

HETERO JUNCTION FIELD EFFECT TRANSISTOR NE3511S02

X TO Ku BAND SUPER LOW NOISE AMPLIFIER N-CHANNEL HJ-FET

FEATURES

- Super low noise figure and high associated gain
NF = 0.30 dB TYP., $G_a = 13.5$ dB TYP. @ $f = 12$ GHz
- Micro-X plastic (S02) package

APPLICATIONS

- X to Ku-band DBS LNB
- Other X to Ku-band communication systems

ORDERING INFORMATION

Part Number	Order Number	Package	Quantity	Marking	Supplying Form
NE3511S02-T1C	NE3511S02-T1C-A	S02 (Pb-Free)	2 kpcs/reel	B	<ul style="list-style-type: none"> • 8 mm wide embossed taping • Pin 4 (Gate) faces the perforation side of the tape
NE3511S02-T1D	NE3511S02-T1D-A		10 kpcs/reel		

Remark To order evaluation samples, contact your nearby sales office.

Part number for sample order: NE3511S02

ABSOLUTE MAXIMUM RATINGS ($T_A = +25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Drain to Source Voltage	V_{DS}	4	V
Gate to Source Voltage	V_{GS}	-3	V
Drain Current	I_D	I_{DSS}	mA
Gate Current	I_G	100	μA
Total Power Dissipation	P_{tot}^{Note}	165	mW
Channel Temperature	T_{ch}	+125	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +125	$^\circ\text{C}$

Note Mounted on $1.08\text{ cm}^2 \times 1.0\text{ mm}$ (t) glass epoxy PCB

Caution Observe precautions when handling because these devices are sensitive to electrostatic discharge.

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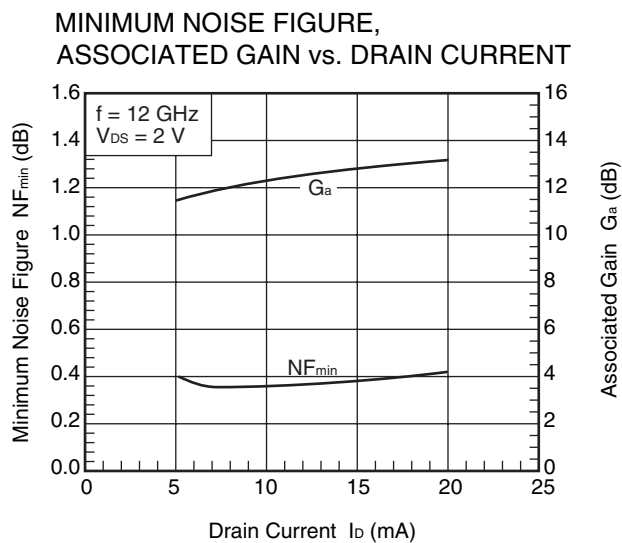
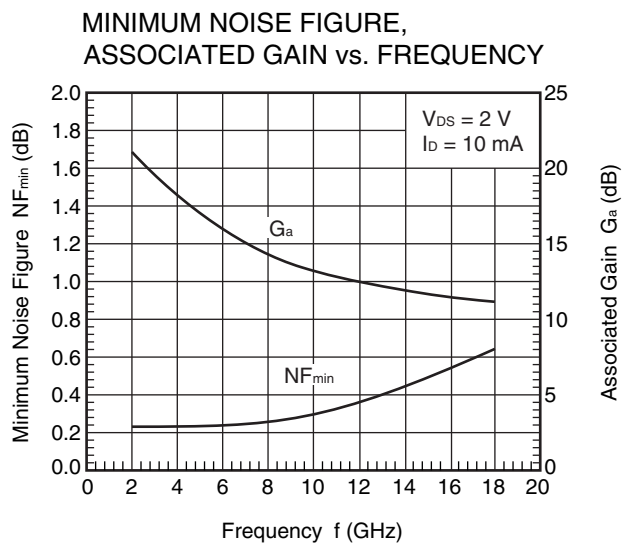
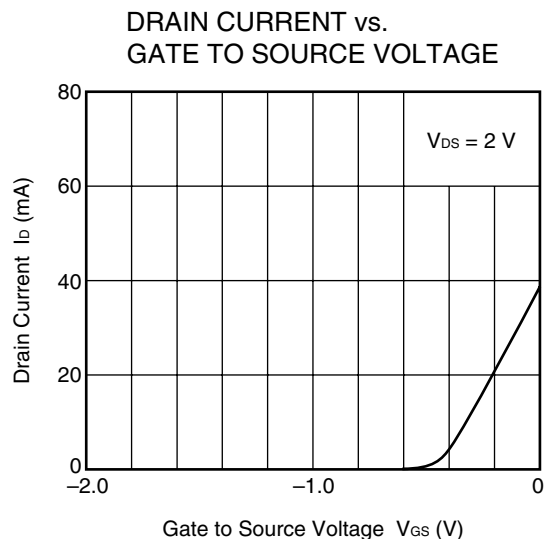
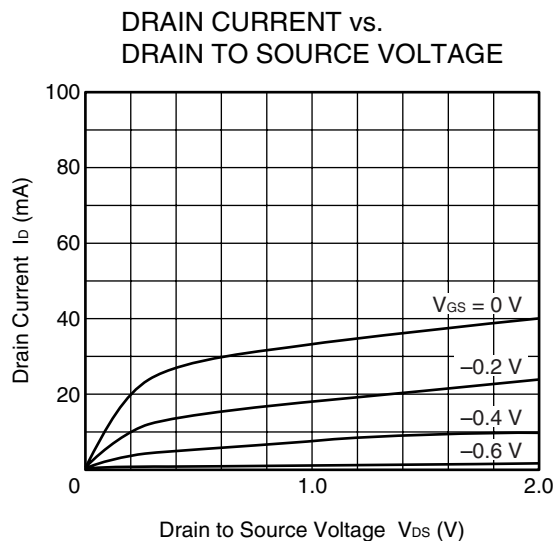
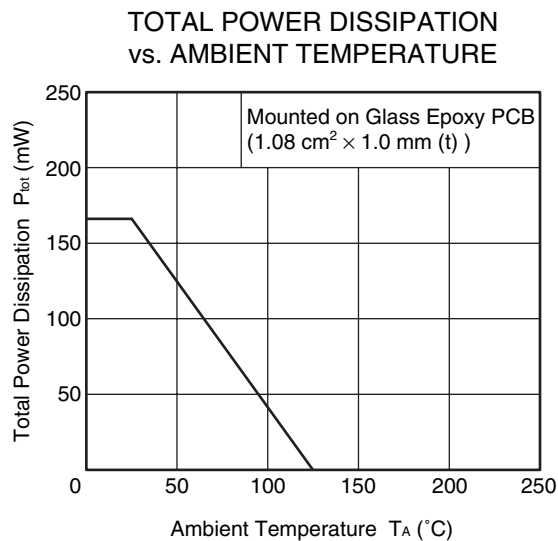
RECOMMENDED OPERATING CONDITIONS ($T_A = +25^\circ\text{C}$)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Drain to Source Voltage	V_{DS}	1	2	3	V
Drain Current	I_D	5	10	20	mA
Input Power	P_{in}	—	—	0	dBm

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Gate to Source Leak Current	I_{GSO}	$V_{GS} = -3\text{ V}$	—	0.5	10	μA
Saturated Drain Current	I_{DSS}	$V_{DS} = 2\text{ V}, V_{GS} = 0\text{ V}$	20	40	70	mA
Gate to Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 2\text{ V}, I_D = 100\text{ }\mu\text{A}$	-0.2	-0.7	-1.7	V
Transconductance	g_m	$V_{DS} = 2\text{ V}, I_D = 10\text{ mA}$	50	65	—	mS
Noise Figure	NF	$V_{DS} = 2\text{ V}, I_D = 10\text{ mA}, f = 12\text{ GHz}$	—	0.30	0.45	dB
Associated Gain	G_a		12.5	13.5	—	dB

TYPICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise specified)



Remark The graphs indicate nominal characteristics.

S-PARAMETERS

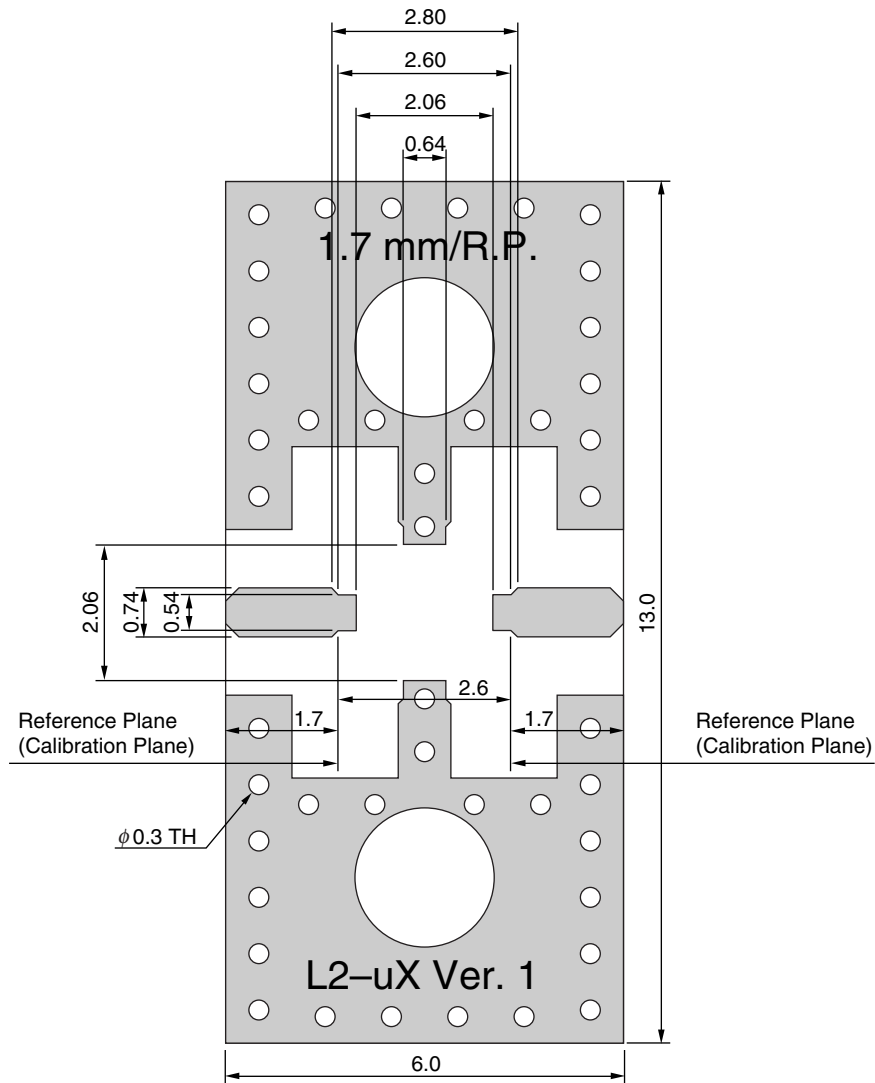
S-parameters/Noise parameters are provided on our web site in a form (S2P) that enables direct import to a microwave circuit simulator without keyboard input.

Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

URL <http://www.ncsd.necel.com/microwave/index.html>

RF MEASURING LAYOUT PATTERN (REFERENCE ONLY) (UNIT: mm)



RT/duroid 5880/ROGERS

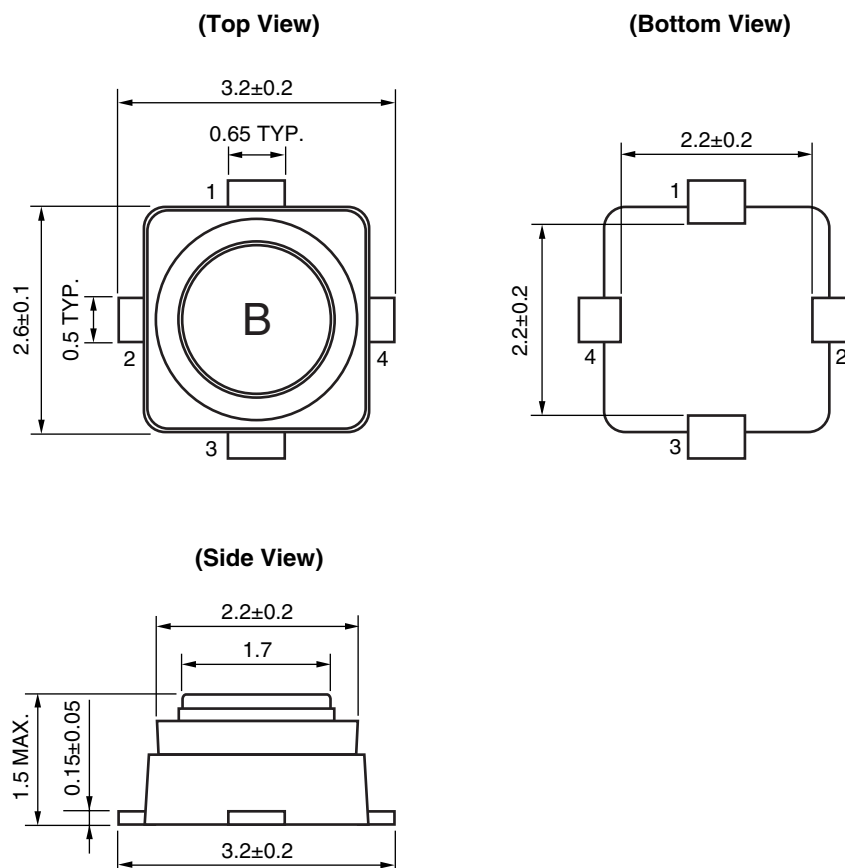
t = 0.254 mm

$\epsilon_r = 2.20$

tan delta = 0.0009 @10 GHz

PACKAGE DIMENSIONS

S02 (UNIT: mm)



PIN CONNECTIONS

1. Source
2. Drain
3. Source
4. Gate

RECOMMENDED SOLDERING CONDITIONS

This product should be soldered and mounted under the following recommended conditions. For soldering methods and conditions other than those recommended below, contact your nearby sales office.

Soldering Method	Soldering Conditions	Condition Symbol
Infrared Reflow	Peak temperature (package surface temperature)	: 260°C or below
	Time at peak temperature	: 10 seconds or less
	Time at temperature of 220°C or higher	: 60 seconds or less
	Preheating time at 120 to 180°C	: 120±30 seconds
	Maximum number of reflow processes	: 3 times
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below
Partial Heating	Peak temperature (terminal temperature)	: 350°C or below
	Soldering time (per side of device)	: 3 seconds or less
	Maximum chlorine content of rosin flux (% mass)	: 0.2%(Wt.) or below

Caution Do not use different soldering methods together (except for partial heating).

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► For further information, please contact

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