

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

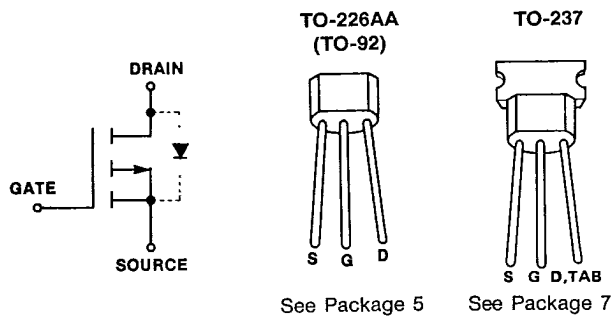
Linear Derating Factor

	Junction to Ambient	Junction to Case
	(mW/ $^\circ C$)	(mW/ $^\circ C$)
TO-92 Pkg.	5.33	24
TO-237 Pkg.	8.0	34

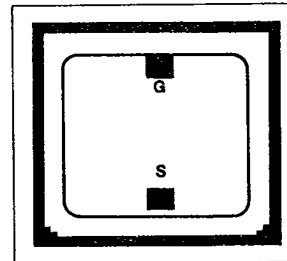
Operating Junction and Storage

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.

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_{GSS} Gate-Body Leakage Current			-100			-100	nA	$V_{GS} = -30\text{V}$, $V_{DS} = 0$
4				100			100	nA	$V_{GS} = +30\text{V}$, $V_{DS} = 0$
5	I_{DSS} Drain-Source OFF Leakage Current			-10				μA	$V_{DS} = -80\text{V}$
6				-500					$V_{GS} = 0$
7							-10		$V_{DS} = -100\text{V}$
8							-500		$V_{GS} = 0$
9	$I_{D(on)}$ ON Drain Current ⁽¹⁾	-1.1			-1.1			A	$V_{DS} = -25\text{V}$, $V_{GS} = -10\text{V}$
10	$V_{DS(on)}$ Drain-Source ⁽¹⁾ 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 ⁽¹⁾ ON Resistance		4.5	5.0		4.5	5.0	ohms	$V_{GS} = -10\text{V}$
12				8.0			8.0	ohms	$I_D = -1.0\text{A}$
13	g_{fs} Common-Source ⁽¹⁾ 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_{rss} 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	-21			-21			A	TO-92 Pkg.
22		-33			-33				TO-237 Pkg.
23	I_{SM} Peak Source Current ⁽¹⁾			-3.0			-3.0		
24	V_{SD} Source-Drain ⁽¹⁾ Forward Voltage		1.2			1.2		V	$V_{GS} = 0$
25			1.2			1.2			$I = .21\text{A}$, TO-92 Pkg. $I = .33\text{A}$, TO-237 Pkg.

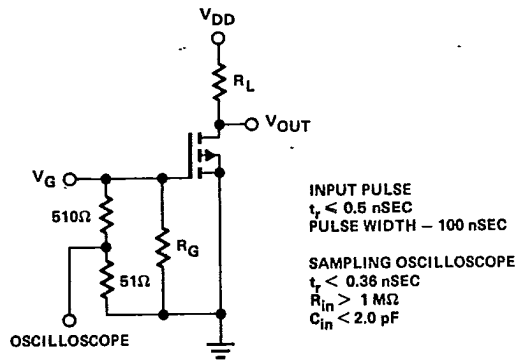
Note 1: Pulse Test 80 μSec , 1% Duty Cycle

T-29-25

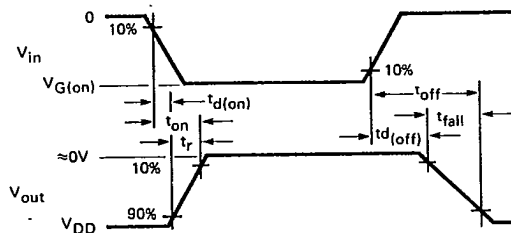
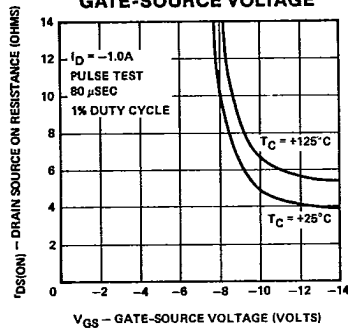
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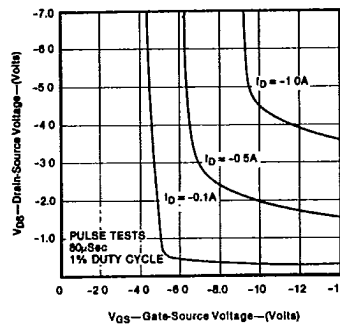
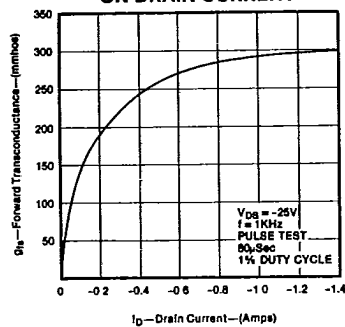
SWITCHING TIME TEST CIRCUIT



TEST WAVEFORMS

TYPICAL PERFORMANCE CHARACTERISTICS ($T_C = +25^\circ\text{C}$ unless otherwise specified)
 DRAIN-SOURCE ON RESISTANCE
 —VS—
 GATE-SOURCE VOLTAGE


ON VOLTAGE CHARACTERISTICS


 FORWARD TRANSCONDUCTANCE
 —VS—
 ON DRAIN CURRENT

 CAPACITANCES
 —VS—
 DRAIN-SOURCE VOLTAGE
