U1897 SERIES

Siliconix incorporated

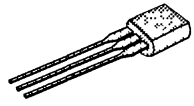
N-Channel JFET

The U1897 Series is a multi-purpose n-channel JFET designed to economically enhance circuit performance. 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.)

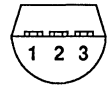
For additional design information please consult the typical performance curves NCB which are located in Section 7.

PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$r_{ds(ON)}$ MAX (Ω)	$I_{D(OFF)}$ MAX (pA)	t_{ON} MAX (ns)
U1897	–10	30	200	25
U1898	–7	50	200	35
U1899	–5	80	200	60

TO-92



BOTTOM VIEW



1 DRAIN
2 SOURCE
3 GATE

SIMILAR PRODUCTS

- TO-18, See 2N4091 Series
- SOT-23, See SST4091 Series
- Duals, See 2N5564Series
- Chips, Order U189XCHP

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	

ELECTRICAL CHARACTERISTICS [1]			LIMITS							
				U1897		U1898		U1899		
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	V
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} = -20 V, V_{DS} = 0 V	-5		-400		-400		-400	pA
		T_A = 85°C	-0.2							nA
Gate Operating Current	I_G	V_{DG} = 15 V, I_D = 10 mA	-5							
Drain Cutoff Current	$I_{D(OFF)}$	V_{DS} = 20 V, V_{GS} = -6 V	5						200	pA
		V_{DS} = 20 V, V_{GS} = -8 V	5				200			
		V_{DS} = 20 V, V_{GS} = -12 V	5		200					
		V_{DS} = 20 V, T_A = 85°C, V_{GS} = -6 V	0.2						10	nA
		V_{DS} = 20 V, T_A = 85°C, V_{GS} = -8 V	0.2				10			
		V_{DS} = 20 V, T_A = 85°C, V_{GS} = -12 V	0.2		10					
Drain-Source On-Voltage	$V_{DS(ON)}$	V_{GS} = 0 V, I_D = 2.5 mA	0.15						0.2	V
		V_{GS} = 0 V, I_D = 4 mA	0.15				0.2			
		V_{GS} = 0 V, 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}	V_{DG} = 20 V, I_D = 1 mA, f = 1 kHz	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	14		16		16		16	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	V_{DS} = 20 V, V_{GS} = 0 V, f = 1 MHz	3		3.5		3.5		3.5	pF
Equivalent Input Noise Voltage	$\bar{e}_n$	V_{DG} = 10 V, I_D = 10 mA, f = 1 kHz	3							$nV/\sqrt{Hz}$
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: U1897 6.6 mA -12 V 430 Ω; U1898 4 mA -8 V 700 Ω; U1899 2.5 mA -6 V 1100 Ω	2		10		20		40	ns
Turn-off Time	t_{OFF}		19		40		60		80	ns

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%.

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