

T-29-25

TOPAZ
SEMICONDUCTOR

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

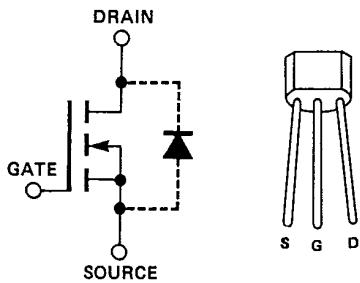
APPLICATIONS

- 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 Temperature Range	-55 to $+150^\circ C$
.21A	.32A	Storage Temperature Range	-55 to $+150^\circ C$
Peak Pulsed Drain Current	0.79A	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)

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

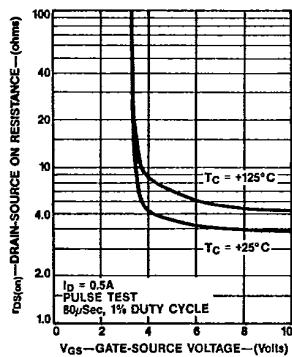
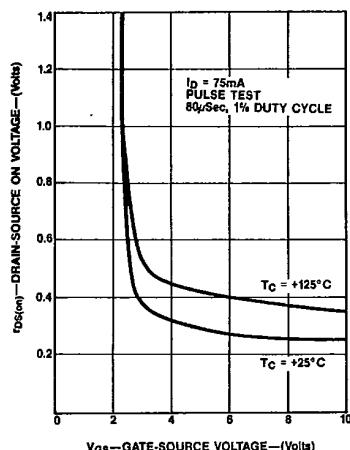
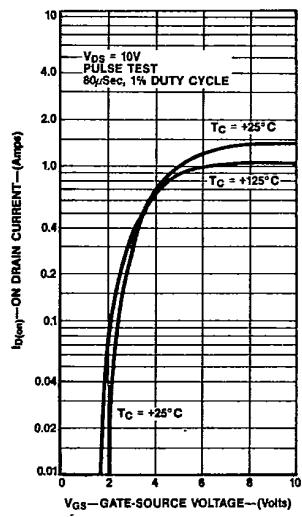
#	CHARACTERISTIC	2N7000			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
1	BV_{DSS} Drain-Source Breakdown Voltage	60	100		V	$I_D = 10\mu\text{A}, V_{GS} = 0$
2	$V_{GS(\text{th})}$ Gate-Source Threshold Voltage	0.8	1.9	3.0	V	$I_D = 1.0\text{mA}, V_{DS} = V_{GS}$
3	I_{GS} Gate-Body Leakage Current		± 1.0	± 10	nA	$V_{GS} = \pm 15\text{V}, V_{DS} = 0$
4	$I_{DS(\text{OFF})}$ Drain-Source OFF		0.1	1.0	μA	$V_{DS} = 48\text{V}, V_{GS} = 0$
5	Leakage Current		.01	1.0	mA	$T_C = +125^\circ\text{C}$
6	$I_{D(\text{ON})}$ ON Drain Current	75			mA	$V_{DS} = 10\text{V}, V_{GS} = 4.5\text{V}$ (Note 1)
7	$V_{DS(\text{ON})}$ 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		$V_{GS} = 10\text{V}, I_D = 0.5\text{A}$ (Note 1)
9	$r_{DS(\text{ON})}$ 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		$T_C = +125^\circ\text{C}$
11	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	nSec	$V_{DD} = 15\text{V}, V_{G(\text{on})} = 10\text{V}$ $R_G = 25\Omega, R_L = 25\Omega$
16	t_{off} Turn-Off Time		6.0	10		

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

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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