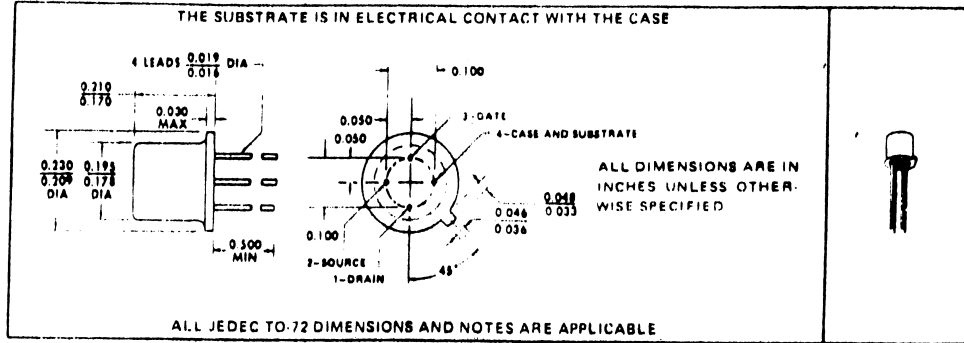


TYPE 3N128
N-CHANNEL INSULATED-GATE
DEPLETION-TYPE FIELD-EFFECT TRANSISTOR

*mechanical data



handling precautions

Curve-tracer testing and static-charge buildup are common causes of damage to insulated-gate devices. Permanent damage may result if either gate-voltage rating is exceeded even for extremely short time periods. Each transistor is protected during shipment by a gate-shorting device, which should be removed only during testing and after permanent mounting of the transistor. Personnel and equipment, including soldering irons, should be grounded.

*absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)

Drain-Gate Voltage	20 V
Drain-Source Voltage (See Note 1)	20 V
Forward Gate-Source Voltage	1 V
Reverse Gate-Source Voltage	-8 V
Peak Drain Current (See Note 2)	50 mA
Continuous Device Dissipation at (or below) 25°C Free Air Temperature (See Note 3)	330 mW
Storage Temperature Range	-65°C to 175°C
Lead Temperature 1/32 Inch from Case for 10 Seconds	265°C

- NOTES: 1. This rating applies when the substrate is at the same potential as the source.
2. This value applies for $t_w \leq 20 \mu s$, duty cycle $\leq 1\%$.
3. Derate linearly to 175°C free-air temperature at the rate of 2.2 mW/°C.

*electrical characteristics at 25°C free-air temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS ¹	MIN	MAX	UNIT
I_{GSSF} Forward Gate Terminal Current	$V_{GS} = 1 V, V_{DS} = 0$		50	pA
I_{GSSR} Reverse Gate Terminal Current	$V_{GS} = -8 V, V_{DS} = 0$		-50	pA
$V_{GS(Off)}$ Gate-Source Cutoff Current	$V_{DS} = -8 V, V_{GS} = 0, T_A = 125^\circ C$		-5	nA
I_{DSS} Zero-Gate-Voltage Drain Current	$V_{DS} = 15 V, I_G = 50 \mu A$	-0.5	-8	V
Y_{fs} Small-Signal Common-Source Forward Transfer Admittance	$V_{DS} = 15 V, I_D = 5 mA, f = 1 kHz$	5	25	mmho
C_{iss} Common-Source Short-Circuit Input Capacitance	$V_{DS} = 15 V, I_D = 5 mA, f = 0.1 to 1 MHz$		7	pF
C_{rss} Common-Source Short-Circuit Reverse Transfer Capacitance	$V_{DS} = 15 V, I_D = 5 mA, f = 0.1 to 1 MHz$	0.16	0.35	pF
g_{fs} Small-Signal Common-Source Input Conductance	$V_{DS} = 15 V, I_D = 5 mA, f = 200 MHz$		800	μmho
g_{os} Small-Signal Common-Source Output Conductance	$V_{DS} = 15 V, I_D = 5 mA, f = 200 MHz$		500	μmho

*operating characteristics at 25°C free-air temperature

PARAMETER	TEST CONDITIONS ¹	MIN	MAX	UNIT
F Common-Source Spot Noise Figure	$V_{DS} = 15 V, I_D = 5 mA, f = 200 MHz$ See Figure 1		5	dB
G_{ps} Signal-Signal Common-Source Section Power Gain	$V_{DD} = 16 V, f = 200 MHz$ See Figure 1	13.5	21	dB
B Bandwidth (6 dB)		10	16	MHz

¹All measurements are made with the substrate connected to the source.
²NOTE 4: This parameter must be measured using pulse techniques, $t_w \leq 20 ns$, duty cycle $\leq 1\%$.

