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The 2N3277 and 2N3278 are P channel PLANAR field effect transistors designed for use in high-performance low-level circuits. These devices will find use where conversion to solid state circuits is desirable in cases that previously required vacuum tubes for high-impedance and low-noise characteristics. Typical 1 KC input impedance is 50 Meg ohms and 1 KC spot noise figure with a source resistance of 10 Meg ohms is 0.5 db. Applications for these devices include amplifiers for high-impedance transducers, photo-cell bridges, geiger counter and scintillator-counter heads and high-impedance differential amplifiers.

ABSOLUTE MAXIMUM RATINGS [Note 1]

Maximum Temperatures

Storage Temperature	-65°C to +200°C
Operating Junction Temperature	175°C Maximum
Lead Temperature (Soldering, 60 sec time limit)	300°C Maximum

Maximum Power Dissipation

Total Dissipation at or below 150°C Free Air Temperature [Note 3]	22.5 mW
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Maximum Voltages

BV _{SGO} Source to Gate Breakdown Voltage	-25 Volts
BV _{DSO} Drain to Source Breakdown Voltage	-25 Volts
BV _{DGO} Drain to Gate Breakdown Voltage	-25 Volts

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

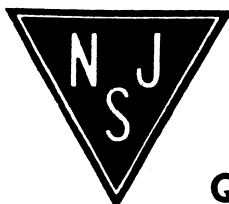
SYMBOL	CHARACTERISTIC	2N3277			2N3278			UNITS	TEST CONDITIONS	
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.			
BV _{DGO}	Drain to Gate Breakdown Voltage	25			25			Volts	I _b = 1.0 μA	I _s = 0
I _e	Gate Reverse Current		0.1	0.4		0.1	0.4	nA	V _{GS} = 10 V	V _{DS} = 0
I _D	Drain Current	0.15	0.35	0.5	0.4	0.67	0.9	mA	V _{DS} = -10 V	V _{GS} = 0
V _{GS}	Gate Source Cutoff Voltage			5.0			8.0	Volts	V _{DS} = -10 V	I _D = 1.0 nA
gm	Forward Transconductance (f = 1.0 kc)	100	150		150	200		μmhos	V _{DS} = -10 V	V _{GS} = 0
C _{ISS}	Input Capacitance (f = 1.0 mc)		3.0	4.5		3.0	4.5	pf	V _{DS} = -10 V	V _{GS} = 0
E _N	Equivalent Input Noise Voltage (f = 1.0 kc) [Note 2]		0.08	0.18		0.08	0.18	μV/√cps	V _{DS} = -10 V	V _{GS} = 0

Electrical Characteristics Continued on Page 2.

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NOTES:

- (1) These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
- (2) Power Bandwidth of 200 cps.
- (3) This maximum power dissipation is determined by BV_{DGO} and I_D.



Quality Semi-Conductors

2N3277 • 2N3278

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

SYMBOL	CHARACTERISTIC	2N3277			2N3278			UNITS	TEST COND
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
I_G (150°C)	Gate Reverse Current		0.07	0.5	0.07	0.5	μA	$V_{DS} = 10 V$	$V_{GS} = 0 V$
BV_{SGO}	Source to Gate Breakdown Voltage	25			25		Volts	$I_S = 1.0 \mu A$	$V_{DS} = 0 V$
C_{DG}	Drain to Gate Capacitance ($f = 1.0 mc$)		1.2	1.5	1.2	1.5	pf	$V_{DS} = -10 V$	$V_{GS} = 0 V$
C_{GS}	Gate to Source Capacitance ($f = 1.0 mc$)		2.0	3.0	2.0	3.0	pf	$V_{DS} = -10 V$	$V_{GS} = 0 V$
C_{DS}	Drain to Source Capacitance ($f = 1.0 mc$)		0.5	1.0	0.5	1.0	pf	$V_{DS} = -10 V$	$V_{GS} = 0 V$
r_d	Drain Resistance ($f = 1.0 mc$)	0.5	1.0		0.1	0.4	Meg Ω	$V_{DS} = -10 V$	$V_{GS} = 0 V$

See Page 4 for Equivalent Circuit

TYPICAL 2N3277 ELECTRICAL CHARACTERISTICS

