



P-Channel JFETs

2N5114JAN/JANTX/JANTXV
2N5115JAN/JANTX/JANTXV
2N5116JAN/JANTX/JANTXV

Table with 5 columns: Part Number, VGS(off) (V), rDS(on) Max (Ω), ID(off) Typ (pA), tON Max (ns). Rows include 2N5114, 2N5115, and 2N5116.

FEATURES

- Low On-Resistance: 2N5114 <75 Ω
• Fast Switching—tON: 16 ns
• High Off-Isolation—ID(off): -10 pA
• Low Capacitance: 6 pF
• Low Insertion Loss

BENEFITS

- Low Error Voltage
• High-Speed Analog Circuit Performance
• Negligible "Off-Error," Excellent Accuracy
• Good Frequency Response
• Eliminates Additional Buffering

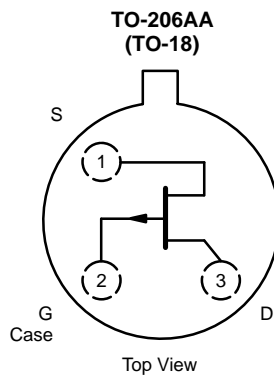
APPLICATIONS

- Analog Switches
• Choppers
• Sample-and-Hold
• Normally "On" Switches
• Current Limiters

DESCRIPTION

The 2N5114JAN/JANTX/JANTXV series consists of p-channel JFET analog switches designed to provide low on-resistance, good off-isolation, and fast switching. These

JFETs are optimized for use in complementary switching applications with the Vishay Siliconix 2N4856A series.



ABSOLUTE MAXIMUM RATINGS

Gate-Drain Voltage . . . . . 30 V
Gate-Source Voltage . . . . . 30 V
Gate Current . . . . . -50 mA
Storage Temperature . . . . . -65 to 200°C
Operating Junction Temperature . . . . . -55 to 200°C

Lead Temperature (1/16" from case for 10 sec.) . . . . . 300°C
Power Dissipationa . . . . . 500 mW

Notes
a. Derate 3 mW/°C above 25°C

SPECIFICATIONS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)												
Parameter	Symbol	Test Conditions	Typ <sup>a</sup>	Limits						Unit		
				2N5114		2N5115		2N5116				
				Min	Max	Min	Max	Min	Max			
<b>Static</b>												
Gate-Source Breakdown Voltage	V <sub>(BR)GSS</sub>	I <sub>G</sub> = 1 μA, V <sub>DS</sub> = 0 V	45	30		30		30		V		
Gate-Source Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> = -15 V, I <sub>D</sub> = -1 nA		5	10	3	6	1	4			
Saturation Drain Current <sup>b</sup>	I <sub>DSS</sub>	V <sub>GS</sub> = 0 V		V <sub>DS</sub> = -18 V								
				V <sub>DS</sub> = -15 V			-15	-60	-5	-25	mA	
Gate Reverse Current	I <sub>GSS</sub>	V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0 V	5		500		500		500	pA		
			0.01		1		1		1		μA	
Gate Operating Current <sup>c</sup>	I <sub>G</sub>	V <sub>DG</sub> = -15 V, I <sub>D</sub> = -1 mA	-5									
Drain Cutoff Current	I <sub>D(off)</sub>	V <sub>DS</sub> = -15 V		V <sub>GS</sub> = 12 V	-10		-500			pA		
				V <sub>GS</sub> = 7 V	-10			-500				
				V <sub>GS</sub> = 5 V	-10					-500		
		V <sub>DS</sub> = -15 V T <sub>A</sub> = 150 °C		V <sub>GS</sub> = 12 V	-0.02		-1					μA
				V <sub>GS</sub> = 7 V	-0.02				-1			
				V <sub>GS</sub> = 5 V	-0.02						-1	
Drain-Source On-Voltage	V <sub>DS(on)</sub>	V <sub>GS</sub> = 0 V		I <sub>D</sub> = -15 mA	-1.0		-1.3					
				I <sub>D</sub> = -7 mA	-0.7			-0.8			V	
				I <sub>D</sub> = -3 mA	-0.5					-0.6		
Drain-Source On-Resistance	r <sub>DS(on)</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = -1 mA			75		100		150	Ω		
Gate-Source Forward Voltage	V <sub>GS(F)</sub>	I <sub>G</sub> = -1 mA, V <sub>DS</sub> = 0 V	-0.7		-1		-1		-1	V		
<b>Dynamic</b>												
Drain-Source On-Resistance	r <sub>ds(on)</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 0 mA, f = 1 kHz			75		100		175	Ω		
Common-Source Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15 V, V <sub>GS</sub> = 0 V f = 1 MHz	20		25		25		27	pF		
Common-Source Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> = 0 V f = 1 MHz		V <sub>GS</sub> = 12 V	5		7					
				V <sub>GS</sub> = 7 V	6			7				
				V <sub>GS</sub> = 5 V	6					7		
<b>Switching</b>												
Turn-On Time	t <sub>d(on)</sub>	See Switching Circuit			6		10		25	ns		
	t <sub>r</sub>				10		20		35			
Turn-Off Time	t <sub>d(off)</sub>				6		8		20			
	t <sub>f</sub>				15		30		60			

**Notes**

- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.
- c. This parameter not registered with JEDEC.

PSCIA

SWITCHING TIME TEST CIRCUIT			
	2N5114	2N5115	2N5116
$V_{DD}$	-10 V	-6 V	-6 V
$V_{GG}$	20 V	12 V	8 V
$R_L^*$	430 $\Omega$	910 $\Omega$	2000 $\Omega$
$R_G^*$	100 $\Omega$	220 $\Omega$	390 $\Omega$
$I_{D(on)}$	-15 mA	-7 mA	-3 mA
$V_{GS(H)}$	0 V	0 V	0 V
$V_{GS(L)}$	-11 V	-7 V	-5 V

\*Non-inductive

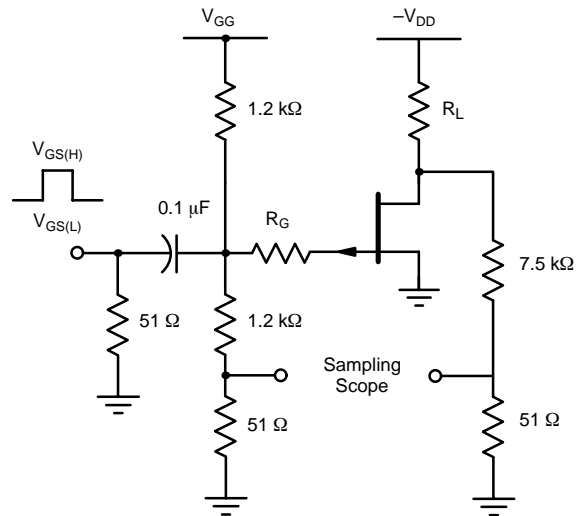
### INPUT PULSE

Rise Time < 1 ns  
 Fall Time < 1 ns  
 Pulse Width 100 ns  
 PRF 1 MHz

### SAMPLING SCOPE

Rise Time 0.4 ns  
 Input Resistance 10 M $\Omega$   
 Input Capacitance 1.5 pF

See Typical Characteristics curves for changes.





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