2N4302, 2N4303, 2N4304 N-Channel JFET

Features

- InterFET N0026S Geometry
- Low Noise: 4 nV/√Hz Typical
- Low Leakage: 10pA Typical
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

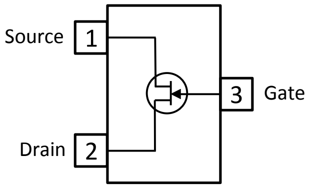
Applications

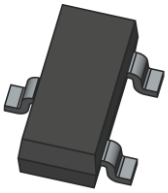
- VHS Amplifiers
- Small Signal Amplifiers
- Oscillators
- Mixers

Description

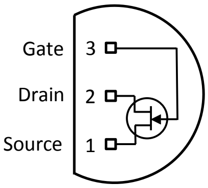
The -30V InterFET 2N4302, 2N4303, and 2N4304 are targeted for small signal amplifiers, mixers and oscillators. Gate leakages are typically less than 10pA at room temperatures.

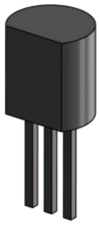
SOT23 Top View





TO-92 Bottom View





Product Summary

Parameters	2N4302 Min	2N4303 Min	2N4304 Min	Unit
BV_{GSS} Gate to Source Breakdown Voltage	-30	-30	-30	V
I_{DSS} Drain to Source Saturation Current	0.5	4	0.5	mA
$V_{GS(off)}$ Gate to Source Cutoff Voltage	-4 (Max)	-6 (Max)	-10 (Max)	V
G_{FS} Forward Transconductance	1	2	1	mS

Ordering Information Custom Part and Binning Options Available

Part Number	Description	Case	Packaging
2N4302; 2N4303; 2N4304	Through-Hole	TO-92	Bulk
SMP4302; SMP4303; SMP4304	Surface Mount	SOT23	Bulk
SMP4302TR; SMP4303TR; SMP4304TR	7" Tape and Reel: Max 3,000 Pieces 13" Tape and Reel: Max 9,000 Pieces	SOT23	Minimum 1,000 Pieces Tape and Reel
2N4302COT; 2N4303COT; 2N4304COT	Chip Orientated Tray (COT Waffle Pack)	COT	400/Waffle Pack
2N4302CFT; 2N4303CFT; 2N4304CFT	Chip Face-up Tray (CFT Waffle Pack)	CFT	400/Waffle Pack

Electrical Characteristics

Maximum Ratings (@ T_A = 25°C, Unless otherwise specified)

Parameters		Value	Unit
V_{RGS}	Reverse Gate Source and Gate Drain Voltage	-30	V
I_{FG}	Continuous Forward Gate Current	10	mA
P_D	Continuous Device Power Dissipation	300	mW
P	Power Derating	2	mW/°C
T_J	Operating Junction Temperature	-55 to 125	°C
T_{STG}	Storage Temperature	-65 to 150	°C

Static Characteristics (@ TA = 25°C, Unless otherwise specified)

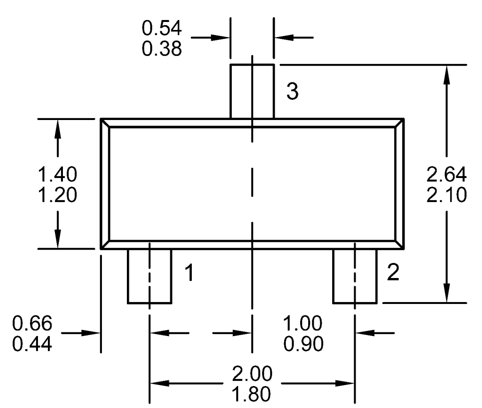
			2N4302		2N4303		2N4304		
Parameters		Conditions	Min	Max	Min	Max	Min	Max	Unit
$V_{(BR)GSS}$	Gate to Source Breakdown Voltage	V_{DS} = 0V, I_G = -1µA	-30		-30		-30		V
I_{GSS}	Gate to Source Reverse Current	V_{GS} = -15V, V_{DS} = 0V		-1		-1		-1	nA
$V_{GS(OFF)}$	Gate to Source Cutoff Voltage	V_{DS} = 20V, I_D = 10nA		-4		-6		-10	V
I_{DSS}	Drain to Source Saturation Current	V_{DS} = 20V, V_{GS} = 0V (Pulsed)	0.5	5	4	10	0.5	15	mA

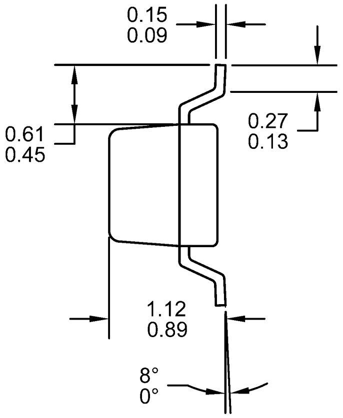
Dynamic Characteristics (@ TA = 25°C, Unless otherwise specified)

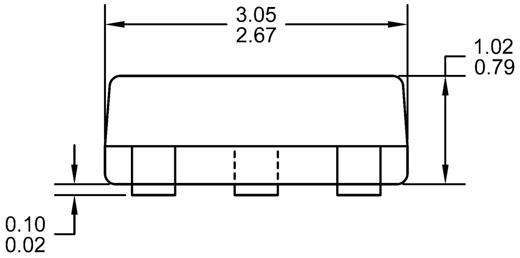
			2N4302		2N4303		2N4304		
Parameters		Conditions	Min	Max	Min	Max	Min	Max	Unit
G_{FS}	Forward Transconductance	V_{DS} = 20V, V_{GS} = 0V, f = 1kHz	1		2		1		mS
C_{iss}	Input Capacitance	V_{DS} = 20V, V_{GS} = 0V, f = 1MHz		6		6		6	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = ( ), V_{GS} = 0V, f = 1MHz		2 (15)		2 (20)		3 (20)	pF V

SOT23 (TO-236AB) Mechanical and Layout Data

Package Outline Data

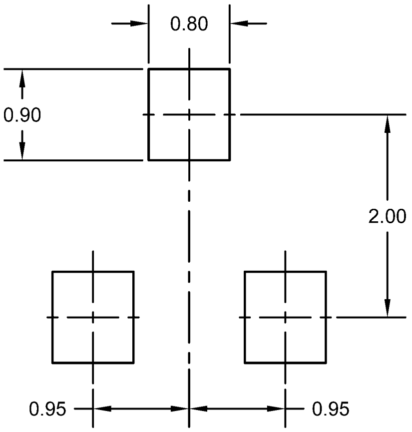






1. All linear dimensions are in millimeters.
2. Package weight approximately 0.12 grams
3. Molded plastic case UL 94V-0 rated
4. For Tape and Reel specifications refer to InterFET CTC-021 Tape and Reel Specification, Document number: IF39002
5. Bulk product is shipped in standard ESD shipping material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

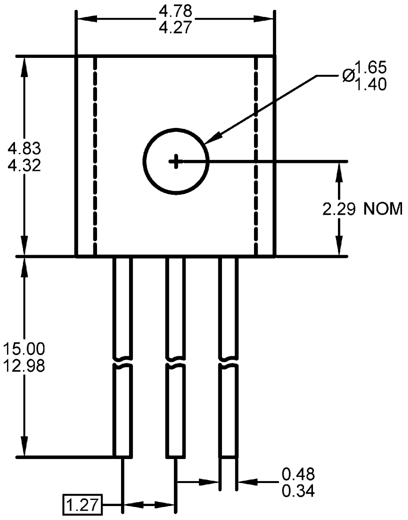
Suggested Pad Layout

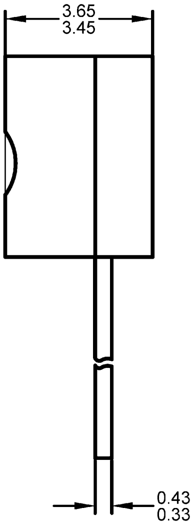


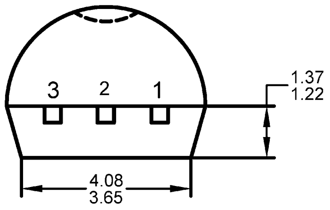
1. All linear dimensions are in millimeters.
2. The suggested land pattern dimensions have been provided for reference only. A more robust pattern may be desired for wave soldering.

TO-92 Mechanical and Layout Data

Package Outline Data

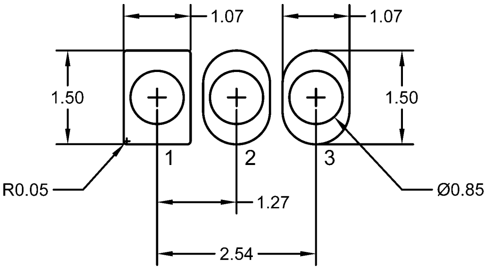






1. All linear dimensions are in millimeters.
2. Package weight approximately 0.19 grams
3. Molded plastic case UL 94V-0 rated
4. Bulk product is shipped in standard ESD shipping material
5. Refer to JEDEC standards for additional information.

Suggested Through-Hole Layout



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.