

2N5114, 2N5115, 2N5116

P-Channel Silicon Junction Field-Effect Transistor

• Analog Switches

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage	- 40 V
Gate Current	50 mA
Continuous Device Power Dissipation	500mW
Power Derating	3 mW/°C
Storage Temperature Range	- 65°C to + 200°C

At 25°C free air temperature:
Static Electrical Characteristics

		2N5114		2N5115		2N5116		Process PJ99	
		Min	Max	Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	30		30		30		V	$I_G = -1\ \mu\text{A}, V_{DS} = \emptyset\text{V}$
Gate Reverse Current	I_{GSS}		500		500		500	pA	$V_{GS} = 20\text{V}, V_{DS} = \emptyset\text{V}$
			1		1		1	μA	$V_{GS} = 20\text{V}, V_{DS} = \emptyset\text{V}$ $T_A = 150^\circ\text{C}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	5	10	3	6	1	4	V	$V_{DS} = -15\text{V}, I_G = -1\ \text{nA}$
Gate Source Forward Voltage	$V_{GS(F)}$		- 1		- 1		- 1	V	$V_{DS} = \emptyset\text{V}, I_G = -1\ \text{mA}$
Drain Saturation Current (Pulsed)	I_{DSS}	- 30	- 90					mA	$V_{GS} = \emptyset\text{V}, V_{DS} = -18\text{V}$
				- 15	- 60	- 5	- 25	mA	$V_{GS} = \emptyset\text{V}, V_{DS} = -15\text{V}$
Drain Cutoff Current	$I_{D(OFF)}$		- 500					pA	$V_{DS} = -15\text{V}, V_{GS} = 12\text{V}$
			- 1					μA	$V_{DS} = -15\text{V}, V_{GS} = 12\text{V}$ $T_A = 150^\circ\text{C}$
					- 500			pA	$V_{DS} = -15\text{V}, V_{GS} = 7\text{V}$
					- 1			μA	$V_{DS} = -15\text{V}, V_{GS} = 7\text{V}$ $T_A = 150^\circ\text{C}$
							- 500	pA	$V_{DS} = -15\text{V}, V_{GS} = 5\text{V}$
							- 1	μA	$V_{DS} = -15\text{V}, V_{GS} = 5\text{V}$ $T_A = 150^\circ\text{C}$
Drain Source ON Voltage	$V_{DS(ON)}$		- 1.3					V	$V_{GS} = \emptyset\text{V}, I_D = -15\ \text{mA}$
					- 0.8			V	$V_{GS} = \emptyset\text{V}, I_D = -7\ \text{mA}$
							- 0.6	V	$V_{GS} = \emptyset\text{V}, I_D = -3\ \text{mA}$
Static Drain Source ON Resistance	$r_{DS(ON)}$		75		100		150	Ω	$V_{GS} = \emptyset\text{V}, I_D = -1\ \text{mA}$

Dynamic Electrical Characteristics

Drain Source ON Resistance	$r_{ds(on)}$		75		100		150	Ω	$V_{GS} = \emptyset\text{V}, I_D = \emptyset\text{A}$	f = 1 kHz
Common Source Input Capacitance	C_{iss}		25		25		27	pF	$V_{DS} = -15\text{V}, V_{GS} = \emptyset\text{V}$	f = 1 MHz
Common Source Reverse Transfer Capacitance	C_{rss}		7					pF	$V_{DS} = \emptyset\text{V}, V_{GS} = 12\text{V}$	f = 1 MHz
					7			pF	$V_{DS} = \emptyset\text{V}, V_{GS} = 7\text{V}$	f = 1 MHz
							7	pF	$V_{DS} = \emptyset\text{V}, V_{GS} = 5\text{V}$	f = 1 MHz

Switching Characteristics

		2N5114		2N5115		2N5116							
Turn ON Delay Time	$t_{d(on)}$		6		10		25	ns	V_{DD}	- 10	- 6	- 6	V
Rise Time	t_r		10		20		35	ns	V_{GG}	20	12	8	V
Turn OFF Delay Time	$t_{d(off)}$		6		8		20	ns	R_L	130	910	2000	Ω
Fall Time	t_f		15		30		60	ns	R_G	100	220	390	Ω
									$I_{D(ON)}$	- 15	- 7	- 3	mA

TO-18 Package

See Section G for Outline Dimensions

Pin Configuration

1 Source 1, 2 Gate & Case, 3 Drain

