2N5545, 2N5546, 2N5547

Monolithic Dual N Channel JFET

Rev. V1

Features

- Available in JAN, JANTX and JANTXV per MIL-PRF-19500/430
- Monolithic Design
- Low Offset/Drift Voltage
- Low Noise, Low Gate Leakage
- Ideal for Hi-Rel High Speed, Temp-Compensated, Single-Ended Input Amps
- High-Speed Comparators
- TO-71 package

Electrical Characteristics (T_A = 25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Reverse Gate Current	V_{GS} = -50 V dc; V_{DS} = 0	I_{GSS1}	µA dc	—	-1.0
Reverse Gate Current	V_{GS} = -30 V dc; V_{DS} = 0	I_{GSS2}	nA dc	—	-0.1
Drain Current	V_{DS} = 15 V dc; V_{GS} = 0	I_{DSS}	mA dc	0.5	8.0
Gate Current	V_{DG} = 15 V dc; I_D = 200 µA dc	I_G	pA dc	—	-50
Gate Source Cutoff Voltage	V_{DS} = 15 V dc; I_D = 0.5 nA dc	$V_{GS(off)}$	V dc	-0.5	-4.5
Gate-Source Voltage Differential	V_{DG} = 15 V dc; I_D = 50 µA dc 2N5545 2N5546 2N5547	$\lvert V_{GS1}-V_{GS2}\rvert$ [1]	mV dc	—	 5 10 15
Gate-Source Voltage Differential	V_{DG} = 15 V dc; I_D = 200 µA dc; 2N5545 2N5546 2N5547	$\lvert V_{GS1}-V_{GS2}\rvert$ [2]	mV dc	—	 5 10 15
Gate-Source Voltage Differential Change With Temperature	V_{DG} = 15 V dc; I_D = 200 µA dc; $T_{A(1)}$ = +25°C; $T_{A(2)}$ = -55°C 2N5545 2N5546 2N5547	$\lvert\Delta V_{GS1}-V_{GS2}\rvert_{\Delta T_A}$	mV dc	—	 .8 1.6 3.2

Electrical Characteristics (T_A = 25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Gate-Source Voltage Differential Change With Temperature	V_{DG} = 15 V dc; I_D = 200 µA dc; $T_{A(1)}$ = +25°C; $T_{A(2)}$ = +125°C 2N5545 2N5546 2N5547	$\lvert\Delta V_{GS1}\text{-}V_{GS2)\Delta T_A}\rvert$	mV dc	— 	1 2 4
Zero-Gate-Voltage Drain Current Ratio	V_{DS} = 15 V dc; V_{GS} = 0; 2N5545 2N5546 2N5547	$\frac{I_{DSS1}}{I_{DSS2}}$		 0.95 0.90 0.90	 1.05 1.10 1.10
Small-Signal Common-Source Short-Circuit Forward Transfer Admittance Ratio	V_{DG} = 15 V dc; I_D = 200 µA dc; f = 1 kHz	$\frac{\lvert y_{fs}\rvert^1}{\lvert y_{fs}\rvert^2}$		0.97 0.95 0.90	1.03 1.05 1.10
Small-Signal Common-Source Short-Circuit Output Admittance Differential	V_{DS} = 15 V dc; V_{GS} = 0; f = 1 kHz 2N5545 2N5546 2N5547	$\lvert\lvert y_{os}\rvert^1\text{-}\lvert y_{os}\rvert^{2\rvert}$	µmho	 	1 2 3

Electrical Characteristics (T_A = 150°C unless otherwise noted)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Reverse Gate Current	V_{GS} = -30 V dc; V_{DS} = 0	I_{GSS3}	nA dc	—	-150
Gate Current Differential	V_{DG} = 15 V dc; I_D = 200 uA dc; T_A = +125°C	$\lvert I_{G1}\text{-}I_{G2}\rvert$	nA dc	—	5

Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Dynamic Characteristics					
Spot Noise Figure (2N5545, 2N5546 only)	V_{DS} = 15 V dc; I_D = 200 µA dc; f = 10 Hz; R_G = 1 MΩ; Noise Bandwidth = 5 Hz 2N5545 2N5546	NF	dB	—	 3.5 5.0
Small-Signal, Common-Source Short-Circuit Forward Transfer Admittance	V_{DS} = 15 V dc; V_{GS} = 0; f = 100kHz ≤ f≤1 MHz	$\lvert y_{fs} \rvert$	mmho	1.5	6.0
Small-Signal, Common-Source Short-Circuit Reverse Transfer Capacitance	V_{DS} = 15 V dc; V_{GS} = 0 V dc; f = 100kHz ≤ f≤1 MHz	C_{rss}	pF	—	2
Small-Signal, Common-Source Short-Circuit Input Capacitance	V_{DS} = 15 V dc; V_{GS} = 0 V dc; f = 100kHz ≤ f≤1 MHz	C_{iss}	pF	—	6
Small-Signal, Common-Source Short-Circuit Output Admittance	V_{DS} = 15 V dc; V_{GS} = 0 V; f = 100kHz ≤ f≤1 MHz	$\lvert y_{os} \rvert$	µmho	—	25
Equivalent Input Noise Voltage	V_{DS} = 15 V dc; I_D = 200 µA dc: Noise bandwidth = 5 Hz 2N5545 2N5546	V_n	$nV\sqrt{Hz}$		 180 200
Magnitude of Small-Signal, Common-Source, Short-Circuit Forward Transfer Admittance	V_{DS} = 15 V dc; V_{GS} = 0; F = 1 kHz T_A = -65°C	$\lvert y_{fs} \rvert$	mmho		10.0

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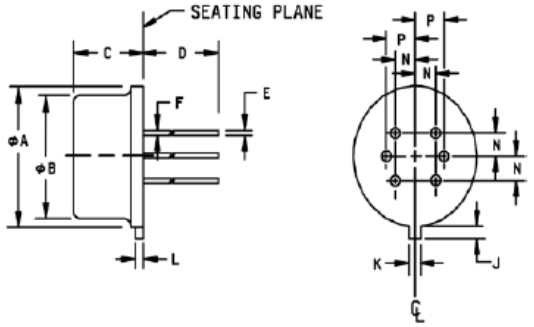
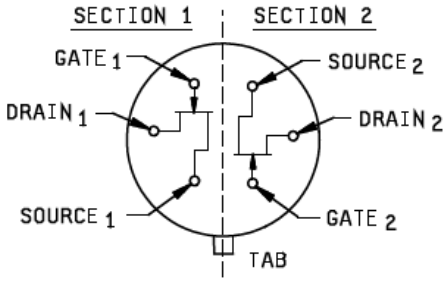
Absolute Maximum Ratings (25°C unless otherwise specified)

Ratings	Symbol	Value
Voltage Drain-Gate Breakdown	V_{DG}	50 V dc
Voltage Gate-Source Breakdown	V_{GS}	-50 V dc
Gate Current	I_G	30 mA dc
Maximum Power Dissipation @ T_A = +25°C One section Both sections	P_T (1)	 250 mW 400 mW
Storage Temperature Range	T_{STG}	-65°C to +200°C

(1) Derate linearly 1.6 mW/°C for T_A > +25°C one section, 2.67 mW/°C both sections

Outline Drawing TO-71





CONNECTION DIAGRAM

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
φA	.209	.230	5.31	5.84	
φB	.178	.195	4.52	4.95	
C	.170	.210	4.32	5.33	
D	.500	.750	12.70	19.05	
E		.021		0.53	3
F	.016	.019	0.41	0.48	4
J	.028	.048	0.71	1.22	7
K	.036	.046	0.91	1.17	
L		.020		0.51	
N	.0146 Nom.		.037 Nom.		5
P	.0354 Nom.		.90 Nom.		5

NOTES:
1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Measured in the zone beyond .250 inch (6.35 mm) from the seating plane.
4. Measured in the zone from .50 inch (1.27 mm) to .250 inch (6.35 mm) from the seating plane.
5. When measured in a gauging plane .054 +.001, -.000 inch (1.37 -0.03, -0.00 mm) below the seating plane of the transistor, maximum diameter leads shall be within .007 inch (0.18 mm) of their true location relative to a maximum width tab. Smaller diameter leads shall fall within the outline of the maximum diameter lead tolerance.
6. All leads electrically insulated from case and each section electrically isolated from the other.
7. Measured from the maximum diameter of the actual device.

FIGURE 1. Physical dimensions (similar to TO-71).