

U290 SERIES

N-Channel JFET

The U290 Series is a high-performance JFET analog switch which offers ultra low on-resistance and fast switching. It features the lowest available on-resistance of any JFET available in the industry today. It is packaged in a hermetically sealed TO-52 can which makes it suitable for military applications. (See Section 1 for details.)

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

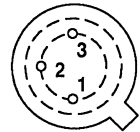
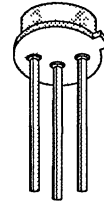
PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$r_{ds(ON)}$ MAX (Ω)	$I_{D(OFF)}$ MAX (nA)	t_{ON} MAX (ns)
U290	-10	3	1	35
U291	-4.5	7	1	35

SIMILAR PRODUCTS

- TO-92, See J105 Series
- Chips, Order U29XCHP

TO-206AC (TO-52)

BOTTOM VIEW



- 1 SOURCE
2 DRAIN
3 GATE

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMIT	UNITS
Gate-Drain Voltage	V_{GD}	-30	V
Gate-Source Voltage	V_{GS}	-30	
Gate Current	I_G	100	mA
Power Dissipation	P_D	500	mW
Power Derating		4.0	mW/ $^\circ\text{C}$
Operating Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to 200	
Lead Temperature (1/16" from case for 10 seconds)	T_L	300	

ELECTRICAL CHARACTERISTICS ¹						LIMITS				
PARAMETER	SYMBOL	TEST CONDITIONS	TYP ²	U290		U291		UNIT		
				MIN	MAX	MIN	MAX			
STATIC										
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = -1 μA, V _{DS} = 0 V	-35	-30		-30		V		
Gate-Source Cutoff Voltage	V _{GS(OFF)}	V _{DS} = 15 V, I _D = 3 nA		-4	-10	-1.5	-4.5			
Saturation Drain Current ³	I _{DSS}	V _{DS} = 10 V, V _{GS} = 0 V		500		200		mA		
Gate Reverse Current	I _{GSS}	V _{GS} = -15 V	-0.02		-1		-1	nA		
		V _{DS} = 0 V T _A = 150°C	-0.04		-1		-1	μA		
Gate Operating Current	I _G	V _{DG} = 10 V, I _D = 25 mA	-0.01					nA		
Drain Cutoff Current	I _{D(OFF)}	V _{DS} = 5 V, V _{GS} = -10 V	0.01		1		1			
		V _{DS} = 5 V, V _{GS} = -10 V T _A = 150°C	0.02		1		1	μA		
Drain-Source On-Voltage	V _{DS(ON)}	V _{GS} = 0 V, I _D = 10 mA			30		70	mV		
Drain-Source On-Resistance	r _{DS(ON)}				3		7	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} = 10 V, I _D = 25 mA f = 1 kHz	55					mS		
Common-Source Output Conductance	g _{os}		5					μS		
Drain-Source On-Resistance	r _{ds(ON)}	V _{GS} = 0 V, I _D = 0 mA f = 1 kHz			3		7	Ω		
Common-Source Input Capacitance	C _{iss}	V _{DS} = 0 V, V _{GS} = 0 V f = 1 MHz	120		160		160	pF		
Common-Source Reverse Transfer Capacitance	C _{rss}	V _{DS} = 0 V, V _{GS} = -15 V f = 1 MHz	20		30		30			
Equivalent Input Noise Voltage	e _n	V _{DG} = 10 V, I _D = 25 mA f = 1 kHz	3					nV/√Hz		
SWITCHING										
Turn-on Time	t _{d(ON)}	V _{DD} = 1.5 V, V _{GS(ON)} = 0 V	6		15		15	ns		
	t _r		8		20		20			
Turn-off Time	t _{d(OFF)}	P/N	I _{D(ON)}	V _{GS(OFF)}	R _L					
	t _f	U290 30 mA U291 30 mA	-12 V -7 V	50 Ω 50 Ω		15 20	15 20			

NOTES: 1. $T_A = 25^\circ C$ unless otherwise noted.
 2. For design aid only, not subject to production testing.
 3. Pulse test; $PW = 300 \mu s$, duty cycle $\leq 3\%$.