



## P-Channel Enhancement-Mode MOSFET Transistors

**PRODUCT SUMMARY**

Part Number	$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max ( $\Omega$ )	$V_{GS(th)}$ (V)	$I_D$ (A)
VP0808L	-80	5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.28
VP1008L	-100	5 @ $V_{GS} = -10$ V	-2 to -4.5	-0.28

**FEATURES**

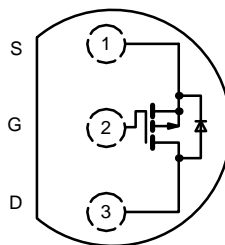
- High-Side Switching
- Low On-Resistance: 2.5  $\Omega$
- Moderate Threshold: -3.4 V
- Fast Switching Speed: 40 ns
- Low Input Capacitance: 75 pF

**BENEFITS**

- Ease in Driving Switches
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Switching
- Easily Driven Without Buffer

**APPLICATIONS**

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Power Supply, Converter Circuits
- Motor Control

TO-226AA  
(TO-92)VP0808L  
VP1008L

Top View

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

Parameter	Symbol	VP0808L	VP1008L	Unit
Drain-Source Voltage	$V_{DS}$	-80	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	$\pm 30$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )	$I_D$	$T_A = 25^\circ\text{C}$	-0.28	A
		$T_A = 100^\circ\text{C}$	-0.17	
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	-3	-3	
Power Dissipation	$P_D$	$T_A = 25^\circ\text{C}$	0.8	W
		$T_A = 100^\circ\text{C}$	0.32	
Maximum Junction-to-Ambient	$R_{thJA}$	156	156	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{thJC}$			
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$

## Notes

a. Pulse width limited by maximum junction temperature.



SPECIFICATIONS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Test Conditions	Typ <sup>a</sup>	Limits				Unit
				VP0808L		VP1008L		
				Min	Max	Min	Max	
<b>Static</b>								
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = -10 μA	-110	-80		-100		V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -1 mA	-3.4	-2	-4.5	-2	-4.5	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100		±100	nA
			T <sub>J</sub> = 125 °C			±500		±500
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -80 V, V <sub>GS</sub> = 0 V			-10			μA
			T <sub>J</sub> = 125 °C			-500		
			V <sub>DS</sub> = -100 V, V <sub>GS</sub> = 0 V					
								-500
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = -15 V, V <sub>GS</sub> = -10 V	-2	-1.1		-1.1		A
Drain-Source On-Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -10 V, I <sub>D</sub> = -1 A	2.5		5		5	Ω
			T <sub>J</sub> = 125 °C	4.4		8		
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -0.5 A	325	200		200		mS
Common Source Output Conductance <sup>b</sup>	g <sub>os</sub>	V <sub>DS</sub> = -7.5 V, I <sub>D</sub> = -0.1 A	0.45					
<b>Dynamic</b>								
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -25 V, V <sub>GS</sub> = 0 V f = 1 MHz	75		150		150	pF
Output Capacitance	C <sub>oss</sub>		40		60		60	
Reverse Transfer Capacitance	C <sub>rss</sub>		18		25		25	
<b>Switching<sup>c</sup></b>								
Turn-On Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -25 V, R <sub>L</sub> = 47 Ω I <sub>D</sub> ≅ -0.5 A, V <sub>GEN</sub> = -10 V R <sub>G</sub> = 25 Ω	11		15		15	ns
	t <sub>r</sub>		30		40		40	
Turn-Off Time	t <sub>d(off)</sub>		20		30		30	
	t <sub>f</sub>		20		30		30	

Notes

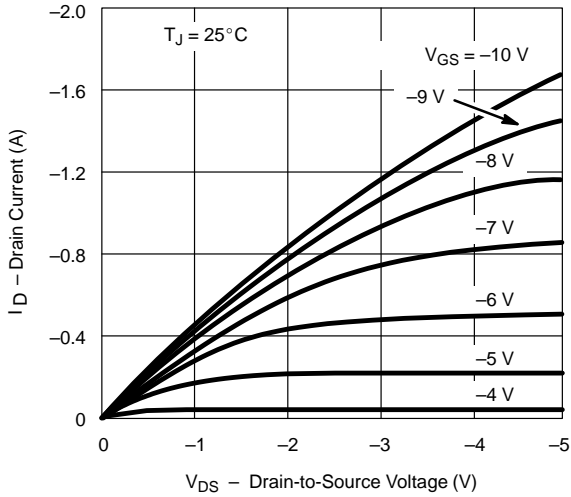
- a. For DESIGN AID ONLY, not subject to production testing..
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- c. Switching time is essentially independent of operating temperature.

VPDV10

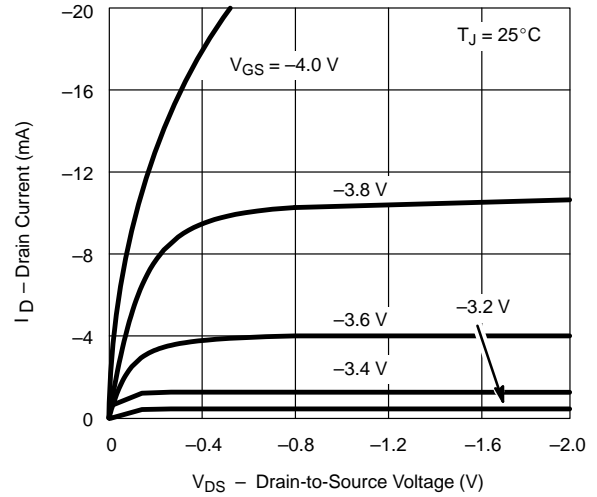


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

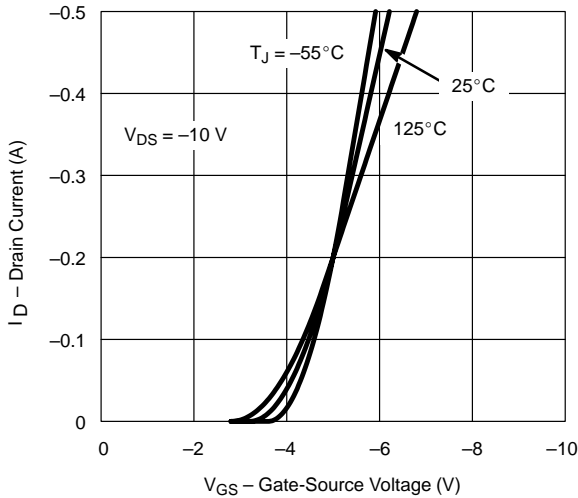
**Ohmic Region Characteristics**



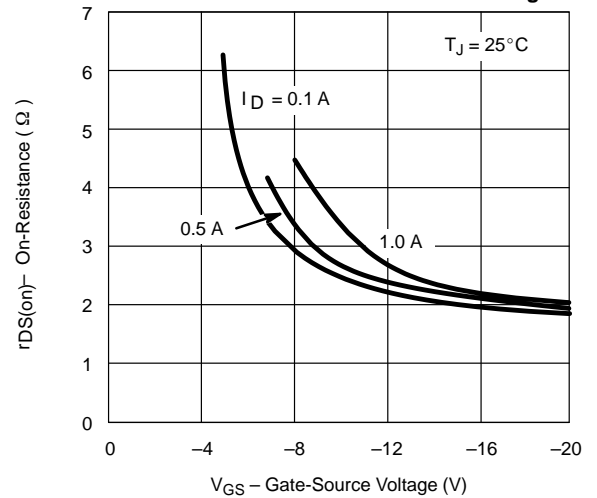
**Output Characteristics for Low Gate Drive**



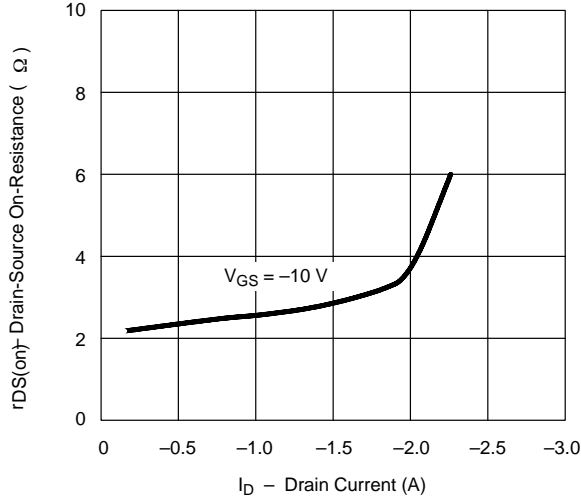
**Transfer Characteristics**



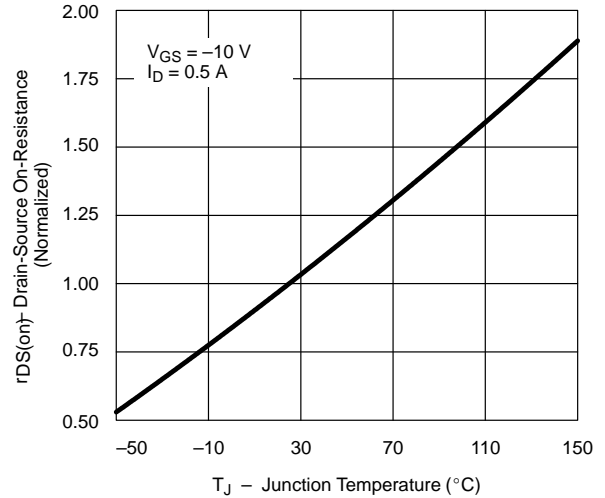
**On-Resistance vs. Gate-to-Source Voltage**



**On-Resistance vs. Drain Current**



**Normalized On-Resistance vs. Junction Temperature**





### TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

