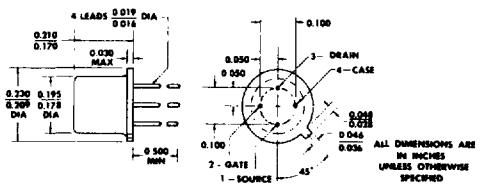
TYPES 2N3329 THRU 2N3332
P-CHANNEL SILICON JUNCTION FIELD-EFFECT TRANSISTORS

BULLETIN NO. DL-S 644905, MARCH 1964

FOR SMALL-SIGNAL, LOW-NOISE APPLICATIONS

- **Active Elements Insulated from Case**
- **High Input Impedance (> 5 megohms at 1 kc)**

***mechanical data**



THE ACTIVE ELEMENTS ARE ELECTRICALLY INSULATED FROM THE CASE

ALL JEDEC TO-72 DIMENSIONS AND NOTES ARE APPLICABLE

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

Continuous Forward Gate Current . . . . . -10 ma
Total Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 1) . . . . . 0.3 w
Storage Temperature Range . . . . . -65°C to +200°C

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

PARAMETER		TEST CONDITIONS†		2N3329 MIN	2N3329 MAX	2N3330 MIN	2N3330 MAX	2N3331 MIN	2N3331 MAX	2N3332 MIN	2N3332 MAX	UNIT
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = 10\ \mu a$,	$V_{DS} = 0$	20		20		20		20		v
I_{GSS}	Gate Cutoff Current	$V_{GS} = 10$ v,	$V_{DS} = 0$		0.01		0.01		0.01		0.01	μa
I_{GSS}	Gate Cutoff Current	$V_{GS} = 10$ v,	$V_{DS} = 0$, $T_A = 150°C$		10		10		10		10	μa
$I_{D(on)}$	Zero-Gate-Voltage Drain Current	$V_{DS} = -10$ v,	$V_{GS} = 0$	−1	−3	−2	−6	−5	−15	−1	−6	ma
V_{GS}	Gate-Source Cutoff Voltage	$V_{DS} = -15$ v,	$I_D = -10\ \mu a$		5		6		8		6	v
r_{DS}	Static Drain-Source Resistance	$I_D = -100\ \mu a$,	$V_{GS} = 0$		1000		800		600			ohm
$\lvert y_{is}\rvert$	Small-Signal Common-Source Input Admittance	$V_{DS} = -10$ v, f = 1 kc	I_D — See Note 2,		0.2		0.2		0.2		0.2	μmho
$\lvert y_{fs}\rvert$	Small-Signal Common-Source Forward Transfer Admittance			1000	2000	1500	3000	2000	4000	1000	2200	μmho
$\lvert y_{rs}\rvert$	Small-Signal Common-Source Reverse Transfer Admittance				0.1		0.1		0.1		0.1	μmho
$\lvert y_{os}\rvert$	Small-Signal Common-Source Output Admittance				20		40		100		20	μmho
$\lvert y_{fs}\rvert$	Small-Signal Common-Source Forward Transfer Admittance	$V_{DS} = -10$ v, f = 10 Mc	I_D — See Note 2,	900		1350		1800		900		μmho
C_{iss}	Common-Source Short-Circuit Input Capacitance	$V_{DS} = -10$ v, f = 1 Mc	$V_{GS} = 1$ v,		20		20		20		20	pf

***operating characteristics at 25°C free-air temperature**

NF	Spot Noise Figure	$V_{DS} = -5$ v, f = 1 kc,	$I_D = -1$ ma, $R_G = 1\ M\Omega$	3	3	4	1	db
		$V_{DS} = -5$ v, f = 10 cps,	$I_D = -1$ ma, $R_G = 10\ M\Omega$				5	db

NOTE 1: Derate linearly to 175°C free-air temperature at the rate of 2 mw/C°.

	2N3329	2N3330	2N3331	2N3332
NOTE 2. I_D =	−1 ma	−2 ma	−5 ma	−1 ma

†The fourth lead (case) is connected to the source for all measurements.

*Indicates JEDEC registered data.

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