

**TOPAZ**  
SEMICONDUCTOR

**SD1500, SD1501**

**N-CHANNEL ENHANCEMENT-MODE  
D-MOS FET SWITCHES**

**ORDERING INFORMATION**

TO-92 Plastic Package	SD1500BD	SD1501BD
Sorted Chips in Waffle Pack	SD1500CHP	SD1501CHP
SOT-89 Surface Mount Pkg.	SD1500CY	SD1501CY
Description	600V, 60ohm	550V, 60ohm

**FEATURES**

- Guaranteed BVDS of 600V min
- Low Output and Transfer Capacitance
- Extended Safe Operating Area
- Available in Low Cost TO-92 Package
- Available in Surface Mount Package

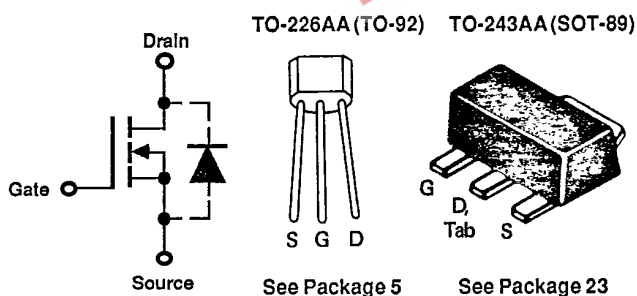
**APPLICATIONS**

- Outpulser Switching
- High Speed Pulse Amplifiers
- Solid-State Relays
- Display Drivers
- High Voltage ATE
- Telecommunications Switching

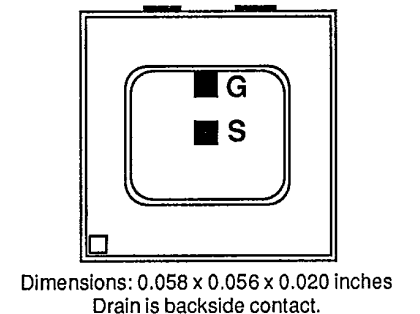
**ABSOLUTE MAXIMUM RATINGS** ( $T_c = +25^\circ\text{C}$  unless otherwise noted)

Drain-Source Voltage			Peak Pulsed Drain Current	200mA
SD1500	600V		Continuous Device Dissipation	
SD1501	550V		$T_c = +25^\circ\text{C}$	$T_c = +100^\circ\text{C}$
Drain-Gate Voltage ( $V_{GS} = 0$ )			SD1500-01BD	3.0 0.4 W
SD1500	600V		SD1500-01CY	1.2 0.3 W
SD1501	550V		Linear Derating Factor	
Gate-Source Voltage	$\pm 40\text{V}$		$T_c = +25^\circ\text{C}$	$T_c = +100^\circ\text{C}$
Continuous Drain Current	$T_c = +25^\circ\text{C}$	$T_c = +100^\circ\text{C}$	SD1500-01BD	24 3.0 mW/°C
SD1500-01BD	180 mA	65 mA	SD1500-01CY	9.6 2.3 mW/°C
SD1500-01CY	115 mA	55 mA	Operating Junction and Storage	
			Temperature Range	-55 to +125°C
			Lead Temperature (1/16" from mounting	
			surface for 30 Sec)	+260°C

**CONFIGURATION**



**CHIP CONFIGURATION**





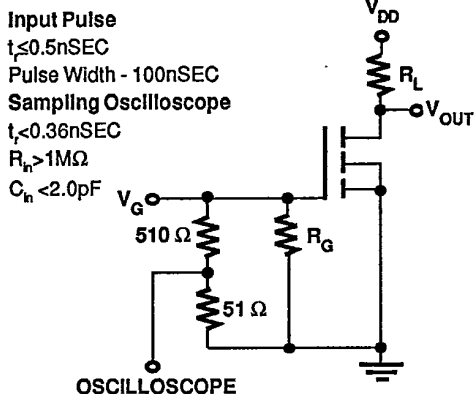
T-29-25  
SD1500, SD1501

**ELECTRICAL CHARACTERISTICS** ( $T_c = +25^\circ\text{C}$  unless otherwise noted)

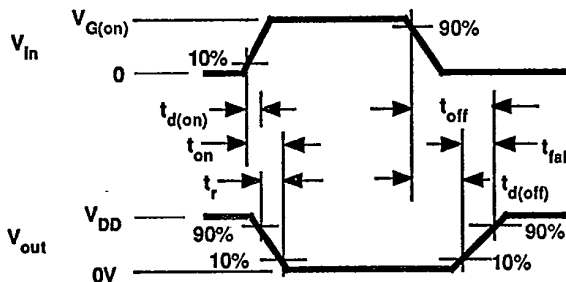
#	CHARACTERISTICS	SD1500			SD1501			UNIT	TEST CONDITION
		MIN	TYP	MAX	MIN	TYP	MAX		
1	$BV_{DSS}$ Drain-Source Breakdown Voltage	600	700		550	600		V	$I_D = 10\mu\text{A}, V_{GS} = 0$
2	$V_{GS(th)}$ Gate-Source Threshold Voltage	1.0	2.1	4.0	1.0	2.1	4.0		$V_{DS} = V_{GS}, I_D = 1\text{mA}$
3	$I_{GSS}$ Gate-Body Leakage Current		0.3	10		0.3	10	nA	$V_{GS} = 20\text{V}$ $V_{DS} = 0$ $T_c = +125^\circ\text{C}$
4				100			100		
5	$I_{DSS}$ Drain-Source OFF Leakage Current			1.0				$\mu\text{A}$	$V_{DS} = 480\text{V}$ $V_{GS} = 0$ $T_c = +125^\circ\text{C}$
6				50					$V_{DS} = 440\text{V}$ $V_{GS} = 0$ $T_c = +125^\circ\text{C}$
7							1.0		
8							50		
9	$I_{D(on)}$ ON Drain Current (1)	100	260		100	260		mA	$V_{DS} = 25\text{V}, V_{GS} = 10\text{V}$
10	$r_{DS(on)}$ Drain-Source ON Resistance(1)		45	60		45	60	ohms	$V_{GS} = 10\text{V}$ $I_D = 20\text{mA}$ $T_c = +125^\circ\text{C}$
11				100			100		
12	$g_{fs}$ Common-Source(1) Forward Transcond.	100	215		100	215		mS	$V_{DS} = 25\text{V}, I_D = 100\text{mA}$ $f = 1\text{kHz}$ (Note 1)
13	$C_{iss}$ Common-Source Input Capacitance		80	100		80	100	pF	$V_{DS} = 25\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$
14	$C_{oss}$ Common-Source Reverse Transfer Capacitance		1.0	2.0		1.0	2.0		
15	$C_{oss}$ Common-Source Output Capacitance		6.0	10		6.0	10		
16	$t_{on}$ Turn-On Time		7.0	12		7.0	12	nSec	$V_{DD} = 25\text{V}$ $R_L = 51\text{ohms}$ $R_G = 51\text{ohms}$ $V_{GS(on)} = 10\text{V}$
17	$t_{off}$ Turn-Off Time		7.0	12		7.0	12		

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

**SWITCHING TIMES TEST CIRCUIT**



**TEST WAVEFORMS**



**TYPICAL PERFORMANCE CHARACTERISTICS ( $T_c = +25^\circ\text{C}$  unless otherwise noted)**

