

TOPAZ
SEMICONDUCTOR

SD2200

N-CHANNEL DEPLETION-MODE D-MOS FET

ORDERING INFORMATION

TO-206AF (TO-72) Hermetic Package	SD2200DE
with Shorting Ring on leads	SD2200DE/R
Description	20V, 75Ω

FEATURES

- Normally ON Configuration
- Low Interelectrode Capacitances
- High-Speed Switching
- Pin and Function Compatible to Industry Standard J-FETs with addition of Substrate Bias Pin

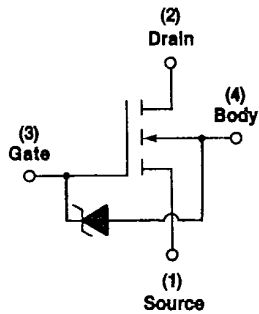
APPLICATIONS

- High-Speed Analog Switches
- Wide-Band RF Amplifiers
- Cascode Amplifiers

ABSOLUTE MAXIMUM RATINGS ($T_A = +25^\circ\text{C}$ unless otherwise noted)

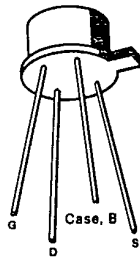
V_{DS} Drain-Source Voltage	+20V	I_D Continuous Drain Current	+100 mA
V_{SD} Source-Drain Voltage	+10V	P_D Total Device Dissipation	360 mW
V_{DB} Drain-Body Voltage	+25V	Derating Factor	2.88 mW/°C
V_{SB} Source-Body Voltage	+15V	T_J Operating Junction Temperature Range	-55 to +150°C
V_{GD} Gate-Drain Voltage	+25V	T_S Storage Temperature Range	-55 to +150°C
V_{GS} Gate-Source Voltage	+25V	T_L Lead Temperature (1/16" from mounting surface for 10 sec.)	+260°C
V_{GB} Gate-Body Voltage	+25V		

SCHEMATIC DIAGRAM



Body internally connected to Case

PIN CONFIGURATION



PACKAGE DIMENSIONS (TO-72) TO-206AF
(See Package 3)

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, per side, unless otherwise noted)

#	CHARACTERISTIC	MIN	TYP	MAX	UNITS	TEST CONDITIONS
1	BV_{DS} Drain-Source Breakdown Voltage	20			V	$I_D = 20\text{ nA}$, $V_{GS} = V_{BS} = -5\text{V}$
2	BV_{SD} Source-Drain Breakdown Voltage	10				$I_S = 20\text{ nA}$, $V_{GD} = V_{BD} = -5\text{V}$
3	BV_{DB} Drain-Body Breakdown Voltage	25				$I_D = 20\text{ nA}$, $V_{GB} = 0$ Source Open
4	BV_{SB} Source-Body Breakdown Voltage	15				$I_S = 10\text{ }\mu\text{A}$, $V_{GB} = 0$ Drain open
5	$I_{GSS(fwd)}$ Forward Gate Leakage Current			2.0	nA	$V_{GS} = 25\text{V}$, $V_{DS} = V_{BS} = 0$
6	I_G Gate Operating Current		-6.0	-100	pA	$V_{DG} = 20\text{V}$ $I_D = 5.0\text{ mA}$
7			-1.4	-10	nA	$V_{GS} = -5.6\text{V}$ $T_A = +125^\circ\text{C}$
8	$V_{GS(off)}$ Gate-Source Cutoff Voltage	-1.0		-5.0	V	$V_{DS} = 10\text{V}$, $I_D = 2.0\text{ }\mu\text{A}$ $V_{BS} = -5.6\text{V}$
9	$V_{GS(on)}$ Gate-Source ⁽¹⁾ ON Voltage	-0.3		-3.0		$V_{DG} = 10\text{V}$, $I_D = 10\text{ mA}$, $V_{BS} = -5.6\text{V}$
10	I_{DSX} Zero Gate Voltage ⁽¹⁾ Drain Current	14		60	mA	$V_{DS} = 10\text{V}$ $V_{GS} = 0$
11		10				$V_{BS} = -5.6\text{V}$ $T_A = +125^\circ\text{C}$
12	$r_{DS(ON)}$ Drain-Source ON Resistance		50	75	ohms	$I_D = 1.0\text{ mA}$, $V_{GS} = 0$, $V_{BS} = -5.6\text{V}$
13	g_{fs} Common-Source ⁽¹⁾ Forward Transconductance	10	15	20	mmhos	$V_{DG} = 10\text{V}$ $I_D = 10\text{ mA}$ $V_{BS} = -5.6\text{V}$
14	g_{os} Common-Source Output Conductance		380	600	μmhos	
15	C_{iss} Common-Source Input Capacitance		7.0		pF	$f = 1\text{ MHz}$
16	C_{oss} Common-Source Output Capacitance		2.4			
17	C_{rss} Common-Source Reverse Transfer Capacitance		0.6			
18	$C_{(gs + sb)}$ Source Node Capacitance		9.0			

Note 1: Pulse Test, 80 μsec , 1% Duty Cycle

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = +25^\circ\text{C}$ unless otherwise specified)

