

**TOPAZ**  
SEMICONDUCTOR

T-29-25  
**2N7000**

**N-CHANNEL ENHANCEMENT-MODE  
D-MOS POWER FETs**

**ORDERING INFORMATION**

TO-226AA (TO-92) Plastic Package	2N7000
Description	60V, 5 ohm

**FEATURES**

- High Gate Oxide Breakdown,  $\pm 40V$  min.
- Low Output and Transfer Capacitances
- Extended Safe Operating Area

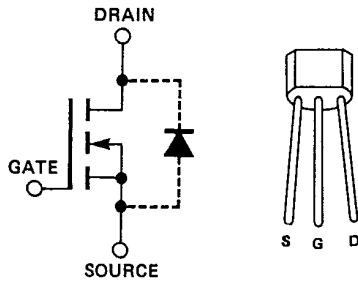
**APPLICATIONS**

- High-Speed Pulse Amplifiers
- Logic Buffers
- Line Drivers
- Solid-State Relays
- Motor Controls
- Power Supplies

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

Drain-Source Voltage	+60V	Continuous Device Dissipation	400mW
Drain-Gate Voltage ( $V_{GS} = 0$ )	+60V	Linear Derating Factor	3.2mW/ $^\circ C$
Gate-Source Voltage	$\pm 40V$	Pulsed Device Dissipation	3.125W
Continuous Drain Current		Linear Derating Factor	25mW/ $^\circ C$
	$T_A = 25^\circ C$ $T_C = 25^\circ C$	Operating Junction	
	.21A                    .32A	Temperature Range	-55 to +150 $^\circ C$
Peak Pulsed Drain Current	0.79A	Storage Temperature Range	-55 to +150 $^\circ C$
		Lead Temperature (1/16" from mounting surface for 30 Sec)	+300 $^\circ C$

**SCHEMATIC DIAGRAM/PACKAGE**



**PACKAGE DIMENSIONS  
(TO-92) TO-226AA**

(See Package 5)

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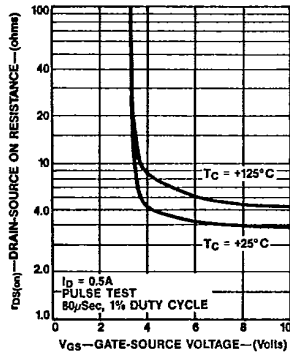
**ELECTRICAL CHARACTERISTICS** ( $T_C = +25^\circ\text{C}$  unless otherwise noted)

#	CHARACTERISTIC		2N7000			UNIT	TEST CONDITIONS
			MIN	TYP	MAX		
1	STATIC	$BV_{DSS}$ Drain-Source Breakdown Voltage	60	100		V	$I_D = 10\mu\text{A}, V_{GS} = 0$
2		$V_{GS(th)}$ Gate-Source Threshold Voltage	0.8	1.9	3.0	V	$I_D = 1.0\text{mA}, V_{DS} = V_{GS}$
3		$I_{GBS}$ Gate-Body Leakage Current		$\pm 1.0$	$\pm 10$	nA	$V_{GS} = \pm 15\text{V}, V_{DS} = 0$
4		$I_{DSS}$ Drain-Source OFF Leakage Current		0.1	1.0	$\mu\text{A}$	$V_{DS} = 48\text{V}, V_{GS} = 0$
5					.01	1.0	mA
6		$I_{D(on)}$ ON Drain Current	75			mA	$V_{DS} = 10\text{V}, V_{GS} = 4.5\text{V}$ (Note 1)
7		$V_{DS(on)}$ Drain-Source ON Voltage			0.4	V	$V_{GS} = 4.5\text{V}, I_D = 75\text{mA}$ (Note 1)
8					1.5		2.5
9		$r_{DS(on)}$ Drain-Source ON Resistance		3.0	5.0	ohms	$V_{GS} = 10\text{V}, I_D = 0.5\text{A}$ (Note 1)
10					4.7		9.0
11	DYNAMIC	$g_{fs}$ Common-Source Forward Transcond.	100			mmhos	$V_{DS} = 10\text{V}, I_D = 0.2\text{A}$ $f = 1\text{KHz}$ (Note 1)
12		$C_{iss}$ Common-Source Input Capacitance			60	pF	$V_{DS} = V_{GS} = 0$ $f = 1\text{MHz}$
13		$C_{rss}$ Common-Source Reverse Transfer Capacitance		1.3	5.0		
14		$C_{oss}$ Common-Source Output Capacitance		10.5	25		
15		$t_{on}$ Turn-On Time		5.0	10		
16		$t_{off}$ Turn-Off Time		6.0	10		

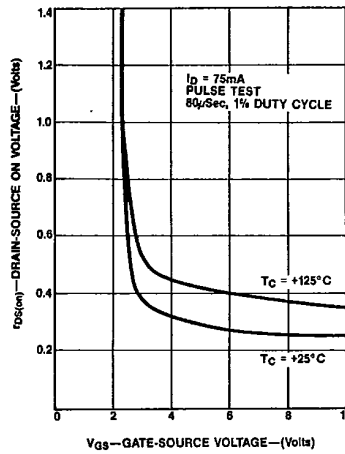
 Note 1: Pulse Test  $80\mu\text{Sec}$ , 1% Duty Cycle

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

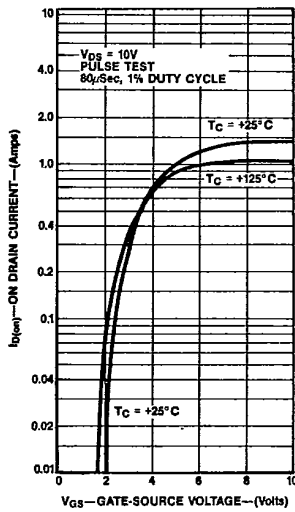
**DRAIN-SOURCE ON RESISTANCE**  
—VS—  
**GATE-SOURCE VOLTAGE**



**DRAIN-SOURCE ON VOLTAGE**  
—VS—  
**GATE-SOURCE VOLTAGE**



**ON DRAIN CURRENT**  
—VS—  
**GATE-SOURCE VOLTAGE**



**FORWARD TRANSCONDUCTANCE**  
—VS—  
**ON DRAIN CURRENT**

