

## 2N5019 P-Channel JFET

### Features

- InterFET [P0099F Geometry](#)
- Typical Noise: 8 nV/√Hz
- Fast Switching
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

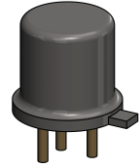
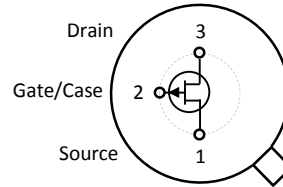
### Applications

- Choppers
- Commutators
- Analog Switches

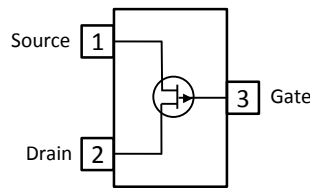
### Description

The 30V InterFET 2N5019 JFET is targeted for choppers and high speed commutator designs. The on resistance is typically less than 100 Ohms at room temperatures. The TO-18 package is hermetically sealed and suitable for military applications.

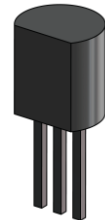
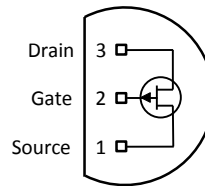
TO-18 Bottom View



SOT23 Top View



TO-92 Bottom View



### Product Summary

Parameters	2N5019 Min	Unit
$BV_{GSS}$ Gate to Source Breakdown Voltage	30	V
$I_{DSS}$ Drain to Source Saturation Current	-5	mA
$V_{GS(off)}$ Gate to Source Cutoff Voltage		V

### Ordering Information Custom Part and Binning Options Available

Part Number	Description	Case	Packaging
2N5019	Through-Hole	TO-18	Bulk
PN5019	Through-Hole	TO-92	Bulk
SMP5019	Surface Mount	SOT23	Bulk
SMP5019TR	7" Tape and Reel: Max 3,000 Pieces 13" Tape and Reel: Max 9,000 Pieces	SOT23	Minimum 1,000 Pieces Tape and Reel
2N5019COT	Chip Orientated Tray (COT Waffle Pack)	COT	400/Waffle Pack
2N5019CFT	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 (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

Parameters	Value	Unit
$V_{RGS}$ Reverse Gate Source and Gate Drain Voltage	30	V
$I_{FG}$ Continuous Forward Gate Current	50	mA
$P_D$ Continuous Device Power Dissipation	300	mW
$P$ Power Derating	3	mW/ $^\circ\text{C}$
$T_J$ Operating Junction Temperature	-55 to 125	$^\circ\text{C}$
$T_{STG}$ Storage Temperature	-65 to 150	$^\circ\text{C}$

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

Parameters	Conditions	2N5019		Unit
		Min	Max	
$V_{(BR)GSS}$ Gate to Source Breakdown Voltage	$I_G = 1\mu\text{A}, V_{DS} = 0\text{V}$	30		V
$V_{GS(OFF)}$ Gate to Source Cutoff Voltage	$V_{DS} = -15\text{V}, I_D = -1\mu\text{A}$		5	V
$V_{DS(ON)}$ Drain to Source ON Voltage	$V_{GS} = 0\text{V}, I_D = -3$		-0.5	V
$I_{GSS}$ Gate to Source Reverse Current	$V_{GS} = 15\text{V}, V_{DS} = 0\text{V}$		2	nA
$I_{DSS}$ Drain to Source Saturation Current	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$ (Pulsed)	-5		mA
$I_{D(OFF)}$ Drain Cutoff Current	$V_{DS} = -15\text{V}, V_{GS} = 7, T_A = 150^\circ\text{C}$		-10 -10	nA $\mu\text{A}$
$I_{DGO}$ Drain Reverse Current	$V_{DS} = -15\text{V}, I_S = 0\text{A}, T_A = 150^\circ\text{C}$		-2 -3	nA $\mu\text{A}$

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

Parameters	Conditions	2N5019		Unit
		Min	Max	
$R_{DS(ON)}$ Drain to Source ON Resistance	$V_{GS} = 0\text{V}, I_D = 0\text{A}, f = 1\text{kHz}$		150	$\Omega$
$C_{iss}$ Input Capacitance	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		45	pF
$C_{rss}$ Reverse Transfer Capacitance	$V_{DS} = 0\text{V}, V_{GS} = 7, f = 1\text{MHz}$		10	pF V
$t_d$ Turn-On Delay Time	$V_{DD} = -6\text{V}, V_{GS(ON)} = 0\text{V}$ $I_{D(ON)} = -3\text{mA}, V_{GS(OFF)} = 7\text{V}$		15	ns
$t_r$ Rise Time	$V_{DD} = -6\text{V}, V_{GS(ON)} = 0\text{V}$ $I_{D(ON)} = -3\text{mA}, V_{GS(OFF)} = 7\text{V}$		75	ns
$t_f$ Fall Time	$V_{DD} = -6\text{V}, V_{GS(ON)} = 0\text{V}$ $I_{D(ON)} = -3\text{mA}, V_{GS(OFF)} = 7\text{V}$		100	ns
$t_{d(off)}$ Turn-Off Delay Time	$V_{DD} = -6\text{V}, V_{GS(ON)} = 0\text{V}$ $I_{D(ON)} = -3\text{mA}, V_{GS(OFF)} = 7\text{V}$		25	ns

## 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.

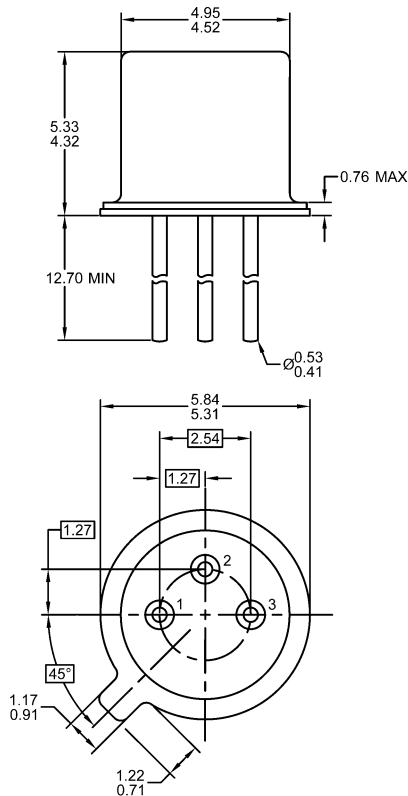
### Suggested Pad Layout



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-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.

### 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.