



2N5114JAN/JANTX/JANTXV Series

Vishay Siliconix

P-Channel JFETs

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

PRODUCT SUMMARY				
Part Number	V _{GS(off)} (V)	r _{DS(on)} Max (Ω)	I _{D(off)} Typ (pA)	t _{ON} Max (ns)
2N5114	5 to 10	75	-10	16
2N5115	3 to 6	100	-10	30
2N5116	1 to 4	150	-10	42

FEATURES

- Low On-Resistance: 2N5114 <75 Ω
- Fast Switching—t_{ON}: 16 ns
- High Off-Isolation—I_{D(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

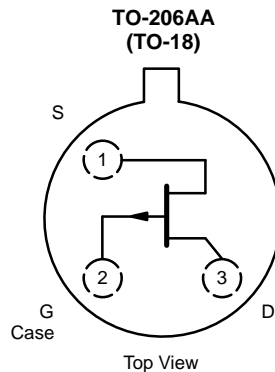
APPLICATIONS

- 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 Dissipation^a 500 mW

Notes
 a. Derate 3 mW/°C above 25°C

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SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)														
Parameter	Symbol	Test Conditions	Typ ^a	Limits						Unit				
				2N5114		2N5115		2N5116						
				Min	Max	Min	Max	Min	Max					
Static														
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = 1 μA, V _{DS} = 0 V	45	30		30		30		V				
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = -15 V, I _D = -1 nA		5	10	3	6	1	4					
Saturation Drain Current ^b	I _{DSS}	V _{GS} = 0 V		V _{DS} = -18 V	-30	-90								
				V _{DS} = -15 V			-15	-60	-5	-25				
Gate Reverse Current	I _{GSS}	V _{GS} = 20 V, V _{DS} = 0 V		T _A = 25 °C	5	500		500		500				
				T _A = 150 °C	0.01	1		1		1				
Gate Operating Current ^c	I _G	V _{DG} = -15 V, I _D = -1 mA	-5											
Drain Cutoff Current	I _{D(off)}	V _{DS} = -15 V		V _{GS} = 12 V	-10	-500								
				V _{GS} = 7 V	-10			-500						
				V _{GS} = 5 V	-10					-500				
		V _{DS} = -15 V T _A = 150 °C		V _{GS} = 12 V	-0.02	-1								
				V _{GS} = 7 V	-0.02			-1						
				V _{GS} = 5 V	-0.02					-1				
Drain-Source On-Voltage	V _{DS(on)}	V _{GS} = 0 V		I _D = -15 mA	-1.0	-1.3								
				I _D = -7 mA	-0.7			-0.8						
				I _D = -3 mA	-0.5					-0.6				
Drain-Source On-Resistance	r _{DS(on)}	V _{GS} = 0 V, I _D = -1 mA			75		100		150	Ω				
Gate-Source Forward Voltage	V _{GS(F)}	I _G = -1 mA, V _{DS} = 0 V	-0.7		-1		-1		-1	V				
Dynamic														
Drain-Source On-Resistance	r _{ds(on)}	V _{GS} = 0 V, I _D = 0 mA, f = 1 kHz			75		100		175	Ω				
Common-Source Input Capacitance	C _{iss}	V _{DS} = -15 V, V _{GS} = 0 V f = 1 MHz	20		25		25		27					
Common-Source Reverse Transfer Capacitance	C _{rss}	V _{DS} = 0 V f = 1 MHz		V _{GS} = 12 V	5	7								
				V _{GS} = 7 V	6			7						
				V _{GS} = 5 V	6					7				
Switching														
Turn-On Time	t _{d(on)}	See Switching Circuit				6		10		25				
	t _r					10		20		35				
Turn-Off Time	t _{d(off)}									6		8		20
	t _f									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



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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 Ω	910 Ω	2000 Ω
R_G^*	100 Ω	220 Ω	390 Ω
$I_{D(on)}$	-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

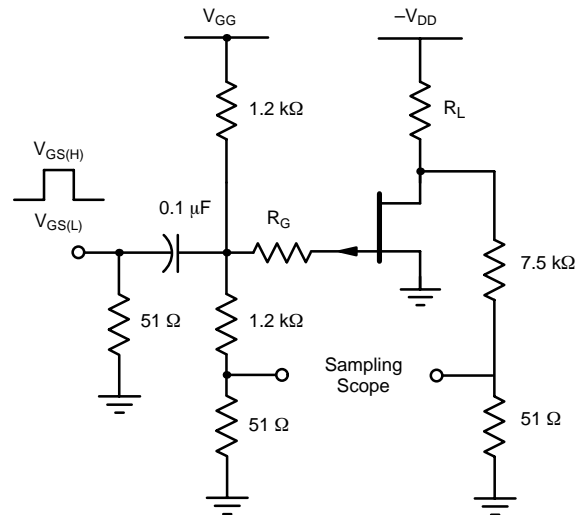
INPUT PULSE

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 Ω
 Input Capacitance 1.5 pF

See Typical Characteristics curves for changes.





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