

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	$V_{GS} = \emptyset\text{V}$, $I_D = \emptyset\text{A}$	$f = 1\text{kHz}$
Common Source Input Capacitance	C_{iss}		25		25		27	pF	$V_{DS} = -15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}		7					pF	$V_{DS} = \emptyset\text{V}$, $V_{GS} = 12\text{V}$	$f = 1\text{MHz}$
					7			pF	$V_{DS} = \emptyset\text{V}$, $V_{GS} = 7\text{V}$	$f = 1\text{MHz}$
							7	pF	$V_{DS} = \emptyset\text{V}$, $V_{GS} = 5\text{V}$	$f = 1\text{MHz}$

Switching Characteristics

		2N5114	2N5115	2N5116				
Turn ON Delay Time	$t_{d(on)}$		6		10		25	ns
Rise Time	t_r		10		20		35	ns
Turn OFF Delay Time	$t_{d(off)}$		6		8		20	ns
Fall Time	t_f		15		30		60	ns
		V_{DD}	– 10	– 6	– 6			V
		V_{GG}	20	12	8			V
		R_L	130	910	2000			Ω
		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



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