Siliconix incorporated

P1086 SERIES

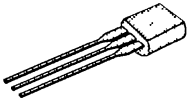
P-Channel JFETs

The P1086 Series of low-cost p-channel analog switches is designed to provide low on-resistance and fast switching. It also works well in conjunction with Siliconix' J111 Series for complementary switching applications. The P1086 Series features a TO-92 package which is available with various lead-forms and/or tape and reel options. (See Section 8.)

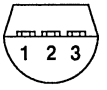
For further design information please consult the typical performance curves PSCIA which are located in Section 7.

PART NUMBER	$V_{GS(OFF)}$ MAX (V)	$r_{ds(ON)}$ MAX (Ω)	$I_{D(OFF)}$ TYP (pA)	t_{ON} TYP (ns)
P1086	10	75	–10	25
P1087	5	150	–10	25

TO-92



BOTTOM VIEW



1 SOURCE
2 DRAIN
3 GATE

SIMILAR PRODUCTS

- TO-18, See 2N5114 Series
- SOT-23, See SST174 Series
- Chips, Order P108XCHP

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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	–50	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	

4

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ELECTRICAL CHARACTERISTICS [1]			LIMITS					
				P1086		P1087		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP [2]	MIN	MAX	MIN	MAX	UNIT
STATIC								
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G = 1 µA, V_{DS} = 0 V	45	30		30		V
Gate-Source Cutoff Voltage	$V_{GS(OFF)}$	V_{DS} = -15 V, I_D = -1 µA			10		5	V
Saturation Drain Current [3]	I_{DSS}	V_{DS} = -20 V, V_{GS} = 0 V		-10		-5		mA
Gate Reverse Current	I_{GSS}	V_{GS} = 15 V, V_{DS} = 0 V	0.01		2		2	nA
		V_{GS} = 15 V, V_{DS} = 0 V, T_A = 85°C	0.6					
Gate Operating Current	I_G	V_{DG} = -15 V, I_D = -1 mA	0.01					nA
Drain Cutoff Current	$I_{D(OFF)}$	V_{DS} = -15 V, V_{GS} = 10 V	-0.01		-10		-10	nA
		V_{DS} = -15 V, V_{GS} = 10 V, T_A = 85°C	-0.001		-0.5		-0.5	µA
Drain-Source On-Resistance	$r_{DS(ON)}$	I_G = -1 mA, V_{GS} = 0 V			75		150	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_{DS} = -15 V, I_D = -1 mA, f = 1 kHz	4.5					mS
Common-Source Output Conductance	g_{os}		20					µS
Drain-Source On-Resistance	$r_{ds(ON)}$	V_{GS} = 0 V, I_D = 0 mA, f = 1 kHz			75		150	Ω
Common-Source Input Capacitance	C_{iss}	V_{DS} = -15 V, V_{GS} = 0 V, f = 1 MHz	20		45		45	pF
Common-Source Reverse Transfer Capacitance	C_{rss}	V_{DS} = 0 V, V_{GS} = 10 V, f = 1 MHz	5		10		10	pF
Equivalent Input Noise Voltage	$\bar{e}_n$	V_{DS} = -10 V, I_D = -1 mA, f = 1 kHz	20					$nV/\sqrt{Hz}$
SWITCHING								
Turn-on Time	$t_{d(ON)}$	$V_{GS(ON)}$ = 0 V	10		15		15	ns
	t_r	P/N: P1086 — V_{DD} = -6 V, $V_{GS(OFF)}$ = 12 V, R_L = 910 Ω; P1087 — V_{DD} = -6 V, $V_{GS(OFF)}$ = 7 V, R_L = 1800 Ω	15		20		75	ns
Turn-off Time	$t_{d(OFF)}$		10		15		25	ns
	t_f		20		50		100	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%.