TOPAZ SEMICONDUCTOR

TZ404

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

ORDERING INFORMATION

TO-92 Plastic Package	TZ404BD
SOT-89 Surface Mount Package	TZ404CY
Description	20V, 8 ohm

FEATURES

- Reliable, Low Cost, Plastic Package
- High Speed Switching, tr < 2nSec
- Low Capacitance, c_{rss} 1.2 pF typ
- CMOS and TTL Compatible Input
- Available in Surface Mount Package

APPLICATIONS

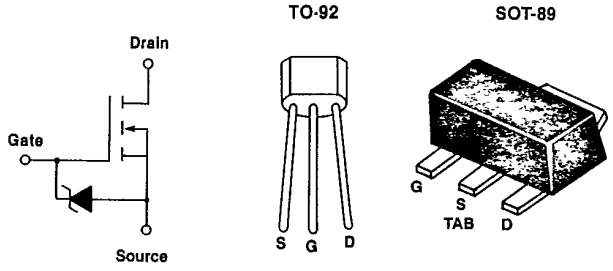
- Switch Drivers
- Video Switches
- VHF/UHF Amplifiers

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

Drain-Source Voltage ..... +20V
Gate-Source Voltage ..... -0.3V
+20V
Gate-Drain Voltage ..... -0.3V
+20V
Source-Drain Voltage ..... -0.3V

Peak Pulsed Drain Current ..... +0.8A
Continuous Drain Current 100mA
Power Dissipation (at or below T_A = +25°C) 300mW
Linear Derating Factor ..... 3.0mW/°C
Operating Junction and
Storage Temperature Range ..... -40°C to +125°C

PIN CONFIGURATIONS



PACKAGE DIMENSIONS TO-92

TO-226AA (TO-92)
See Package 5

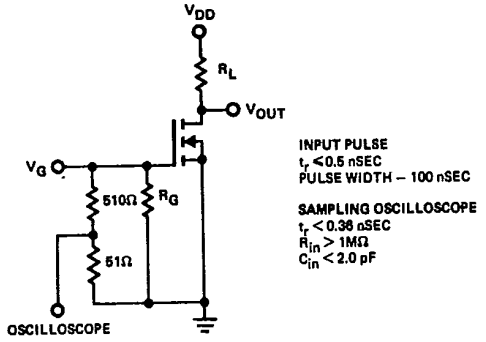
TO-243AA (SOT-89)
See Package 23

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

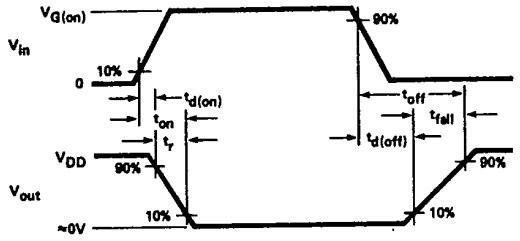
	CHARACTERISTIC		MIN	TYP	MAX	UNIT	TEST CONDITION	
STATIC	BV_{DS}	Drain-Source Breakdown Voltage	20	25		V	I_D = 1.0μA, V_{GS} = 0	
	$I_{D(off)}$	Drain-Source OFF Leakage Current			1.0	μA	V_{DS} = 15V, V_{GS} = 0	
	I_{GSS}	Gate-Source Leakage Current			10	μA	V_{GS} = 20V, V_{DS} = 0	
	$I_{D(on)}$	Drain-Source ON Current	0.8	1.2		A	V_{DS} = 10V, V_{GS} = 10V (Note 1)	
	$V_{GS(th)}$	Gate-Source Threshold Voltage	0.7	1.1	1.5	V	I_D = 1.0μA, V_{DS} = V_{GS}	
	$V_{DS(on)}$	Drain-Source ON Voltage			200	mV	I_D = 10mA	(Note 1)
	$r_{DS(on)}$	Drain-Source ON Resistance			20	ohms	V_{GS} = 2.4V	
	$V_{DS(on)}$	Drain-Source ON Voltage			800	mV	I_D = 100mA	
	$r_{DS(on)}$	Drain-Source ON Resistance			8.0	ohms	V_{GS} = 4.5V	
DYNAMIC	g_{fs}	Common-Source Forward Transcond.	100			mmhos	I_D = 0.3A V_{DS} = 20V f = 1KHz	
	C_{iss}	Common-Source Input Capacitance		12	18	pf	V_{DS} = 20V, V_{GS} = 0 f = 1MHz	
	C_{oss}	Common-Source Output Capacitance		6.0	8.0			
	C_{rss}	Common-Source Reverse Transfer Capacitance		1.2	2.0			
	$t_{d(on)}$	Turn ON Delay Time		1.0	1.5	nS	V_{DD} = 10V, R_L = 390Ω $V_{G(on)}$ = 10V, R_G = 51Ω C_L = 1.5pF	
	t_r	Rise Time		1.0	2.0			
	$t_{(off)}$	Turn OFF Time		10				

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

SWITCHING TIMES TEST CIRCUIT

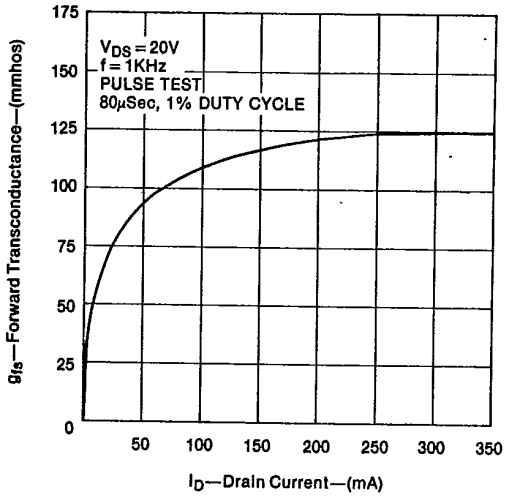


TEST WAVEFORMS

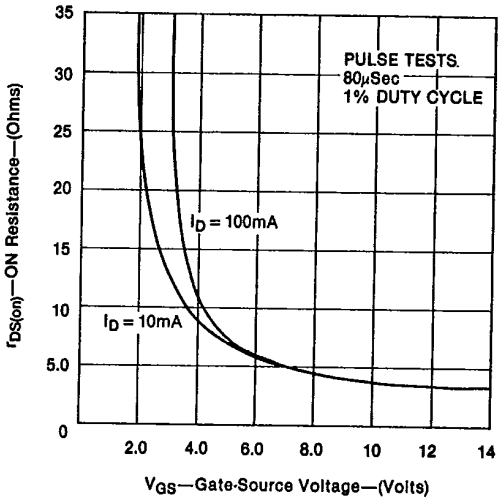


TYPICAL PERFORMANCE CHARACTERISTICS (T_A = +25°C unless otherwise specified)

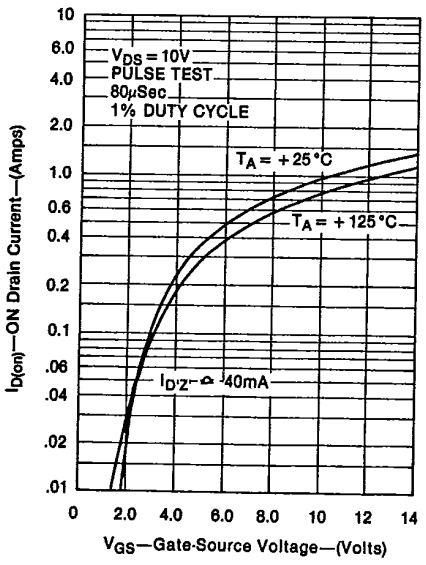
FORWARD TRANSCONDUCTANCE —VS— ON DRAIN CURRENT



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



ON DRAIN CURRENT —VS— GATE-SOURCE VOLTAGE



CAPACITANCES —VS— DRAIN-SOURCE VOLTAGE