



## J111/A, J112/A, J113/A N-Channel JFET

#### Features

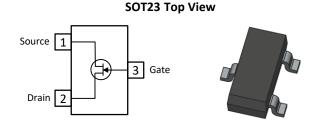
- InterFET N0132S Geometry
- Low Noise: 1.2 nV/VHz Typical
- High Gain: 15mS Typical
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

#### Applications

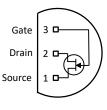
- Choppers
- Commutators
- Analog Switches

#### Description

The -25V InterFET J111/A, J112/A, and J113/A JFET's are targeted for high gain low noise switching, commutator, and chopper applications.



#### **TO-92 Bottom View**





#### **Product Summary**

Parameters		J111/A Min	J112/A Min	J113/A Min	Unit
BV <sub>GSS</sub>	Gate to Source Breakdown Voltage	-40	-40	-40	V
IDSS	Drain to Source Saturation Current	-2	-2	-2	mA
V <sub>GS(off)</sub>	Gate to Source Cutoff Voltage	-5	-2	-1	V

#### Ordering Information Custom Part and Binning Options Available

Part Number	Description	Case	Packaging
J111; J112; J113			
J111A; J112A; J113A	Through-Hole	TO-92	Bulk
SMPJ111; SMPJ112; SMPJ113			
SMPJ111A; SMPJ112A; SMPJ113A	Surface Mount	SOT23	Bulk
SMPJ111TR; SMPJ112TR; SMPJ113TR	7" Tape and Reel: Max 3,000 Pieces		Minimum 1,000 Pieces
SMPJ111ATR; SMPJ112ATR; SMPJ113ATR	13" Tape and Reel: Max 9,000 Pieces	SOT23	Tape and Reel
J111COT; J112COT; J113COT			
J111ACOT; J112ACOT; J113ACOT	Chip Orientated Tray (COT Waffle Pack)	СОТ	400/Waffle Pack
J111CFT; J112CFT; J113CFT			
J111ACFT; J112ACFT; J113ACFT	Chip Face-up Tray (CFT Waffle Pack)	CFT	400/Waffle Pack



**Disclaimer:** It is the Buyers responsibility for designing, validating and testing the end application under all field use cases and extreme use conditions. Guaranteeing the application meets required standards, regulatory compliance, and all safety and security requirements is the responsibility of the Buyer. These resources are subject to change without notice.







## **Electrical Characteristics**

## Maximum Ratings (@ T<sub>A</sub> = 25°C, Unless otherwise specified)

	Parameters	Value	Unit
$V_{\text{RGS}}$	Reverse Gate Source and Gate Drain Voltage	-40	V
I <sub>FG</sub>	Continuous Forward Gate Current	50	mA
PD	Continuous Device Power Dissipation	360	mW
Р	Power Derating	3.3	mW/°C
Τı	Operating Junction Temperature	-55 to 125	°C
T <sub>STG</sub>	Storage Temperature	-65 to 150	°C

## Static Characteristics (@ TA = 25°C, Unless otherwise specified, Highlighted values = A variant)

			J111/A		J112/A		J113/A		
	Parameters	Conditions	Min	Max	Min	Max	Min	Max	Unit
	Gate to Source	V <sub>DS</sub> = 0V, I <sub>G</sub> = -1µA	-35		-35		-35		v
V(BR)GSS	Breakdown Voltage		-40		-40		-40		
	Gate to Source	V <sub>GS</sub> = -15V, V <sub>DS</sub> = 0V		-1		-1		-1	nA
I <sub>GSS</sub>	Reverse Current			-2		-2		-2	
Vgs(off)	Gate to Source	$V_{DS} = 5V$ , $I_D = 1\mu A$	-3	-10	-1	-5		-3	v
	Cutoff Voltage		-5	-10	-2	-7	-1	-5	
I <sub>DSS</sub>	Drain to Source	$V_{GS} = 0V, V_{DS} = 15V$	20		5		2		mA
	Saturation Current	(Pulsed)	30		15		8		
Id(off)	Drain Cutoff Current	V <sub>DS</sub> = 15V, V <sub>GS</sub> = -10V		-1		-1		-1	nA
				-1		-1		-1	mA

## **Dynamic Characteristics** (@ TA = 25°C, Unless otherwise specified, Highlighted values = A variant)

		J111/A		J11	J112/A		J113/A	
Parameters	Conditions	Min	Max	Min	Max	Min	Max	Unit
Drain to Source	$V_{DS} = 0.1V, V_{GS} = 0V,$		30		50		100	Ω
ON Resistance	f = 1kHz		30		50		80	77
Drain Gate	$V_{DS} = 0V, V_{GS} = -10V,$		5		5		5	рF
Capacitance	f = 1MHz		5		5		5	μr
Input Canacitance	$V_{DS} = 0V, V_{GS} = -10V,$		5		5		5	рF
	f = 1MHz		5		,		5	рі
Drain + Source Gate	$V_{DS} = V_{CS} = 0V f = 1MHz$		28		28		28	рF
Capacitance	VD3 = VG3 = OV, I = 110112		20		20		20	P
Turn ON Delay Time		7 (1	wn)	7 (†	wn)	7 (†	wn)	ns
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KISE TITTE		0(1	.yp)	в (тур)		2 (typ)		ns
Turn OFF Delay Time	-	20 (typ)		) 20 (typ)		20 (typ)		ns
Fall Time	NL - 3200 M	15 (	typ)	15 (	typ)	15 (	typ)	ns
	Drain to Source ON Resistance Drain Gate Capacitance Input Capacitance Drain + Source Gate	$\begin{array}{c c} \mbox{Drain to Source} & V_{DS} = 0.1V, V_{GS} = 0V, \\ \mbox{ON Resistance} & f = 1 kHz \\ \mbox{Drain Gate} & V_{DS} = 0V, V_{GS} = -10V, \\ \mbox{Capacitance} & f = 1 MHz \\ \mbox{Input Capacitance} & V_{DS} = 0V, V_{GS} = -10V, \\ \mbox{f = 1 MHz} & \\ \mbox{Drain + Source Gate} & V_{DS} = 0V, V_{GS} = -10V, \\ \mbox{f = 1 MHz} & \\ \mbox{Drain + Source Gate} & V_{DS} = V_{GS} = 0V, f = 1 MHz \\ \mbox{Drain + Source Gate} & V_{DS} = V_{GS} = 0V, f = 1 MHz \\ \mbox{Turn ON Delay Time} & V_{DD} = 10V \\ \mbox{J111/A: V}_{GS(OFF)} = -12V, \\ \mbox{Rise Time} & \\ \mbox{J112/A: V}_{GS(OFF)} = -7V, \\ \mbox{R}_L = 1600 \ \Omega \\ \mbox{J113/A: V}_{GS(OFF)} = -5V, \\ \mbox{R}_L = 2200 \ \Omega \\ \mbox{ON Delay Delay Composition} = -5V, \\ \mbox{R}_L = 2200 \ \Omega \\ \mbox{Capacitance} = -5V, \\ \mbox{R}_L = 2200 \ \Omega \\ \mbox{Capacitance} = -5V, \\ \mbox{R}_L = 2200 \ \Omega \\ \mbox{Capacitance} = -5V, \\ Capaci$	ParametersConditionsMinDrain to Source $V_{DS} = 0.1V, V_{GS} = 0V,$ $(1, 1, 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3,$	ParametersConditionsMinMaxDrain to Source $V_{DS} = 0.1V, V_{GS} = 0V,$ 30ON Resistance $f = 1kHz$ 30Drain Gate $V_{DS} = 0V, V_{GS} = -10V,$ 5Capacitance $f = 1MHz$ 5Input Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ 5Drain + Source Gate $V_{DS} = 0V, V_{GS} = -10V,$ 5Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ 5Drain + Source Gate $V_{DS} = V_{GS} = 0V, f = 1MHz$ 28Turn ON Delay Time $V_{DD} = 10V$ 7 (typ)Size Time $V_{DD} = 10V$ 7 (typ)J112/A: $V_{GS(OFF)} = -12V,$ 6 (typ)J112/A: $V_{GS(OFF)} = -7V,$ 20 (typ)J113/A: $V_{GS(OFF)} = -5V,$ $20$ (typ)	ParametersConditionsMinMaxMinDrain to Source $V_{DS} = 0.1V, V_{GS} = 0V,$ f = 1kHz3030ON Resistancef = 1kHz30Drain Gate $V_{DS} = 0V, V_{GS} = -10V,$ f = 1MHz5Input Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ f = 1MHz5Drain + Source Gate Capacitance $V_{DS} = V_{GS} = 0V, f = 1MHz$ 5Drain + Source Gate Capacitance $V_{DS} = V_{GS} = 0V, f = 1MHz$ 28Turn ON Delay Time $V_{DD} = 10V$ J111/A: $V_{GS(OFF)} = -12V,$ RL = 800 $\Omega$ J112/A: $V_{GS(OFF)} = -7V,$ RL = 1600 $\Omega$ J113/A: $V_{GS(OFF)} = -5V,$ 6 (typ)6 (typ)Turn OFF Delay Time $P_L = 1600 \Omega$ J113/A: $V_{GS(OFF)} = -5V,$ PL = 2200 $\Omega$ 20 (typ)20 (typ)	ParametersConditionsMinMaxMinMaxDrain to Source $V_{DS} = 0.1V, V_{GS} = 0V,$ $f = 1kHz$ 3050ON Resistance $f = 1kHz$ 3050Drain Gate $V_{DS} = 0V, V_{GS} = -10V,$ $f = 1MHz$ 55Input Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ $f = 1MHz$ 55Drain + Source Gate Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ $f = 1MHz$ 55Drain + Source Gate Capacitance $V_{DS} = V_{GS} = 0V, f = 1MHz$ 2828Turn ON Delay Time $V_{DD} = 10V$ $J111/A: V_{GS(OFF)} = -12V,$ $R_L = 800 \Omega$ $J112/A: V_{GS(OFF)} = -7V,$ $R_L = 1600 \Omega$ 6 (typ)6 (typ)Turn OFF Delay Time $P_L = 1600 \Omega$ $J113/A: V_{GS(OFF)} = -5V,$ $R_L = 1600 \Omega$ 20 (typ)20 (typ)	ParametersConditionsMinMaxMinMaxMinDrain to Source $V_{DS} = 0.1V, V_{GS} = 0V,$ $30$ $50$ $50$ ON Resistance $f = 1kHz$ $30$ $50$ $50$ Drain Gate $V_{DS} = 0V, V_{GS} = -10V,$ $5$ $5$ $5$ Capacitance $f = 1MHz$ $5$ $5$ $5$ Input Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ $5$ $5$ $5$ Drain + Source Gate $V_{DS} = 0V, V_{GS} = -10V,$ $5$ $5$ $5$ Drain + Source Gate $V_{DS} = V_{GS} = 0V, f = 1MHz$ $28$ $28$ $28$ Turn ON Delay Time $V_{DD} = 10V$ $7$ (typ) $7$ (typ) $7$ (typ)Rise Time $V_{L} = 800 \Omega$ $50$ $6$ (typ) $20$ (typ) $20$ (typ)Turn OFF Delay Time $N_{L} = 1600 \Omega$ $20$ (typ) $20$ (typ) $20$ (typ)	ParametersConditionsMinMaxMinMaxMinMaxDrain to Source $V_{DS} = 0.1V, V_{GS} = 0V,$ f = 1kHz3050100ON Resistancef = 1kHz305080Drain Gate $V_{DS} = 0V, V_{GS} = -10V,$ f = 1MHz5555Input Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ f = 1MHz5555Input Capacitance $V_{DS} = 0V, V_{GS} = -10V,$ f = 1MHz5555Drain + Source Gate Capacitance $V_{DS} = V_{GS} = 0V, f = 1$ MHz28282828Turn ON Delay Time $V_{DD} = 10V$ J111/A: $V_{GS(OFF)} = -12V,$ RL = 800 $\Omega$ J112/A: $V_{GS(OFF)} = -7V,$ RL = 1600 $\Omega$ J113/A: $V_{GS(OFF)} = -5V,$ 6 (typ)6 (typ)2 (typ)Turn OFF Delay Time $P_{L} = 1600 \Omega$ J113/A: $V_{GS(OFF)} = -5V,$ RL = 300 $\Omega$ 20 (typ)20 (typ)20 (typ)



Technical

Support

Order

Now

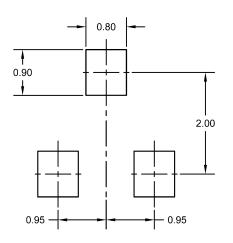
## SOT23 (TO-236AB) Mechanical and Layout Data

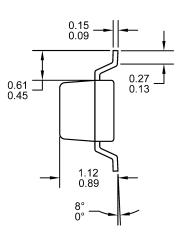
#### **Package Outline Data**





### Suggested Pad Layout





- 1. All linear dimensions are in millimeters.
- 2. Package weight approximately 0.12 grams
- 3. Molded plastic case UL 94V-0 rated
- For Tape and Reel specifications refer to InterFET CTC-021 Tape and Reel Specification, Document number: IF39002
- 5. Bulk product is shipped in standard ESD shipping material
- 6. Refer to JEDEC standards for additional information.

- 1. All linear dimensions are in millimeters.
- 2. The suggested land pattern dimensions have been provided for reference only. A more robust pattern may be desired for wave soldering.

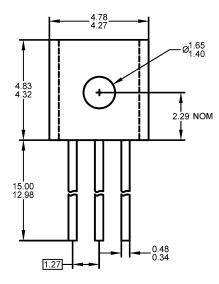


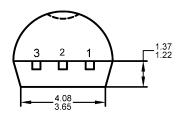


Support

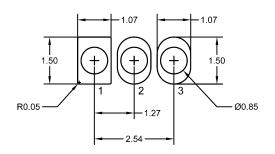
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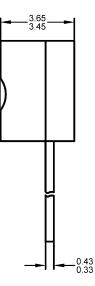
## **Package Outline Data**





## Suggested Through-Hole Layout





- All linear dimensions are in millimeters. 1.
- 2. Package weight approximately 0.19 grams
- Molded plastic case UL 94V-0 rated 3.
- 4. Bulk product is shipped in standard ESD shipping material
- 5. Refer to JEDEC standards for additional information.

- 1. All linear dimensions are in millimeters.
- 2. The suggested land pattern dimensions have been provided as a straight lead reference only. A more robust pattern may be desired for wave soldering and/or bent lead configurations.

# **Mouser Electronics**

Authorized Distributor

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