

Performance Curves NLH

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N-CHANNEL SILICON JUNCTION FIELD-EFFECT TRANSISTORS



HIGH VOLTAGE AMPLIFIERS MEDIUM CURRENT

- Low ON Resistance
- High Breakdown Voltage ($BV_{GSS} \geq 275$ V U328, U330)
- Designed for High Voltage Current Sources
- Suitable for High Voltage Switching
- High Dissipation Capability

ABSOLUTE MAXIMUM RATINGS (25°C)

	U328	U329
	U330	U331
Gate-Drain and Gate-Source Voltage	-275 V	-200 V
Continuous Forward Gate Current	10 mA	10 mA
Continuous Device Dissipation at (or below) 25°C Free Air Temp.	800 mW	800 mW
Storage Temp. Range	-65 to +200°C	-65 to +200°C
Lead Temp. 1/16" From Case For 10 Sec	+300°C	+300°C

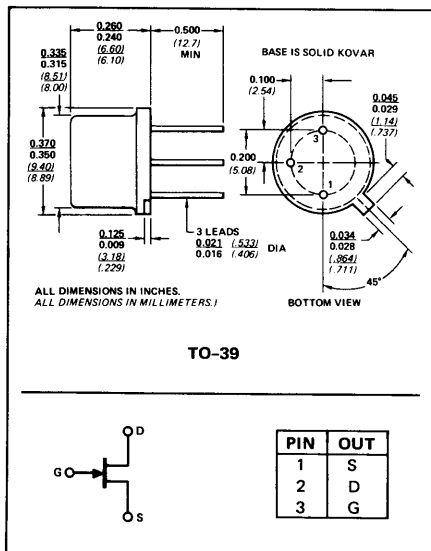
ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

Characteristic		U328		U329		U330		U331		Unit	Test Conditions
		Min	Max	Min	Max	Min	Max	Min	Max		
S T A T I C	I_{GSS} Gate Reverse Current		-2.0				-2.0			nA	$V_{GS} = -75$ V, $V_{DS} = 0$
					-2.0				-2.0		$V_{GS} = -50$ V, $V_{DS} = 0$
			-2.0				-2.0			μ A	$V_{GS} = -75$ V, $V_{DS} = 0$
					-2.0				-2.0		$V_{GS} = -50$ V, $V_{DS} = 0$
D Y N A M I C	BV_{GSS} Gate-Source Breakdown Voltage	-275		-200		-275		-200		V	$I_G = -1$ μ A, $V_{DS} = 0$
	$V_{GS(off)}$ Gate-Source Cutoff Voltage	-5.0	-15	-5.0	-15	-1.0	-7.0	-1.0	-7.0		$V_{DS} = 30$ V, $I_D = 10$ nA
	I_{DSS} Saturation Drain Current	10	60	10	60	1.0	20	1.0	20	mA	$V_{DS} = 30$ V, $V_{GS} = 0$ (Note 1)
D Y N A M I C	$r_{DS(on)}$ Static Drain-Source ON Resistance		400		400		650		650	Ω	$I_D = 100$ μ A, $V_{GS} = 0$
	g_{fs} Common-Source Forward Transconductance	2,500	6,000	2,500	6,000	1,500	4,500	1,500	4,500	μ mhos	$V_{DS} = 30$ V, $V_{GS} = 0$
	g_{os} Common-Source Output Conductance		200		200		120		120		$V_{DS} = 30$ V, $V_{GS} = 0$
	$r_{DS(on)}$ Drain-Source ON Resistance		400		400		650		650	Ω	$I_D = 0$, $V_{GS} = 0$
	C_{iss} Common-Source Input Capacitance		25		25		25		25	pF	$V_{DS} = 30$ V, $V_{GS} = 0$
C	C_{rss} Common-Source Reverse Transfer Capacitance		4.0		4.0		4.0		4.0		$V_{DS} = 30$ V, $V_{GS} = 0$
	NF Noise Figure						3.0		3.0	dB	$V_{DS} = 30$ V, $V_{GS} = 0$ $R_G = 1$ M Ω

Note:

1 Pulse test P.W. 300 μ sec Duty Cycle $\leq$ 3%

NLH



Performance Curves NZT

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U350

N-CHANNEL SILICON JUNCTION QUAD-RING DEMODULATOR



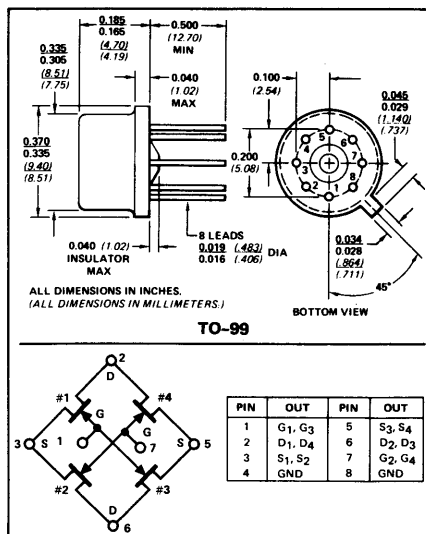
FOR VHF DOUBLE-BALANCED MIXER & ANALOG MULTIPLIER APPLICATIONS

- Four Matched U310 JFETs
- High IMD Intercept Point
- Low Turn-ON Resistance
- Conversion Gain
- High 1 dB Compression
- Suitable for PC Board Construction

ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage	-25 V
Gate Current	25 mA
Total Power Dissipation	1 W
Power Derating	3.5 mW/°C
Storage Temperature Range	-65 to +150°C
Lead Temperature (1/16" Case)	300°C

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)



2

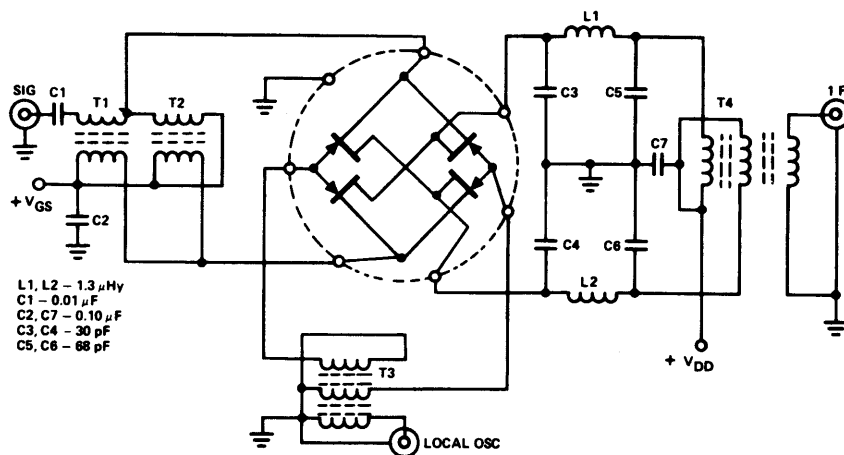
Characteristic			U350			Unit	Test Conditions			
			Min	Typ	Max					
1	S T A T I C	I _{GSS}	Gate Reverse Current			-1	nA	V _{GS} = -15 V, V _{DS} = 0 T _A = +125°C (Note 1)		
2					-1	μA				
3		BV _{GSS}	Gate-Source Breakdown Voltage		-25			I _G = -1 μA, V _{DS} = 0		
4		V _{GS(off)}	Gate-Source Cutoff Voltage		-2		-6	V	I _D = 1 nA, V _{DS} = 10 V (Note 1)	
5		V _{GS(f)}	Gate-Source Forward Voltage				1		I _G = 1 mA, V _{DS} = 0 (Note 1)	
6		I _{DSS}	Saturation Drain Current		24		60	mA	V _{DS} = 15 V, V _{GS} = 0 (Pulsed) (Note 1, 2)	
7	D Y N A M I C	g _{fs}	Common-Source Forward Transconductance		10		18	mS	V _{DS} = 10 V, I _D = 10 mA f = 1 kHz (Note 1)	
8		g _{os}	Common-Source Output Conductance				150	μS		
9		C _{gs}	Gate-Source Capacitance				5	pF	V _{GS} = -10 V, I _D = 0	
10		C _{gd}	Drain Gate Capacitance				2.5		V _{GD} = -10 V, I _S = 0	
11		R _{ds(on)}	Drain-Source ON Resistance			50	90	Ω	V _{GS} = 0, I _D = 0	f = 1 kHz
12	H	G _c	(Conversion Gain)			4		dB	V _{DS} = 20 V, V _{GS} = ½V _p	f = 100 MHz (Note 3)
13	F	NF	Noise Figure			7	10		V _{DS} = 20 V, V _{GS} = ½V _p , R _D = 1,700 Ω	
14	M A T C H	I _{DSS} /I _{DSS}	Saturation Drain Current Ratio		0.9		1.0		V _{DS} = 15 V, V _{GS} = 0 (Note 2)	
15		V _{GS(off)} /V _{GS(off)}	Gate-Source Cutoff Voltage Ratio		0.9		1.0		V _{DS} = 15 V, I _D = 1 nA	
16		g _{fs} /g _{fs}	Common-Source Forward Transconductance		0.9		1.0		V _{DS} = 15 V, I _D = 10 mA	f = 1 kHz
17		g _{os} /g _{os}	Differential Output Conductance		0.9		1.0			

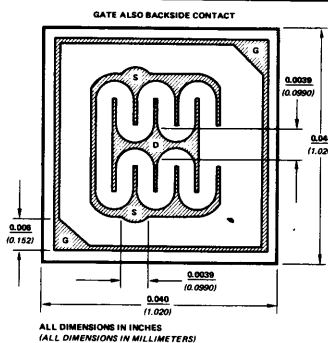
NOTES:

1. Other gate terminal clamped to -8 V
2. Pulse test: PW 300 μsec DC ≤ 3 %.
3. In circuit shown

NZT

Double-Balanced Mixer





N-CHANNEL DEPLETION MODE SILICON JUNCTION FIELD-EFFECT TRANSISTOR

APPLICATIONS

- Medium Current, High Voltage Amplifiers
- High Voltage Current Source/Limiter

PRINCIPAL DEVICES

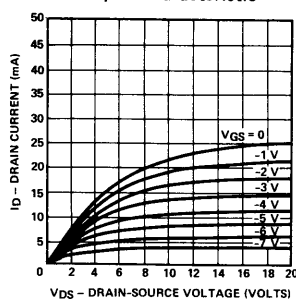
2N5277-78, U328-31

PACKAGE TYPES

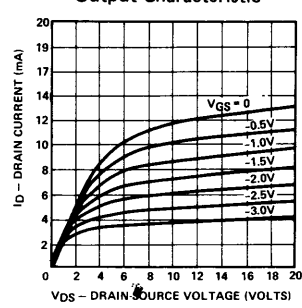
TO-18 TO-39

PERFORMANCE CURVES (25°C unless otherwise noted)

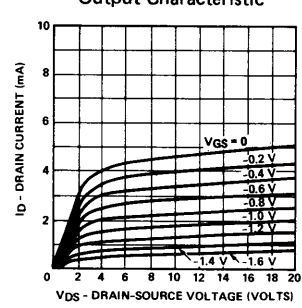
Output Characteristic



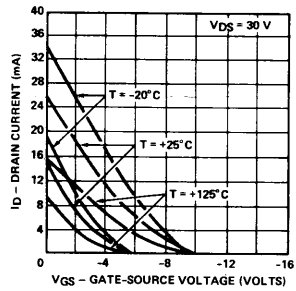
Output Characteristic



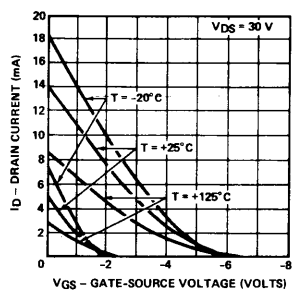
Output Characteristic



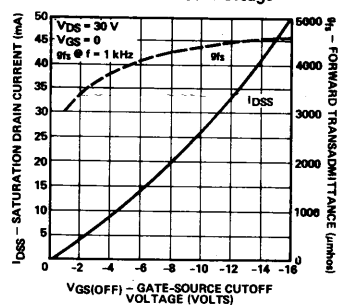
Transfer Characteristics



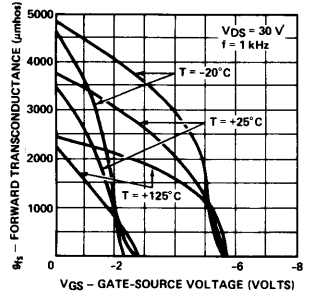
Transfer Characteristics



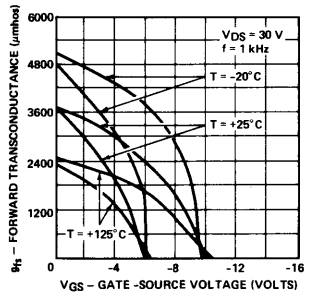
Drain Current & Transconductance vs Gate-Source Voltage



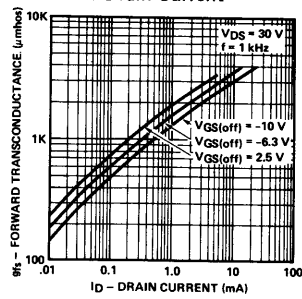
Transconductance Characteristics



Transconductance Characteristics

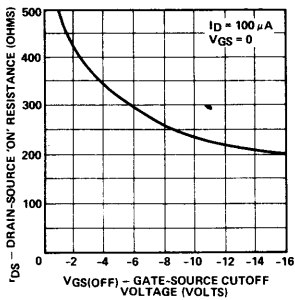


Common-Source Forward Transconductance vs Drain Current

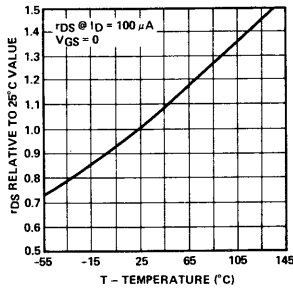


PERFORMANCE CURVES (Cont'd) (25°C unless otherwise noted)

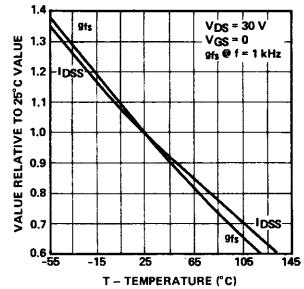
Static Drain-Source 'ON' Resistance vs Gate-Source Cutoff Voltage



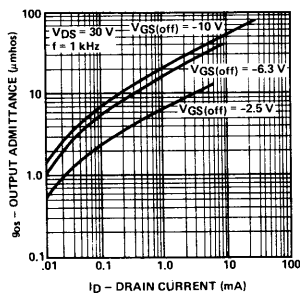
'ON' Resistance vs Ambient Temperature



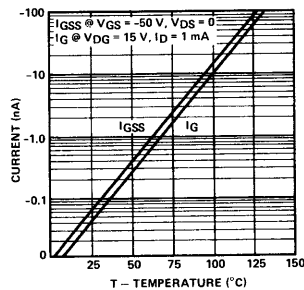
Drain Current & Transconductance vs Ambient Temperature



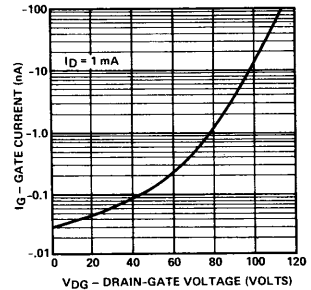
Common-Source Output Admittance vs Drain Current



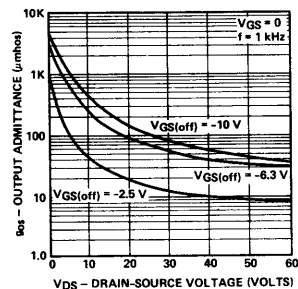
Gate Current vs Ambient Temperature



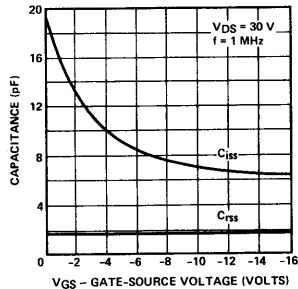
Gate Operating Current vs Drain-Gate Voltage



Common-Source Output Admittance vs Drain-Source Voltage



Common-Source Capacitances vs Gate-Source Voltage



Equivalent Input Noise Voltage vs Frequency

