J108 SERIES
N-Channel JFETs

The J108 Series is designed with high-performance analog switching applications in mind. It features low on-resistance, good off-isolation, and fast switching. The TO-92 package affords low-cost and a wide range of tape and reel options. (See Section 7.)

PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$r_{DS(ON)}$ MAX (Ω)	$I_{D(OFF)}$ TYP (pA)	t_{ON} TYP (ns)
J108	-10	8	20	4
J109	-6	12	20	4
J110	-4	18	20	4

For further design information please consult the typical performance curves NIP.

SIMILAR PRODUCTS

- SOT-23, See SST108 Series
- TO-52, See 2N5432 Series
- Chips, See NIP Series Die

TO-92 (TO-226AA) BOTTOM VIEW

1 DRAIN
2 SOURCE
3 GATE

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Gate-Drain Voltage	V_{GD}	-25	V
Gate-Source Voltage	V_{GS}	-25	
Gate Current	I_G	50	mA
Power Dissipation	P_D	360	mW
Power Derating		3.27	mW/°C
Operating Junction Temperature Range	T_J	-55 to 135	°C
Storage Temperature Range	T_{stg}	-55 to 150	
Lead Temperature ($^1/_{16}$" from case for 10 sec.)	T_L	300	

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J108 SERIES

Siliconix incorporated

SPECIFICATIONS[a]			LIMITS							
				J108		J109		J110		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[b]	MIN	MAX	MIN	MAX	MIN	MAX	UNIT
STATIC										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1\ \mu A$, $V_{DS} = 0\ V$	-32	-25		-25		-25		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	$V_{DS} = 5\ V$, $I_D = 1\ \mu A$		-3	-10	-2	-6	-0.5	-4	
Saturation Drain Current[c]	I_{DSS}	$V_{DS} = 15\ V$, $V_{GS} = 0\ V$		80		40		10		mA
Gate Reverse Current	I_{GSS}	$V_{GS} = -15\ V$, $V_{DS} = 0\ V$	-0.01		-3		-3		-3	nA
		$T_A = 125°C$	-5							
Gate Operating Current	I_G	$V_{DG} = 10\ V$, $I_D = 10\ mA$	-0.01							
Drain Cutoff Current	$I_{D(OFF)}$	$V_{DS} = 5\ V$, $V_{GS} = -10\ V$	0.02		3		3		3	
		$T_A = 125°C$	10							
Drain-Source On-Resistance	$r_{DS(ON)}$	$V_{GS} = 0\ V$, $V_{DS} \leq 0.1\ V$			8		12		18	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}	$V_{DG} = 5\ V$, $I_D = 10\ mA$, $f = 1\ kHz$	17							mS
Common-Source Output Conductance	g_{os}		600							µS
Drain-Source On-Resistance	$r_{ds(ON)}$	$V_{GS} = 0\ V$, $I_D = 0\ V$, $f = 1\ kHz$			8		12		18	Ω
Common-Source Input Capacitance	C_{iss}	$V_{DS} = 0\ V$, $V_{GS} = 0\ V$, $f = 1\ MHz$	60		85		85		85	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 0\ V$, $V_{GS} = -10\ V$, $f = 1\ MHz$	11		15		15		15	
Equivalent Input Noise Voltage	$\overline{e}_n$	$V_{DG} = 5\ V$, $I_D = 10\ mA$, $f = 1\ kHz$	3.5							$nV/\sqrt{Hz}$
SWITCHING										
Turn-On Time	$t_{d(ON)}$	$V_{DD} = 1.5\ V$, $V_{GS(ON)} = 0\ V$	3							ns
	t_r	P/N $I_{D(ON)}$ $V_{GS(OFF)}$ R_L	1							
Turn-Off Time	$t_{d(OFF)}$	J108 10mA -12V 150Ω J109 10mA -7V 150Ω J110 10mA -5V 150Ω	4							
	t_f		18							

NOTES:
a. $T_A = 25°C$ unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test; PW = 300 µS, duty cycle $\leq$ 3%.