

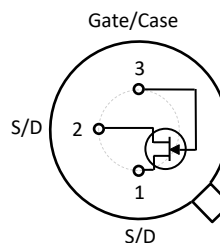
2N4391, 2N4392, 2N4393 N-Channel JFET

Jan equivalent parts

Features

- InterFET [N0132S Geometry](#)
- Low noise: 1.0 nV/VHz typical
- High gain: 22mS typical
- Low gate leakage: 750fA typical @20V
- High radiation tolerance
- RoHS, REACH, CMR compliant
- Custom test and binning options available
- Edge case SPICE modeling: [InterFET SPICE](#)

TO-18 Bottom View



InterFET Similar Parts

- 2N3970-1-2, 2N4091-2-3, 2N4856-7-8A, 2N4859-60-61A
- IFN113
- J111-2-3

Built to MIL-PRF-19500

(Source and Drain pins are interchangeable)

Applications

- General: Amplifiers; Switches; Voltage regulators; Oscillators; Signal mixers; Noise generators
- Military/Aero: Radar; Communications; Satellites; Missiles guidance; Hydrophone preamplifiers
- Medical: Medical imaging systems; Medical monitors and recorders; Ultrasound equipment
- Audio: Tone control circuits; Headphone amplifiers; Audio filters; Electret Microphone

Description

The -40V InterFET 2N4391, 2N4392 and 2N4393 are targeted for switch, chopper and commutator designs. Gate leakages are typically less than 50pA at room temperatures. The 2N4393 has a cutoff voltage of less than 3.0V ideal for low-level power supplies. The TO-18 package is hermetically sealed and suitable for military applications.

Ordering Information Custom Part and Binning Options Available

Part Number	Description	Case	Packaging
2N4391JANequiv, 2N4392JANequiv 2N4393JANequiv	JAN equivalent	TO-18	Bulk
2N4391JANTXequiv, 2N4392JANTXequiv 2N4393JANTXequiv	JANTX equivalent	TO-18	Bulk
2N4391JANTXVequiv, 2N4392JANTXVequiv 2N4393JANTXVequiv	JANTXV equivalent	TO-18	Bulk
2N4391JANSequiv, 2N4392JANSequiv 2N4393JANSequiv	JANS equivalent	TO-18	Bulk



NOTICE: Please refer to the end of this document for information on product materials, compliance, safety, and legal statements.

Electrical Characteristics

Maximum Ratings (@ $T_A = 25^\circ\text{C}$, Unless otherwise specified)

Parameters	TO-18	SOT-23	TO-92	Unit
V_{RGS} Reverse Gate Source and Gate Drain Voltage	-20	-20	-20	V
I_{FG} Continuous Forward Gate Current	50	50	50	mA
P_D Continuous Device Power Dissipation ¹	500	350	500	mW
P Power Derating ¹	3.3	2.8	4	mW/ $^\circ\text{C}$
T_J Operating Junction Temperature	-65 to 175	-55 to 150	-55 to 150	$^\circ\text{C}$
T_{STG} Storage Temperature	-65 to 175	-55 to 150	-55 to 150	$^\circ\text{C}$

¹ Thermal power dissipation and derating values obtained with gate pin (substrate) thermally connected to pad and/or internal layer.

Static Characteristics (@ $T_A = 25^\circ\text{C}$, Unless otherwise specified)

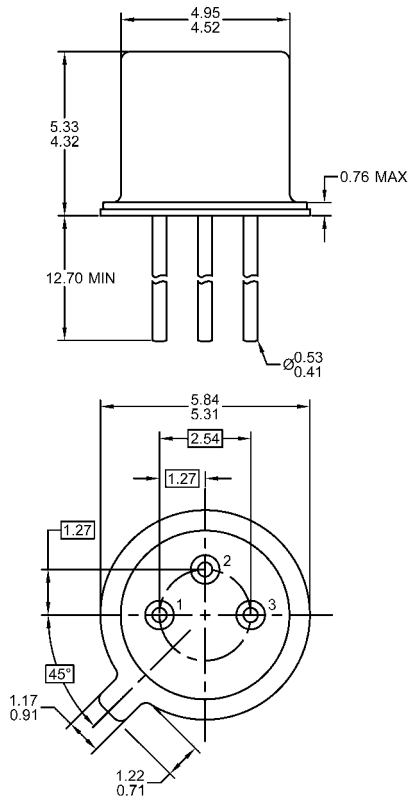
Parameters	Conditions	2N4391		2N4392		2N4393		Unit
		Min	Max	Min	Max	Min	Max	
$V_{(BR)GSS}$ Gate to Source Breakdown Voltage	$V_{DS} = 0V, I_G = -1\mu A$	-40		-40		-40		V
I_{GSS} Gate to Source Reverse Current	$V_{DS} = -20V, V_{GS} = 0V, T_A = 25^\circ\text{C}$		-100		-100		-100	pA
	$V_{DS} = -20V, V_{GS} = 0V, T_A = 150^\circ\text{C}$		-200		-200		-200	nA
$V_{GS(OFF)}$ Gate to Source Cutoff Voltage	$V_{DS} = 20V, I_D = 1nA$	-4	-10	-2	-5	-0.5	-3	V
$V_{GS(F)}$ Gate to Source Forward Voltage	$V_{DS} = 0V, I_G = 1mA$		1		1		1	V
I_{DSS} Drain to Source Saturation Current	$V_{GS} = 0V, V_{DS} = 20V$ (Pulsed)	50	150	25	75	5	30	mA
$I_{D(OFF)}$ Drain Cutoff Current	$V_{DS} = 20V, V_{GS} = -5V, T_A = 25^\circ\text{C}$						100	pA
	$V_{DS} = 20V, V_{GS} = -5V, T_A = 150^\circ\text{C}$						200	nA
	$V_{DS} = 20V, V_{GS} = -7V, T_A = 25^\circ\text{C}$				100			pA
	$V_{DS} = 20V, V_{GS} = -7V, T_A = 150^\circ\text{C}$				200			nA
	$V_{DS} = 20V, V_{GS} = -12V, T_A = 25^\circ\text{C}$		100					pA
	$V_{DS} = 20V, V_{GS} = -12V, T_A = 150^\circ\text{C}$		200					nA
$V_{DS(ON)}$ Drain to Source ON Voltage	$V_{GS} = 0V, I_D = 3mA$						0.4	V
	$V_{GS} = 0V, I_D = 6mA$				0.4			
	$V_{GS} = 0V, I_D = 12mA$		0.4					
$R_{DS(ON)}$ Static Drain to Source ON Resistance	$V_{GS} = 0V, I_D = 1mA$		30		60		100	Ω

Dynamic Characteristics (@ $T_A = 25^\circ\text{C}$, Unless otherwise specified)

Parameters	Conditions	2N4391		2N4392		2N4393		Unit
		Min	Max	Min	Max	Min	Max	
$R_{DS(ON)}$ Drain to Source ON Resistance	$V_{GS} = 0V, I_D = 0A, f = 1kHz$		30		60		100	Ω
C_{iss} Input Capacitance	$V_{DS} = 20V, V_{GS} = 0V, f = 1MHz$		14		14		14	pF
C_{rss} Reverse Transfer Capacitance	$V_{DS} = 0V, V_{GS} = -5V, f = 1MHz$						3.5	pF
	$V_{DS} = 0V, V_{GS} = -7V, f = 1MHz$				3.5			
	$V_{DS} = 0V, V_{GS} = -12V, f = 1MHz$		3.5					
t_d Turn-On Delay Time	$V_{DD} = 10V, V_{GS(ON)} = 0V$		15		15		15	ns
t_r Rise Time	$V_{DD} = 10V, V_{GS(ON)} = 0V$		5		5		5	ns
$t_{D(OFF)}$ Turn-Off Delay Time	$V_{DD} = 10V, V_{GS(ON)} = 0V$		20		35		50	ns
t_f Fall Time	$V_{DD} = 10V, V_{GS(ON)} = 0V$		15		20		30	ns

TO-18 Mechanical and Layout Data

Package Outline Data



1. All linear dimensions are in millimeters.
2. Package weight approximately 0.29 grams
3. Bulk product is shipped in standard ESD shipping material
4. Refer to JEDEC standards for additional information.



Compliance and Legal

Environment

InterFET parts follow the latest RoHS Compliance, REACH Compliance, Proposition 65 Statement, TSCA Statement, and Chemical Disposal and Waste Mitigation requirement and guidelines. For more on InterFET's Environmental Commitment please visit

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