

# TOPAZ

SEMICONDUCTOR

## VP0808, VP1008

### P-CHANNEL ENHANCEMENT-MODE D-MOS POWER FETs

#### ORDERING INFORMATION

Sorted Chips in Waffle Pack	VP0808CHP	VP1008CHP
TO-226AA (TO-92) Plastic Package	VP0808L	VP1008L
TO-237 Plastic Package	VP0808M	VP1008M
Description	-80V, 5.0 ohm	-100V, 5.0 ohm

#### FEATURES

- Gate Stand-off Voltage,  $\pm 40V$  min.
- Low Output and Transfer Capacitances
- N-Channel Complements Available

#### APPLICATIONS

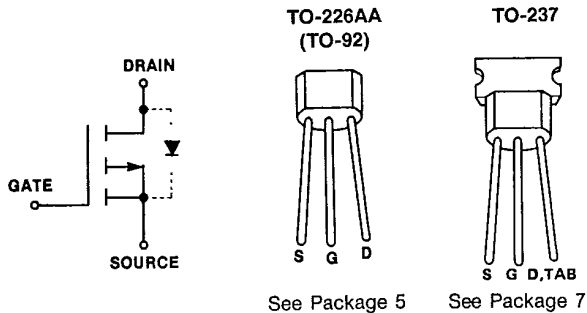
- Motor Controls
- Logic Interfaces
- Pulse Amplifiers

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

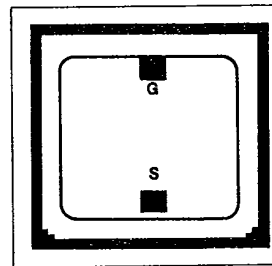
Drain-Source Voltage		
VP1008	.....	-100V
VP0808	.....	-80V
Drain-Gate Voltage ( $R_{GS} = 1M\Omega$ )		
VP1008	.....	-100V
VP0808	.....	-80V
Gate-Source Voltage		
.....	.....	$\pm 40V$
Continuous Drain Current		
	$T_c = +100^\circ C$	$T_c = +25^\circ C$
TO-92 Pkg.	.....	-13A    -21A
TO-237 Pkg.	.....	-21A    -33A
Peak Pulsed Drain Current		
.....	.....	-3.0A

Maximum Power Dissipation		
	$T_c = +100^\circ C$	$T_c = +25^\circ C$
TO-92 Pkg.	.....	0.4W    3.0W
TO-237 Pkg.	.....	0.6W    4.3W
Linear Derating Factor		
	Junction to Ambient	Junction to Case
	(mW/ $^\circ C$ )	(mW/ $^\circ C$ )
TO-92 Pkg.	.....	5.33    24
TO-237 Pkg.	.....	8.0    34
Operating Junction and Storage		
Temperature Range	.....	-55 to +150 $^\circ C$
Lead Temperature (1/16" from mounting surface for 10 Sec)	.....	+300 $^\circ C$

#### PIN CONFIGURATIONS



#### CHIP CONFIGURATION



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



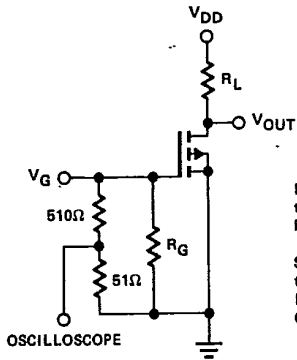
**VP0808, VP1008**

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

#	CHARACTERISTIC	VP0808			VP1008			UNIT	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX		
1	$BV_{DSS}$ Drain-Source Breakdown Voltage	-80			-100			V	$I_D = -10\mu\text{A}, V_{GS} = 0$
2	$V_{GS(th)}$ Gate-Source Threshold Voltage	-2.0		-4.5	-2.0		-4.5	V	$V_{DS} = V_{GS}$ $I_D = -1.0\text{mA}$
3	$I_{GAS}$ Gate-Body Leakage Current			-100			-100	nA	$V_{GS} = -30\text{V}, V_{DS} = 0$
4				100			100		$V_{GS} = +30\text{V}, V_{DS} = 0$
5	$I_{DSS}$ Drain-Source OFF Leakage Current			-10				$\mu\text{A}$	$V_{DS} = -80\text{V}$
6				-500					$V_{GS} = 0$ $T_C = +125^\circ\text{C}$
7							-10		$V_{DS} = -100\text{V}$
8							-500		$V_{GS} = 0$ $T_C = +125^\circ\text{C}$
9	$I_{D(on)}$ ON Drain Current <sup>(1)</sup>	-1.1			-1.1			A	$V_{DS} = -25\text{V}, V_{GS} = -10\text{V}$
10	$V_{DS(on)}$ Drain-Source <sup>(1)</sup> ON Voltage		-4.5	-5.0		-4.5	-5.0	V	$V_{GS} = -10\text{V}, I_D = -1.0\text{A}$
11	$r_{DS(on)}$ Drain-Source <sup>(1)</sup> ON Resistance		4.5	5.0		4.5	5.0	ohms	$V_{GS} = -10\text{V}$
12				8.0			8.0		$I_D = -1.0\text{A}$ $T_C = +125^\circ\text{C}$
13	$g_{fs}$ Common-Source <sup>(1)</sup> Forward Transcond.	200	270		200	270		mS	$V_{DS} = -25\text{V}, I_D = -0.5\text{A}, f = 1\text{KHz}$
14	$C_{iss}$ Common-Source Input Capacitance		60	150		60	150	pF	$V_{DS} = -25\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$
15	$C_{rns}$ Common-Source Reverse Transfer Capacitance		8.0	25		8.0	25		
16	$C_{oss}$ Common-Source Output Capacitance		11	60		11	60		
17	$t_{d(on)}$ Turn-ON Delay Time			10			10	nsec	$V_{DD} = -25\text{V}$ $R_L = 45\text{ ohms}$ $R_G = 25\text{ ohms}$ $V_{G(on)} = -10\text{V}$
18	$t_r$ Rise Time			15			15		
19	$t_{d(off)}$ Turn-OFF Delay Time			10			10		
20	$t_f$ Fall Time			15			15		
21	$I_S$ Continuous Source Current	-0.21			-0.21			A	TO-92 Pkg.
22			-0.33			-0.33			TO-237 Pkg.
23	$I_{SM}$ Peak Source Current <sup>(1)</sup>			-3.0			-3.0		
24	$V_{SD}$ Source-Drain <sup>(1)</sup> Forward Voltage		1.2			1.2		V	$V_{GS} = 0$ $I = .21\text{A}, \text{TO-92 Pkg.}$
25				1.2			1.2		$I = .33\text{A}, \text{TO-237 Pkg.}$

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

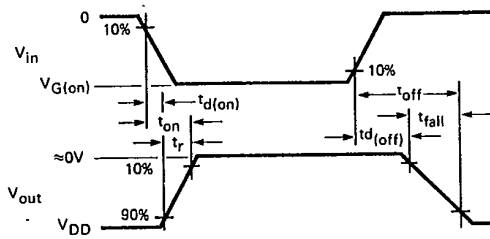
**SWITCHING TIME TEST CIRCUIT**



INPUT PULSE  
 $t_r < 0.5 \text{ nSEC}$   
 PULSE WIDTH - 100 nSEC

SAMPLING OSCILLOSCOPE  
 $t_s < 0.38 \text{ nSEC}$   
 $R_{in} > 1 \text{ M}\Omega$   
 $C_{in} < 2.0 \text{ pF}$

**TEST WAVEFORMS**



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

