

P-Channel JFETs

Product Summary

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	30

Features

- Low On-Resistance: P1086 < 75 Ω
- Fast Switching— t_{ON} : 25 ns
- High Off-Isolation— $I_{D(off)}$: -10 pA
- Low Capacitance: 5 pF
- Low Insertion Loss

Benefits

- Low Error Voltage
- High-Speed Analog Circuit Performance
- Negligible “Off-Error,” Excellent Accuracy
- Good Frequency Response
- Eliminates Additional Buffering

Applications

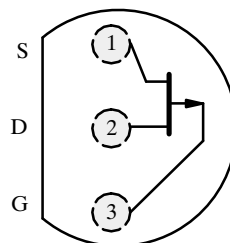
- Analog Switches
- Choppers
- Sample-and-Hold
- Normally “On” Switches
- Current Limiters

Description

The P1086/1087 are p-channel analog switches designed to provide low on-resistance and fast switching. These devices are optimized for use in complementary switching applications with the Siliconix J/SST111 series.

These devices are available in various lead forms and tape-and-reel for automated assembly (see Packaging Information).

TO-226AA
(TO-92)



Top View

Absolute Maximum Ratings

Gate-Drain Voltage	30 V
Gate-Source Voltage	30 V
Gate Current	-50 mA
Storage Temperature	-55 to 150°C
Operating Junction Temperature	-55 to 150°C

Lead Temperature ($1/16$ " from case for 10 sec.)	300°C
Power Dissipation ^a	350 mW

Notes
a. Derate 2.8 mW/°C above 25°C

Specifications^a

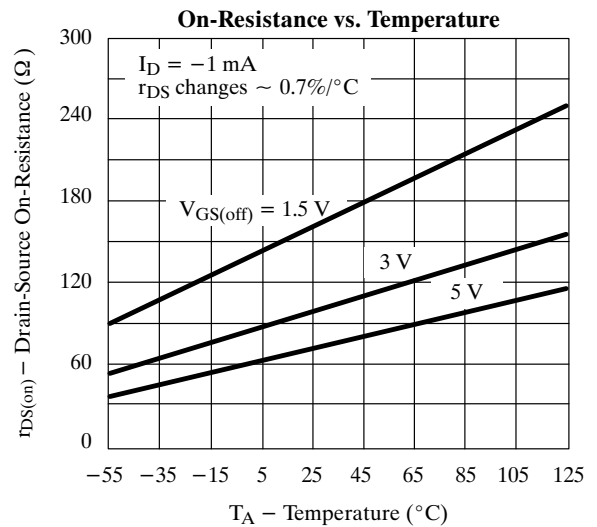
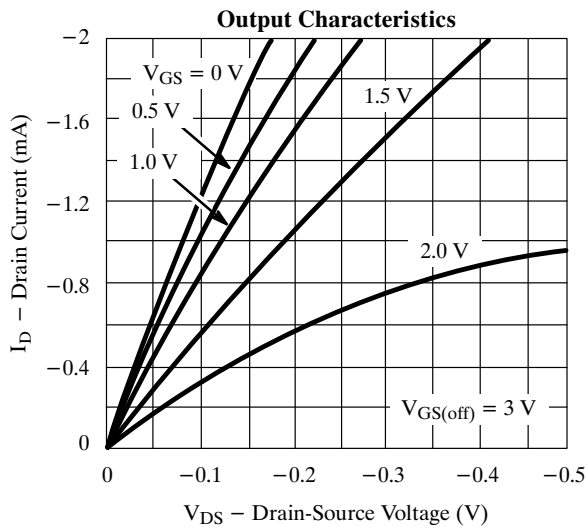
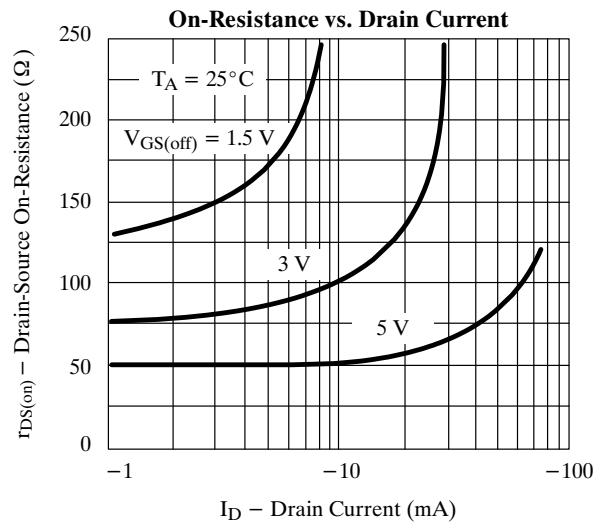
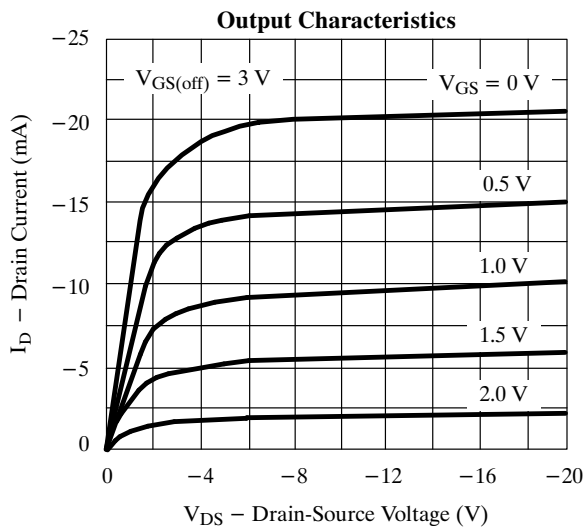
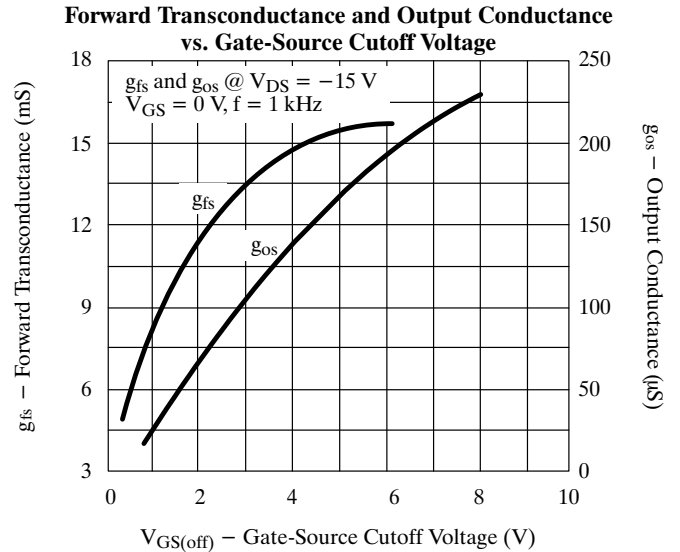
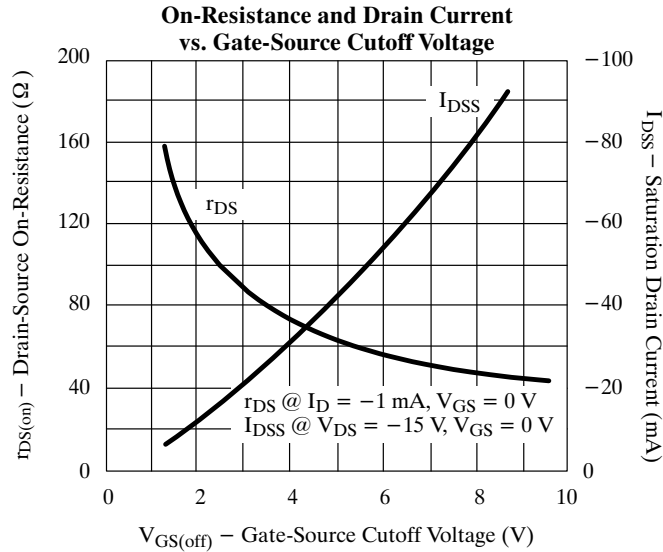
Parameter	Symbol	Test Conditions	Typ ^b	Limits				Unit
				P1086		P1087		
				Min	Max	Min	Max	
Static								
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = 1 \mu A, V_{DS} = 0 V$	45	30		30		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -15 V, I_D = -1 \mu A$			10		5	
Saturation Drain Current ^c	I_{DSS}	$V_{DS} = -20 V, V_{GS} = 0 V$		-10		-5		mA
Gate Reverse Current	I_{GSS}	$V_{GS} = 15 V, V_{DS} = 0 V$ $T_A = 85^\circ C$	0.01		2		2	nA
			0.6					
Gate Operating Current	I_G	$V_{DG} = -15 V, I_D = -1 mA$	0.01					nA
Drain Cutoff Current	$I_{D(off)}$	$V_{DS} = -15 V$	$V_{GS} = 12 V$	-0.01		-10		μA
			$V_{GS} = 7 V$	-0.01			-10	
			$T_A = 85^\circ C$	-0.001		-0.5		
Drain-Source On-Resistance	$r_{DS(on)}$	$V_{GS} = 0 V, I_D = -1 mA$			75		150	Ω
Gate-Source Forward Voltage	$V_{GS(F)}$	$V_{DS} = 0 V, I_G = -1 mA$	-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	
Equivalent Input Noise Voltage	\bar{e}_n	$V_{DG} = -10 V, I_D = -1 mA$ $f = 1 kHz$	20					nV/ √Hz
Switching								
Turn-On Time	$t_{d(on)}$	$V_{GS(L)} = 0 V, V_{GS(H)} = 10 V$ See Switching Circuit	10		15		15	ns
	t_r		15		20		75	
Turn-Off Time	$t_{d(off)}$		10		15		25	
	t_f		20		50		100	

Notes

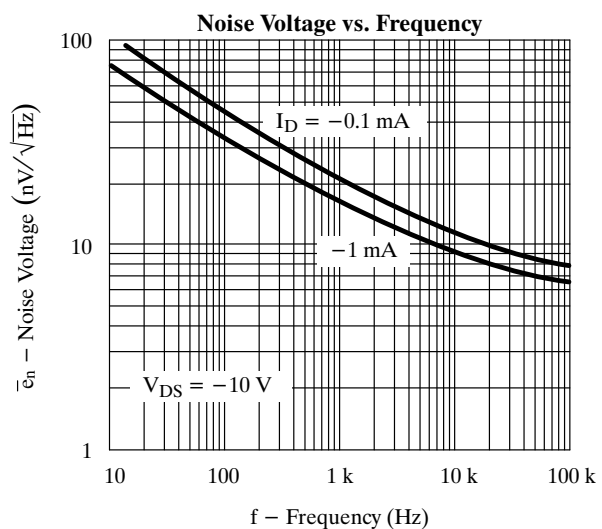
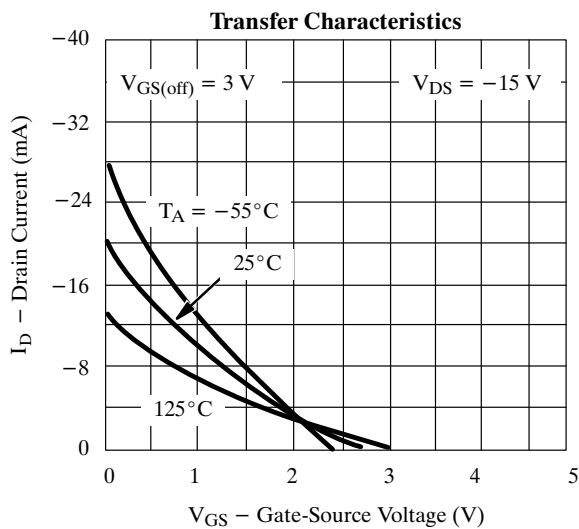
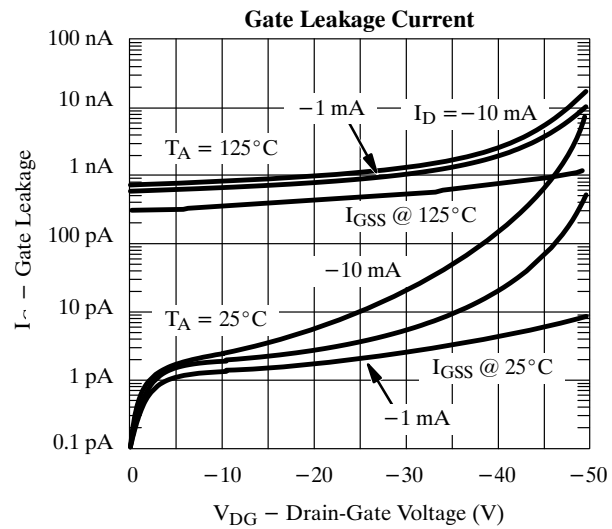
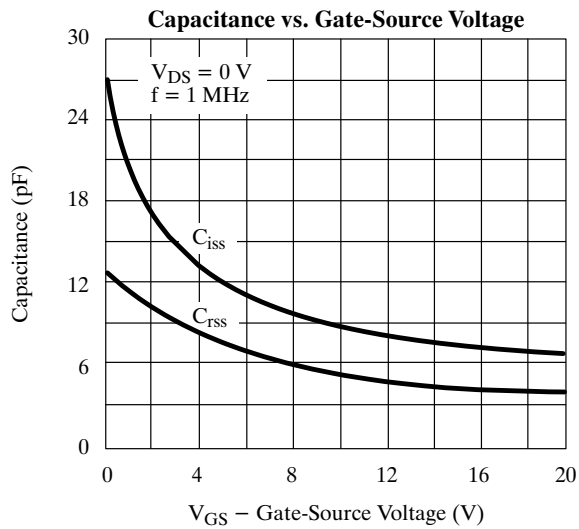
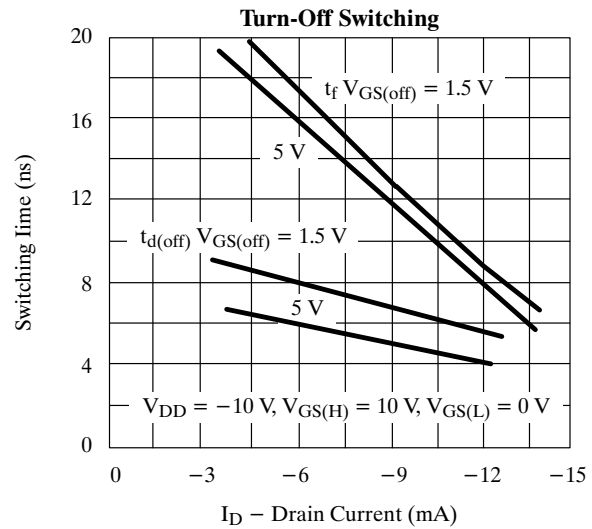
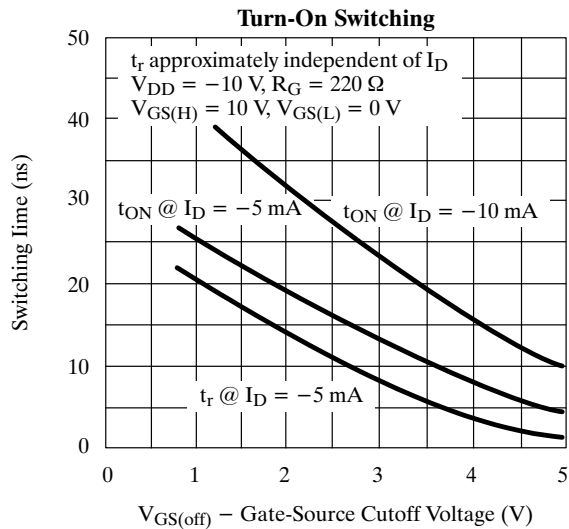
- $T_A = 25^\circ C$ unless otherwise noted.
- Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- Pulse test: $PW \leq 300 \mu s$ duty cycle 3%.

PSCIA

Typical Characteristics



Typical Characteristics (Cont'd)



Switching Time Test Circuit

	P1086	P1087
V _{DD}	-6 V	-6 V
V _{GG}	20 V	12 V
R _L *	910 Ω	1800 Ω
R _G *	100 Ω	220 Ω
I _{D(on)}	-15 mA	-3 mA

*Non-inductive

Input Pulse

Rise Time < 1 ns
 Fall Time < 1 ns
 Pulse Width 100 ns
 PRF 1 MHz

Sampling Scope

Rise Time 0.4 ns
 Input Resistance 10 MΩ
 Input Capacitance 1.5 pF

