

T-35-25

**TOPAZ**  
SEMICONDUCTOR

**TZ403**

**N-CHANNEL ENHANCEMENT-MODE D-MOS FET  
ULTRA HIGH-SPEED LOW-COST SWITCH**

**ORDERING INFORMATION**

TO-92 Plastic Package	TZ403BD
Description	15V, 60 ohm

**FEATURES**

- Reliable, Low Cost, Plastic Package
- High Speed Switching,  $t_r < 1\text{nSec}$
- Low Capacitance,  $c_{rss}$  0.4pF typ
- CMOS and TTL Compatible Input

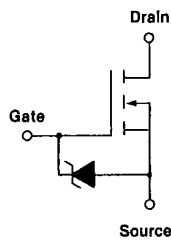
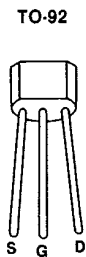
**APPLICATIONS**

- Switch Drivers
- Video Switches
- Sample Hold and Track and Hold
- VHF/UHF Amplifiers

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

Drain-Source Voltage	+15V	Continuous Drain Current	.50mA
Gate-Source Voltage	-0.3V	Power Dissipation (at or below $T_A = +25^\circ\text{C}$ )	.300mW
	+20V	Linear Derating Factor	3.0mW/ $^\circ\text{C}$
Gate-Drain Voltage	-0.3V	Operating Storage and	
	+20V	Junction Temperature Range	-40 $^\circ\text{C}$ to +125 $^\circ\text{C}$
Source-Drain Voltage	-0.3V		

**PIN CONFIGURATION/SCHEMATIC DIAGRAM**



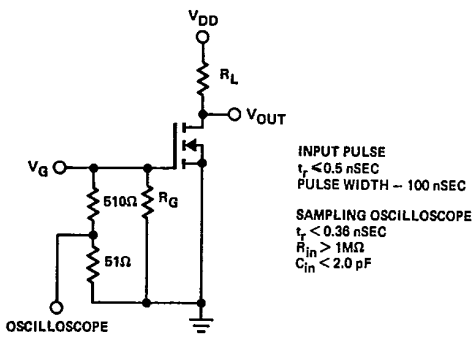
**PACKAGE DIMENSIONS  
(TO-92) TO-226AA**

(See Package 5)

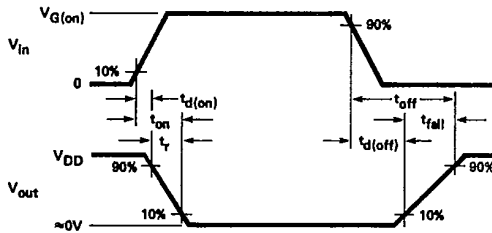
**ELECTRICAL CHARACTERISTICS** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

CHARACTERISTIC		MIN	TYP	MAX	UNIT	TEST CONDITION
STATIC	$BV_{DS}$ Drain-Source Breakdown Voltage	15	25		V	$I_D = 1.0\mu\text{A}$ , $V_{GS} = 0$
	$I_{D(off)}$ Drain-Source OFF Leakage Current			1.0	$\mu\text{A}$	$V_{DS} = 15\text{V}$ , $V_{GS} = 0$
	$I_{GSS}$ Gate-Source Leakage Current			1.0	$\mu\text{A}$	$V_{GS} = 20\text{V}$ , $V_{DS} = 0$
	$I_{D(on)}$ Drain-Source ON Current	80	120		mA	$V_{DS} = 10\text{V}$ , $V_{GS} = 10\text{V}$ Pulse Test
	$V_{GS(th)}$ Gate-Source Threshold Voltage	0.7		1.5	V	$I_D = 1.0\mu\text{A}$ , $V_{DS} = V_{GS}$
	$V_{DS(on)}$ Drain-Source ON Voltage		140	175	mV	$I_D = 1\text{mA}$ , $V_{GS} = 2.4\text{V}$
	$r_{DS(on)}$ Drain-Source ON Resistance		140	175	ohms	
	$V_{DS(on)}$ Drain-Source ON Voltage		40	60	mV	$I_D = 1\text{mA}$ , $V_{GS} = 4.5\text{V}$
	$r_{DS(on)}$ Drain-Source ON Resistance		40	60	ohms	
DYNAMIC	$g_{fs}$ Common-Source Forward Transcond.	15	19		mmhos	$I_D = 20\text{mA}$ , $V_{DS} = 10\text{V}$ $f = 1\text{KHz}$ Pulse Test
	$C_{iss}$ Common-Source Input Capacitance		4.5	6.0	pf	$V_{DS} = 10\text{V}$ , $V_{GS} = 0$ $f = 1\text{MHz}$
	$C_{oss}$ Common-Source Output Capacitance		2.0	3.0		
	$C_{rss}$ Common-Source Reverse Transfer Capacitance		0.4	0.6		
	$t_{d(on)}$ Turn ON Delay Time		0.8	1.2	nS	$V_{DD} = 10\text{V}$ , $R_L = 680\Omega$ $V_{G(on)} = 10\text{V}$ , $R_G = 51\Omega$ $C_L = 1.5\text{pF}$
	$t_r$ Rise Time		0.9	1.2		
	$t_{(off)}$ Turn OFF Time		14			

**SWITCHING TIMES TEST CIRCUIT**



**TEST WAVEFORMS**



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

