

## 2N5114 SERIES

### SINGLE P-CHANNEL JFET

#### FEATURES

DIRECT REPLACEMENT FOR SILICONIX 2N5114

LOW ON RESISTANCE 75Ω

LOW CAPACITANCE 6pF

#### ABSOLUTE MAXIMUM RATINGS<sup>1</sup>

@ 25 °C (unless otherwise stated)

#### Maximum Temperatures

Storage Temperature -55 to 200°C

Junction Operating Temperature -55 to 200°C

#### Maximum Power Dissipation

Continuous Power Dissipation 500mW

#### Maximum Currents

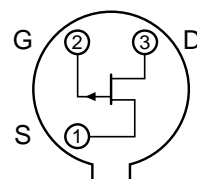
Gate Current -50mA

#### Maximum Voltages

Gate to Drain 30V

Gate to Source 30V

TO-18  
BOTTOM VIEW



#### STATIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC	TYP	2N5114		2N5115		2N5116		UNIT	CONDITIONS
			MIN	MAX	MIN	MAX	MIN	MAX		
BV <sub>GSS</sub>	Gate to Source Breakdown Voltage		30		30		30		V	I <sub>G</sub> = 1μA, V <sub>DS</sub> = 0V
V <sub>GS(off)</sub>	Gate to Source Cutoff Voltage		5	10	3	6	1	4		V <sub>DS</sub> = -15V, I <sub>D</sub> = -1nA
V <sub>GS(F)</sub>	Gate to Source Forward Voltage	-0.7		-1		-1		-1		I <sub>G</sub> = -1mA, V <sub>DS</sub> = 0V
V <sub>DS(on)</sub>	Drain to Source On Voltage	-1.0		-1.3						V <sub>GS</sub> = 0V, I <sub>D</sub> = -15mA
		-0.7				-0.8				V <sub>GS</sub> = 0V, I <sub>D</sub> = -7mA
		-0.5						-0.6		V <sub>GS</sub> = 0V, I <sub>D</sub> = -3mA
I <sub>DSS</sub>	Drain to Source Saturation Current <sup>2</sup>		-30	-90					mA	V <sub>DS</sub> = -18V, V <sub>GS</sub> = 0V
					-15	-60	-5	-25		V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V
I <sub>GSS</sub>	Gate Leakage Current	5		500		500		500	pA	V <sub>GS</sub> = 20V, V <sub>DS</sub> = 0V
I <sub>G</sub>	Gate Operating Current	-5								V <sub>DG</sub> = -15V, I <sub>D</sub> = -1mA
I <sub>D(off)</sub>	Drain Cutoff Current	-10		-500						V <sub>DS</sub> = -15V, V <sub>GS</sub> = 12V
		-10				-500				V <sub>DS</sub> = -15V, V <sub>GS</sub> = 7V
		-10						-500		V <sub>DS</sub> = -15V, V <sub>GS</sub> = 5V
r <sub>DS(on)</sub>	Drain to Source On Resistance			75		100		150	Ω	V <sub>GS</sub> = 0V, I <sub>D</sub> = -1mA

# **DYNAMIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)**

SYM.	CHARACTERISTIC	TYP	2N5114		2N5115		2N5116		UNIT	CONDITIONS
			MIN	MAX	MIN	MAX	MIN	MAX		
$g_{fs}$	Forward Transconductance	4.5							mS	$V_{DS} = -15V, I_D = -1mA$ $f = 1kHz$
$g_{os}$	Output Conductance	20							$\mu S$	
$r_{ds(on)}$	Drain to Source On Resistance			75		100		150	$\Omega$	$V_{GS} = 0V, I_D = 0mA$ $f = 1kHz$
$C_{iss}$	Input Capacitance	20		25		25		25	pF	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1MHz$
$C_{rss}$	Reverse Transfer Capacitance	5		7						$V_{DS} = 0V, V_{GS} = 12V$ $f = 1MHz$
		6				7				$V_{DS} = 0V, V_{GS} = 7V$ $f = 1MHz$
		6						7		$V_{DS} = 0V, V_{GS} = 5V$ $f = 1MHz$
$e_n$	Equivalent Noise Voltage	20							nV/ $\sqrt{Hz}$	$V_{DG} = 10V, I_D = 10mA$ $f = 1 kHz$

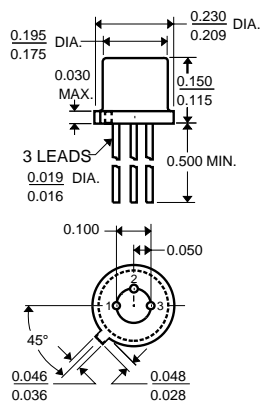
## **SWITCHING CHARACTERISTICS (max)**

SYM.	CHARACTERISTIC	2N5114	2N5115	2N5116	UNITS
$t_{d(on)}$	Turn On Time	6	10	12	ns
$t_r$		10	20	30	
$t_{d(off)}$	Turn Off Time	6	8	10	
$t_f$		15	30	50	

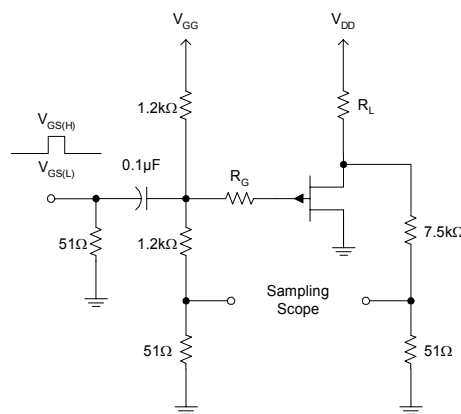
## **SWITCHING CIRCUIT CHARACTERISTICS**

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

## **TO-18** Three Lead



## **SWITCHING TEST CIRCUIT**



## **NOTES**

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse test: PW  $\leq$  300 $\mu s$ , Duty Cycle  $\leq$  3%

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