INTERSIL

3N161
Diode Protected P-Channel Enhancement Mode MOS FET

GENERAL DESCRIPTION

DIODE-PROTECTED ENHANCEMENT-TYPE METAL-OXIDE-SEMICONDUCTOR TRANSISTOR

For applications requiring very high input impedance, such as series and shunt choppers, multiplexers, and commutators.

FEATURES

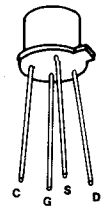
- Channel Cut Off with Zero Gate Voltage
- Square-Law Transfer Characteristic Reduces Distortion
- Independent Substrate Connection Provides Flexibility in Biasing
- Internally Connected Diode Protects Gate from Damage due to Overvoltage

DESCRIPTION

These devices are designed for applications requiring very high input impedance, such as choppers, commutators, and logic switches. Each device is protected from excessive input voltage by a shunting diode connected from the gate to the substrate. This eliminates the need for most precautionary handling procedures associated with unprotected MOS devices.

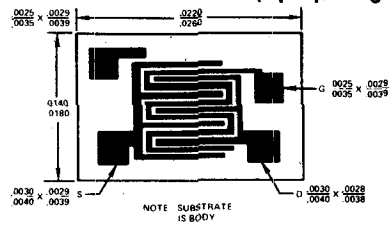
PIN CONFIGURATION

TO-72



CHIP TOPOGRAPHY

1503-Z (2 per package)



ORDERING INFORMATION

TO-72	WAFER	DICE
3N161	3N161/W	3N161/D

ELECTRICAL CHARACTERISTICS (25°C free-air temperature unless otherwise noted)

	PARAMETER	MIN	TYP	MAX	UNIT	TEST CONDITIONS	
I_{GSSF}	Forward Gate-Terminal Current			-0.1	nA	V_{GS} = -25 V, V_{DS} = 0	
				-1	nA	V_{GS} = -25 V, V_{DS} = 0,	T_A = 100°C
BV_{GSS}	Forward Gate-Source Breakdown Voltage	-25			V	I_G -0.1 mA, V_{DS} = 0,	
I_{DSS}	Zero-Gate-Voltage Drain Current			-10	nA	V_{DS} = -15 V, V_{GS} = 0	
				-10	μA	V_{DS} = -25 V, V_{GS} = 0	
$V_{GS(th)}$	Gate-Source Threshold Voltage	-1.5		-5	V	V_{DS} = -15 V, I_D = 10 μA	
V_{GS}	Gate-Source Voltage	-4.5		-8	V	V_{DS} = -15 V, I_D = -8 mA	
$I_{D(on)}$	On-State Drain Current	-40		-120	mA	V_{DS} = -15 V, V_{GS} = -15 V	
$\|y_{fs}\|$	Small-Signal Common-Source Forward Transfer Admittance	3500		6500	μmho	V_{DS} = -15 V, I_D = -8 mA	f = 1 kHz
$\|y_{os}\|$	Small-Signal Common-Source Output Admittance			250	μmho		
C_{iss}	Common-Source Short-Circuit Input Capacitance			10	pF		f = 1 MHz
C_{rss}	Common-Source Short-Circuit Reverse Transfer Capacitance			4	pF		