T-35-25

TOPAZ
SEMICONDUCTOR

SD1127

N-CHANNEL ENHANCEMENT-MODE VERTICAL D-MOS FET ULTRA LOW-LEAKAGE

ORDERING INFORMATION

TO-226AA (TO-92) Plastic Package	SD1127BD
Sorted Chips in Waffle Pack	SD1127CHP
Description	60 Volt, 4.0 ohm

FEATURES

- Drain-Source Leakage (I_{DSS}), 1.0nA max
- Low Output and Transfer Capacitances
- Extended Safe Operating Area

APPLICATIONS

- High-Speed Switches
- Low-Leakage Solid State Relays
- High-Speed Pulse Amplifiers
- Logic Interfaces
- Line Drivers

ABSOLUTE MAXIMUM RATINGS ($T_A = +25°C$ unless otherwise noted)

Drain-Source Voltage .... +60V
Drain-Gate Voltage ($V_{GS} = 0$) .... +60V
Gate-Source Voltage .... ±30V
Continuous Drain Current

	$T_A = +25°C$	$T_C = +25°C$
SD1127BD	.20A	.36A

Peak Pulsed Drain Current 2.0A

Continuous Device Dissipation

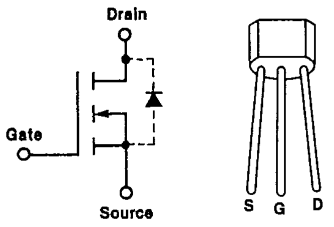
	$T_A = +25°C$	$T_C = +25°C$
SD1127BD	0.30W	1.0W

Linear Derating Factor

	$T_A = +25°C$	$T_C = +25°C$
SD1127BD	3.0mW/°C	10mW/°C

Operating Junction and Storage Temperature Range
-55°C to +150°C
Lead Temperature (1/16" from mounting surface for 30 sec.) .... +260°C

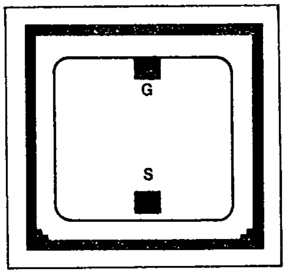
PIN CONFIGURATION



PACKAGE DIMENSIONS (TO-92) TO-226AA

(See Package 5)

CHIP CONFIGURATION



Dimensions: 054 × .051 × .020 in.
Drain is backside contact.

T-35-25

TOPAZ
SEMICONDUCTOR

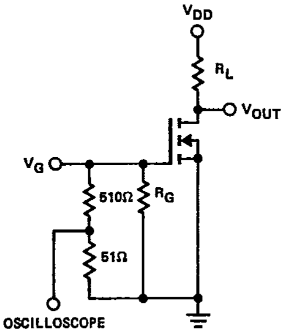
SD1127

ELECTRICAL CHARACTERISTICS (T_A = +25°C unless otherwise noted)

#		CHARACTERISTIC		SD1127			UNIT	TEST CONDITION
				MIN	TYP	MAX		
1	STATIC	BV_{DSS}	Drain-Source Breakdown Voltage	60	90		V	$I_D = 10\mu A$, $V_{GS} = 0$
2		$V_{GS(th)}$	Gate-Source Threshold Voltage	0.8		2.4	V	$V_{DS} = V_{GS}$, $I_D = 1mA$
3		I_{GBS}	Gate-Body Leakage Current		.03	1.0	nA	$V_{GS} = 20V$, $V_{DS} = 0$
4						10		$T_A = +125°C$
5		I_{DSS}	Drain-Source OFF Leakage Current			1.0	nA	$V_{DS} = 30V$, $V_{GS} = 0$
6						100		$T_A = +125°C$
7		$I_{D(on)}$	ON Drain Current	2.0	3.5		A	$V_{DS} = 25V$, $V_{GS} = 10V$ (Note 1)
8		$r_{DS(on)}$	Drain-Source ON Resistance		3.2	5.0	ohms	$V_{GS} = 5V$, $I_D = 0.3A$ (Note 1)
9					2.9	4.0		$V_{GS} = 10V$, $I_D = 1.0A$ (Note 1)
10	DYNAMIC	g_{fs}	Common-Source Forward Transcond.	250	500		mmhos	$V_{DS} = 25V$, $I_D = 1.0A$ f = 1KHz (Note 1)
11		C_{iss}	Common-Source Input Capacitance		80		pF	$V_{DS} = 25V$, $V_{GS} = 0$ f = 1MHz
12		C_{rss}	Common-Source Reverse Transfer Capacitance		1.5			
13		C_{oss}	Common-Source Output Capacitance		15			
14		t_{on}	Turn-On Time		4.0	6.0	nSec	$V_{DD} = 25V$ R_L = 25 ohms R_G = 51 ohms $V_{G(on)} = 10V$
15		t_{off}	Turn-Off Time		4.0	6.0		

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

SWITCHING TIMES TEST CIRCUIT



INPUT PULSE
t_r <0.6 nSEC
PULSE WIDTH – 100 nSEC

SAMPLING OSCILLOSCOPE
t_r < 0.36 nSEC
R_{in} > 1MΩ
C_{in} < 2.0 pF

TEST WAVEFORMS