

p-channel JFETs designed for . . .



Performance Curves
PSA/PSB/PSC
See Section 4

- Analog Switches
- Commutators
- Choppers

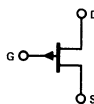
BENEFITS

- Low Insertion Loss
 $r_{DS(on)} < 85 \Omega$ (U304)
- High Off-Isolation
 $I_{D(off)} < 500 \text{ pA}$

ABSOLUTE MAXIMUM RATINGS (25°C)

Reverse Gate-Drain or Gate-Source Voltage (Note 1) . . . 30 V
 Gate Current 50 mA
 Total Device Dissipation, Free-Air
 (Derate 2.8 mW/°C) 350 mW
 Storage Temperature Range -65 to +200°C
 Lead Temperature
 (1/16" from case for 60 seconds) 300°C

TO-18
See Section 6



ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

Characteristic			U304		U305		U306		Unit	Test Conditions			
			Min	Max	Min	Max	Min	Max					
1	S T A T I C	I _{GSS} Gate Reverse Current		500		500		500	pA	V _{GS} = 20 V, V _{DS} = 0	125°C		
2			1.0		1.0		1.0	μA					
3		BV _{GSS} Gate-Source Breakdown Voltage	30		30		30			V	I _G = 1 μA, V _{DS} = 0 V _{DS} = -15 V, I _D = -1 μA V _{GS} = 0, I _D = -15 mA (U304), I _D = -7 mA (U305), I _D = -3 mA (U306)		
4		V _{GS(off)} Gate-Source Cutoff Voltage	5	10	3	6	1	4					
5		V _{DS(on)} Drain-Source ON Voltage		-1.3		-0.8		-0.6					
6		I _{DSS} Saturation Drain Current (Note 2)	-30	-90	-15	-60	-5	-25	mA	V _{DS} = -15 V, V _{GS} = 0			
7		I _{D(off)} Drain Cutoff Current		-500		-500		-500	pA	V _{DS} = -15 V, V _{GS} = 12 V (U304), V _{GS} = 7 V (U305), V _{GS} = 5 V (U306)			
8				-1.0		-1.0		-1.0	μA	125°C			
9	r _{DS(on)} Static Drain-Source ON Resistance		85		110		175	Ω	V _{GS} = 0 V, I _D = -1 mA				
10	r _{ds(on)} Drain-Source ON Resistance		85		110		175	Ω	V _{GS} = 0 V, I _D = 0				
11	D Y N	C _{iss} Common-Source Input Capacitance		27		27		27	pF	V _{DS} = -15 V, V _{GS} = 0			
12		C _{rss} Common-Source Reverse Transfer Capacitance		7		7		7		V _{DS} = 0, V _{GS} = 12 V (U304) V _{GS} = 7 V (U305), V _{GS} = 5 V (U306)			
13	S W I T C H	t _{d(on)} Turn-ON Delay Time		20		25		25	ns	U304	U305	U306	
14		t _r Rise Time		15		25		35		V _{DD}	-10 V	-6 V	-6 V
15		t _{d(off)} Turn-OFF Delay Time		10		15		20		V _{GS(off)}	12 V	7 V	5 V
16		t _f Fall Time		25		40		60		R _L	580 Ω	743 Ω	1800 Ω
										V _{GS(on)}	0	0	0
										I _{D(on)}	-15 mA	-7 mA	-3 mA

n-channel JFETs designed for . . .



- VHF Amplifiers
- Front End High Sensitivity Amplifiers
- Oscillators
- Mixers

Performance Curves NZB See Section 4

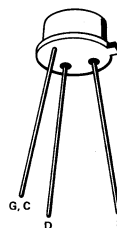
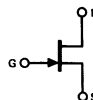
BENEFITS

- Industry Standard
- High Power Gain
16 dB at 105 MHz, Common-Gate
11 dB at 450 MHz, Common-Gate
- Low Noise
2.7 dB Noise Figure at 450 MHz
- Wide Dynamic Range
Greater than 100 dB
- 75 Ω Input Match Common Gate

ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage	-25 V
Gate Current	20 mA
Total Power Dissipation at $T_A = 25^\circ\text{C}$	500 mW
Power Derating to 150°C	4.0 mW/°C
Storage Temperature Range	-65 to +200°C
Lead Temperature (1/16" from case for 10 seconds)	300°C

TO-52
See Section 6



ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

Characteristic			U308			U309			U310			Unit	Test Conditions	
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max			
1	S T A T I C	I _{GSS} Gate Reverse Current			-150			-150			-150	pA	V _{GS} = -15 V, V _{DS} = 0	T _A = 125° C
2				-150			-150			-150	nA			
3		BV _{GSS} Gate-Source Breakdown Voltage	-25			-25			-25			V	I _G = -1 μA, V _{DS} = 0	
4		V _{GS(off)} Gate-Source Cutoff Voltage	-1.0		-6.0	-1.0		-4.0	-2.5		-6.0	V	V _{DS} = 10 V, I _D = 1 nA	
5		I _{DSS} Saturation Drain Current (Note 1)	12		60	12		30	24		60	mA	V _{DS} = 10 V, V _{GS} = 0	
6		V _{GS(f)} Gate-Source Forward Voltage			1.0			1.0			1.0	V	I _G = 10 mA, V _{DS} = 0	
7	D Y N A M I C	g _{fg} Common-Gate Forward Transconductance (Note 1)	10	17		10	17		10	17		mmho	V _{DS} = 10 V, I _D = 10 mA	f = 1 kHz
8		g _{og} Common-Gate Output Conductance			250			250			250	μmho		
9		C _{gd} Drain-Gate Capacitance			2.5			2.5			2.5	pF	V _{GS} = -10 V, V _{DS} = 10 V	f = 1 MHz
10		C _{gs} Gate-Source Capacitance			5.0			5.0			5.0			
11		e _n Equivalent Short Circuit Input Noise Voltage		10			10			10		$\frac{nV}{\sqrt{Hz}}$	V _{DS} = 10 V, I _D = 10 mA	f = 100 Hz
12	H I F R E Q	g _{fg} Common-Gate Forward Transconductance		15		15			15			mmho	V _{DS} = 10 V, I _D = 10 mA	f = 105 MHz
13				14		14			14					f = 450 MHz
14		g _{og} Common-Gate Output Conductance		0.18		0.18			0.18					f = 105 MHz
15				0.32		0.32			0.32					f = 450 MHz
16		G _{pg} Common-Gate Power Gain (Note 2)	14	16		14	16		14	16		dB		f = 105 MHz
17			10	11		10	11		10	11				f = 450 MHz
18		NF Noise Figure		1.5	2.0		1.5	2.0		1.5	2.0			f = 105 MHz
19				2.7	3.5		2.7	3.5		2.7	3.5			f = 450 MHz

NOTES:

1. Pulse test duration = 2 ms.
2. Gain (G_{pg}) measured at optimum input noise match.

NZB

n-channel JFET designed for . . .



Performance Curves NZB See Section 4

- VHF Amplifiers
- Oscillators
- Mixers

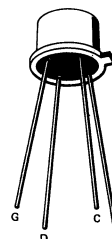
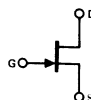
BENEFITS

- High Power Gain
16 dB Typ @ 105 MHz, Common-Gate
11 dB Typ @ 450 MHz, Common-Gate
- Low Noise Figure
1.5 dB Typ @ 105 MHz
2.7 dB Typ @ 450 MHz
- Wide Dynamic Range—Greater than 100 dB

ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage	-25 V
Gate Current	10 mA
Total Device Dissipation (Derate 1.7 mW/°C)	300 mW
Storage Temperature Range	-65 to +200°C
Lead Temperature (1/16" from case for 10 seconds)	300°C

TO-72
See Section 6



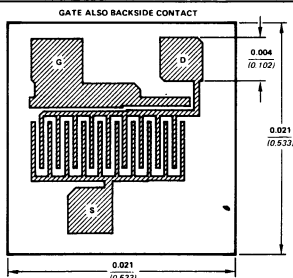
ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

Characteristic			Min	Max	Typ	Unit	Test Conditions	
1	S T A T I C	I _{GSS} Gate Reverse Current		-150		pA	V _{GS} = -15 V, V _{DS} = 0	150°C
2			-150		nA			
3		BV _{GSS} Gate-Source Breakdown Voltage	-25			V	I _G = -1 μA, V _{DS} = 0	
4		V _{GS(off)} Gate-Source Cutoff Voltage	-1	-6			V _{DS} = 10 V, I _D = 1 nA	
5		I _{DSS} Saturation Drain Current (Note 1)	20	60			mA	
6		V _{GS(f)} Gate-Source Forward Voltage		1		V	I _G = 1 mA, V _{DS} = 0	
7	D Y N	g _{fg} Common-Gate Forward Transconductance (Note 1)	10,000		17,000	μmho	V _{DS} = 10 V, I _D = 10 mA	f = 1 kHz
8		g _{og} Common-Gate Output Conductance		250				
9		C _{gd} Gate-Drain Capacitance		2.5		pF	V _{DG} = 10 V, I _D = 5 mA	f = 1 MHz
10		C _{gs} Gate-Source Capacitance		5.0				

NOTE:

1. Pulse test duration = 2 ms.

NZB



ALL DIMENSIONS IN INCHES
(ALL DIMENSIONS IN MILLIMETERS)

TYPE PACKAGE

Single	TO-52
Single	TO-72
Single	TO-92
Dual	TO-78
Single	Chip
Dual	Chip

n-channel JFET designed for . . .

- VHF/UHF Amplifiers
- Front End High Sensitivity Amplifiers
- Oscillators
- Mixers

BENEFITS

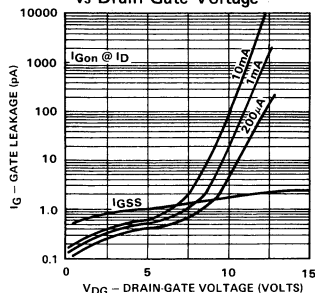
- Industry Standard
- High Power Gain
16 dB at 100 MHz, Common Gate
11 dB at 450 MHz, Common Gate

PRINCIPAL DEVICES

U308-10
U311
J308-10, 2N5638-40
U4301, 4350
J308CHP-10CHP,
J308CHP-10CHP, U311CHP
U430CHP-1CHP

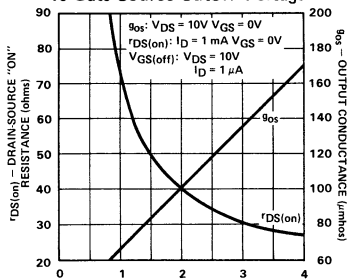
BENEFITS

- Low Noise
3 dB Noise Figure at 450 MHz
- Wide Dynamic Range
Greater Than 100 dB
- 75 Ohm Input Match Common Gate
Gate Operating Current
vs Drain-Gate Voltage

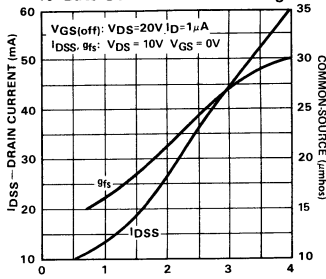


PERFORMANCE CURVES (25°C unless otherwise noted)

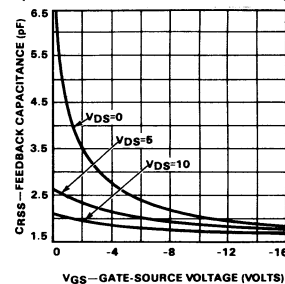
On Resistance & Output Conductance vs Gate-Source Cutoff Voltage



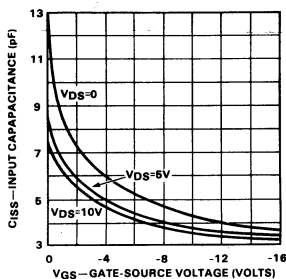
Drain Current & Transconductance vs Gate-Source Cutoff Voltage



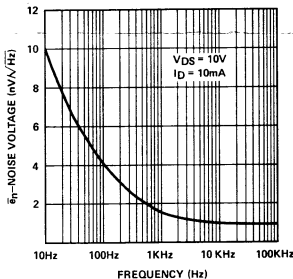
Common Source Reverse Feedback Capacitance vs Gate Source Voltage



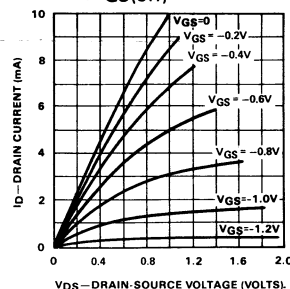
Common Source Input Capacitance vs Gate-Source Voltage



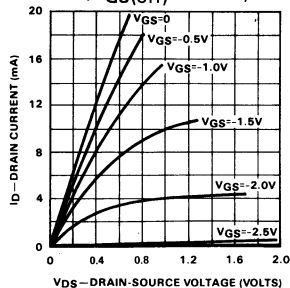
Noise Voltage vs Frequency



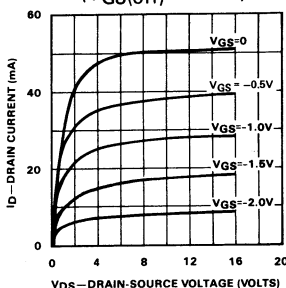
Output Characteristic (VGS(off) = -1.7V)



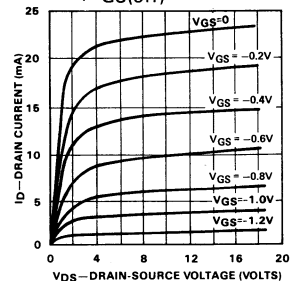
Output Characteristic (VGS(off) = -3.0V)



Output Characteristic (VGS(off) = -3.0V)

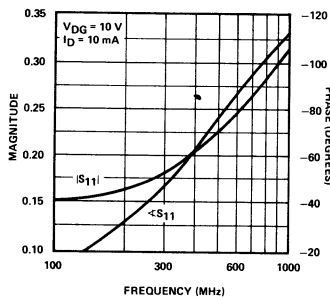


Output Characteristic (VGS(off) = -1.7V)

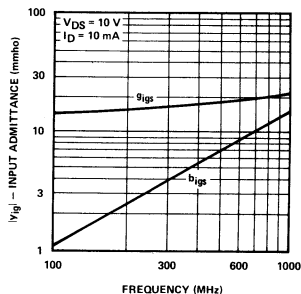


PERFORMANCE CURVES (Con't) (25°C unless otherwise noted)

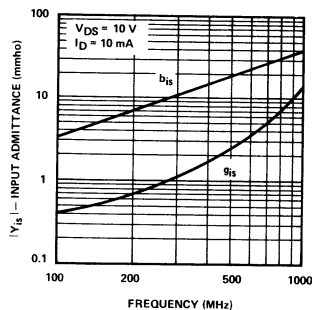
Forward Reflection Coefficient Common Gate



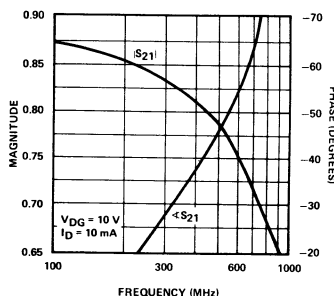
Input Admittance Common Gate



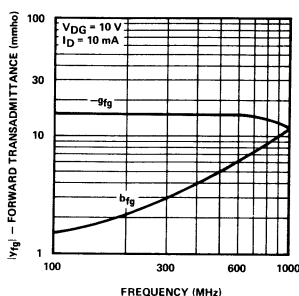
Input Admittance Common Source



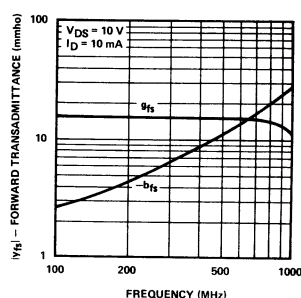
Forward Transmission Coefficient Common Gate



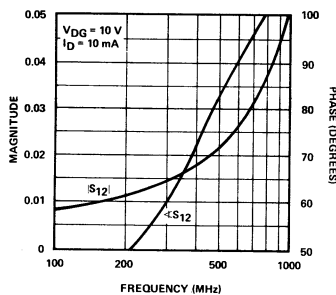
Forward Transfer Admittance Common Gate



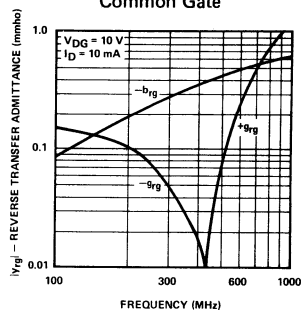
Forward Transfer Admittance Common Source



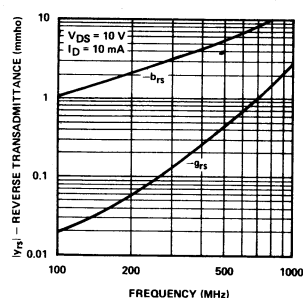
Reverse Transmission Coefficient Common Gate



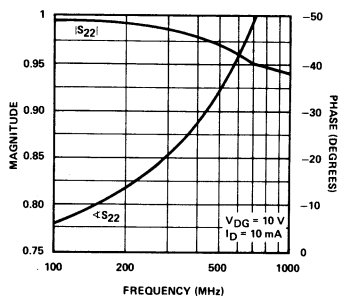
Reverse Transfer Admittance Common Gate



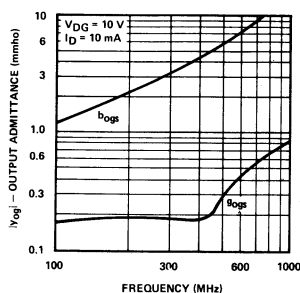
Reverse Transfer Admittance Common Source



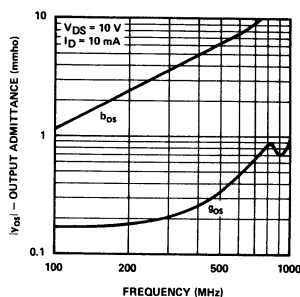
Reverse Reflection Coefficient Common Gate

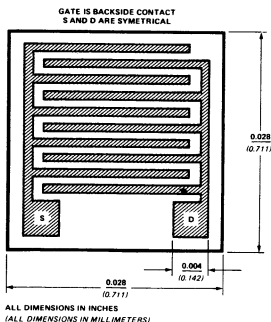


Output Admittance Common Gate



Output Admittance Common Source





p-channel JFET designed for . . .

- Analog Switches
- Commutators
- Choppers
- Integrator Reset Switch

TYPE	PACKAGE
Single	TO-18
Single	TO-92
Single	Chip



BENEFITS:

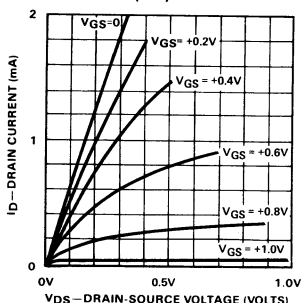
- Low Insertion Loss in Switching Systems
 $R_{ON} < 75 \Omega$ (2N5114)
- Short Sample and Hold Aperture Time
 $C_{RSS} < 7 \text{ pF}$
- High Off-Isolation $I_{D(off)} < 500 \text{ pA}$

PRINCIPAL DEVICES

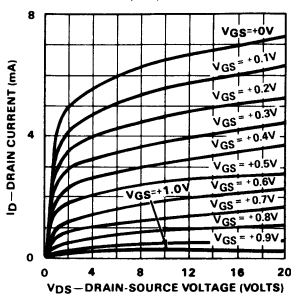
2N5018-19, 2N5114-16, U304-6, VCR3P
J174-7, J270-1, P1086-87
2N5018CHP-19CHP, 2N5114CHP-16CHP
U304CHP-6CHP, P1086CHP-87CHP
J270CHP-271CHP

PERFORMANCE CURVES (25°C unless otherwise noted)

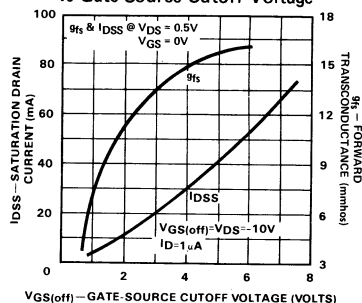
Output Characteristic
($V_{GS(off)} = +1.5\text{V}$)



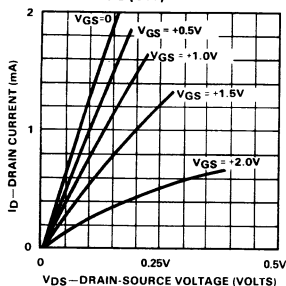
Output Characteristic
($V_{GS(off)} = +1.5\text{V}$)



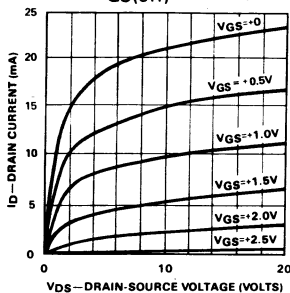
Drain Current & Transconductance
vs Gate-Source Cutoff Voltage



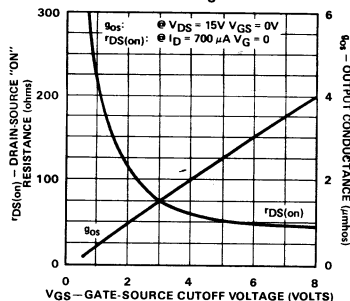
Output Characteristic
($V_{GS(off)} = +3.0\text{V}$)



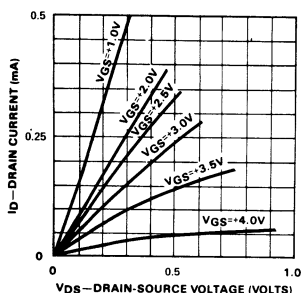
Output Characteristic
($V_{GS(off)} = +3.0\text{V}$)



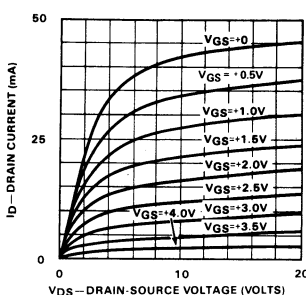
On Resistance and Output
Conductance vs Gate-Source
Voltage



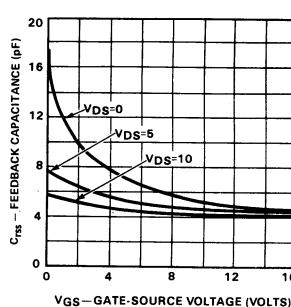
Output Characteristic
($V_{GS(off)} = +5.0\text{V}$)



Output Characteristic
($V_{GS(off)} = +5.0\text{V}$)

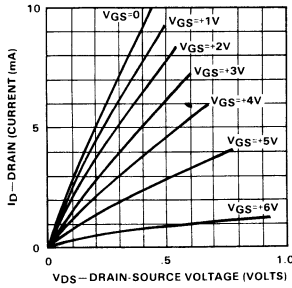


Common Source Reverse
Feedback Capacitance
vs Gate Source Voltage

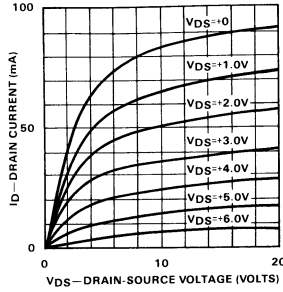


PERFORMANCE CURVES (Cont'd) (25°C unless otherwise noted)

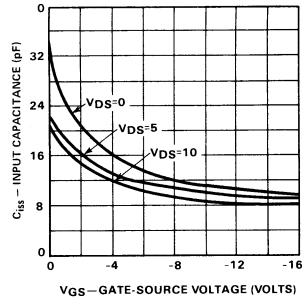
Output Characteristic
($V_{GS(off)} = +8.0V$)



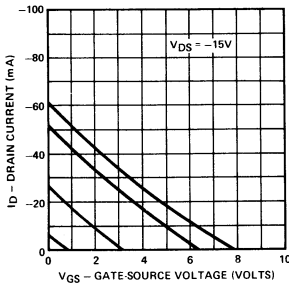
Output Characteristic
($V_{GS(off)} = +8.0V$)



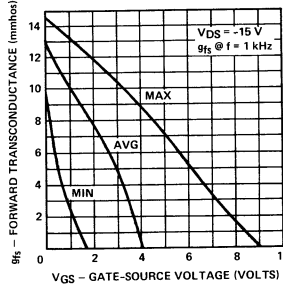
Common Source Input Capacitance
vs Gate-Source Voltage



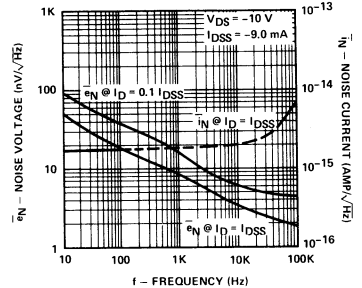
Transfer Characteristics

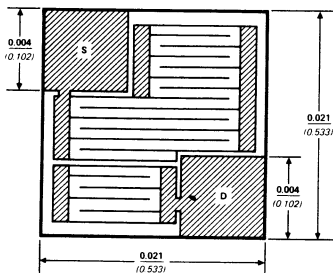


Transconductance
Characteristics



Equivalent Input Noise Voltage and
Noise Current vs Frequency





ALL DIMENSIONS IN INCHES
(ALL DIMENSIONS IN MILLIMETERS)

p-channel JFET designed for ...

- Amplifiers
- Sample and hold
- Choppers
- Analog Switches

TYPE

Single

PACKAGE

TO-92

Chip

TO-72

TO-18

Siliconix

BENEFITS:

- Low $\bar{g}_m < 15 \text{ nV}/\sqrt{\text{Hz}}$ at 10 kHz
- Low leakage $< 10 \text{ pA}$ at 30 V

PRINCIPAL DEVICES

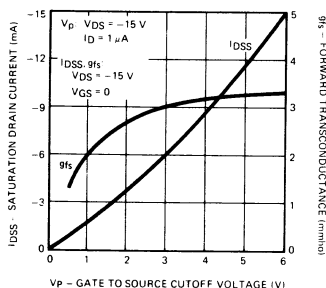
2N5460 – 65

All of the above

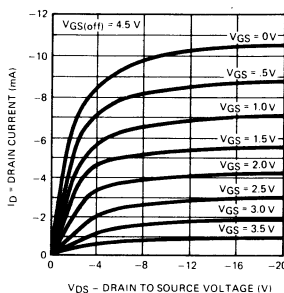
Available thru the factory

Contact local sales office

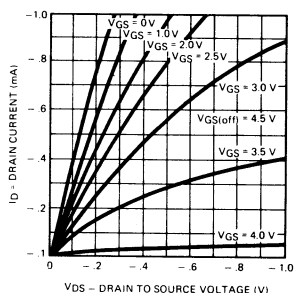
Drain Current & Transconductance vs Gate to Source Cutoff Voltage



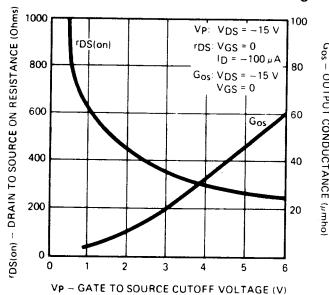
Output Characteristics



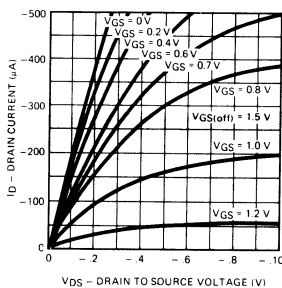
Output Characteristics



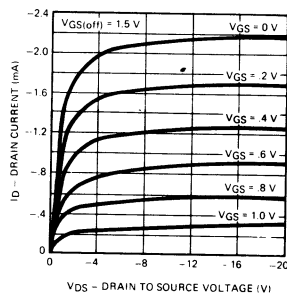
ON Resistance & Output Conductance vs Gate to Source Cutoff Voltage



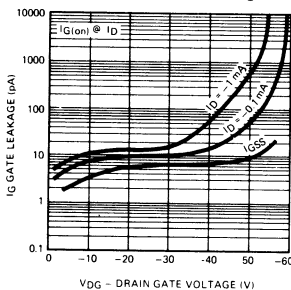
Output Characteristics



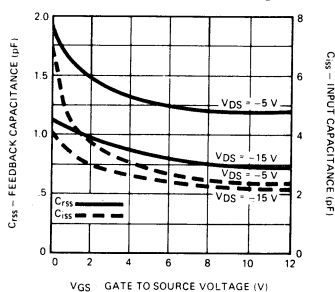
Output Characteristics



Gate Operating Current vs Drain-Gate Voltage



Capacitance vs Gate to Source Voltage



Noise Voltage vs Frequency

