 V	78 m $\Omega$ @ 10 V	4.5 A
	104 m $\Omega$ @ 4.5 V	

#### ELECTRICAL CONNECTION N-Channel

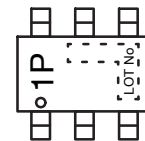


- 1 : Drain 1
- 2 : NC
- 3 : Drain 2
- 4 : Gate 2
- 5 : Source 1 / Source 2
- 6 : Gate 1

#### MARKING DIAGRAM



CASE 318BD



#### ORDERING INFORMATION

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

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

# NSVJ6904DSB6

## ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ , (Note 1))

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Gate to Drain Breakdown Voltage	$V_{(BR)GDS}$	$I_G = -10 \mu\text{A}$ , $V_{DS} = 0 \text{ V}$	-25	-	-	V
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS} = -10 \text{ V}$ , $V_{DS} = 0 \text{ V}$	-	-	-1.0	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 5 \text{ V}$ , $I_D = 100 \mu\text{A}$	-0.6	-1.2	-1.8	V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 5 \text{ V}$ , $V_{GS} = 0 \text{ V}$	20	-	40	mA
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 5 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ kHz}$	30	40	-	mS
Input Capacitance	$C_{iss}$	$V_{DS} = 5 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ MHz}$	-	6.0	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	2.3	-	pF
Noise Figure	NF	$V_{DS} = 5 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 100 \text{ MHz}$	-	2.1	2.8	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. The specifications shown above are for each individual JFET.

CHARACTERISTICS

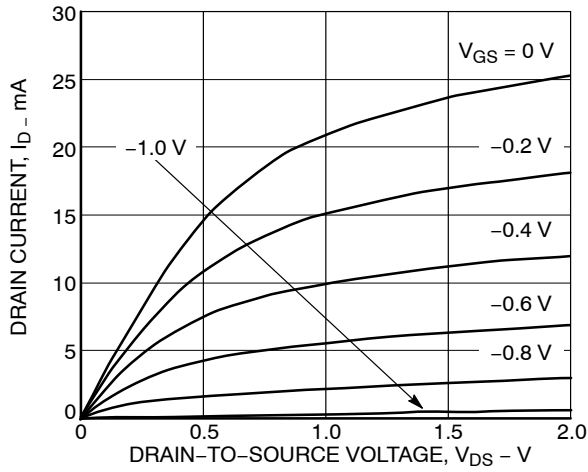


Figure 1.  $I_D - V_{DS}$

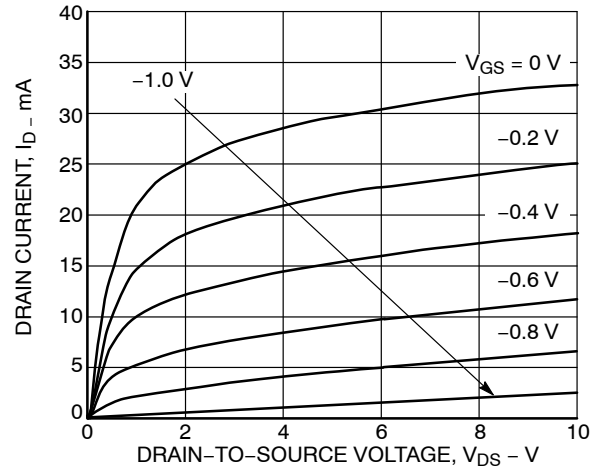


Figure 2.  $I_D - V_{DS}$

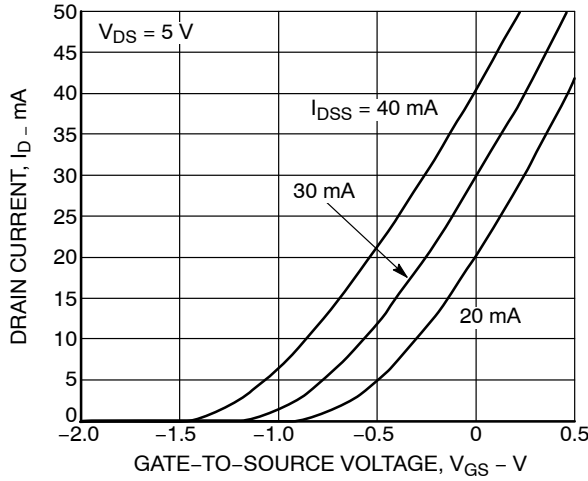


Figure 3.  $I_D - V_{GS}$

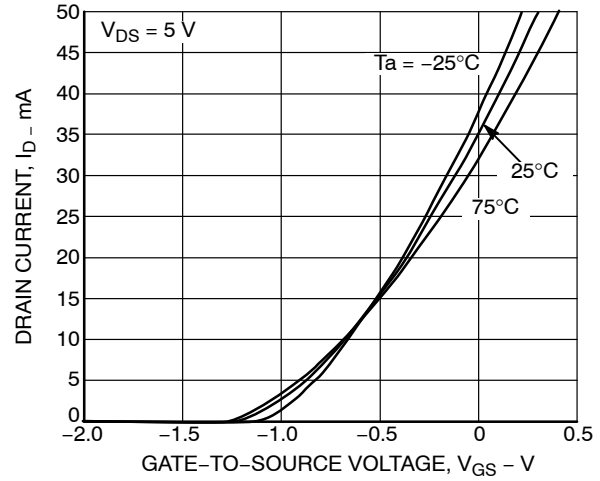


Figure 4.  $I_D - V_{GS}$

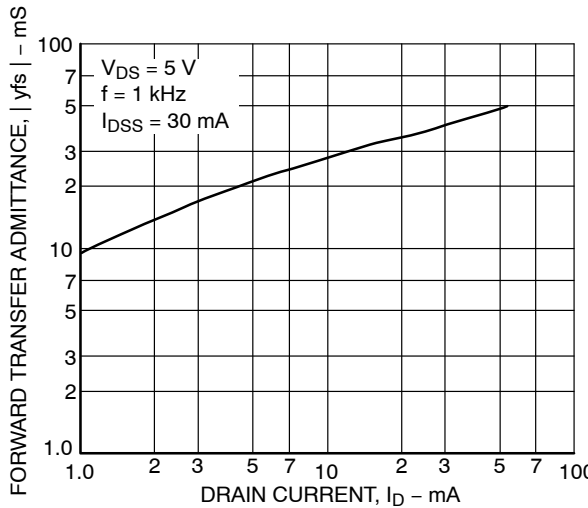


Figure 5.  $|y_{fs}| - I_D$

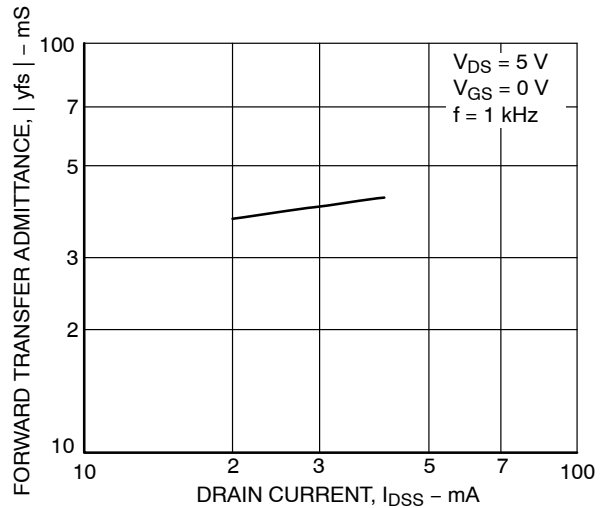


Figure 6.  $|y_{fs}| - I_{DSS}$

# NSVJ6904DSB6

## CHARACTERISTICS

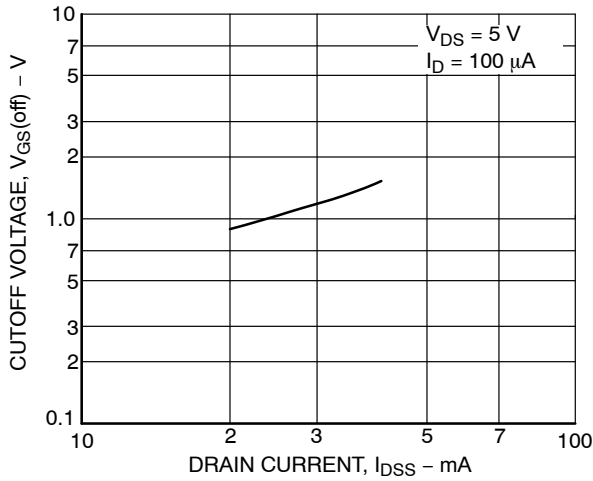


Figure 7.  $V_{GS(off)}$  -  $I_{DSS}$

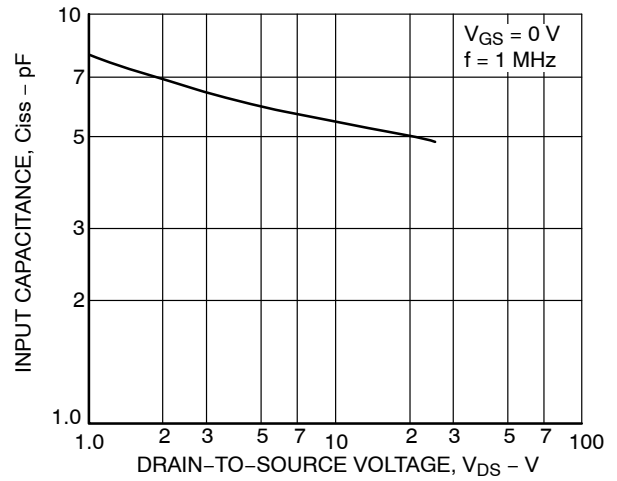


Figure 8.  $C_{iss}$  -  $V_{GS}$

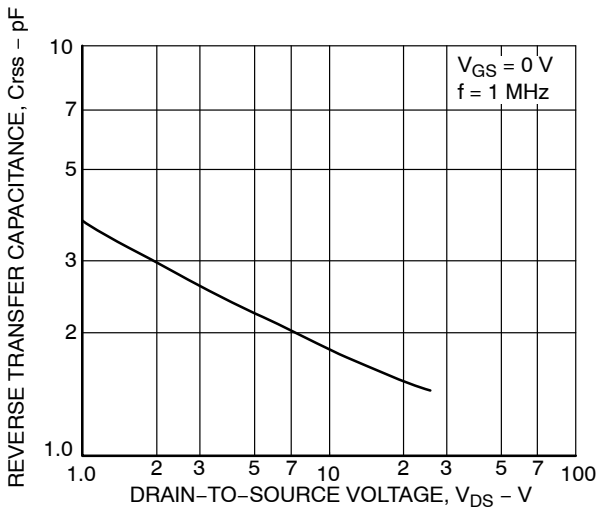


Figure 9.  $C_{rss}$  -  $V_{DS}$

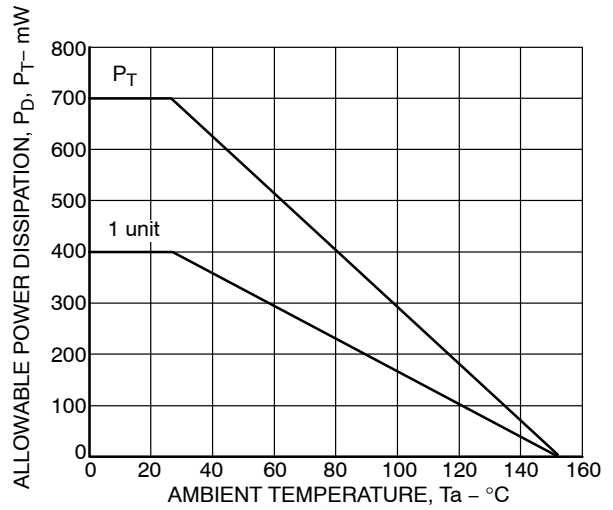


Figure 10.  $P_D$ ,  $P_T$  -  $T_a$

## ORDERING INFORMATION

Device Order Number	Specific Device Marking	Package Type	Shipping <sup>†</sup>
NSVJ6904DSB6T1G	1P	CPH6 (Pb-Free / Halogen 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.

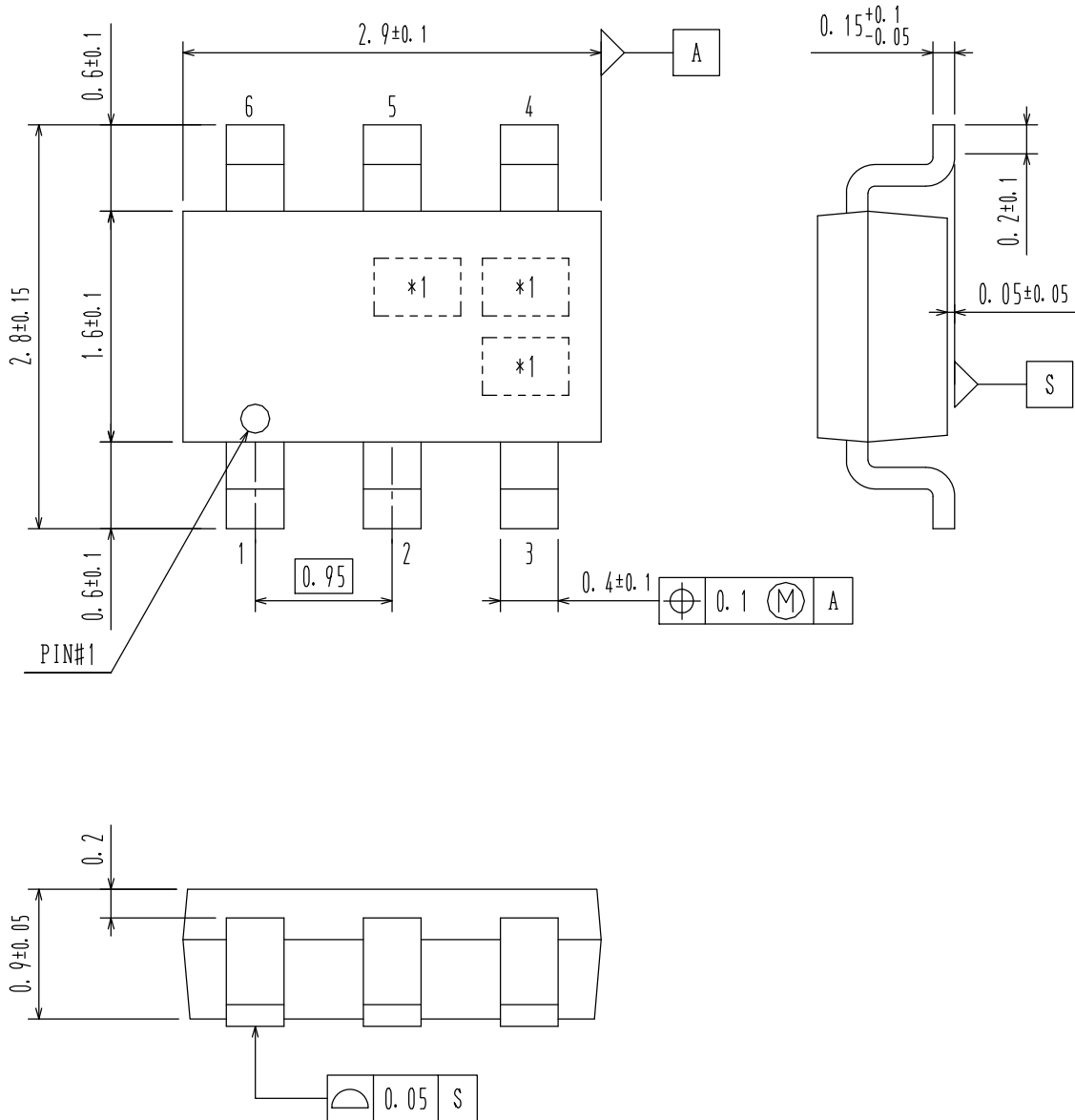
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®



**CPH6**  
**CASE 318BD**  
**ISSUE O**

DATE 30 NOV 2011



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<b>DESCRIPTION:</b>	<b>CPH6</b>	<b>PAGE 1 OF 2</b>



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