



P-Channel JFET

PRODUCT SUMMARY			
V _{GS(off)} Max (V)	r _{DS(on)} Max (Ω)	I _{D(off)} Typ (pA)	t _{ON} Typ (ns)
10	75	-10	25

FEATURES

- Low On-Resistance—<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

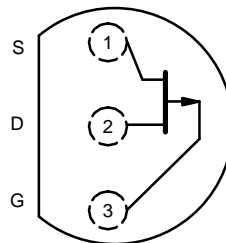
- Analog Switches
- Choppers
- Sample-and-Hold
- Normally “On” Switches
- Current Limiters

DESCRIPTION

The P1086 is a p-channel analog switch designed to provide low on-resistance and fast switching. This device is optimized for use in complementary switching applications with the Siliconix J/SST111 series.

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

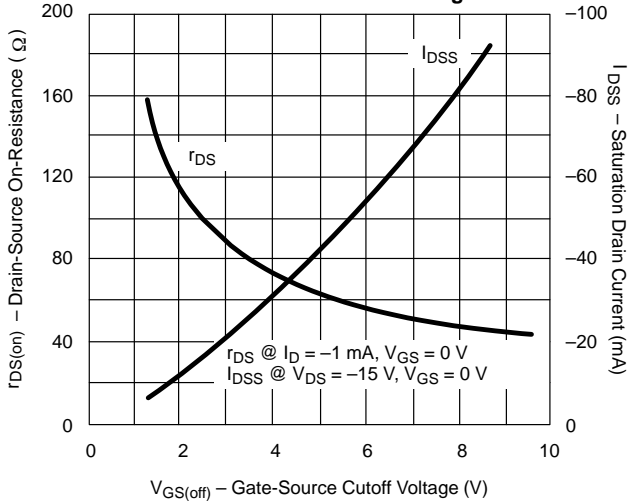
Notes

- $T_A = 25^\circ C$ 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%.

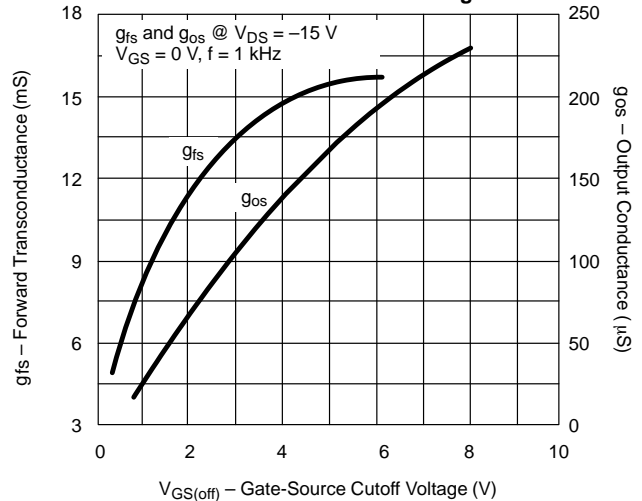
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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

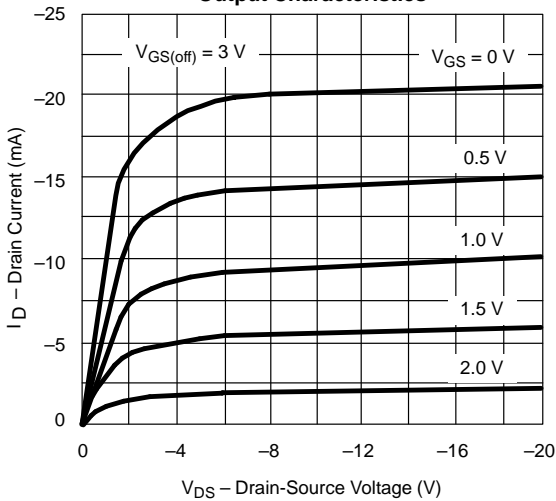
On-Resistance and Drain Current vs. Gate-Source Cutoff Voltage



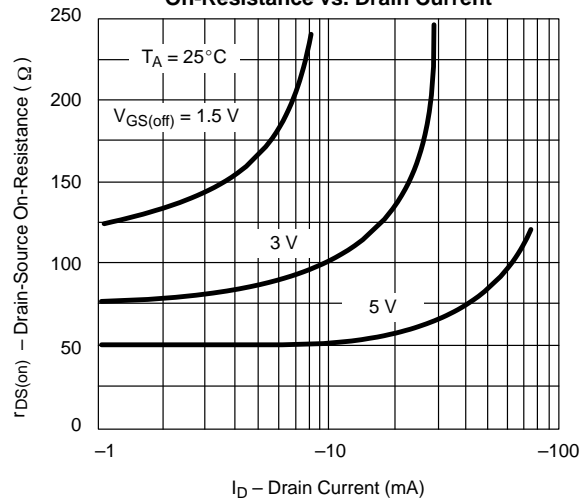
Forward Transconductance and Output Conductance vs. Gate-Source Cutoff Voltage



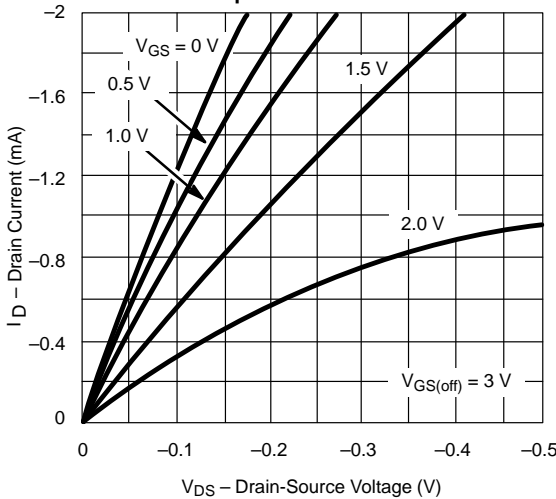
Output Characteristics



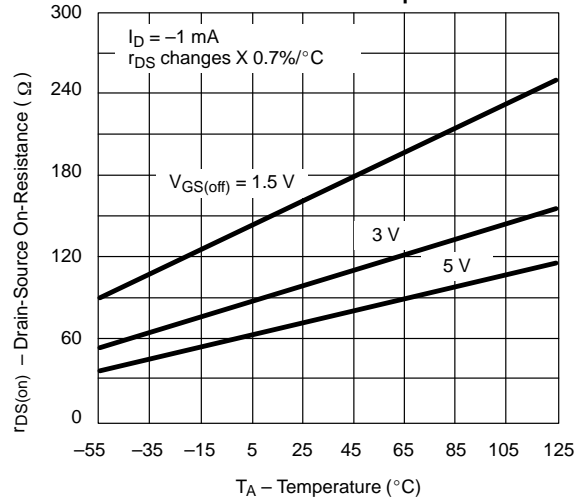
On-Resistance vs. Drain Current



Output Characteristics

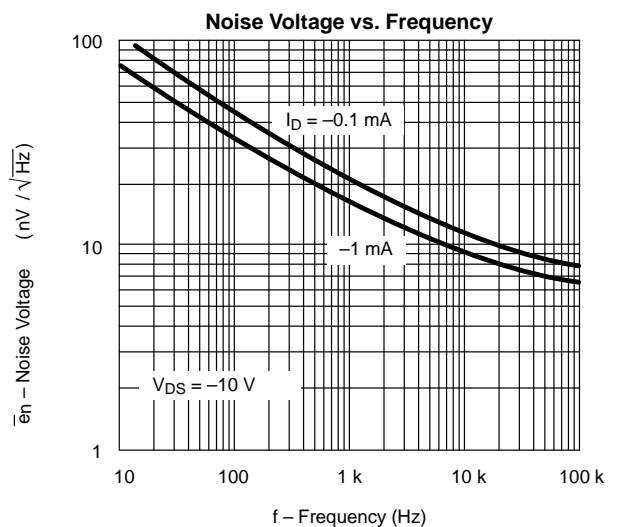
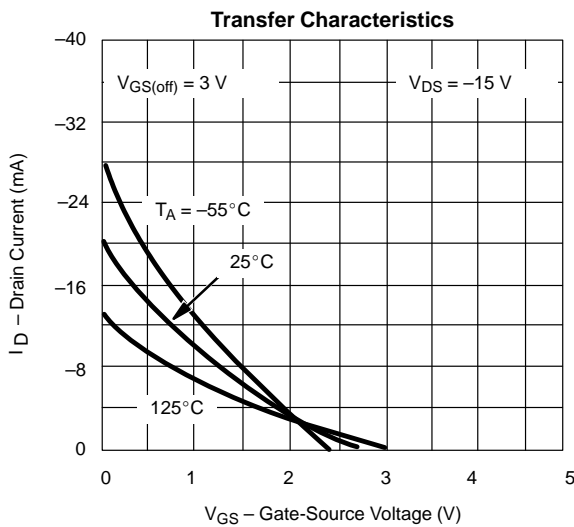
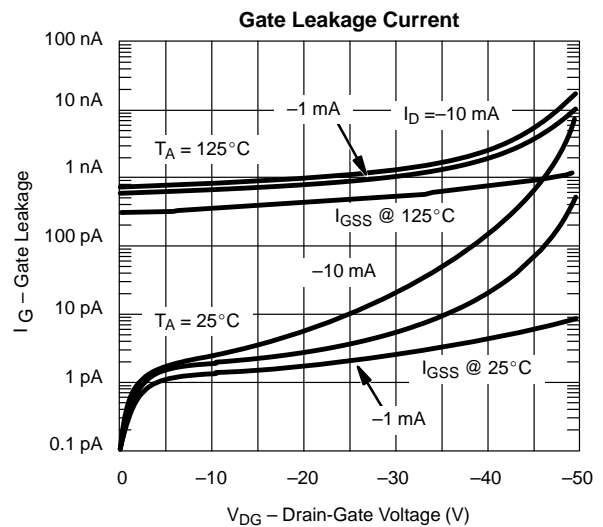
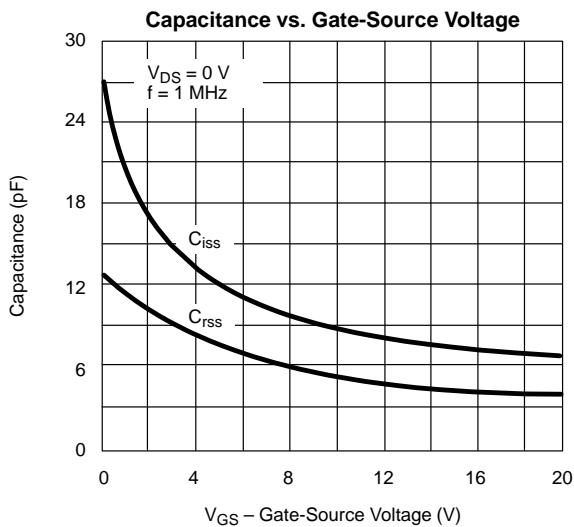
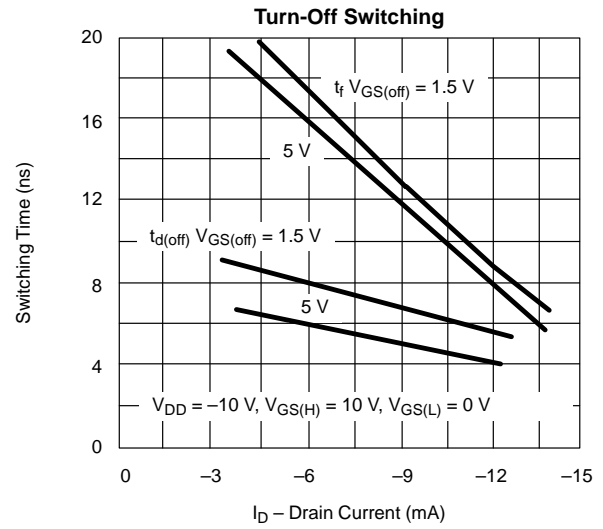
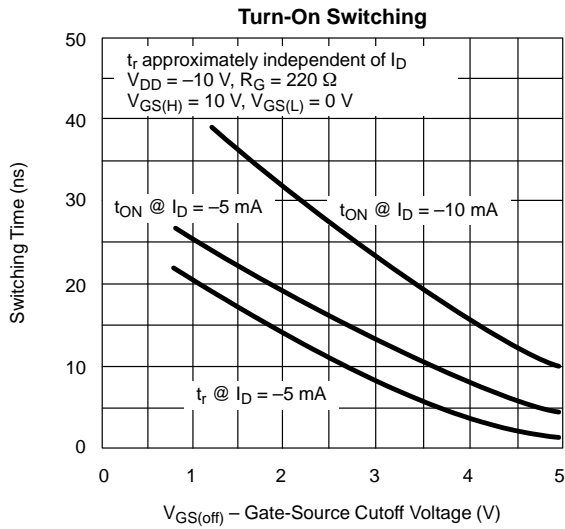


On-Resistance vs. Temperature





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



SWITCHING TIME TEST CIRCUIT	
V_{DD}	-6 V
V_{GG}	12 V
R_L^*	1800 Ω
R_G^*	220 Ω
$I_{D(on)}$	-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 M Ω
 Input Capacitance 1.5 pF

