Siliconix incorporated

PN4091 SERIES

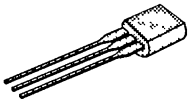
N-Channel JFET

The PN4091 Series is the plastic equivalent of our popular 2N4091 Series. These devices are especially well suited for analog switching applications but function efficiently as high-gain amplifiers, particularly at high-frequency. Our low-cost TO-92 packaging offers affordable performance with flexibility for designers, as these devices can be ordered with a variety of lead forms or tape and reel for automated insertion. (See Section 8.)

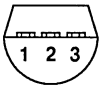
For additional design information please consult the typical performance curves NCB which are located in Section 7.

PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$r_{ds(ON)}$ MAX (Ω)	$I_{D(OFF)}$ MAX (pA)	t_{ON} MAX (ns)
PN4091	–10	30	200	25
PN4092	–7	50	200	35
PN4093	–5	80	200	60

TO-92



BOTTOM VIEW



1 DRAIN
2 SOURCE
3 GATE

SIMILAR PRODUCTS

- SOT-23, See SST4091 Series
- TO-18, See 2N4091 Series
- Duals, See 2N5564 Series
- Chips, Order PN409XCHP

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMIT	UNITS
Gate-Drain Voltage	V_{GD}	–40	V
Gate-Source Voltage	V_{GS}	–40	
Gate Current	I_G	10	mA
Power Dissipation	P_D	360	mW
Power Derating		3.27	mW/°C
Operating Junction Temperature	T_J	–55 to 135	°C
Storage Temperature	T_{stg}	–55 to 150	
Lead Temperature (1/16" from case for 10 seconds)	T_L	300	

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ELECTRICAL CHARACTERISTICS [1]				LIMITS							
					PN4091		PN4092		PN4093		
PARAMETER	SYMBOL	TEST CONDITIONS		TYP[2]	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
STATIC											
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G = -1 µA, V_{DS} = 0 V		-55	-40		-40		-40		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	V_{DS} = 20 V, I_D = 1 nA			-5	-10	-2	-7	-1	-5	
Saturation Drain Current[3]	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			30		15		8		mA
Gate Reverse Current	I_{GSS}	V_{GS} = -15 V, V_{DS} = 0 V		-5		200		200		200	pA
			T_A = 125°C	-3		100		100		100	nA
Gate Operating Current	I_G	V_{DG} = 15 V, I_D = 10 mA		-5							pA
Drain Cutoff Current	$I_{D(OFF)}$	V_{DS} = 20 V	V_{GS} = -6 V	5						200	
			V_{GS} = -8 V	5				200			
			V_{GS} = -12 V	5		200					
		V_{DS} = 20 V, T_A = 125°C	V_{GS} = -6 V	3						100	nA
			V_{GS} = -8 V	3				100			
			V_{GS} = -12 V	3		100					
Drain-Source On-Voltage	$V_{DS(ON)}$	V_{GS} = 0 V	I_D = 2.5 mA	0.15						0.2	V
			I_D = 4 mA	0.15				0.2			
			I_D = 6.6 mA	0.15		0.2					
Drain-Source On-Resistance	$r_{DS(ON)}$	V_{GS} = 0 V, I_D = 1 mA				30		50		80	Ω
Gate-Source Forward Voltage	$V_{GS(F)}$	I_G = 1 mA, V_{DS} = 0 V		0.7							V
DYNAMIC											
Common-Source Forward Transconductance	g_{fs}	V_{DG} = 20 V, I_D = 1 mA, f = 1 kHz		6							mS
Common-Source Output Conductance	g_{os}			25							µS
Drain-Source On-Resistance	$r_{ds(ON)}$	V_{GS} = 0 V, I_D = 0 mA, f = 1 kHz				30		50		80	Ω
Common-Source Input Capacitance	C_{iss}	V_{DS} = 20 V, V_{GS} = 0 V, f = 1 MHz		13		16		16		16	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	V_{DS} = 0 V, V_{GS} = -20 V, f = 1 MHz		3.5		5		5		5	
Equivalent Input Noise Voltage	$\bar{e}_n$	V_{DG} = 10 V, I_D = 1 mA, f = 1 kHz		4							$nV/\sqrt{Hz}$
SWITCHING											
Turn-on Time	$t_{d(ON)}$	V_{DD} = 3 V, $V_{GS(ON)}$ = 0 V		2		15		15		20	ns
	t_r	P/N $I_{D(ON)}$ $V_{GS(OFF)}$ R_L		2		10		20		40	
Turn-off Time	t_{OFF}	PN4091 6.6 mA -12 V 425 Ω PN4092 4 mA -8 V 700 Ω PN4093 2.5 mA -6 V 1120 Ω		20		40		60		80	

NOTES: 1. T_A = 25 °C unless otherwise noted.
2. For design aid only, not subject to production testing.
3. Pulse test; PW = 300 µS, duty cycle ≤ 3%.