



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— $<75\ \Omega$
- 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

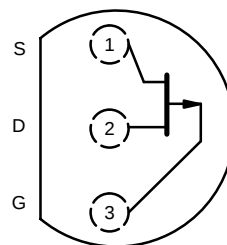
- Analog Switches
- Choppers
- Sample-and-Hold
- Normally "On" Switches
- Current Limiters

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 Vishay 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 (l_{16} from case for 10 sec.) 300°C
Power Dissipation^a 350 mW

Notes

a. Derate 2.8 mW/°C above 25°C

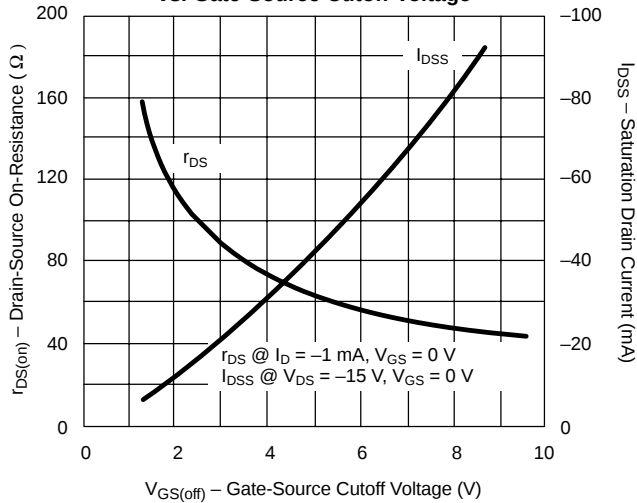
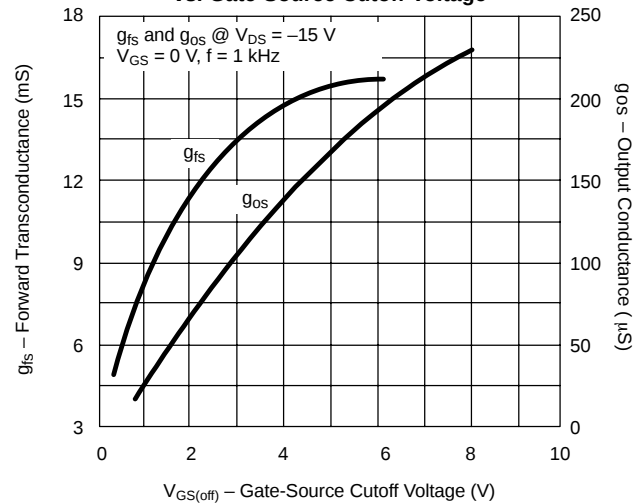
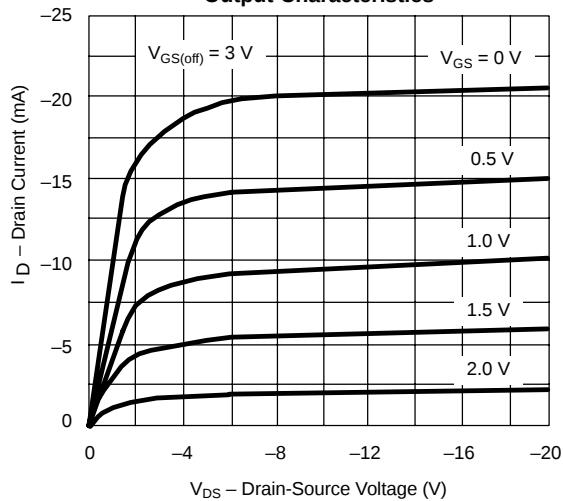
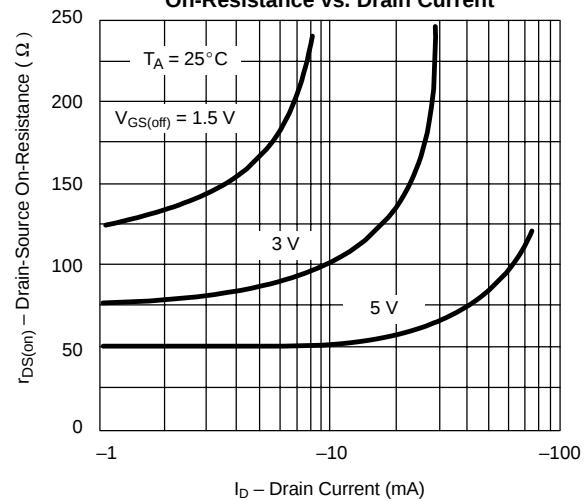
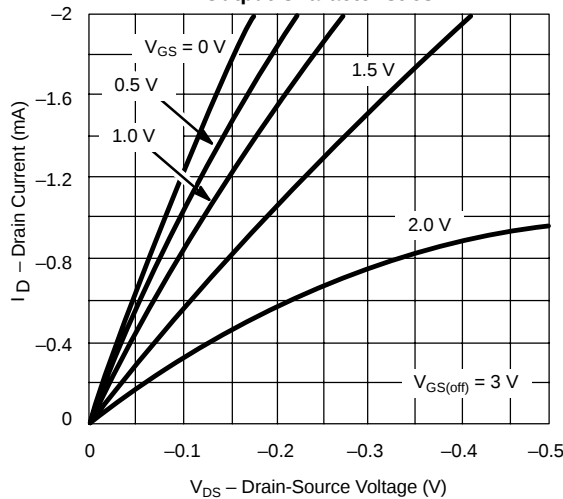
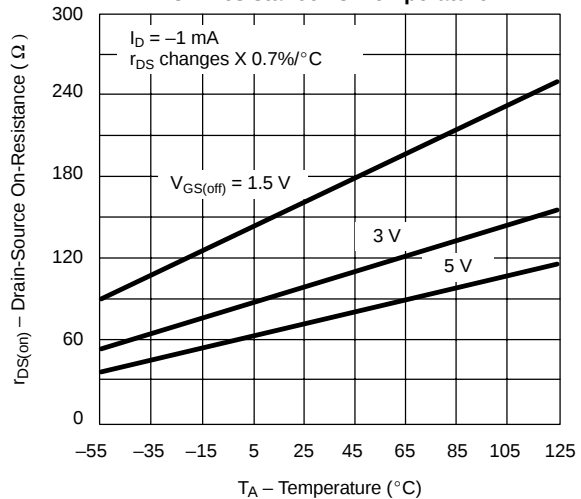


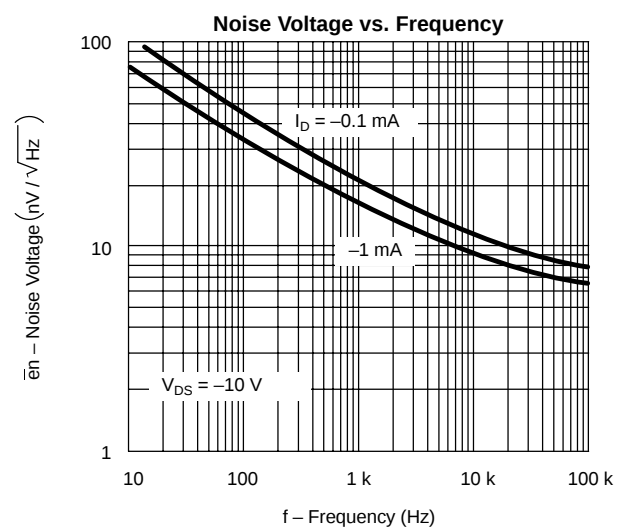
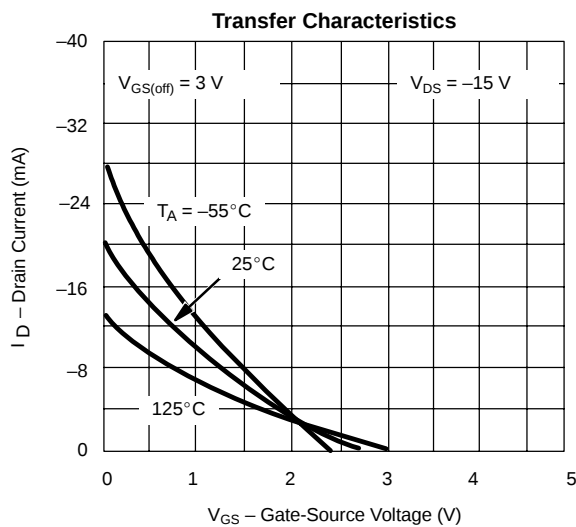
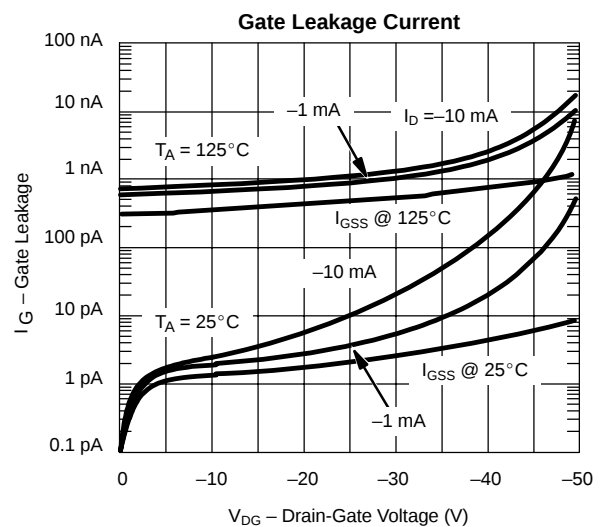
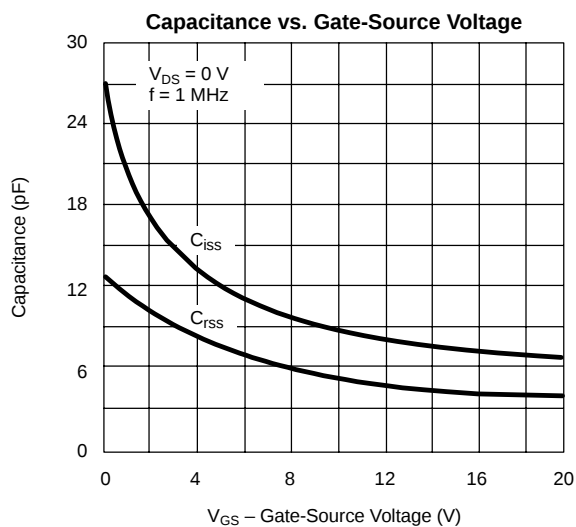
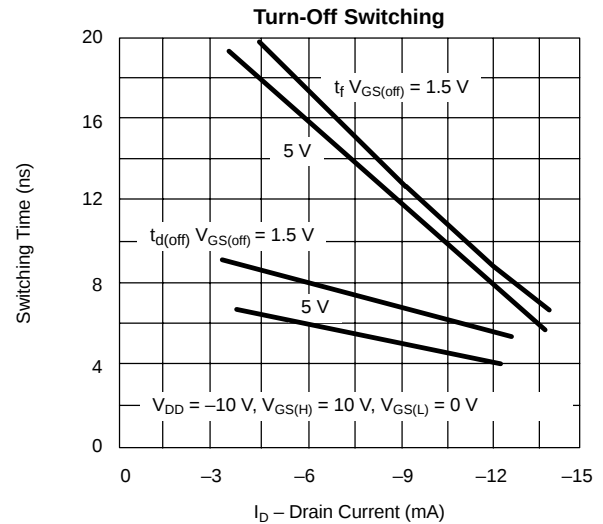
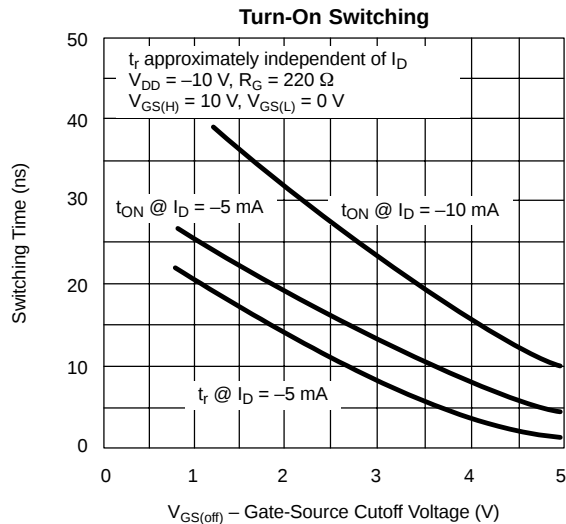
SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ ^a	Max	
Static						
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = 1 μA , V _{DS} = 0 V	30	45		V
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = −15 V, I _D = −1 μA			10	
Saturation Drain Current ^b	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		0.01	2	nA
		T _A = 85 °C		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 °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	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	ns
	t _r			15	20	
Turn-Off Time	t _{d(off)}			10	15	
	t _f			20	50	

Notes

- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
 b. Pulse test: $PW \leq 300\ \mu\text{s}$ duty cycle 3%.

PSCIA

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE 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 ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE 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

