

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

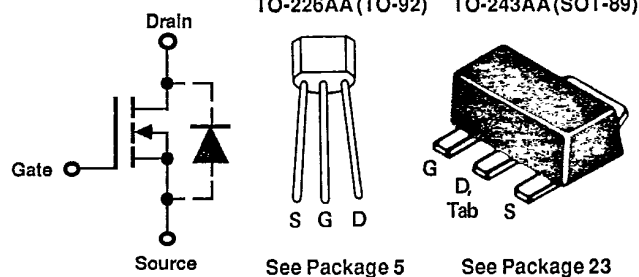
APPLICATIONS

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

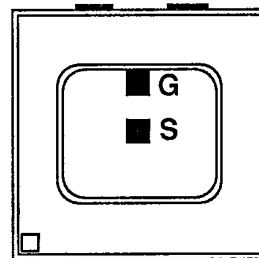
ABSOLUTE MAXIMUM RATINGS ($T_c = +25^\circ\text{C}$ unless otherwise noted)

Drain-Source Voltage	SD1500	600V	Peak Pulsed Drain Current	200mA
	SD1501	550V	Continuous Device Dissipation	
Drain-Gate Voltage ($V_{GS} = 0$)	SD1500	600V	$T_c = +25^\circ\text{C}$	$T_c = +100^\circ\text{C}$
	SD1501	550V	SD1500-01BD	3.0 0.4 W
Gate-Source Voltage		$\pm 40\text{V}$	SD1500-01CY	1.2 0.3 W
Continuous Drain Current			Linear Derating Factor	
	$T_c = +25^\circ\text{C}$	$T_c = +100^\circ\text{C}$	$T_c = +25^\circ\text{C}$	$T_c = +100^\circ\text{C}$
SD1500-01BD	180	65	SD1500-01BD	24 3.0 mW/°C
SD1500-01CY	115	55	SD1500-01CY	9.6 2.3 mW/°C
			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



Dimensions: 0.058 x 0.056 x 0.020 inches
Drain is backside contact.

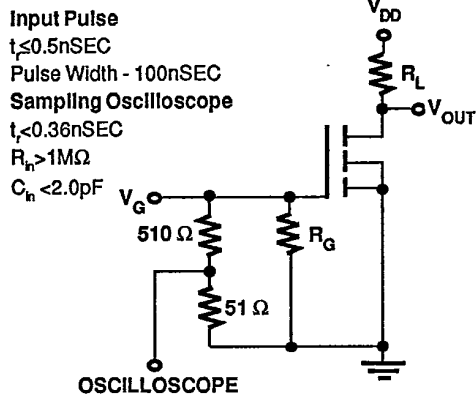
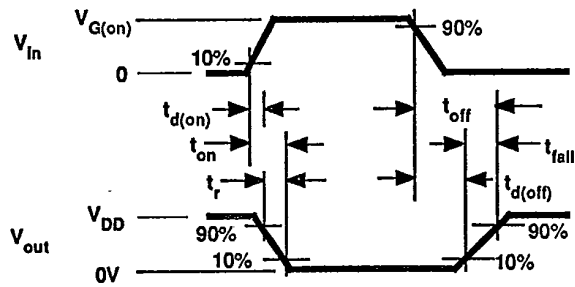
ELECTRICAL CHARACTERISTICS ($T_c = +25^\circ\text{C}$ unless otherwise noted)

#	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	$V_{GS} = 20\text{V}$
4					100			100		$V_{DS} = 0, T_c = +125^\circ\text{C}$
5	I_{DSS}	Drain-Source OFF Leakage Current			1.0				μA	$V_{DS} = 480\text{V}$
6					50					$V_{GS} = 0, T_c = +125^\circ\text{C}$
7								1.0		$V_{DS} = 440\text{V}$
8								50		$V_{GS} = 0, T_c = +125^\circ\text{C}$
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		$V_{GS} = 10\text{V}$
11					100			100		$I_D = 20\text{mA}, T_c = +125^\circ\text{C}$
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		$V_{DS} = 25\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$
14	C_{riss}	Common-Source Reverse Transfer Capacitance		1.0	2.0		1.0	2.0	pF	
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 80 μSec , 1% Duty Cycle

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 T-29-25
 SD1500, SD1501

SWITCHING TIMES TEST CIRCUIT

TEST WAVEFORMS

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